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ENVIRONMENTAL STATEMENT: VOLUME 1 ELY VALLEY SOLAR FARM

LAND OFF ELY VALLEY ROAD | YNYSMAERDY | NR LLANTRISANT

Sirius Planning

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PREPARED BY

PREPARED FOR

WINDEL SOLAR 8 Ltd

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1. INTRODUCTION

1.1 SUMMARY OF SITE AND PROPOSAL

1.1.1 This Environmental Statement (ES) has been prepared on behalf of Windel Solar 8 Limited (a project developed by Windel Energy Ltd and Recurrent Energy Ltd) 'the Applicant' for the construction and operation of a solar farm on land located c.0.4km north of Ynysmaerdy and 0.8km east of Coedely. The application site totals approximately 20.9ha.

1.1.2 The site is irregular in shape and comprises several agricultural fields.

1.1.3 Drawing WN1011/01/01 identifies the site location.

1.1.4 The Application Site is situated within the administrative area of Rhondda Cynon Taf County Borough Council (RCTCBC).

1.1.5 The proposed solar farm will have a generating capacity of up to 9.9MW renewable electricity, enough to power over 2,678 homes[1] per year and offset nearly 2,850 tonnes[2] of CO2 every year.

1.2 REQUIREMENT FOR AN ENVIRONMENTAL IMPACT ASSESSMENT

1.2.1 In April 2025, the Applicant submitted a request for a formal Scoping Opinion from RCTCBC under Regulation 14 of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017. The purpose of the request for a Scoping Opinion was to:

- Define the scope of the Environmental Statement (ES) which will accompany the planning application;
- Anticipate and so allow potentially adverse environmental impacts to be considered at an early stage;
- Define methodologies to be used in the EIA process to assess the potential effects of the proposal; and
- Engage relevant stakeholders at an early stage of the proposals to enable contribution of relevant information

1.2.2 A Scoping Opinion was received on 30 June 2025 and confirmed that the following should be included in the Environmental Statement:

- Ecology and Nature Conservation;
- Landscape and Visual Impact;
- Noise; and
- Cumulative Impacts

1.3 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

1.3.1 There is no statutory requirement regarding the form an ES must take, as this is dependent upon the nature of the development under consideration and the sensitivity of the baseline environment. Government guidance advises that where it is decided that an assessment is required, the applicant must prepare and submit an Environmental Statement. The Environmental Statement must include at least the information reasonably required to assess the likely significant environmental effects of the development listed in regulation 18(3) and comply with regulation 18(4).

1.3.2 Table 1.1 identifies the locations within this ES where the information required for inclusion within an ES in accordance with EIA Regulations 2017: Schedule 4 can be

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/295244/Revisions_to_DECC_domestic_energy_bill_estimates.pdf

[2] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/715425/Conversion_Factors_2018_-_Condensed_set__for_most_users__v01-01.xls

found.

Table 1.1: Information for Inclusion in Environmental Statements

Required Environmental Information	Document that Contains the Information
1. Description of the development, including in particular –	
(a) a description of the location of the development;	Environmental Statement Vol. 1, Chapter 2
(b) a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works and the land-use requirements during the construction and operational phases;	Environmental Statement Vol. 1, Chapter 3
(c) a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;	Environmental Statement Vol. 1, Chapter 3
(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, oil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operational phases.	Environmental Statement Vol. 1, Chapters 6 to 10. Supporting technical reporting in Environmental Statement Vol 2. Chapters 6 to 10
2. A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the applicant or appellant which are relevant to the proposed development and its specific characteristics and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	Environmental Statement Vol. 1, Chapter 5
3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information	Environmental Statement Vol. 1, Chapters 6 to 10. Supporting technical reporting in Environmental Statement Vol 2. Chapters 6 to 10.

and scientific knowledge.	
4. A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaption), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	Environmental Statement Vol. 1, Chapters 6 to 10. Supporting technical reporting in Environmental Statement Vol 2. Chapters 6 to 10
5. A description of the likely significant effects of the development on the environment resulting from, inter alia –	.
(a) the construction and existence of the development, including, where relevant, demolition works;	Environmental Statement Vol. 1, Chapters 6 to 10.
(b) the use of natural resources in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;	Environmental Statement Vol. 1, Chapters 6 to 10.
(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances and the disposal and recovery of waste;	Environmental Statement Vol. 1, Chapters 6 to 10.
(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);	Environmental Statement Vol. 1, Chapters 6 to 10.
(e) the cumulation of effects with other existing and / or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;	Environmental Statement Vol. 1, Chapters 6 to 10.
(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;	Environmental Statement Vol. 1, Chapters 6.
(g) the technologies and the substances used.	Environmental Statement Vol. 1, Chapters 3, 6 to 10.
The description of the likely significant	

effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at European Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC and Directive 2009/147/EC	
6. A description of the forecasting methods or evidence used to identify and assess the effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved	Environmental Statement Vol. 1, Chapters 6 to 10.
7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced, or offset, and should cover both the construction and operational phases.	Environmental Statement Vol. 1, Chapters 6 to 10.
8. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to European Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or	Environmental Statement Vol. 1, Chapter 6

relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of the Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	
9. A Non-Technical Summary (NTS) of the information provided under paragraphs 1 to 8	Environmental Statement Vol. 3, Non-Technical Summary.
10. A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	Environmental Statement Vol. 1, Chapters 6 to 10.

1.3.3 Information has been gathered for each environmental subject matter area. This ensures that a comprehensive technical assessment of the potentially significant effects of the proposed development has been undertaken.

1.3.4 Each of the technical assessments will consider:

- **Context:** This sets out the relevance of each environmental topic in both planning and technical terms, including an explanation of the terminology to be used;
- **Proposed Development:** This outlines the proposed development focussing on aspects pertinent to the topic chapter;
- **Assessment Approach:** This includes details of the initial data gathering undertaken for the scoping exercise and how this has influenced the scope of the assessment;
- **Baseline Conditions:** It describes baseline environmental conditions relating to the environmental topic and the identification of potentially sensitive receptors;
- **Assessment of Effects:** This outlines how data has been collected and the method used to identify any potentially significant effects. It concludes by predicting the effects of the proposed development and their significance;
- **Proposed Mitigation:** This outlines the measures that have been incorporated into the proposed development to reduce and minimise the environmental effects;
- **Cumulative Effects:** Assess the potential for likely significant cumulative effects as a result of committed and reasonably foreseeable developments within an identified study area;
- **Summary of Predicted Effects:** This brings all of the effects, both adverse (negative) and beneficial (positive) together in tabular form and summarises the findings using defined and consistently applied criteria;
- **Implementation of Mitigation:** This section summarises the mitigation measures that will form part of the development proposals and who will be responsible for their implementation. It also states how measures will be

monitored where appropriate;

- **Residual Impacts:** This section identifies that impacts that potentially remain following implementation of the mitigation. Residual impacts should not lead to any significantly adverse effects on identified receptors, equally residual impact may have positive effects.
- Summary and Conclusions

1.3.5 The purpose of the Environmental Impact Assessment is to identify the likely 'significance' of environmental effects (beneficial or adverse) arising from a development. In broad terms, environmental effects are described as:

- Adverse – detrimental or negative effects to an environmental resource or receptor;
- Beneficial – advantageous or positive effect to an environmental resource or receptor; or
- Negligible – a neutral effect to an environmental resource or receptor.

1.3.6 Effects are assessed in terms of:

- The magnitude of the impact – the degree of alteration (both positive and negative) from the baseline state; and
- The sensitivity of the receptor(s) subjected to the impact – this may relate to the value of a resource and the reversibility of impacts.

1.3.7 Significance of effect is evaluated as a combination of the sensitivity of the receptor and the magnitude of change the development results in. Although the matrix in Table 1.2 is designed to demonstrate an objective rationale to reach a conclusion about the potential significance of impact, a degree of professional judgement is a key element in the evaluation process.

Table 1.2: Significance of Effects

		Sensitivity of Receptor			
		High	**Medium**	**Low**	**Negligible**
Magnitude of Effect	**High**	Major	Major	Moderate	Negligible
	Medium	Major	Moderate	Minor/ Moderate	Negligible
	Low	Moderate	Minor/ Moderate	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

1.3.8 Any effect of Moderate or Major significance is considered to represent a likely significant effect for the purposes of the EIA Regulations. Significance of effects would be considered before and after mitigation.

1.3.9 The criteria for determining magnitude of impact is set out below in Table 1.3.

Table 1.3: Magnitude of Effects and Criteria

Magnitude of Effect	Criteria
High	Total loss or major/substantial alteration to elements/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally changed.
Medium	Loss or alteration to one or more elements/features of the baseline conditions such that post development

	character/composition/attributes of the baseline will be materially changed.
Low	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but the underlying character/composition/attributes of the baseline condition will be similar to the pre-development.
Negligible	Very little change from baseline conditions. Change not material, barely distinguishable or indistinguishable, approximating to a 'no change' situation.

1.3.10 The sensitivity of a receptor is based on the importance of the receptor using the criteria below in **Table 1.4.**

Table 1.4: Degree of Sensitivity Criteria

Sensitivity	Criteria
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character or is of international or national importance.
Medium	The receptor/resource has moderate capacity to absorb change without significantly altering its present character or is of high and more than local (but not national or international) importance.
Low	The receptor/resource is tolerant of change without detrimental effect, is of low or local importance.
Negligible	The receptor/resource can accommodate change without material effect, is of limited importance.

1.4 FORMAT OF THE ENVIRONMENTAL STATEMENT

1.4.1 The required information will be incorporated into an Environmental Statement which will be presented in 3 volumes:

- ES Volume 1 - Environmental Statement;
- ES Volume 2 - Appendices and Annexes of Technical Reports, Plans and Photographs; and
- ES Volume 3 - Non-Technical Summary.

Environmental Statement - Volume 1

1.4.2 The introductory chapters of the ES set out the main characteristics of the site and its surroundings, and outline the proposed development, methodology of assessment and scope of the Environmental Statement.

1.4.3 Schedule 4 of the Environmental Impact Assessment Regulations 2017, requires a description of the likely significant impacts, direct and indirect, on the environment, explained by reference to its possible impact on:

- the construction and existence of the development, including, where relevant, demolition works;
- the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;
- the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;
- the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);

- the culmination of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;
- the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; and
- the technologies and the substances used.

1.4.4 The LPA issued a Scoping Opinion on 30 June 2025 and is included in Appendix A. The below summarises the assessments that have been scoped into the ES, and those scoped out:

Introduction	Outline of Planning Application Purpose of ES Requirement for an ES Format of ES
The Site	Site and Environs Site Access Site History
The Development	Introduction Background Proposal Description
Summary of Relevant Planning Policy	National Planning Policy Local Plan Material Considerations
Need and Alternatives	Alternative Options and Scenarios
Environmental Topics Scoped Out	Soils, Geology and Agricultural Land Historic Environment Public Health and Wellbeing Climate Change Major Accidents and/or Disasters Air Quality Traffic and Transport Socio Economic Hydrology and Flood Risk
Scoped in Assessments	Ecology and Nature conservation Landscape and Visual Impact Noise Cumulative Impacts
Conclusions	

1.4.5 Of the above environmental topics Agricultural Land Quality, Flood Risk, Historic Environment and Traffic and Transport will have sperate standalone technical statements which have been submitted with the application.

Environmental Statement - Volume 2

1.4.6 Each subject considered will be supported, where necessary, by detailed technical reports that will form appendices to the main ES document in Volume 1.

Non-Technical Summary – Volume 3

1.4.7 The Non-Technical Summary (NTS) provides summary information about the proposal and its likely environmental effects. It is written for the non-specialist reader and provides a summary overview of the environmental impact assessment. It is proposed that the NTS adopts the following format:

- Summary
- Introduction
- Site and Surroundings
- Descriptions and Proposals
- Summary of main topic areas and predicted environmental effects
- Summary and Conclusions

1.5 COMPETENT EXPERTS

1.5.1 Following pre-application discussions, a project team was assembled to carry out the assessments within the EIA process. The EIA has been undertaken by a team of environmental consultants with expertise in their relevant disciplines. EIA coordination and preparation of the ES has been undertaken by Sirius Planning Ltd. In compliance with Regulation 18(5), the consultants involved in undertaking the EIA are listed below in **Table 1.5**, by EIA topic responsibility and details of their qualifications.

Table 1.5: Competent Experts

EIA Topic	Name	Company	Qualifications
Planning Policy	James Cook	Sirius Planning Ltd	MRTPI
Alternatives	James Cook	Sirius Planning Ltd	MRTPI
Landscape and Visual Impact	Alex Stappard	Sirius Planning Ltd	CMLI
Ecology and Nature Conservation	Joseph Monkhouse	Wychwood	MSc
Noise and Vibration	Matthew Gascoigne	Noice Assess Ltd	MICE, MIOA
Cumulative	James Cook	Sirius Planning Ltd	MRTPI

1.6 PRE-APPLICATION CONSULTATION

1.6.1 The Town and County Planning (Development Management Procedure) (Wales) (Amendment) Order 2016, requires pre-application consultation to be undertaken for all planning applications for 'major' development. Given the planning application area is larger than 1 hectare the proposal falls within the 'major' development category therefore pre-application consultation is required.

1.6.2 Pre-application consultation takes the form of:

- Erecting site notices up near to the site;
- Notifying those adjacent landowners to the site;
- Notifying relevant Community Councils and Ward Members;
- Notifying relevant statutory consultees;
- Project website containing information on the proposals, the draft planning application, ways to make comments / provide feedback on the proposals and details of the project team for any queries; and
- Pre-Application Consultation Report.

1.7 OBTAINING INFORMATION

1.7.1 Electronic copies of all draft documents are available to view on the project website:

www.elyvalleyroadsolarfarm.co.uk

1.7.2 Paper format copies of the planning application and supporting information are available on request at the following price:

Full Hard Copy - £75
Electronic CD Copy - £15

1.7.3 All requests for hard copy information should be addressed to the following:

info@elyvalleyroadsolarfarm.co.uk

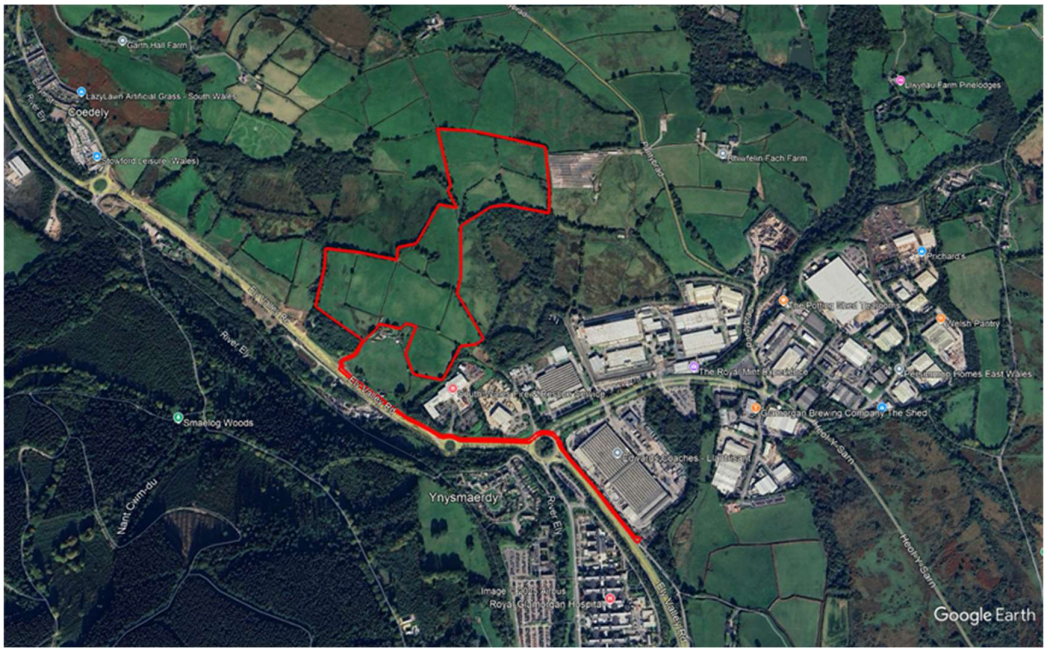
2. THE SITE AND SURROUNDINGS

2.1 INTRODUCTION

2.1.1 This chapter provides a description of the site in terms of its location, history, and surrounding land uses. It also sets the development within the context of surrounding land uses.

2.1.2 The site location and extent of site boundaries are shown in Drawing WN1011/04/01 and below in Figure 2.1. The application site boundary measures 20.9ha.

Figure 2.1: Site Location



2.2 SITE DESCRIPTION

2.2.1 The site has a rural setting with several farms in the locality. Elevation of the site ranges from 79m to 153m above Ordnance Datum (AOD), with higher terrain in the north descending southwards.

2.2.2 There are a number of overhead electricity transmission lines that cross the site, drainage channels and streams, and underground utility infrastructure. A small-scale solar farm (1.3MW) and wind turbine (60m in height (to tip)) is located adjacent to the eastern boundary of the proposal site. There is another turbine (90m to tip) located further east. There is significant industrial development located adjacent to the south east of the site.

2.2.3 The solar farm will connect to an existing substation located approximately c.1.2km to the south east of the application site off Ely Valley Road. The cable from the on site substation will largely run in the highway.

2.2.4 Access to the site Is via existing point off Ely Valley Road which serves the farmhouse of Dyffryn Farm.

2.3 DESIGNATIONS

2.3.1 The Local Plan Proposals Map shows that the site is within a Special Landscape Area outside of settlement limits, in an area designated as comprising Sandstone resources.

2.3.2 The Rhos Tonyrefail Site of Special Scientific Interest (SSSI) is located adjacent on the eastern boundary of the application site. In addition, the Rhiwfelin Fawr Site of Importance for Nature Conservation (SINC) which is located 0.09km northwest of the

site.

2.3.3 The site is withing Flood Zone 1 and therefore has a low risk of flooding.

2.3.4 There are no designated heritage assets on site. Historic Wales Maps show there are three national monuments near the site; Rhiwefelen is a Post Medieval House located to the northeast of the site (c.125m) and Dyffryn-Uchaf is noted on the Historic Environment Record as a Post Medieval House and Farmstead located to the south of the site (c.220m). Beddw, a Post-Medieval House is sited c.215m to the northwest of the site.

2.3.5 There are no Scheduled Monuments within the proposed site, but there is one within 2.5km of the site. No Listed Buildings lie within the proposed site. There are 27 Listed Buildings within 2.5km of the site, 8 of which are within 1km. The site does not form part of a Conservation Area, nor are there any Conservation Areas in proximity to the site.

2.4 PLANNING HISTORY

2.4.1 Whilst there is no planning history of relevance to the site itself, there are three nearby renewable energy related developments to the east of the site.

2.4.2 On 15th November 2019, the Council advised that a proposed solar farm (located c.320m to the east of the site) was EIA development. Following an appeal against this opinion, the Welsh Government confirmed on 17th January 2020 that the proposed solar farm was not EIA development. Permission was then subsequently granted by Rhondda Cynon Taf CBC on 16th November 2020 for the proposal.

2.4.3 Permission was granted for the wind turbine located to the east of the site by way of a decision notice dated 19th July 2016 under application reference 16/0124/10, with a subsequent application being granted to increase the height (ref: 18/0761/39).

2.4.4 To the immediate east of Pantybrad consent was granted on 27 April 2022 for a single wind turbine and associated infrastructure (21/0661/FUL).

2.4.5 Permission was granted for the construction and operation of a solar farm directly to the north and west of the site by way of a decision notice dated 25th April 2024 under application reference 22/1414/FUL.

3. THE PROPOSED DEVELOPMENT

3.1 OUTLINE OF THE PROPOSAL

3.1.1 The proposed development comprises the construction, operation, maintenance and decommissioning of a ground-mounted solar farm plus ancillary infrastructure including the following:

- Photovoltaic (PV) panels;
- Mounting frames – matt finished small section metal structure;
- Scheme of landscaping and biodiversity enhancement;
- Inverters and transformers and associated cabling (largely below ground);
- Distribution Network Operator (DNO) substation and customer cabins;
- Deer fencing, sympathetic to the area, and infra-red CCTV (CCTV cameras would operate using motion sensors and would be positioned inward only to ensure privacy to neighbouring land and property);
- Temporary set down area;
- Internal service roads; and
- Site access for the construction, operational and decommissioning phases.

3.1.2 Ely Valley Solar Farm will have a generating capacity of up to 9.9MW of renewable electricity, enough to power over 2,678 homes per year and offset nearly 2,850 tonnes of CO2 every year.

3.1.3 The panels will be arranged in rows in an east-west alignment across the development areas and orientated south. The scheme will be operational for 40 years after which all equipment can be removed from site.

3.2 SITE DESIGN AND LAYOUT

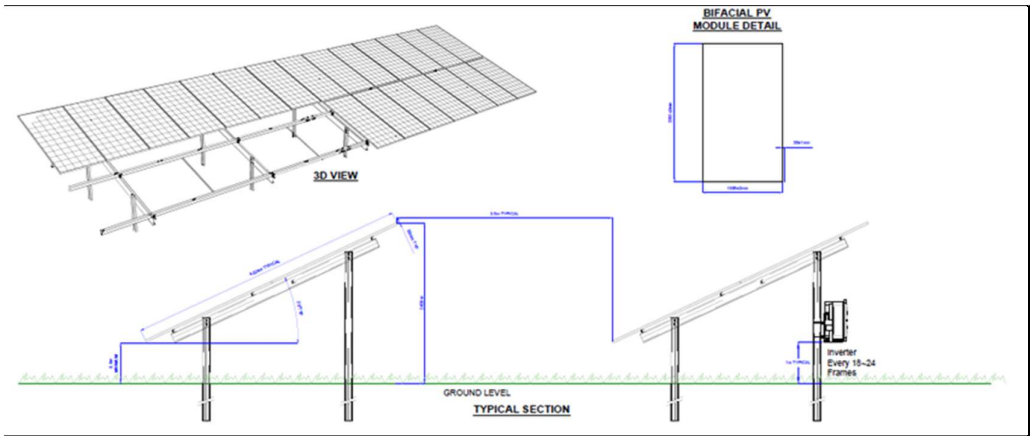
3.2.1 The proposed layout is shown on Drawing WN1011/04/03. Due to commercial constraints, potential changes in solar panels, transformer and substation manufacturer during the determination process an element of flexibility is required in relation to their dimensions, appearance and their arrangement. The submitted layout is therefore indicative as the detailed layout and phasing of construction will be agreed with the Local Planning Authority (LPA) by way of planning condition following grant of planning consent. This approach is commonplace in solar farm planning permissions.

3.2.2 The panels will be arranged in rows in an east-west alignment across the development areas and will be angled at up to 20° from the horizontal and orientated south. The height of the panels will be up to 2.6m above ground level; the lowest part of the panel will measure approximately 0.8m above ground level. The rows of panels will be set between 3m and 5m apart to avoid shadowing and allow for scheduled maintenance, this will be dependent on local topography.

3.2.3 During construction, operation and decommissioning a 15m setback from woodland edge will be implemented and a 4m setback will be established from the hedgerows, ditches and field drains.

3.2.4 The mounting frames will be matt finished galvanised steel that will be fixed to the ground employing a pile mounting system, depending on ground conditions. Drawing WN1011/04/04 and Figure 3.1 below provide a specification of the panel and frames. The piles will be pushed into the ground via a mobile piling rig.

Figure 3.1: Typical Panel and Frames Specification



3.2.5 The solar panels will be connected to small inverter units typically located on the racking of the frames. The inverters will connect to transformer stations which converts the electricity from Direct Current (DC) to Alternating Current (AC). The transformers ensure that electricity can be transferred to the substation and then to the 'local grid' more efficiently. For comparison metering of the electricity generated by the solar farm, 'customer' substation will also be provided. Details of the proposed ancillary equipment within the site are provided on:

- Drawing WN1011/04/05 and 07 - substations specifications;
- Drawing WN1011/04/03 - equipment locations across the development area; and
- Drawing WN1011/04/06 – transformer station details.

3.2.6 Cabling from the transformers to the substation will be below ground. An earth cable will be required around the perimeter the deployment area. Trench depths will vary from 0.4m to 1.3m depending on whether they are for earthing or AC cabling.

3.3 POINT OF CONNECTION AND CABLE ROUTE

3.3.1 The solar farm will connect to the local distribution network at the existing substation located c.1.3km to the south of the application site off Ely Valley Road. The cable from the on site substation will be underground and will largely run in the highway.

3.3.2 The indicative cable routes are presented in Drawing WN1011/04/13. The drawing shows a 'corridor' within which the cable will be laid. The exact alignment of the route is to be confirmed at the detailed design stage via separate authorisation from the Local Highway Authority.

3.4 SITE SECURITY

3.4.1 Once operational, the solar farm deployment areas will be secured by a c. 2m high stock fence or similar. Infra-red (non-visible at night), inward facing pole mounted CCTV cameras (c. 2.5m – 3m in height) will also be provided at between 50m and 100m intervals along the boundary fence. These will enable remote surveillance of the site. Fencing and CCTV camera details are presented on Drawing WN1011/04/09. The CCTV cameras will be positioned to avoid views of any private property.

3.5 CONSTRUCTION PROGRAMME

3.5.1 The construction of the solar farm is expected to last approximately 6 months and employ up to 50 staff over the construction period. A Transport Statement (TS)

accompanies the application (see Appendix C). The TS provides details of proposed access arrangements, the anticipated build programme, construction vehicle numbers and type, construction worker numbers and the proposed construction hours.

3.6 SITE ACCESS

3.6.1 Access to the application site is taken from Ely Valley Road (A4119) using an existing access that serves Dyffryn Farm and two other residential properties. The access will be used during both the construction and operational phases of the development.

3.6.2 The recently upgraded A4119 is a dual carriageway subject to a 50mph speed limit. Being a dual carriageway, vehicles can only access the site from the north west (turning left into site) and leaving the site turning left onto A4119.

3.6.3 Drawing WN1011/04/12 identifies the locations of the temporary set down area.

3.6.4 Within the site, internal service roads will be constructed to access all areas of the site. The roads will be approximately 4m wide and will be finished with compacted crushed stone.

3.6.5 After commissioning and once operational, the site will only be visited during routine monthly maintenance checks. The access during the operational phase will be as per the construction routes.

3.6.6 The proposed development will have restricted public access. In designing the proposed development, emphasis will be placed on security. The design ensures the site is secure and not readily accessible to the public through the installation of deer fencing and infra-red CCTV. Access to the site will be through invitation only.

3.6.7 Details of the proposed access arrangements during construction are presented in the TS (Appendix C). Once operational, the proposal will generate minimal traffic flow from monthly inspections and maintenance.

3.7 PUBLIC RIGHT OF WAY

3.7.1 There are no Public Rights of Way which run either through or adjacent to the site.

3.8 BIODIVERSITY ENHANCEMENTS AND LANDSCAPING

3.8.1 The landscape and visual impact assessment and ecology and nature conservation chapters (ES Chapters 7 and 9 respectively) provide full details of the enhancement proposals, but in summary these include:

- The existing field boundary vegetation, in the form of native hedgerows and trees, including those within the site, will be retained where possible and managed to an appropriate height to provide visual screening, but also to enhance landscape and ecological structure.
- Analysis of historic mapping will be undertaken to determine whether there are any lost landscape features that could be reinstated and integrated with the solar development e.g. copses, banking, ditches and hedgerows.
- Grassland will be managed and enhanced for landscape and ecological benefit, Species mixes will be appropriate to the local area and follow recommendations of the project and County Ecologists
- Appropriate development offsets (clear zones) will be initiated from adjacent habitats including the woodland and grassland SINC and neighbouring SSSI as well as field margins to ensure visual effects are not of a significant nature and that existing habitats have a sufficient buffer to enable transition/connectivity between existing and proposed habitat areas.
- Development will facilitate the management of the range of semi-natural habitats – trees, hedgerows and grassland mosaic/upland meadows, found

throughout the solar plot and adjoining areas.

- Mitigation proposals will serve the dual purpose of providing landscape and visual mitigation and to increase the site's value and reflect Local Biodiversity Action Plan objectives.

3.8.2 A Landscape Masterplan Plan is shown in drawing WN1011/07/07 and a Green Infrastructure Strategy is shown in Appendix K.

3.9 SITE WASTE MANAGEMENT PLAN

3.9.1 A Construction Environmental Management Plan (CEMP) will be prepared prior to the development works commencing on site. A Site Waste Management Plan (SWMP) will be prepared as part of the CEMP. The SWMP will detail:

- Actions to meet the waste hierarchy;
- Identify the person with responsibility for the SWMP;
- Details of the types and quantities of waste that will be produced by the Contractor as part of the construction phase; and
- Details of all consignments made for example a WRAP waste recording and reporting spreadsheet.

3.10 SURFACE WATER MANAGEMENT

3.10.1 Although the solar panels will divert the downward path of falling rain, being raised off the ground on frames, they will not reduce the permeable area where they are sited. Rainfall that does fall onto the site will, as now, infiltrate into the soil substrate. The amount of land that is made impermeable by the installation of the facility is limited to the concrete pads of the transformers and substations. Therefore, the surface water runoff from the developed site will be no different pre and post-development. There will be no increase in surface water run-off or exacerbation of off-site risk as a result of the proposals.

3.10.2 A separate application for SAB approval will be made.

3.11 DECOMISSIONING

3.11.1 After 40 years of operation the panels and associated infrastructure will be removed from site. The outline TS presented in Appendix C details the programme and anticipated vehicle movements associated with this phase of development.

4. POLICY CONTEXT

4.1 INTRODUCTION

4.1.1 This section presents the key policy, legislation and guidance relevant to the proposed development. Section 38(6) of the Planning and Compulsory Purchase Act 2004 Act states that:

> *"…if regard is to be had to the development plan for the purpose of any determination to be made under the Planning Acts the determination must be made in accordance with the plan unless material considerations indicate otherwise".*

4.1.2 The following section considers relevant national strategies, policy and guidance, and development plans as far as they are relevant to the proposed development. This relates to matters of energy and planning.

4.2 NATIONAL ENERGY CONTEXT

Climate Change Act

4.2.1 The Climate Change Act 2008 required long term targets for the UK to achieve an 80% reduction in greenhouse gases by 2050 against 1990 levels. In June 2019, the Climate Change Act 2008 (2050 target Amendment) Order came into effect which required the net UK carbon account for the year 2050 to be 100% of 1990 levels.

4.2.2 The UK Act requires governments to set legally binding 'carbon budgets'. Each budget provides a five-year cap on total greenhouse emissions; in order to meet the UK's emission reduction commitments caps should not be exceeded.

4.2.3 The first carbon budget (2008-12) and the second (2013-17) have been met and the UK is on track to outperform the third (2018-22). However, it is not on track to meet the fourth (2023-27) or the fifth (2028-32).

The Clean Growth Strategy: Leading the Way to a Low Carbon Future

4.2.4 The Clean Growth Strategy sets out a comprehensive set of policies and proposals that aim to accelerate the pace of clean growth. In order to meet the fourth and fifth carbon budgets (covering the periods of 2023-2027 and 2028-2032) the Government will need to drive a significant acceleration in the pace of decarbonisation and this Strategy sets out the policies that keep the UK on track to meet the carbon budgets.

COP26 and the Net Zero Strategy

4.2.5 The UK hosted the 26th United Nations Climate Change Conference of the Parties (COP26) in Glasgow on 31 October – 13 November 2021. The COP 26 summit brought together 120 world leaders and representatives from 194 countries to accelerate action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change. COP26 secured near-global Net Zero commitments from 153 countries. As highlighted during the COP26 event in Glasgow:

> *"We cannot afford to wait to act against the threat of climate change. We must work together to protect our planet and people and ensure a greener, more resilient future for us all".*

4.2.6 In October 2021, the UK Government launched its Net Zero Strategy: Build Back Greener which will be submitted to the United Nations Framework Convention on Climate Change (UNFCCC) as the UK's second Long Term Low Greenhouse Gas Emission Development Strategy under the Paris Agreement and includes the target for decarbonising the UKs electricity grid by 2035. To deliver the strategy, overall electricity demand is expected to increase 40-60% by 2035, all met from low carbon source.

4.2.7 The 'Net Zero Strategy'[3] commits the UK to be powered entirely by clean electricity by 2035, which, in addition to a significant increase in renewable energy generation capacity, will require the deployment of new flexibility measures including energy storage to help smooth out power supply and future price spikes.

4.2.8 The British Energy Security Strategy was published in April 2022, in response to rising global energy prices, provoked by surging demand following the Covid-19 pandemic as well as Russia's invasion of Ukraine. This strategy is designed to reduce the UKs reliance on expensive fossil fuels, which are subject to volatile gas prices set by international markets we are unable to control, and boost its diverse sources of homegrown renewable energy to deliver greater energy security in the long-term. The strategy commits to a fivefold increase in solar deployment, with up to 70GW installed capacity by 2035. The paper sets out that by 2050, the Government ambition is to have a low-cost net zero consistent electricity system, most likely to be composed of predominantly wind and solar generation.

Environmental (Wales) Act 2016

4.2.9 The Act provides the necessary legislation to improve planning and management of natural resources in Wales. Part 2 of the Act relates to Climate Change and places an obligation on Welsh Ministers to reduce greenhouse gas emissions such that in the year 2050 they are at least 80% lower than baseline figures for 1990 or 1995, depending on the type of GHG.

Advice Report: Path to a Net Zero Wales

4.2.10 Required under the Environmental (Wales) Act 2016, the Report provides ministers with advice on Wales' climate targets between now and 2050 and assesses progress on reducing emissions to date. Prepared in December 2020 by the Climate Change Committee (an independent statutory body) the report states that meeting the Net Zero target in Wales requires action across four key areas; Reducing demand for carbon-intensive activities; Take-up of low-carbon solutions; Expansion of low-carbon energy supplies; Land; and Flexibility to meet Net Zero.

4.2.11 In April 2019, the Welsh Government Minister for the Environment, Energy and Rural Affairs, Lesley Griffiths AM declared a climate change emergency in Wales. The Welsh Government initially committed to a 95% reduction in emissions by 2050, but in February 2021 amended this to a legal commitment to achieve net zero emissions by 2050, with a stated ambition to *"get there sooner"*. RCTCBC by 2030, will be a Carbon Neutral Council and the County Borough will be as close as possible to Carbon Neutral as we can get by then.

Prosperity for All: A Low Carbon Wales

4.2.12 The Environment (Wales) Act 2016 requires Welsh Government to reduce emissions of greenhouse gases (GHGs) in Wales by at least 80% for the year 2050 from 1990 levels with a system of interim emissions targets and carbon budgets. Under s39 of that Act, Welsh Ministers must prepare and publish a report for each budgetary period setting out their policies and proposals for meeting the carbon budget for that period.

4.2.13 Prosperity for All: A Low Carbon Wales is the Welsh Government's first statutory decarbonisation plan. It sets out the Welsh government's approach to cut emissions and increase efficiency in a way that maximises wider benefits for Wales, ensuring a fairer and healthier society. It sets out a hundred policies and proposals that directly reduce emissions and support the growth of the low carbon economy.

4.2.14 It specifically seeks to reduce the use of fossil fuels for power generation, and promote and accelerate the deployment of renewable energy generation. The plan

[3] https://www.gov.uk/government/publications/net-zero-strategy

also recognises that energy storage and flexibility services will need to be provided to integrate with new renewable energy development as part of a whole system approach.

4.2.15 The Welsh Government published its second statutory decarbonisation plan (LCDP2) in Autumn 2021. The Plan sets out:

- the overall vision for Wales in 2025 and beyond to 2050, an overview of the reduction trajectory, the latest emissions data, and a broader view of our consumption emissions and global responsibilities;
- setting out the pathways for each emissions sector, describing what is in scope, where the emissions come from, progress to date setting out our governance structures, performance indicators, financial costings; and
- highlighting key engagement and emissions reducing deliverables over this carbon budget and the timeframe for developing our third delivery Plan to meet Carbon Budget 3.

The Well-being of Future Generations (Wales) Act 2015

4.2.16 In addition to the policy provisions outlined above, under the Well-being of Future Generations (Wales) Act 2015 all public bodies in Wales have a duty to secure sustainable development by improving the economic, social, environmental and cultural well-being of Wales to achieve the 7 “well-being goals”. All planning applications in Wales need to demonstrate how they align with the seven well-being goals:

- A Prosperous Wales.
- A Resilient Wales.
- A More Equal Wales.
- A Healthier Wales.
- A Wales of Cohesive Communities.
- A Wales of Vibrant Culture and Thriving Welsh Language.
- A Globally Responsible Wales.

4.3 NATIONAL PLANNING CONTEXT

Futures Wales: The National Plan 2040

4.3.1 Future Wales: The National Plan 2040 (adopted February 2021) sets the direction of development in Wales to 2040. Future Wales constitutes the development plan for Developments of National Significance (DNS) in line with s38(6) of the Planning and Compulsory Purchase Act 2004. It states:

> *“Wales can become a world leader in renewable energy technologies. Our wind and tidal resources, our potential for solar generation, our support for both large and community scaled projects and our commitment to ensuring the planning system provides a strong lead for renewable energy development, mean we are well placed to support the renewable sector, attract new investment, and reduce carbon emissions".*

4.3.2 As set out in legislation (Planning & Compulsory Purchase Act 2004 as amended by the Planning (Wales) Act 2015), applications for DNS must be determined in accordance with Future Wales, which is the national development plan for Wales.

4.3.3 Future Wales identifies 11 Outcomes to be achieved in 20-year’s time. Outcome 9 seeks a Wales where people live in places that sustainably manage their natural resources and reduce pollution. Outcome 11 seeks a Wales where people live in places which are decarbonised and climate resilient.

4.3.4 Future Wales states:

"Wales is abundant in opportunities to generate renewable energy and the Welsh Government is committed to maximising this potential. Generating renewable energy is a key part of our commitment to decarbonisation and tackling the climate emergency."

4.3.5 Furthermore, Future Wales sets the following ambitious targets for the generation of renewable energy:

- For 70% of electricity consumption to be generated from renewable energy by 2030.
- For one gigawatt of renewable energy capacity to be locally owned by 2030.
- For new renewable energy projects to have at least an element of local ownership from 2020.

4.3.6 The National Plan includes Policies 17 and 18 which are strategic spatial and detailed criteria-based policies respectively and should be considered together in the determination of applications.

4.3.7 Policy 17 demonstrates the Welsh Government's support in principle for all renewable energy projects and technologies. Proposals should ensure there is no significant unacceptable detrimental impact on the surrounding natural environment and local communities and that the development delivers positive social, environmental, cultural and economic benefits. Policy 17 - Renewable and Low Carbon Energy and Associated Infrastructure states:

"The Welsh Government strongly supports the principle of developing renewable and low carbon energy from all technologies and at all scales to meet our future energy needs. In determining planning applications for renewable and low carbon energy development, decision-makers must give significant weight to the need to meet Wales' international commitments and our target to generate 70% of consumed electricity by renewable means by 2030 in order to combat the climate emergency…

Proposals should describe the net benefits the scheme will bring in terms of social, economic, environmental and cultural improvements to local communities…"

4.3.8 Policy 18 provides a decision-making framework for renewable and low carbon energy technologies. Policy 18 - Renewable and Low Carbon Energy Developments of National Significance states:

"Proposals for renewable and low carbon energy projects (including repowering) qualifying as Developments of National Significance will be permitted subject to policy 17 and the following criteria:

1. outside of the Pre-Assessed Areas for wind developments and everywhere for all other technologies, the proposal does not have an unacceptable adverse impact on the surrounding landscape (particularly on the setting of National Parks and Areas of Outstanding Natural Beauty);

2. there are no unacceptable adverse visual impacts on nearby communities and individual dwellings;

3. there are no adverse effects on the integrity of Internationally designated sites (including National Site Network sites and Ramsar sites) and the features for which they have been designated (unless there are no alternative solutions, Imperative Reasons or Overriding Public Interest (IROPI) and appropriate compensatory measures have been secured);

4. there are no unacceptable adverse impacts on national statutory designated sites for nature conservation (and the features for which they have been designated), protected habitats and species;

5. the proposal includes biodiversity enhancement measures to provide a net benefit for biodiversity;

6. there are no unacceptable adverse impacts on statutorily protected built heritage assets;

7. there are no unacceptable adverse impacts by way of shadow flicker, noise, reflected light, air quality or electromagnetic disturbance;

8. there are no unacceptable impacts on the operations of defence facilities and operations (including aviation and radar) or the Mid Wales Low Flying Tactical Training Area (TTA-7T);

9. there are no unacceptable adverse impacts on the transport network through the transportation of components or source fuels during its construction and / or ongoing operation;

10. the proposal includes consideration of the materials needed or generated by the development to ensure the sustainable use and management of resources;

11. there are acceptable provisions relating to the decommissioning of the development at the end of its lifetime, including the removal of infrastructure and effective restoration.

The cumulative impacts of existing and consented renewable energy schemes should also be considered.

Planning Policy Wales Edition 12

4.3.9 The Welsh Government published Planning Policy Wales Edition 12 (PPW) in February 2024. This provides the overarching national level source of planning policy for Wales and is a material consideration alongside Futures Wales. It has been updated to take into account Futures Wales and the Wellbeing of Futures Generations Act which incorporates 7 wellbeing goals. It seeks to support the requirement for sustainable development via the planning system whereby the presumption in favour of sustainable development forms the overarching role together with a firm view on improving population wellbeing.

4.3.10 PPW sets out the specific planning policies for achieving sustainable development across Wales. Figure 4 sets out the key planning principles of this national policy, stating that:

"The planning system has a vital role to play in making development resilient to climate change, decarbonising society and developing a circular economy for the benefit of both the built and national environments and to contribute to the achievement of well-being goals".

4.3.11 Chapter 5 (Providing and Enterprising Places) of the PPW sets out the Welsh Government's policies regarding Enterprising Placemaking and Wellbeing across Wales. One of the key aims in relation to energy is for Wales to generate 70% of its electricity consumption from renewable generation by 2030 and actively manage the transition to a low carbon economy.

4.3.12 Chapter 5 of the PPW outlines the importance of the planning system to deliver these targets, paragraph 5.7.15 states:

"The planning system has an active role to help ensure the delivery of these targets, in terms of new renewable energy generating capacity and the promotion of energy efficiency measures in buildings."

4.3.13 Paragraph 5.9.19 states that:

"In determining applications for the range of renewable and low carbon energy technologies, planning authorities should take into account:

- *The contribution a proposal will make to meeting identified Welsh, UK and European targets;*
- *The contribution to cutting greenhouse gas emissions; and*
- *The wider environmental, social and economic benefits and opportunities from renewable and low carbon energy development.*

4.3.14 Paragraph 5.9.20 continues stating:

"Planning authorities should also identify and require suitable ways to avoid, mitigate or compensate adverse impacts of renewable and low carbon energy development. The construction, operation, decommissioning, remediation and aftercare of proposals should take into account:

- *The need to minimise impacts on local communities, such as from noise and air pollution, to safeguard quality of life for existing and future generations;*
- *The impact on the natural and historic environment;*
- *Cumulative impact;*
- *The capacity of, and effects on the transportation network;*
- *Grid connection issues where renewable (electricity) energy developments are proposed; and*
- *The impacts of climate change on the location, design, build and operation of renewable and low carbon energy development. In doing so, consider whether measures to adapt to climate change impacts give rise to additional impacts."*

4.3.15 Chapter 5 also outlines that before an application is submitted "…developments should, where possible, consider how to avoid, or otherwise minimise, adverse impacts through careful consideration of location, scale, design and other measures". Furthermore, active engagement with the local community should be undertaken at pre-application stage.

Technical Advice Note 5: Nature Conservation and Planning (2009)

4.3.16 This Technical Advice Note provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation. It:

- sets out the key principles of planning for nature conservation;
- provides advice about the preparation and review of development plans, including the relevant statutory requirements;
- addresses nature conservation in development management procedures;
- deals with the conservation of internationally and nationally designated sites and habitats and also covers local sites; and
- deals with the conservation of protected and priority species.

Technical Advice Note 18: Transport

4.3.17 TAN18 states that in relation to traffic management well designed and implemented traffic management measures can help to secure planning objectives in a number of ways, including:

- reducing community severance, noise, local air pollution and traffic accidents;
- promoting safe walking, cycling and public transport;
- improving the attractiveness of urban areas by helping to avoid or manage congestion;
- controlling on street parking (including resident parking schemes) in areas of high parking demand;
- promoting safer road conditions leading to improved opportunity for children's safety and play; and
- promoting safer road conditions in rural areas and reducing the impact of roads on the environment whilst maintaining access for rural businesses."

Technical Advice Note 15: Development and Flood Risk

4.3.18 TAN 15 (updated March 2025) is a technical advice note that provides technical guidance to supplement Planning Policy Wales (PPW) and Future Wales, in relation to development and flooding. TAN 15 advises on development and flood risk, and provides a framework within risks arising from both river and coastal flooding, and from additional run-off from development in any location, can be assessed.

4.3.19 The general approach of PPW and TAN 15 is to advise caution with respect to new development in areas at high risk of flooding by setting out a precautionary framework to guide planning decisions.

> *Proposals that address national security or energy security needs, mitigate the impacts of climate change, that are necessary to protect and promote public health may also, by exception, be appropriate provided that their locational need is clear and the potential consequences from flooding have been considered and found to be acceptable.*

Technical Advice Note 24: The Historic Environment (2017)

4.3.20 The purpose of TAN24 is to provide guidance on how the planning system considers the historic environment during development plan preparation and decision making on planning and Listed Building (LBC) applications.

4.3.21 Conservation Principles should be used by others (including owners, developers and other public bodies) to assess the potential impacts of a development proposal on the significance of any historic asset/assets and to assist in decision making where the historic environment is affected by the planning process.

4.3.22 There are six principles.

- Historic assets will be managed to sustain their values.
- Understanding the significance of historic assets is vital.
- The historic environment is a shared resource.
- Everyone will be able to participate in sustaining the historic environment.
- Decisions about change must be reasonable, transparent and consistent.
- Documenting and learning from decisions is essential.

4.3.23 Applicants and other organisations are strongly encouraged to make use of these Conservation Principles when considering development proposals and other works to historic assets. It is important for those responsible to understand the heritage values and assess the significance of the historic assets that will be affected.

4.4 LOCAL CONTEXT

4.4.1 The Development Plan comprises:

- The Rhondda Cynon Taf County Borough Council Local Development Plan (2011).

4.4.2 Tackling climate change is a priority of Rhondda Cynon Taf County Borough Council as it continues to commitment to become a 'carbon free council' by 2050. The Council have already cut its carbon emissions by almost 40% over the last five years and latest figures show its carbon footprint has fallen by 12,725 tonnes since 2014.

Rhondda Cynon Taf County Borough Council Local Development Plan

4.4.3 The Rhondda Cynon Taf County Borough Council Local Development Plan was adopted on 2nd March 2011.

4.4.4 Policy AW5 make provisions for new development:

Development proposals will be supported where:-

1) Amenity

a) The scale, form and design of the development would have no unacceptable effect on the character and appearance of the site and the surrounding area;

b) Where appropriate, existing site features of built and natural environment value would be retained;

c) There would be no significant impact upon the amenities of neighbouring occupiers;

d) The development would be compatible with other uses in the locality;

e) The development would include the use of multi-functional buildings where appropriate;

f) The development designs out the opportunity for crime and anti social behaviour.

…

4.4.5 Policy AW8 relates to the protection and enhancement of the natural environment:

Rhondda Cynon Taf's distinctive natural heritage will be preserved and enhanced by protecting it from inappropriate development. Development proposals will only be permitted where:-

1. They would not cause harm to the features of a Site of Importance for Nature Conservation (SINC) or Regionally Important Geological Site (RIGS) or other locally designated sites, unless it can be demonstrated that:-

a) The proposal is directly necessary for the positive management of the site; or

b) The proposal would not unacceptably impact on the features of the site for which it has been designated; or

c) The development could not reasonably be located elsewhere and the benefits of the proposed development clearly outweigh the nature conservation value of the site.

2. There would be no unacceptable impact upon features of importance to landscape or nature conservation, including ecological networks, the quality

of natural resources such as air, water and soil, and the natural drainage of surface water.

All development proposals, including those in built up areas, that may affect protected and priority species will be required to demonstrate what measures are proposed for the protection and management of the species and the mitigation and compensation of potential impacts.

Development proposals must be accompanied by appropriate ecological surveys and appraisals, as requested by the Council.

Development proposals that contribute to the management or development of Ecological Networks will be supported.

4.4.6 Policy AW10 relates to environmental protection and public health:

"Development proposals will not be permitted where they would cause or result in a risk of unacceptable harm to health and / or local amenity because of:-

Air pollution;

noise pollution;

light pollution;

contamination;

landfill gas;

land instability;

water pollution;

flooding;

Or any other identified risk to the environment, local amenity and public health or safety.

unless it can be demonstrated that measures can be taken to overcome any significant adverse risk to public health, the environment and / or impact upon local amenity.

4.4.7 Policy AW12 relates to renewable energy:

Development proposals which promote the provision of renewable and non-renewable energy…will be permitted where it can be demonstrated there is no unacceptable effect upon the interests of soil conservation, agriculture, nature conservation, wildlife, natural and cultural heritage, landscape importance, public health and residential amenity.

Development proposals should be designed to minimise resource use during construction, operation and maintenance.

4.4.8 Policy SSA23 makes provision for Special Landscape Areas. The policy identifies the following locations:

1. Llanharry Surrounds;

2. Talygarn Surrounds;

3. Ely Valley at Miskin;

4. Coed-yr-Hendy and Mwyndy;

5. Llantrisant Surrounds;

6. Mynydd y Glyn and Nant Muchudd Basin;

7. Mynydd Hugh and Llantrisant Forest;

8. Efail Isaf, Garth and Nantgarw Western Slopes;

9. Craig yr Allt;

10. Taff Vale Eastern Slopes, and

11. Treforest Western Slopes.

Development within the defined Special Landscape Areas will be expected to conform to the highest standards of design, siting, layout and materials appropriate to the character of the area.

4.5 SUMMARY AND CONCLUSION

4.5.1 This section of the ES outlines the policy context for the determination of Ely Valley Solar Farm.

4.5.2 There is clear policy support for renewable energy schemes at both the local and national level, particularly as such schemes will support a vibrant and decarbonised economy.

4.5.3 Whilst policy takes a positive approach to the renewables sector, development proposals need to be mindful of local constraints, communities and natural resources.

4.5.4 This ES reports on a detail assessment of the site and its environs and how they are anticipated to interact with the proposed development.

4.5.5 The Planning Statement that accompanies the planning application presents a detailed appraisal of the proposal in the context of the above polices.

5. NEED AND ALTERNATIVES

5.1 INTRODUCTION

5.1.1 This chapter considers the need for the proposed solar farm development and presents the site selection and design evolution process including the consideration of alternatives.

5.1.2 Schedule 4 of the EIA Regulations which states that an ES should include:

> *"A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the applicant or appellant which are relevant to the proposed development and its specific characteristics and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effect".*

5.1.3 This chapter includes the following sections:

- Need for the development; and
- Alternatives:
  - Consideration of alternative sites and the reasons for selecting the preferred location.
  - Consideration of alternative renewable energy technology, site design and configuration

5.2 NEED FOR THE DEVELOPMENT

5.2.1 Man-made climate change is generally considered to be the greatest existential threat to the environment, our way of living and humanity in general. The extreme heat, wildfires and drought conditions experienced in the UK and Europe during the summer of 2022 were a dramatic reminder of this reality. Addressing this huge challenge requires a sea change in how we live our lives in the future and the decisions we all make.

5.2.2 In order to address this challenge, the UK Government have set a target to decarbonise the power grid and ensure all cars are zero emissions capable by 2035 thus moving away from fossil fuels and replacing this capacity with renewable energy.

5.2.3 In addition to this, recent years have brought into stark focus the need for the UK to improve its energy security to ensure both continuity of supply, reduced costs to the consumer and avoid future price spikes causes by geo-political events. In response to this additional challenge the UK government has published The British Energy Security Strategy which commits to a low-cost net zero consistent electricity system, supported by large scale long duration electricity storage.

5.2.4 This transition is predicted to result in an increase in electricity demand by 40%-60% all of which must be met from renewable energy sources.

5.2.5 The importance of renewable energy generation as part of the response to climate change is recognised at both a UK Government, National level and at a local level. Future Wales confirms 'in principle' support for the development of renewable energy at all scales and Paragraph 5.9.15 of Planning Policy Wales (PPW) Edition 11 confirms that the need for renewable energy generation is not a material planning consideration. It states:

> *"…planning applications for renewable and low carbon energy developments should be determined based on the merits of the individual proposal. The local need for a particular scheme is not a material consideration, as energy generation is of national significance and there is a recognised need to optimise renewable and low carbon energy generation".*

5.2.6 Chapter 4 sets out key national and local planning policy that is relevant to the need for the Development.

5.2.7 Both Future Wales and PPW set ambitious targets for 70% of electricity consumption in Wales to be supplied from renewable energy sources by 2030.

5.2.8 In February 2021, the Welsh Government set out its legal commitment to achieve net zero emissions by 2050[4]. The Energy Generation in Wales 2018 report[5] estimates that 50% of electricity consumption comes from renewable sources leaving a significant shortfall if the Government's target is to be met.

5.2.9 At a local level, Rhondda Cynon Taf Council's "Climate Change Strategy 2022 to 2025[6]" sets out the following aims:

> *Rhondda Cynon Taf Council will be carbon neutral;*
>
> *The whole County Borough will be as close as possible to carbon neutral;*
>
> *our work with partners will have ensured that all public and private organisations that operate in the County Borough will be carbon neutral by 2040; and*
>
> *Rhondda Cynon Taf will have contributed to the Welsh Government's ambition of a Net Zero public sector by 2030.*
>
> *In order to deliver our Vision, the Council will continue to provide strong community leadership and create a cleaner, greener environment for people and businesses to be independent, healthy and prosperous and for natural eco systems to thrive. We will play our part in tackling climate change and protecting the planet and also adapting our services and operations so that we are able to meet the climate challenges ahead.*

5.2.10 It is widely accepted that electricity produced from solar energy has a positive benefit compared to traditional forms of electricity generation in terms of avoiding carbon emissions. Furthermore, renewable energy from solar PV supports the national economic objective to diversify energy supply and to lessen dependence on the generation of fossil fuels.

5.2.11 The proposed solar farm would have a capacity of 9.9MW and the power generated would be exported to the local electricity network.

5.2.12 A scheme of this scale will provide power over 2,678 homes, off-setting over 2,850 tonnes of CO2 each year. In addition, the operation of the scheme would reduce the emissions of the gases sulphur dioxide and nitrogen oxides, which contribute to the production of acid rain.

5.2.13 Windel Solar 8 Limited seeks to support the increase in renewable energy generation and the transition to a lower carbon energy supply system through developing a solar farm at land off Ely Valley Road.

5.3 SITE SELECTION

5.3.1 The application site was selected through an extensive search criteria exercise undertaken by the Applicant. South Wales represents a particularly favourable area for solar deployment because of the high levels of solar irradiation. A range of technical, environmental and economic factors are considered when assessing a site for ground-mounted solar PV development. Key factors for consideration include:

- Solar irradiation levels;
- Availability and proximity of the local distribution network (grid);

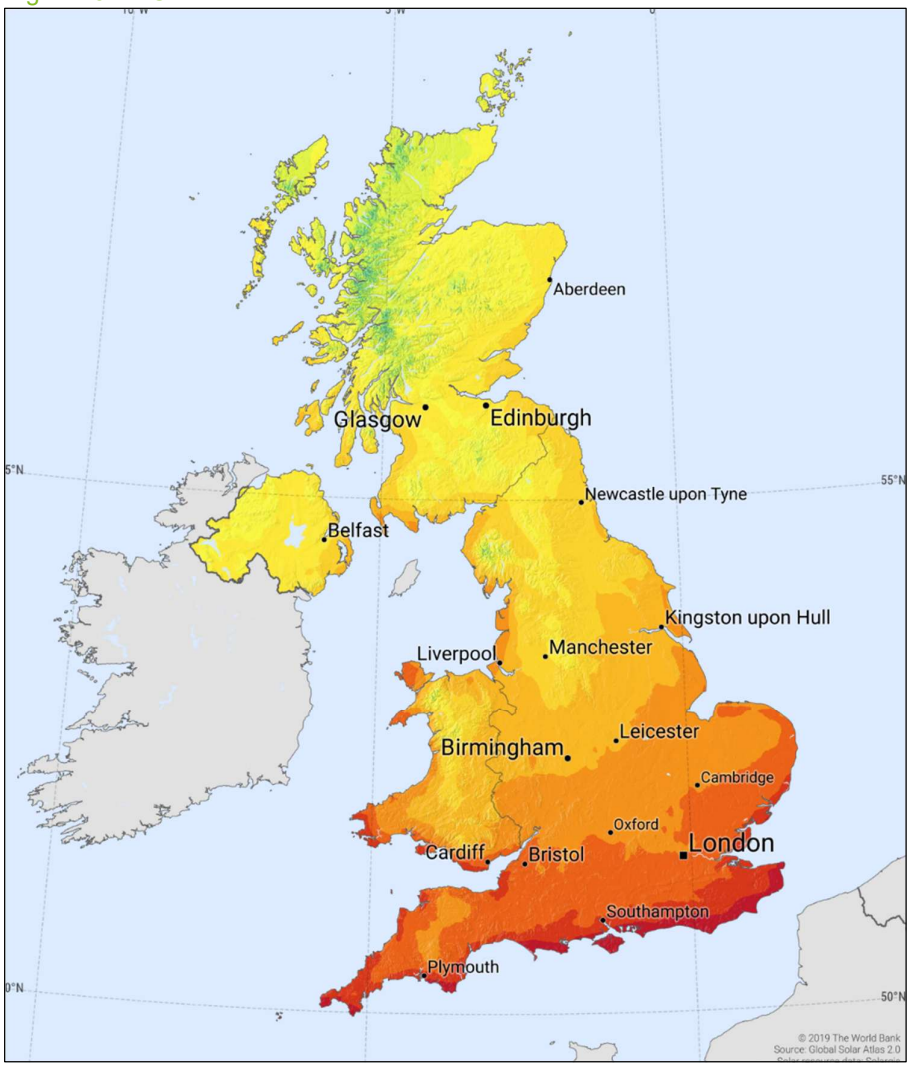
[4] https://gov.wales/wales-commits-net-zero-2050-sets-out-ambitions-get-there-sooner
[5] Energy Generation in Wales 2018: https://gov.wales/sites/default/files/publications/2019-10/energy-generation-in-wales-2018.pdf
[6] https://rctcbc.moderngov.co.uk/documents/s35287/Climate%20Change%20Strategy.pdf?LLL=0

- Proximity to local population;
- Topography;
- Field size and shape;
- Potential for overshadowing;
- Development Plan Policy;
- Access to the site for construction/decommissioning traffic;
- Agricultural land quality;
- Nature conservation and potential for enhancement;
- Flood risk; and
- Land availability.

Solar Irradiation Levels

5.3.2 UK irradiation levels are illustrated below in **Figure 5.1**. It shows that the band located to the north west of Cardiff and receives some of the highest amounts of irradiation within the UK. This presents a particularly favourable area for solar development as it allows for significantly more electricity generation than other site locations.

Figure 5.1: UK Irradiance Levels



Availability and Proximity to Distribution Network

5.3.3 An important aspect of solar farm development is having access to the local distribution network, or 'grid'. To export electricity generated by a solar farm there must be sufficient capacity on the network to accommodate the additional power from the development. Availability of grid capacity in the UK is at a premium and incredibly scarce due to the way the UK electricity distribution and transmission system has evolved from one which is designed to move power over large distances from centrally located fossil fuel power stations. As a result of this there are very few available locations at which renewable energy power generation can connect effectively to the grid.

5.3.4 Discussions with National Grid Distribution (the Distribution Network Operator (DNO) for the area) advised that the network in South Wales is highly constrained in terms of available capacity. The network is constantly evolving as supply and demand fluctuates as new infrastructure comes to the network or old is removed.

5.3.5 The discussions with National Grid culminated in a grid offer to the applicant for a point of connection at the existing substation off Ely Valley Road, Ynysmaerdy. The DNO considered this location was the most efficient way of supplying electricity (on a scale of the proposal) to the network, avoiding excessive connection costs. The applicant has little or no control over where the point of connection will be.

5.3.6 Proximity to an available grid connection is critical to the viability of any renewable energy project. The industry-standard approach is to secure sites within 3.5km of a grid connection. This is partly due to the requirement for easements to enable the crossing of third-party land, and necessary roadworks which may disrupt local communities. Additionally, long cables introduce voltage drops and unwanted energy losses which cause further difficulties for the distribution network operators. It is also far more costly to connect at distance, therefore effecting the viability of any renewable energy project.

5.3.7 Consideration of land closer to the point of connection has been given but discounted as there are areas of higher flood risk, Llantrisant Conservation Area national ecological designations (SSSI), proximity to built-up areas, extensive woodland and limited availability of landowners willing to lease their land.

Proximity to Local Population

5.3.8 For any development, minimising potential impacts to residential amenity is a key aspect. Therefore, distance from centres of population is a key locational factor for proposed solar farms. In some cases, it is not possible to be distant from the curtilage of every residential property however it is an important element of the site selection process to minimise impacts on local residences.

5.3.9 The low height of the solar panels (up to 2.6m above ground level), the existing screening and landscaping and the significant distance to nearest residential properties means that nearby views of the application site are limited. This has been confirmed in the Landscape and Visual Impact Assessment (LVIA) as reported in Chapter 7 and Appendix G of this ES.

Topography

5.3.10 Flat or gently undulating land is preferred for solar development as construction is more straightforward, shading between arrays is limited and more consistent and flat land is generally less visible than slopes where the surrounding topography is also flat or has gentle gradients. The design of the development will however respond to the terrain and physical features.

5.3.11 The application site in its entirety is south facing and is therefore well suited to the deployment of PV as this allows more efficient use of the land. The gradients have been taken into consideration when determining a suitable layout for the solar panels.

Field Size

5.3.12 In the efficient deployment of solar large, open fields are preferable. However, smaller fields with established field boundaries will help to visually contain a solar proposal and be more sympathetic to local landscape character. Therefore, a balanced approach to field size and boundary treatment is needed.

5.3.13 The application site includes a range of field sizes with established woodlands surrounding the deployment areas.

Site Specific Allocation

5.3.14 The site is located within open countryside. It is not allocated for any specific form of development. This means that the proposal would not sterilise land which is proposed for an alternate form of development in the Local Plan.

Access to Site for Construction

5.3.15 Appropriate access to the solar deployment areas must be available for the construction and decommissioning phases.

5.3.16 Access to the application site is taken from Ely Valley Road (A4119) using an existing access that serves Dyffryn Farm and two other residential properties. From the A4119 a private farm track leads to the deployment area.

5.3.17 A Construction Traffic Management Plan (CTMP) accompanies the application and sets out the proposed access arrangements to each of the development areas; vehicle routing; the anticipated construction programme, construction vehicle numbers; construction worker numbers and the proposed construction hours.

Agricultural Land Classification

5.3.18 National level guidance on the deployment of ground mounted solar expresses a preference to avoid 'Best and Most Versatile Agricultural Land'. Grades 1, 2 and 3A of the Agricultural Land Classification are considered to be best and most versatile land, whilst 3B, 4 and 5 are not.

5.3.19 The soil survey presented in Appendix D has determined there are no elements of 'Best and Most Versatile' agricultural land within the proposed deployment area. However, as part of the operation of the solar farm grazing will form a key part of the habitat management regime. In addition, the construction and decommissioning of the solar farm will have little impact on the land quality as the fields will continue to be grazed on removal of the panels and associated infrastructure.

Nature Conservation Designations

5.3.20 Consideration of national and international ecological designations such as Sites of Scientific Interest (SSSI), Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites was undertaken when assessing the site's potential for a solar proposal.

5.3.21 The Rhos Tonyrefail Site of Special Scientific Interest (SSSI) is located adjacent on the eastern boundary of the application site. In addition, the Rhiwfelin Fawr Site of Importance for Nature Conservation (SINC) which is located 0.09km northwest of the site.

5.3.22 Biodiversity enhancement schemes are an integral part of solar proposals as the land is effectively managed for 40 years for the benefit of ecology. As part of the proposals for the Solar Farm, ecological management is a core element. Not only is the deployment area managed for species rich grassland, areas within the site not subject to solar PV development will also be managed to secure ecological benefits. Chapter 9 (Ecology) outlines land management options for the main application site

and demonstrates why these designations are not a constraint to the proposed development. It also justifies the approach to the proposed management and how such options will be implemented.

5.3.23 Potential effects on designated ecological sites and mitigation measures proposed are addressed in Chapter 9 of this ES.

Flood Risk

5.3.24 Although solar farm developments are not strictly flood sensitive infrastructure, some ancillary electrical infrastructure are such as the cables transferring the power to the substation, the substation itself and the inverters.

5.3.25 The application site is located within Flood Zone 1 and therefore considered to be at little or no risk of fluvial or tidal / coastal flooding. The Flood Consequences Assessment presented in Appendix F confirms the site to be at little or no risk.

Commercial Agreement with the Landowner

5.3.26 Having established the areas potential to accommodate the development it was then necessary to investigate whether sufficient land would be available to allow the development to proceed. To this effect, discussions were held with local landowners to determine interest.

5.3.27 The proposed development presents an attractive proposition to the landowners due to the comparative uplift in returns that could be achieved from the land from a development of this nature. Commercial terms have been agreed with the landowners for the construction and operation of a solar farm subject to the necessary consents. This established the fundamental deliverability of the development on this site.

5.4 CONSIDERATION OF ALTERNATIVES

Do Nothing Scenario

5.4.1 Should the proposal not be implemented it is likely the site would continue to be used as grazing land/silage/haymaking. As a result, the benefits of the proposed scheme would not happen, the key effects include:

- Powering approximately 2,678 homes per year from a renewable source of energy offsetting approximately 2,850 tonnes of CO_2 each year for the life of the development;
- Inward investment into the local economy, using local businesses as part of the supply chain during the construction; and
- Significant enhancement of local biodiversity.

Alternative Schemes for Renewable Energy

5.4.2 Alternative renewable energy developments were considered for utilising the grid connection. A wind turbine to generate renewable energy was investigated in this location. But due to the presence of the operational turbines (the Daffodils) it was considered that the potential cumulative effect of an additional turbine in close proximity may adversely affect the success of any proposal.

Alternative Sites

5.4.3 Solar farms require a viable connection to the distribution network. The point of connection is determined by the distribution network operator which is purely based on the sensitivities of the network; therefore, the general location of solar farms is not under the control of a developer. Once a point of connection has been identified site specific constraints are assessed as per those identified above (section 5.3).

Alternative Configuration of Sites

5.4.4 The original design of the scheme sought to maximise deployment across all fields within the application site. However, initial baseline work identified the presence of acid grassland in the north eastern fields of the application site. On the advice of the ecologist these areas were removed from the deployment areas and retained for biodiversity enhancement.

5.4.5 Following detailed ecological survey work and assessment including pre-application discussions with the Local Authority's Ecologist appropriate stand offs from woodland and the hedgerows were incorporated into the design.

5.4.6 Through exhaustive environmental assessment covered elsewhere in this application and an iterative process of design review the optimum site configuration is now included as the proposed design which optimises the utilisation of available grid capacity whilst minimising environmental impact and maximising the environmental benefit of the scheme.

5.5 CONCLUSION

5.5.1 It has been demonstrated through the above site selection criteria that there are no suitable and available alternatives within a reasonable distance of the point of connection. Once the preferred site was identified, the iterative design process, environmental and technical assessments necessitated further refinement of proposed deployment area in order to minimise potential adverse environmental effects and enhance benefits where possible.

6. ENVIRONMENTAL CONSIDERATIONS NOT SIGNIFICANTLY AFFECTED BY THE PROPOSAL

6.1 INTRODUCTION

6.1.1 This chapter considers those topics that are not deemed to be significantly affected by the proposal and were proposed to be 'scoped out' of the Environmental Impact Assessment as detailed in the Scoping Opinion dated 30 June 2025 (Appendix A). Scoped out environmental topics include:

- Traffic and Transport;
- Agricultural Land Quality and Land Use;
- Socio Economic;
- Major Accidents and/or Disasters;
- Public Health and Wellbeing;
- Climate Change;
- Historic Environment;
- Air Quality; and
- Hydrology.

6.2 TRAFFIC AND TRANSPORT

6.2.1 Solar developments do not generate significant levels of traffic on a permanent basis. Once the construction phase of the facility is complete, visits to site are limited to weekly occurrences by a handful of operatives.

6.2.2 The site will be accessed via Ely Valley Road which runs to the south via an existing track through Duffryn Farm.

6.2.3 As solar developments do not generate significant levels of traffic on a permanent basis, then significant effects are not likely to be experienced. Traffic is however created during the temporary construction phase and whilst potential temporary effects may be experienced during this period they would be limited to the lesser used routes.

6.2.4 Transport Statements (TS) principally relate to developments that generate significant permanent increase in travel as a direct consequence of their function, such as residential developments. It is considered that as the construction phase will be short term in duration, the effect on traffic levels will not be significant. The potential effects identified above can be adequately addressed through a Transport Statement (TS). The TS is a separate but supporting plan to the application.

6.2.5 The TS presented in Appendix C sets out the proposed access arrangements to the site; vehicle routing along Ely Valley Road; the anticipated construction programme, construction vehicle numbers; construction worker numbers and the proposed construction hours.

6.3 AGRICULTURAL LAND QUALITY AND LAND USE

6.3.1 An Agricultural Land Classification (ALC) Survey has been undertaken across the application site. The assessment is presented in Appendix D to this ES.

6.3.2 The assessment concludes that ALC grades 3b and 4.

6.3.3 The assessment has determined that the application site does not contain 'Best and Most Versatile' (BMV) agricultural land. In addition, given the temporary nature of the development, there will be little impact on land quality as the fields can be returned to agricultural use on removal of the solar farm. The proposed development does not therefore result in a detrimental impact on land quality or the supply of 'Best and Most Versatile' land.

6.3.4 The application site has been in agricultural use since the 1800s (determined by map regression). As such there is unlikely to be land contamination associated with previous uses. Therefore, ground contamination has been scoped out of the EIA

accordingly.

6.3.5 A Coal Mining Risk Assessment has been undertaken, see Appendix E.

6.4 GLINT AND GLARE

6.4.1 Photovoltaic solar panels are specifically designed to absorb light rather than reflect it. Light reflecting from solar panels results in a loss of energy output. PV modules are dark in colour due to their antireflective coatings and are manufactured with low-iron, ultra-clear glass with specialised coatings and textures to enable maximum absorption. The combination of these factors significantly increases electrical energy production of the panels and at the same time significantly reduces the potential for reflected rays.

6.4.2 It is considered that the proposed solar farm will not give rise to any additional hazardous or troublesome reflections beyond those that already exist in the local area.

6.5 SOCIO-ECONOMIC

6.5.1 Climate change is generally considered to be the greatest existential threat to the environment, our way of living and humanity in general. Addressing this huge challenge requires a sea change in how we live our lives in the future and the decisions we make going forward.

6.5.2 As highlighted during the COP26 event in Glasgow, “We cannot afford to wait to act against the threat of climate change. We must work together to protect our planet and people and ensure a greener, more resilient future for us all”.

6.5.3 In addition to this, recent years have brought into stark focus the need for the UK to improve its energy security to ensure both continuity of supply, reduced costs to the consumer and avoid future price spikes causes by geo-political events.

6.5.4 The UK Government’s “Net Zero Strategy”[5] commits the UK to be powered entirely by clean electricity by 2035, subject to security of supply. In order to meet this target a key component is the deployment of new flexibility measures including energy storage to help smooth out power supply delivery and future price spikes.

6.5.5 The British Energy Security Strategy was published in April 2022. This Strategy commits to a five fold increase in solar deployment, with a target of up to 70GW installed capacity by 2035. The paper sets out that by 2050, the Government ambition is to have a low-cost net zero consistent electricity system, supported by large scale long duration electricity storage. This transition is predicted to result in an increase in electricity demand by 40%-60%, all of which must be met from renewable energy sources.

6.5.6 Future Wales: The National Plan 2040 (adopted February 2021) sets the direction of development in Wales to 2040. Future Wales states:

> *“Wales is abundant in opportunities to generate renewable energy and the Welsh Government is committed to maximising this potential. Generating renewable energy is a key part of our commitment to decarbonisation and tackling the climate emergency."*

6.5.7 Furthermore, Future Wales sets the ambitious target for 70% of electricity consumption to be generated from renewable energy by 2030.

6.5.8 At a local level, the need to mitigate the effects of climate change, e.g. reduce greenhouse gas emissions, promote generating renewable energy and low carbon is accepted as a key issue. Tackling climate change is a priority of Rhondda Cynon Taf County Borough Council as it continues to commitment to become a ‘carbon free council’ by 2050.

6.5.9 National, regional and local economic growth policy refers to Wales being well positioned to support the renewable sector, attract investment and reduce carbon emissions.

6.5.10 One of the Welsh Government's key priorities is for low carbon electricity to become the main source of energy in Wales. Not only is this a reaction with the Welsh Government setting out its legal commitment to achieve net zero emissions by 2050, but also a realisation that renewable and low carbon energy developments offer significant potential for communities and small businesses.

6.5.11 Of national concern is the significant economic leakage because of the current energy system. There is a need to create an energy system that retains more of the economic value for Wales. Through localised production more benefits can be directed to the local communities through skills, quality jobs and a greater retention of economic value.

6.5.12 Therefore, the proposed development would contribute to local and regional economic growth aspirations, whilst also providing progress in meeting renewable energy targets.

6.5.13 Across the lifecycle of the project a range of skills and training are required. There will be numerous entry points for employment across the different phases of construction and throughout the operational period of the proposed development. Many skills will be transferable from other industries although training will be required to take on many of the roles which will be created.

6.5.14 The proposed development could potentially generate numerous socio-economic and economic benefits throughout the 40-year lifespan.

6.5.15 The Proposed Development will deliver multiplier economic and socio-economic benefits throughout its lifecycle. The solar farm will have a maximum export capacity of 9.9MW generating enough electricity to power over 2,678 homes per year and offset nearly 2,850 tonnes of CO2 every year.

6.5.16 It is anticipated that the development will employ approximately 50 people during the c. 6-month construction phase, followed by approximately half a dozen operational and maintenance staff over the 40-year lifespan. The labour force employed throughout the initial six-month construction stage would likely spend in the local economy.

6.5.17 Employment onsite would support local business through daily expenditure and also any works accommodation required for the temporary period. The proposed development could also allow local business to operate on clean energy. Allowing them to market themselves as low carbon businesses. It could be particularly attractive to investors, clients and the tourism market.

6.5.18 The proposed development offers the opportunity to build awareness of the energy sector and expand the knowledge network through potential collaboration with local schools and colleges.

6.5.19 There will also be benefits to the landowners that accommodate the proposal by diversifying their agricultural business and in turn supporting the rural economy.

6.5.20 Whilst the above is considered a positive for the local area, given the relatively short construction phase it is unlikely to have a major significant effect on the social or economic well-being of the vicinity. The potential effects on the social and economic fabric of the area is not considered to be significant and the topic has therefore been scoped out.

6.6 MAJOR ACCIDENTSAND/OR DIASTERS

6.6.1 The benign nature of the proposed development is such that they are unlikely to release pollutants or any hazardous, toxic or noxious substances to air or land and are unlikely to have a significant effect in terms of pollution and nuisance.

6.6.2 A search was conducted using COMAH 2015 Public Information Search[7] from the Health and Safety Executive (HSE). Two results were found within 4.5km.

- Fillcare Limited, Lanelay Road, Talbot Green CF72 9HG. This site is located 2.1km to the south of the application site and is a COMAH site due to storage of flammable material on site; and
- Royal Mint Limited, Llantrisant Business Park, Llantrisant CF72 8YT. This site is located approximately 270m to the east of the application site and is a COMAH site due to processing of metals using electrolytic or chemical processes.

6.6.3 The Fillcare site is considered sufficiently distant from the application site to not warrant further consideration. The Royal Mint site is closer to the application site but is separated by woodland and agricultural fields an. According to the HSE, fire and accidental release of dangerous substances is quoted as the major hazardous to the Royal Mint site. However, the site has numerous control measures in place to address these hazards.

Potential for the Development to Cause Major Accidents / Disasters

6.6.4 The development is not considered likely to cause a significant accident or disaster risk during either the construction or operational phases.

Construction Phase

6.6.5 Health and Safety during the construction phase is addressed in section below which concludes that the risk to both construction workers and the general public is low. A Construction Management Plan will be implemented during the construction period and will include the requirement for all construction activities to be undertaken in accordance with statutory requirements and best practice methods.

Operational Phase

6.6.6 When operational, the majority of the development comprises fixed photovoltaic (PV) panels. Electrical infrastructure will be located within the development areas in the form of inverters, transformers, substations and cabling all of which will be subject to routine maintenance such that it is not considered to pose a significant risk of creating an accident or disaster. Risks associated with fire are also considered low as electrical systems have cooling mechanisms and will automatically shut down should any overheating occur.

6.6.7 All development areas will be secured by a 2m stock fence or similar with CCTV ensuring there is no public access and ensuring public safety.

Vulnerability of the Development from Major Accidents/Disasters

6.6.8 The site is in Flood Risk Zone 1 and as such at a very low risk of flooding. However, the facility can be controlled remotely so that the transmission of electricity could be quickly disabled if any concerns should arise resulting from disasters.

Conclusion

6.6.9 The potential for major accidents and disasters from the proposed development is

[7] https://notifications.hse.gov.uk/COMAH2015/Search.aspx

likely to be low and therefore does not require any further consideration.

6.7 PUBLIC HEALTH AND WELLBEING

6.7.1 The proposed development is unlikely to release pollutants or any hazardous, toxic or noxious substances to air or land. Potential health impacts are therefore related primarily to construction and operational related impacts.

Health Impacts During the Construction Phase

6.7.2 Comprehensive health and safety assessments are an essential part of the construction process and would be carried out prior to construction by the contractor in accordance with legislation. The appointed Site Management will have the responsibility of Health and Safety on site during the construction phase and all personnel working on site will be required to wear the appropriate Personal Protective Equipment (PPE).

6.7.3 The potential impacts from noise and vibration during the construction and operational phases has been assessed and the results are presented in Chapter 8 of this ES. The assessment concludes that the proposal will not result in significant environmental effects to identified receptors.

6.7.4 A TS has been prepared (Appendix C) which sets out anticipated traffic generation associated with the proposal. Given the short duration of the construction phase and the relatively low background traffic numbers it is expected that proposed vehicle movements will not lead to significantly adverse effects on health from vehicle emissions. All deliveries will take place within temporary construction set down areas and away from the public highway, therefore no adverse impacts on road safety are anticipated. Once the construction phase is complete, visits to site are limited to largely weekly visits by car or van.

6.7.5 Dust can be created from the movement of construction traffic and from general construction activities and particles can be carried by prevailing wind. Construction traffic carrying loose materials will be covered to reduce dust generation. Weather and ground conditions will be observed on a daily basis throughout the construction phase. In addition, plant and equipment will be maintained in accordance with manufacturer's specifications to help control air emissions. Vehicle and construction equipment shall be switched off when not in use (where practicable) to avoid unnecessary emissions. Consideration of potential effects on air quality is presented in section 6.10 of this ES.

6.7.6 A detailed CEMP will be implemented during the construction period and will include the requirement for all construction activities to be undertaken in accordance with statutory requirements and best practice methods.

Health Impacts During the Operational Phase

6.7.7 Once operational, there will be no public access to the solar farm which will be by secured fencing and monitored by CCTV.

6.7.8 The generation and transmission of electricity produced by the proposed development can be safely managed. The panels themselves are inert, static structures with there being no issues relating to the release of light, heat energy or electromagnetic radiation likely. The power generated by each array would be transmitted through insulated cables buried below the ground. The associated electrical equipment would be housed in sealed containers mounted above the ground.

6.7.9 In addition, the scheme can be controlled remotely so that the transmission of electricity could be quickly disabled if any immediate health and safety concerns should arise.

Conclusion

6.7.10 The potential for adverse impacts on public health and wellbeing from the proposed development is likely to be low and therefore does not require any further consideration.

6.8 CLIMATE CHANGE

6.8.1 In order to satisfy the requirements of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017[8], an assessment has been undertaken on the effects of the Development with regard to climate change:

> *'The EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of proposed development on the following:*
>
> *(c) land, soil, water, air and climate.'*

Guidance - Institute of Environmental Management and Assessment (IEMA): Environmental Impact Assessment Guide to: Climate Change Resilience and Adaptation[9]

6.8.2 The Guide to Climate Change Resilience and Adaptation (June 2020) provides an updated framework for the effective consideration of climate change resilience and adaption in the EIA process in line with the Town and Country Planning (EIA) Regulations (2017). This document is a revision of the 2015 IEMA guidance on Climate Change Resilience and Adaption in EIA and reflects lessons learnt from emerging practice.

6.8.3 A step by step method presented within this guidance is set out below and has been incorporated within this section. EIA Reports produced in line with this guidance are to be proportionate in their approach and not include superfluous assessment that does not address likely material issues.

IEMA Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance[10]

6.8.4 IEMA published this guidance (referred to hereafter to as IEMA GHG Guidance) to complement the guidance above and to assist practitioners with addressing greenhouse gas (GHG) emissions assessment and mitigation in statutory and non – statutory EIA. The guidance indicates that a 'good practice' approach is advocated where GHG emissions are always considered and reported but at varying degrees of detail depending on the project.

6.8.5 The guidance sets out there are a number of different assessment methods available for measuring and quantifying the GHG emissions associated with the built environment, ranging from general guidance to form standards for the use of an EIA. The Guidance recognising that '*qualitative assessments are acceptable, for example: where data is unavailable or where mitigation measures are agreed early on in the design phase with design and engineering teams'*.

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[8] 2017 No.567: Part 1, 4 (2)(c)
[9] IEMA (June 2020): IEMA Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation
[10] IEMA. Assessing greenhouse gas emissions and evaluating their significance. [online]. Accessed from: https://www.iaia.org/pdf/wab/EIA%20Guide_GHG%20Assessment%20and%20Significance_IEMA_16May17.pdf

Assessment Methodology - General Approach

6.8.6 'Climate' is generally understood to mean the weather conditions prevailing over a long period of time and climate change refers to changes in recorded long term climate trends. As a topic for the assessment within EIA, climate change is relatively new. Guidance is evolving and there is no prescribed way in which climate change should be incorporated into an ES, however, some guidance has been prepared by IEMA, discussed further below, which sets out the two main approaches that can be taken to determine a project's climate change impact. These involve identifying:

- The vulnerability of the Development to climate change (climate change adaptation / resilience); and
- The direct and indirect influence on the Development on climate change (climate change mitigation).

Climate Change Adaptation and Resilience

6.8.7 This section provides an assessment of the main potential risks presented by a changing climate to the Development. It outlines the relevant disciplines of climate change adaptation to the four key trends identified: the projected increase in mean summer and winter temperatures; projected increase in annual precipitation; projected decrease in mean summer precipitation; and extreme weather events (such as heavy and/or prolonged precipitation and storm events).

Temperature

6.8.8 With the projected trend to warmer conditions, a rise in temperature has the potential to impact on habitat which in turn may affect the behaviour of animals such as birds, while changes in temperature could affect the composition and growth rates of plant communities and invertebrates and habitats.

Wind

6.8.9 Over the lifetime of the Development, the change in wind speeds and storms is limited to well within the limits of current inter-annual variability. Therefore, no effects are anticipated. Given the maximum heights of the Development and the projected modest increase in central wind speeds, it is anticipated that there will be no likely effect as a result of increased wind speeds during the operational phase of the Development.

Biodiversity

6.8.10 As outlined, the Site supports a range of habitats and species, with statutorily designated and non-statutorily designated sites proximate to the Site. Changes in precipitation and temperature could potentially affect the future habitats.

6.8.11 The landscape and visual impact assessment and ecology and nature conservation chapters (ES Chapters 7 and 9 respectively) provide full details of the enhancement proposals, but in summary these include:

- The existing field boundary vegetation, in the form of native hedgerows and trees, including those within the site, will be retained where possible and managed to an appropriate height to provide visual screening, but also to enhance landscape and ecological structure.
- Analysis of historic mapping will be undertaken to determine whether there are any lost landscape features that could be reinstated and integrated with the solar development e.g. copses, banking, ditches and hedgerows.
- Grassland will be managed and enhanced for landscape and ecological benefit, Species mixes will be appropriate to the local area and follow recommendations of the project and County Ecologists

- Appropriate development offsets (clear zones) will be initiated from adjacent habitats including the woodland and grassland SINC and neighbouring SSSI as well as field margins to ensure visual effects are not of a significant nature and that existing habitats have a sufficient buffer to enable transition/connectivity between existing and proposed habitat areas.
- Development will facilitate the management of the range of semi-natural habitats – trees, hedgerows and grassland mosaic/upland meadows, found throughout the solar plot and adjoining areas.
- Mitigation proposals will serve the dual purpose of providing landscape and visual mitigation and to increase the site's value and reflect Local Biodiversity Action Plan objectives.

6.8.12 A Landscape Masterplan Plan is shown in drawing WN1011/07/07.

6.8.13 Through ensuring that the planting is suited to adapt to the climatic changes outlined and through increasing the biodiversity of the Site, it is considered that the Development will be increasingly resilient to the effects of climate change. Although the effects of climate change are uncertain, the enhancement in biodiversity will result in a positive significant effect.

Precipitation & Flood Risk

6.8.14 The risk from increased precipitation is the potential for flooding, particularly if it is associated with extreme events. For the Development, this increases the risk for potential destruction/disruption of infrastructure.

6.8.15 The FCA (Appendix F), outlines inherent mitigation measures aimed to minimise risk of flooding. Modelling for allowances for increased rainfall projected due to a changing climate.

6.8.16 The solar arrays and vulnerable infrastructure will be located above the ground level. The modules will be raised off the ground, such that the leading edge of each panel will be approximately 0.8m above the ground, and the top edge approximately 3m off the ground. The frame supporting the solar panels should not impede overland flows or reduce flood storage capacity as only the legs of the panels will be below ground. The panels themselves have been designed so that they have minimal foundations as to not impede or disturb soil and reduce the volume of concrete required. Thereby limiting the potential for disrupting surface and groundwater flows.

6.8.17 Ancillary structures such as substations and transformers also require shallow foundations and will limit ground disturbance and disruption. The Development will maintain existing drainage, with only minimal areas of impermeable surfacing proposed.

6.8.18 Climate change is projected to increase the likelihood of flooding from most flood sources and therefore an assessment of the effects has been considered over the estimated development lifetime. Given the embedded mitigation[11] and FCA conducted and submitted as part of the planning application, the magnitude of effect on the operation of the Development is assessed as low and the overall significance of effect is not significant.

Climate Change Mitigation

6.8.19 Owing to the nature of the Development as a proposed solar farm providing renewable electricity, an assessment of carbon emissions throughout the construction and operational phases has not been undertaken. During the construction phase, any emissions associated with construction traffic is expected to

[11] Outlined in Chapter 3 – Development Description. Also refer to supporting Design and Access Statement.

be minor and temporary in nature. During the operational phase, no emissions are expected. An embodied carbon assessment has also not been undertaken.

6.9 HISTORIC ENVIRONMENT

6.9.1 A desk-based assessment has been undertaken and is presented in Appendix I. The primary objective of the desk-based assessment is to assess the impact of the development proposals on the historic environment.

6.9.2 The work conformed to the Standard and Guidance for Archaeological Desk-Based Assessment, as produced by the Chartered Institute for Archaeologists (ClfA 2014).

Outline Baseline Conditions

6.9.3 No Registered Historic Landscape will be directly or indirectly affected by the development.

6.9.4 No Registered Historic Park & Gardens will be directly or indirectly affected by the development.

6.9.5 The Conservation Area of Llantrisant (WAL/RCT/CEB4/29) lies on the south-eastern edge of the 2km study area, with a small part of the Conservation Area, lying within this search area. Due to the intervening topography the conservation area is largely hidden from view from the site, with the only views to it being across the industrial estate just to the south-east of the site. Due to the presence of the industrial estate and the fact that only a small part of the conservation area is visible suggests that the impact of the development would be Negligible.

6.9.6 No Scheduled Monuments (SMs) will be directly affected by the development. There are two SMs within a 2km study area, the Beacons Round Barrows(GM280) and Lle'r Gaer hillfort (GM219). Neither of these are visible from the proposed development site due to the topography and dense tree coverage. There are other potential impacts to the setting such as noise and sense of tranquillity, however, due to the distance of the monuments from the proposed site noise is unlikely to be an issue. These monuments are considered to be of High archaeological value, but it is believed that the proposed development will result in No Change to the SMs.

6.9.7 There are three Listed Buildings within the 1km study area and a further eleven within the 2km study area surrounding the site. None of the Listed Buildings will be directly affected by the development.

6.9.8 Due to the local topography only eight of the Listed Buildings are visible from the site. These are the cluster of buildings associated with the former Llantrisant Colliery south of the site in the Ely Valley. These are the Explosives store (LB15843), which is within the 1km search area, the Engine Hall (LB15839; NPRN91666), Cow Shed at Ynysmaerdy Farm, formerly stores of Llantrisant Colliery (LB15840; NPRN91667), reservoir (LB15842), revetment wall (LB15841), barn and cow house (LB24370), hay barn and former winding engine house (LB15838) and the Grange (LB15837). 8.6.3 Although there is clear visibility from the upper parts of the development area, down the Ely Valley, the buildings are shielded from view by the lower slopes of Mynydd Garthmaelwg and wooded areas. The setting of these buildings has already been altered by modern development, such as the hospital to the east and the industrial estate to the north-east.

6.9.9 These monuments are considered to be of Medium archaeological value. Due to the limited visibility and previous changes to their settings it is believed the proposed development will have a Negligible impact on the Listed Buildings.

6.9.10 There are no non-designated sites within the site boundary, however, there are 38 non-designated assets within the 1km search area. Of these only thirteen will possibly be impacted by the development.

Potential Effects

6.9.11 The proposal site respects the existing boundary banks and hedgerows. The boundaries across the site are thought to largely be of medieval date, although the irregular nature of some of the boundaries in the southern part of the site may suggest prehistoric origins, as discussed above. The design of the proposed development respects the current boundaries, however, there is the potential for minor isolated impact if the existing field entrances need widening or new access through field boundaries is required. To mitigate against the impact of these ground works an archaeological watching brief should be carried out on any intrusive works that are required that disturb the historic field boundaries.

6.10 AIR QUALITY

6.10.1 Solar developments have no direct source of emissions to atmosphere during the operational phase. Possible impacts to local air quality only have the potential to occur during the short period of the construction phase through vehicular and plant emissions and through the creation of dust.

6.10.2 The site is not within or near an Air Quality Management Area and proposed traffic generation will not lead to significant vehicle emissions. Excessive dust is unlikely to be generated through anchoring of the frames to the ground as the frames will be secured by piles that will be pushed into the ground. Excavation is limited to trenching thus minimising the potential for ground disturbance and the entertainment of dust. Vehicle movements on site will be limited to transportation of equipment from the set down area to solar array development areas.

6.10.3 A detailed CEMP will be implemented during the construction period and will outline measures to control dust and air emissions.

6.10.4 Given the limited duration of the proposed construction works and the nature of works during the construction phase the potential for dust creation will be relatively low.

6.11 HYDROLOGY AND FLOOD RISK

6.11.1 Although solar farm developments are not strictly flood sensitive infrastructure, some ancillary elements are, such as the associated electrical infrastructure including substations and transformers. The application site is located within Flood Zone 1 and therefore considered to be at little or no risk of fluvial or tidal/coastal flooding.

6.11.2 The FCA presented in Appendix F confirms that the site would be expected to remain dry on all but the most extreme conditions. The consequences of the flooding are acceptable, and the development would be in accordance with the requirements of TAN 15. The proposed development would be operated with minimal risk from flooding, would not increase flood risk elsewhere and is compliant with the requirements of TAN15.

7. LANDSCAPE AND VISUAL IMPACT

7.1 INTRODUCTION

7.1.1 This Chapter on Landscape and Visual Impact has been prepared to support the planning application for the construction and operation of the Ely Valley Solar Farm comprising ground mounted solar photovoltaic (PV) arrays together with associated infrastructure including a DNO substation, customer substation, customer switchgear, access, fencing, CCTV cameras and landscaping ("the proposed development").

7.1.2 The assessment and methodology for this LVIA conforms to the relevant parts of the Guidelines for Landscape and Visual Impact Assessment, Third Edition (Landscape Institute and IEMA, 2013). The assessment focuses on the identification of likely 'Significant' landscape and visual effects, including those that are, positive and negative, direct and indirect, long, medium and short term, and reversible and irreversible, as well as cumulative effects (where applicable). This includes the potential effects on local landscape character and landscape designations, as well as the potential effects on views experienced by people (receptors) including (but not limited to), settlements, public rights of way, registered parks and gardens and transportation corridors.

7.1.3 This assessment outlines the data gathering methodology that was adopted for the LVIA. It then leads to a description of the assessment methodology, the overall baseline conditions, and an assessment of potential effects. The chapter concludes with a summary of the assessment results.

7.1.4 The main objectives of the LVIA, in relation to this development, are as follows:

- To identify, evaluate and describe the current landscape character of the site and its local surroundings and any notable individual landscape elements within the site.
- To determine the sensitivity of the landscape to the type of development proposed.
- To identify potential visual receptors (i.e. people who would be able to see the development) and evaluate their sensitivity to the type of changes proposed.
- To identify and describe any effects of the development in so far as they affect the landscape and/or views of it and to evaluate the magnitude of change due to these effects; and
- To assess the effects of the development with regard to the significance of the potential effects, mitigation proposals identified and the residual effect (with mitigation in place) and to demonstrate the effectiveness of the mitigation proposed.

Chapter Structure

7.1.5 This assessment chapter is structured as follows:

- Introduction.
- Site Context.
- Methodology.
- Policy Context.
- Cumulative Baseline.
- Baseline Landscape Conditions.
- Baseline Visual Conditions.
- Scheme Design, Mitigation and Enhancement.
- Assessment of Landscape Effect.
- Assessment of Visual Effect.
- Assessment of Viewpoints and Photomontages; and,

- Summary and Conclusion.

7.2 SITE CONTEXT

7.2.1 The proposed development is located in a rural farming area c 0.4km north-west of the village of Ynysmaerdy, 0.7km east of the village Coedely, 1.3km south of Tonyrefail, and 2km northwest of the town Llantrisant (adjoining the urban area of Talbot Green).

7.2.2 The Application site has a rural fringe setting within the landholding of Dyffryn Farm with several neighbouring farms also in the locality. In total (including the deployment area and the access, not the cable corridor) the proposal site covers an area of c.20.5 hectares. The proposed site boundary is shown in drawing WN1011/01/01.

7.2.3 The site comprises sloping grass pasture formed of irregular small and medium scale field compartments subdivided by hedgerow field boundaries with numerous mature hedge trees. There are several small copses located at the junctions of field boundaries in general alignment with hedgerows. A more significant block of wet grassland, scrub and woodland is located along the eastern boundary which is part of the Rhos Tonyrefail Site of Special Scientific Interest (SSSI). In addition, the Rhiwfelin Fawr Site of Importance for Nature Conservation (SINC) is located 0.09km northwest of the site.

7.2.4 The site's sloping landform rises from the southern boundary (close to Dyffryn Farm) where levels are c.80m AOD to a high point at the north west corner of the site at c.155m AOD.

7.2.5 Two wind turbines, distinctively coloured green and yellow, are located c.150m and c.400m to the east of the site boundary. The turbines located upon the hillside, measure approximately 60m and 90m (respectively) to tip forming prominent features within the local landscape. The field directly to the east of the site (beside the closest, smaller, turbine) contains a small solar array deployment (c.1.3mw). There is also planning consent for an additional solar farm, Talgren Solar Farm, immediately to the north west of the site (decision notice dated 25th April 2024 under application reference 22/1414/FUL). Construction had not commenced on this scheme at the time of assessment.

7.2.6 Built features within the site boundary are limited, however, there are also a number of overhead electricity transmission lines, drainage channels, streams, and underground utility infrastructure that cross the site area.

7.2.7 The solar farm will connect to an existing substation located approximately c.1.2km to the south east of the application site off Ely Valley Road. The cable from the on-site substation will largely run in the highway.

7.2.8 There is a large area of industrial development immediately adjoining the south eastern site boundary, including the South Wales Fire and Rescue Service headquarters, The Royal Mint and wider Edwards Business Park which envelop the small settlement of Ynysmaerdy. The Royal Glamorgan Hospital is located within the valley floor to the south of Ynsmaerdy on land to the north of Talbot Green.

Scheme Outline

7.2.9 The proposed development comprises the construction, operation, maintenance and decommissioning of a ground-mounted solar farm plus ancillary infrastructure including the following:

- Photovoltaic (PV) panels.
- Mounting frames – matt finished small section metal structure.
- Scheme of landscaping and biodiversity enhancement.

- Inverters and transformers and associated cabling (largely below ground).
- Distribution Network Operator (DNO) substation and customer cabins.
- Deer fencing, sympathetic to the area, and infra-red CCTV (CCTV cameras would operate using motion sensors and would be positioned inward only to ensure privacy to neighbouring land and property).
- Temporary set down area.
- Internal service roads; and
- Site access for the construction, operational and decommissioning phases.

7.2.10 Ely Valley Solar Farm will have a generating capacity of up to 9.9MW renewable electricity, enough to power over 2,678 homes per year and offset nearly 2,850 tonnes of CO2 every year.

7.2.11 The panels will be arranged in rows in an east-west alignment across the development areas and orientated south. The scheme will be operational for 40 years after which all equipment can be removed from site.

7.2.12 The proposed layout is shown on Drawing WN1011/04/03. Due to commercial constraints, potential changes in solar panels, transformer and substation manufacturer during the determination process an element of flexibility is required in relation to their dimensions, appearance and their arrangement. The submitted layout is therefore indicative as the detailed layout and phasing of construction will be agreed with the Local Planning Authority (LPA) by way of planning condition following grant of planning consent. This approach is commonplace in solar farm planning permissions.

7.2.13 The panels will be arranged in rows in an east-west alignment across the development areas and will be angled at typically 20° from the horizontal and orientated south. The height of the panels will be up to 2.6m above ground level; the lowest part of the panel will measure approximately 0.8m above ground level. The rows of panels will be set between 3m and 5m apart to avoid shadowing and allow for scheduled maintenance, this will be dependent on local topography.

7.2.14 During construction, operation and decommissioning a 15m setback from woodland edge will be implemented and a 4m setback will be established from the hedgerows, ditches and field drains.

7.2.15 Once operational, the solar farm deployment areas will be secured by a c. 2m high stock fence or similar. Infra-red (non-visible at night), inward facing pole mounted CCTV cameras (c. 2.5m – 3m in height) will also be provided at between 50m and 100m intervals along the boundary fence. These will enable remote surveillance of the site. Fencing and CCTV camera details are presented on Drawing WN1011/04/09. The CCTV cameras will be positioned to avoid views of any private property.

7.2.16 The construction of the solar farm is expected to last approximately 6 months and employ up to 50 staff over the construction period. A Transport Statement and accompanies the application (see Appendix C). The TS provides details of proposed access arrangements, the anticipated build programme, construction vehicle numbers and type, construction worker numbers and the proposed construction hours.

7.2.17 Access to the application site is taken from Ely Valley Road (A4119) using an existing access that serves Dyffryn Farm and two other residential properties. The access will be used during both the construction and operational phases of the development.

7.2.18 After 40 years of operation the panels and associated infrastructure will be removed from site. The TS presented in Appendix C details the programme and anticipated vehicle movements associated with this phase of development.

Study Area

7.2.19 It is accepted practice within landscape and visual assessment work that the extent of the study area for a development is broadly defined by the visual envelope of the proposal and the anticipated extent of the visibility, based on landform, built form and natural features. The study area for this assessment extends to a 2.5km radius from the site boundary, although detailed assessment will be focussed to a more focussed area.

7.2.20 GLVIA, section 5.2, additionally states that a study area should *"include the site itself and the full extent of the wider landscape around it which the proposed development may influence in a significant manner. This will usually be based on the extent of landscape character areas likely to be significantly affected either directly or indirectly".*

7.2.21 The study area was selected for the assessment on the basis of the scale of the proposal; c.2.6m high solar panel arrays and their actual theoretical visibility considering local screening features and the nature of the surrounding topography and established tree cover. Considering the height of the solar arrays, topographic setting as well as the level of screening available in the local area, the likelihood of the site being notably perceptible at distances over 2.5km from the site is very low.

Consultation

7.2.22 In April 2025, the Applicant submitted a request for a formal Scoping Opinion from RCTCBC under Regulation 14 of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017. The purpose of the request for a Scoping Opinion was to:

- Define the scope of the Environmental Statement (ES) which will accompany the planning application – including the scope of the LVIA and Viewpoint assessment locations.
- Anticipate and so allow potentially adverse environmental impacts to be considered at an early stage.
- Define methodologies to be used in the EIA process to assess the potential effects of the proposal; and
- Engage relevant stakeholders at an early stage of the proposals to enable contribution of relevant information

7.2.23 A Scoping Opinion was received on 30 June 2025.

Planning Policy

7.2.24 This section sets out the landscape and visual focussed planning policies and material considerations, which are relevant both to the site and the type of development proposed, considering National, and local planning policy. Refer to the Planning Statement for a full consideration of national policies, legislation and guidance with regard to the development of renewable energy and related information on the need to meet 'Net Zero' carbon emissions by the year 2050.

Futures Wales: The National Plan 2040

7.2.25 Future Wales: The National Plan 2040 (adopted February 2021) sets the direction of development in Wales to 2040. Future Wales constitutes the development plan for Developments of National Significance (DNS) in line with s38(6) of the Planning and Compulsory Purchase Act 2004. It states:

> *"Wales can become a world leader in renewable energy technologies. Our wind and tidal resources, our potential for solar generation, our support for both large and community scaled projects and our commitment to ensuring*

the planning system provides a strong lead for renewable energy development, mean we are well placed to support the renewable sector, attract new investment, and reduce carbon emissions".

7.2.26 As set out in legislation (Planning & Compulsory Purchase Act 2004 as amended by the Planning (Wales) Act 2015), applications for DNS must be determined in accordance with Future Wales, which is the national development plan for Wales.

7.2.27 Future Wales identifies 11 Outcomes to be achieved in 20-years' time. Outcome 9 seeks a Wales where people live in places that sustainably manage their natural resources and reduce pollution. Outcome 11 seeks a Wales where people live in places which are decarbonised and climate resilient.

7.2.28 The plan is considered in greater detail within the Planning Policy section of the ES.

Planning Policy Wales Edition 12

7.2.29 The Welsh Government published Planning Policy Wales Edition 12 (PPW) in February 2024. This provides the overarching national level source of planning policy for Wales and is a material consideration alongside Futures Wales. It has been updated to take into account Futures Wales and the Wellbeing of Futures Generations Act which incorporates 7 wellbeing goals. It seeks to support the requirement for sustainable development via the planning system whereby the presumption in favour of sustainable development forms the overarching role together with a firm view on improving population wellbeing.

7.2.30 PPW sets out the specific planning policies for achieving sustainable development across Wales. Figure 4 sets out the key planning principles of this national policy, stating that:

"The planning system has a vital role to play in making development resilient to climate change, decarbonising society and developing a circular economy for the benefit of both the built and national environments and to contribute to the achievement of well-being goals".

7.2.31 Chapter 5 (Providing and Enterprising Places) of the PPW sets out the Welsh Government's policies regarding Enterprising Placemaking and Wellbeing across Wales. One of the key aims in relation to energy is for Wales to generate 70% of its electricity consumption from renewable generation by 2030 and actively manage the transition to a low carbon economy.

7.2.32 Chapter 5 of the PPW outlines the importance of the planning system to deliver these targets, paragraph 5.7.15 states:

"The planning system has an active role to help ensure the delivery of these targets, in terms of new renewable energy generating capacity and the promotion of energy efficiency measures in buildings."

7.2.33 Paragraph 5.9.19 states that:

"In determining applications for the range of renewable and low carbon energy technologies, planning authorities should take into account:

- *The contribution a proposal will make to meeting identified Welsh, UK and European targets;*
- *The contribution to cutting greenhouse gas emissions; and*
- *The wider environmental, social and economic benefits and opportunities from renewable and low carbon energy development.*

7.2.34 Paragraph 5.9.20 continues stating:

"Planning authorities should also identify and require suitable ways to avoid, mitigate or compensate adverse impacts of renewable and low carbon energy development. The construction, operation, decommissioning, remediation and aftercare of proposals should take into account:

- *The need to minimise impacts on local communities, such as from noise and air pollution, to safeguard quality of life for existing and future generations;*
- *The impact on the natural and historic environment;*
- *Cumulative impact;*
- *The capacity of, and effects on the transportation network;*
- *Grid connection issues where renewable (electricity) energy developments are proposed; and*
- *The impacts of climate change on the location, design, build and operation of renewable and low carbon energy development. In doing so, consider whether measures to adapt to climate change impacts give rise to additional impacts."*

7.2.35 Chapter 5 also outlines that before an application is submitted "…developments should, where possible, consider how to avoid, or otherwise minimise, adverse impacts through careful consideration of location, scale, design and other measures". Furthermore, active engagement with the local community should be undertaken at pre-application stage.

The Environment (Wales) Act 2016

7.2.36 This Act provides a context for the delivery of multi-functional green infrastructure. Its provision can make a significant contribution to the sustainable management of natural resources, and in particular to maintaining and enhancing biodiversity and the resilience of ecosystems in terms of the diversity between and within ecosystems and the extent, condition and connectivity of ecosystems and their ability to adapt.

7.2.37 Para 6.24 covers the Integration of Green Infrastructure and Development. The key aim being to protect and enhance existing assets and networks and recognise their multi- functional role…

'the protection and enhancement of biodiversity must be carefully considered as part of green infrastructure provision alongside the need to meet society's wider social and economic objectives and the needs of local communities. The multiple benefits that resilient ecosystems and green infrastructure offer to society, including the economic and social contribution they make to local areas, should be taken into account when balancing and improving these needs.

7.2.38 Para 6.2.10 makes the connection of green infrastructure with ecological and landscape networks and how strategies should support connectivity and enhancement where possible:

'The need for ecosystems, habitats and species to adapt to climate change should be considered as part of the Green Infrastructure Assessment. This should include identifying ways to minimise or reverse the fragmentation of habitats, and to improve habitat connectivity through the promotion of wildlife corridors and identifying opportunities for land rehabilitation, landscape management and the creation of new or improved habitats. '

7.2.39 At paras 6.4.24 to 6.4.27 the guidance discusses the importance of trees woodland and hedgerows for biodiversity:

'They are important connecting habitats for resilient ecological networks and make a valuable wider contribution to landscape character, sense of place, air quality, recreation and local climate moderation;

Planning authorities should protect trees, hedgerows, groups of trees and areas of woodland where they have ecological value, contribute to the character or amenity of a particular locality, or perform a beneficial and identified green infrastructure function;

The protection and planting of trees and hedgerows should be delivered, where appropriate, through locally specific strategies and policies, through imposing conditions when granting planning permission…

Rhondda Cynon Taf County Borough Council Local Development Plan

7.2.40 The Rhondda Cynon Taf County Borough Council Local Development Plan was adopted on 2nd March 2011.

7.2.41 The following table provides an assessment of policies within the Rhondda Cynon Taf County Borough Council Local Development Document which are considered relevant to the proposed development and landscape and visual issues only. See also the Planning Statement for consideration of all policies.

Table 7.1: Local Planning Policy Relating to Landscape and Visual Issues

Policy	Commentary
Policy AW 5 - New Development *Development proposals will be supported where:-* *1) Amenity* *a) The scale, form and design of the development would have no unacceptable effect on the character and appearance of the site and the surrounding area;* *b) Where appropriate, existing site features of built and natural environment value would be retained;* *c) There would be no significant impact upon the amenities of neighbouring occupiers;* *d) The development would be compatible with other uses in the locality;* *e) The development would include the use of multi-functional buildings where appropriate;* *f) The development designs out the opportunity for crime and anti-social behaviour.* *2) Accessibility* *a) The development would be accessible to the local and wider community by a range of sustainable modes of transport;* *b) The site layout and mix of uses maximises opportunities to reduce dependence on cars;*	The landscape and visual assessment will take account of the changing landscape and visual baseline. The amenity of the surrounding residents, users of public rights of way and transport routes will be considered as well as the local landscape resource in terms of opportunities for quiet enjoyment and recreational opportunities on offer. The layout and design of the solar farm will look to retain and enhance the existing landscape characteristics of the site whilst mitigating any adverse landscape and visual effects identified so that local people's amenity is not significantly impacted, and local landscape character is not adversely affected. In landscape and visual terms, the assessment will consider if the proposal is in accordance with the aims and objectives of this policy.

c) The development would have safe access to the highway network and would not cause traffic congestion or exacerbate existing traffic congestion; *d) Car parking would be provided in accordance with the Council's Supplementary Planning Guidance on Delivering Design and Placemaking: Access, Circulation and Parking Requirements.*	
Policy AW 6 - Design and Placemaking *Development Proposals will be supported where:-* *…* *7. Landscaping and planting are integral to the scheme and enhance the site and the wider context;* *…* *14. The design protects and enhances the landscape and biodiversity;* *…* *The development promotes energy efficiency and the use of renewable energy…'*	No specific amenity issues relating to landscape or visual aspects of the project are envisaged. A landscape and ecological mitigation scheme is proposed which offer site wide enhancements which will in the short to medium term offer benefits to the wider context on maturation of additional planting, and the long term following decommissioning of the scheme an enhanced landscape structure with a net gain in biodiversity The proposed development's footprint is sited within the existing field structure so that it can be assimilated into the surrounding landscape. The solar farm scheme will help promote energy efficiency locally and assist with meeting regional and national targets for renewable energy generation and the aim to be carbon neutral 'Net Zero' by 20250. In landscape and visual terms, the assessment will consider if the proposal is in accordance with the aims and objectives of this policy.
Policy AW 7 - Protection and Enhancement of the Built Environment *Development proposals which affect areas of public open space, allotments, public rights of way, bridleways and cycle tracks will only be permitted where it can be demonstrated that :-* *1. There is a surplus of such facilities in the locality, or;* *2. The loss can be replaced with an equivalent or greater provision in the immediate locality; or* *3. The development enhances the existing facility.*	This policy does not specifically mention Renewable energy projects but the proposals assume that the general principles of sustainable design would be applied in the decision-making process. The site is not publicly accessible and the amenity of local paths which are not intervisible with the ground based solar arrays will not be adversely affected. (Refer to visual assessment at Section 8 of this report.) The site within an existing farm is well separated from existing residential areas and there are few public vantage points from where people's visual amenity could be affected from. It is considered that

	there would be little or limited detrimental impact on local amenity. In landscape and visual terms, the assessment will consider if the proposal is in accordance with the aims and objectives of this policy.
Policy AW 8 - Protection And Enhancement of the natural Environment *Rhondda Cynon Taf's distinctive natural heritage will be preserved and enhanced by protecting it from inappropriate development.* *Development proposals will only be permitted where:-* *1. They would not cause harm to the features of a Site of Importance for Nature Conservation (SINC) or Regionally Important Geological Site (RIGS) or other locally designated sites, unless it can be demonstrated that:-* *a) The proposal is directly necessary for the positive management of the site; or* *b) The proposal would not unacceptably impact on the features of the site for which it has been designated; or* *c) The development could not reasonably be located elsewhere, and the benefits of the proposed development clearly outweigh the nature conservation value of the site.* *2. There would be no unacceptable impact upon features of importance to landscape or nature conservation, including ecological networks, the quality of natural resources such as air, water and soil, and the natural drainage of surface water.*	The mitigation proposals, developed for landscape and visual purposes but also supporting the ecological assessment seek to deliver a net gain in biodiversity over the current intensive grazing regime of the site area. On site mitigation measures will include a suitable standoff from the SINC habitat and transitional zones left free of development to buffer existing woodland and hedgerows and offer additional supporting wildlife habitat. The nature of the development will seek to offer increased levels of management of existing and proposed habitats in comparison to current pastoral hill farm practices. In landscape and visual terms, the assessment will consider if the proposal is in accordance with the aims and objectives of this policy.
Policy AW 12 - Renewable & Non-Renewable Energy *Development proposals which promote the provision of renewable and non-renewable energy such as schemes for energy from biomass, hydro-electricity, anaerobic digestion, on-shore oil and gas and small / medium sized wind turbines, will be permitted where it can be demonstrated that there is no unacceptable effect upon the interests of soil conservation, agriculture, nature conservation, wildlife, natural and cultural heritage,* ***landscape importance****, public health and residential amenity.*	This assessment considers the criteria outlined in Policy AW12 and seeks to demonstrate that the development outweighs any potential landscape and visual harm and is appropriately mitigated – see conclusions.

Development proposals should be designed to minimise resource use during construction, operation and maintenance.	

7.2.42 Overall, it is considered that the proposed development, through the design and mitigation proposed will support the highlighted aims and policies of the Local Development Plan.

Cumulative Baseline

7.2.43 Opportunities exist for potential cumulative views, where more than one solar farm, including the proposed development, may be seen either simultaneously or sequentially. Solar farms with the potential to generate cumulative effects include those which; are constructed, are in construction; have planning permission and are not yet constructed; or are awaiting determination of planning permission.

7.2.44 A review of planning applications has been undertaken within the Local Planning Authority within the study area, and it is confirmed that there are 4 consented cumulative solar sites with the potential for cumulative visual effects from certain viewpoints. Table 7.2 provides details of the 4 cumulative solar schemes for which the redline boundaries are also included on the Study Area Constraints Plan (Refer to Drawing WN1011 07 01 – Appendix G2).

Table 7.2: Cumulative Solar Farm Developments

Planning Ref.	Proposal	Capacity	Site area	Decision Date	Operational, consented, in planning or screening?	Address	Distance from site
20/0553/10	C1. Solar farm including substation, fencing and below ground cabling. (revised drainage strategy received 17th July 2020) (REF 01)	c.2MW	2ha	16 Nov 2020	OPERATIONAL	Land Off Pantybrad Road, Llantrisant Road, Ynysmaerdy, Llantrisant, CF72 8YY	300m east
21/1613/10	C2. Development of solar scheme and associated infrastructure.	c.0.5MW	0.5ha	21 March 2022	Consented	Land At Rhiwfelin Fach Farm, Llantrisant Road, Ynysmaerdy, Llantrisant, Pontyclun, CF72 8LQ	c.700m east
22/1413/10	C3. TALGREN SOLAR Construction and operation of a solar photovoltaic farm including access, fencing, CCTV, internal service tracks, ancillary	9.9MW	21.5 ha		Consented	Land At Rhiwfelin Fach Farm, Llantrisant Road, Ynysmaerdy, Llantrisant, Pontyclun, CF72 8LQ	50m west

	equipment and scheme of landscaping						
23/0994/08	C4. Coed Ely Solar Farm including ground mounted solar panels, sub stations, inverters, access tracks, security fencing and private wire.	6MW	-	23rd November 2023	OPERATIONAL	Land At Former Coed Ely Colliery, Off the A4119, Coed Ely	c.1.6km north west

7.2.45 Schemes C1 and C2 are smaller in scale than the proposed Ely Valley Solar Scheme, which is similar in scale to C3 Talgren Solar farm and C4 Coed Ely Solar Farm. It is noted that the adjoining C1 scheme is set within the same site as the nearby Daffodil Turbine 1 turbine. Solar site C2 is also set close to the Daffodill Turbine 2. The constructed and consented schemes now form part of the landscape and visual baseline; they will therefore be assessed within the main assessment. Where there are views to C3 Talgren Solar and the Ely Valley scheme, these will be discussed.

7.2.46 Typically, operational and consented developments are treated as being part of the landscape and visual baseline. i.e. it is assumed that consented schemes are / will be built and theoretically visible and present in the landscape so a separate cumulative assessment is not required. As site C3 Talgren has not yet been constructed and is a notable scheme next to the proposal site, this will be discussed separately.

7.2.47 The additional cumulative visual effects are considered within the visual and viewpoint assessment for all viewpoint locations. It is considered the type of cumulative effects experienced at these viewpoints is likely to be 'In Combination' effects 'where two or more developments would be within the observer's arc of vision at the same time without moving location'. Due to the lack of intervisibility between the proposal site and cumulative sites it is not considered sequential effects of any significance would occur.

7.2.48 It is also noted that there are two single wind turbines nearby, the prominent 'Daffodil' turbine 1 and 2. These structures, painted green towers and with yellow blades, now form part of the local landscape setting and will be discussed within the baseline and effects sections where appropriate.

Assessment Approach

7.2.49 The methodology for this LVIA conforms to the relevant parts of the Guidelines for Landscape and Visual Impact Assessment, Third Edition (Landscape Institute and IEMA, 2013). The assessment focuses on the identification of likely landscape and visual effects, including those that are, positive and negative, direct and indirect, long, medium and short term, and reversible and irreversible, as well as cumulative effects.

7.2.50 Detailed explanation of the methodology including the basis on which judgements have been made on the sensitivity of the receptors, magnitude of change and level of effects is contained within Appendix G1.

7.2.51 For the purposes of clarity, the European Landscape Convention (ELC) (2000), defines the term 'landscape' as *"an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors".*

7.2.52 The ELC confirms that the landscape should be considered as a resource in its own right. It provides an integrated way of conceptualising our surroundings and is increasingly considered to provide a useful spatial framework for thinking about a wide range of environmental, land use and development issues. The ELC applies to all landscapes; natural, rural, urban and peri-urban areas, including land, inland water and marine areas. It considers landscapes that might be considered outstanding as well as every day or degraded landscapes.

7.2.53 Additional guidance has also been taken from the following publications:

- Council of Europe, The European Landscape Convention (2000, ratified 2006) ETS no. 175.
- An Approach to Landscape Sensitivity Assessment – To Inform Spatial Planning and Land Management, Natural England, June 2019.
- An Approach to Landscape Character Assessment, Natural England, October 2014.
- Landscape Institute Advice Note 06/19 – Visual Representation of Development Proposals Landscape Institute, (Sept 2019).
- Landscape Institute Technical Guidance Note 02/21 – Assessing landscape value outside national designations, (May 2021).
- Landscape Institute Technical Guidance Note LITGN-2024-01 (August 2024).
- Solar Specific:
- Planning guidance for the development of large scale ground mounted solar PV systems, BRE, 2013.
- Biodiversity Guidance for Solar Developments, BRE, 2014.

Assessment Process

7.2.54 This LVIA assessment has 3 key stages, summarised as follows:

- Baseline – gathering of documented information; existing landscape character studies, identification of landscape and visual receptors, scoping of the assessment, agreement of viewpoints and assessment parameters, discussion with relevant consultees and the local planning authority, site visits and initial reporting of design issues with client designer.
- Design – Review of initial design and ongoing design iterations following baseline survey, including responses to other specialisms e.g. ecology and cultural heritage. Consideration of mitigation options and enhancement (where appropriate); and,
- Assessment – involves of an assessment of the landscape and visual effects of the scheme, involves site and desk based survey and assessment.

Landscape and Visual Effects

7.2.55 LVIA is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity (GLVIA 2013, para 1.1).

7.2.56 Landscape and visual effects are assessed separately within the LVIA, "the assessments are known as impact assessments, but the European Union Directive refers to assessment of the effects, which are changes arising from the development that is being assessed" (GLVIA 2013, para 1.15). Impact is defined as 'action being taken' and the effect is defined as the 'change resulting from the action'.

7.2.57 Landscape effects are defined as "An assessment of landscape effects deals with the effects of change and development on landscape as a resource. How the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character" (GLVIA 2013 para 5.1).

7.2.58 Visual effects are defined as "An assessment of visual effects deals with the effects of change and development on the views available to people and their visual amenity. Assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the content and character of views as a result of the change or loss of existing elements of the landscape and/or introduction of new elements" (GLVIA 2013 para 6.1).

Level of Effect

7.2.59 The assessment will consider the landscape and visual baseline characteristics within the defined study area, together with an assessment of landscape and visual effects. Effects will be considered to be either 'Significant' or 'Not Significant' in accordance with the criteria in the methodology. 'Significant' effects are those that should be considered in the eventual decision, effects that are 'Not Significant' are of a lesser concern.

7.2.60 The detailed criteria used to determine the level of effect is listed in Appendix G1 Methodology. As with all LVIAs, it should be noted that while the methodology is designed to be robust and transparent, in line with best practice, professional judgement is finally applied to determine the level of effects, and whether the effects are considered 'Significant' or 'Not Significant'.

Timescale of Effects

7.2.61 The principal landscape and visual effects, which are reversible, occur during the operational lifetime of the solar farm, which will be 40 years, but owing to the height and layout of the scheme there is the potential for mitigation screening with planting which will over time mature and grow to screen areas of the development further. The effects of the development may reduce over time. Effects during construction, scheme opening and future operation are considered.

7.2.62 The only receptor likely to experience construction and decommissioning effects that are markedly different to the operational effects is the site itself, which will temporarily take on the character of a construction site. These effects will be short term, different in nature to those experienced once the development is complete, but similar in terms of their magnitude and level. At the decommissioning stage all mitigation planting and landscape enhancement implemented as part of the development will be retained.

Construction Effects

7.2.63 The only receptor likely to experience construction effects that are markedly different to the operational effects is the site itself, which will temporarily take on the character of a construction site. These effects will be short term, different in nature to those experienced once the development is complete, but similar in terms of their magnitude and level.

Seasonal Effects

7.2.64 Within the assessment consideration is given to the seasonal differences in effects arising from the varying degree of screening and/or filtering of views by vegetation that will apply year round. The assessment considers the visual screening effects that vegetation would provide in both summer and winter months (when deciduous vegetation is not in leaf), and if it is considered that there would be Significant differences in the screening and/or filtering of vegetation between the summer and winter months, it will be stated.

Residual Effects

7.2.65 Residual effects are defined as the effects remaining after any proposed methods of mitigation have been implemented.

7.2.66 The potential for specific residual effects on landscape and visual amenity during the construction and decommissioning phase is limited given the relative short length of these phases and it is considered that the impacts would be less than those experienced during the operational phase. Where this is different the residual effects will be highlighted.

Subjectivity of the Nature of Effects

7.2.67 This LVIA states the level of anticipated effects resulting from the development on landscape and visual amenity and if these effects would be adverse, neutral or beneficial.

7.2.68 It is commonly accepted that the nature (or valency) of effects of a development is subjective based upon the attitude of the individual.

7.2.69 In accordance with GLVIA a 'precautionary approach' is taken and therefore, although the nature of effects is not stated within the assessment, effects would be negative unless stated otherwise. This precautionary approach of negative effects should be considered with the caveat that the valency of effect must always be considered by the decision makers, the approach should not be concluded to be the final judgement, and it should be acknowledged that many people may see the development as either a positive or neutral addition.

Assessment Limitations

7.2.70 The assessment of landscape and visual effects is undertaken from publicly accessible locations only including roads, parks and public rights of way to represent potential impacts on a range of receptors. Consideration of the effect on views from residential receptors is undertaken from representative publicly accessible points and analysis of map data. This assessment does not consider or assess impacts from every theoretical location where the development would be visible.

7.3 BASELINE CONDITIONS - LANDSCAPE CHARACTER

7.3.1 An overview of the existing landscape character and value for both the application site and the study area as a whole has been determined by observations made during site visits and through review of the published Landscape Character Assessments (LCA). Landscape character is defined as "an area, as perceived by people, the character of which is the result of the action and interaction of natural and/or human resources". (GLVIA 2013).

National Landscape Character - Wales National Landscape Character Areas

7.3.2 The National Landscape Character Areas (NLCA) undertaken by National Resources Wales (NRW) form the broadest scale of landscape character assessment in Wales. The NLCAs are defined at a broad landscape scale and the descriptive profiles for the 48 individual character areas highlight what distinguishes one landscape from another, with reference to their regionally distinct natural, cultural and perceptual characteristics.

7.3.3 Within the study area the development is contained within **NLCA37 South Wales Valleys**. The following description accurately summaries the general landscape context:

> *"Extensive ribbon development fills many valley bottoms and lower slopes. Their urban and industrial character is juxtaposed with dramatic upland settings with steep hillsides, open moors or forests"*

7.3.4 The following key characteristics of the NLCA are relevant to the site and study area:

Extensive Upland plateaux – typically wild and windswept, often with unenclosed tracts, running roughly north-south as 'fingers' parallel between intervening deep valleys.

Numerous steep-sided valleys - typically aligned in parallel, flowing in southerly directions, shaped by southward flowing glaciers, leaving behind distinctive corrie ('cwm') and crag features.

Ribbon urban and industrial areas in valleys – in places extending up valley sides and to valley heads. The area is sometimes regarded as being part of a 'city region'. The uplands by comparison have little or no settlement.

Contrast of urban valley activity next to quiet uplands – e.g. busy roads, new developments, traffic noise, night lighting, versus the adjacent wilder, remoter, quieter uplands.

Large blocks of coniferous plantation and deciduous woodland fringes – covering many steep hillsides and hilltops, most notably in the middle to western portion of the area, providing a softer contemporary landscape where there was once industry.

Heather, rough grassland and steep bracken slopes – dominate many plateaux and are grazed mainly by sheep. Much is common land.

Improved pastures on some lower valley sides - grazed by sheep and some dairy cattle.

Field boundaries - dry stone walls mark the boundary of common land while fields on lower slopes are bounded by dense hawthorn hedges, interspersed with swathes of broadleaved woodland.

7.3.5 Visual and Sensory profile:

It is a landscape of contrasts. The valleys contain the extensive ribbon development, which snakes along the valley floors and lower valley sides, and sometimes with settlements precariously extending over intervening slopes and spurs. The windswept upland plateaux that separate the valleys could not be more different. Devoid of settlement, the uplands engender a strong sense of openness and remoteness

The middle to western valleys are dominated by the extensive coniferous plantations whereas the eastern valleys, although generally smaller, are more intimate. On many valley sides, there are distinctive 'ffridd' and 'rhos pasture' mosaics of small fields, hedgerows, boundary walls, wet flushes and marshland, interspersed with small stands of trees, copses and woodlands. It is the vestige of the former agricultural landscape that once dominated before the expansion of coal mining and the iron industries.

7.3.6 Although the National Landscape Character Areas defined by Natural Resources Wales are acknowledged and useful to give a regional context, the more detailed LANDMAP classifications and District landscape assessments are more suitable vehicles for assisting in the assessments of effects upon landscape character and are duly considered. Refer to Appendix G1 for Landmap assessment methodology.

Landmap

7.3.7 The LANDMAP Aspect Areas covering the study area are illustrated on:

- WN1011 07 04 - Landmap Visual Sensory
- WN1011 07 05 - Landmap Geological Landscape
- WN1011 07 06 - Landmap Landscape Habitats

- WN1011 07 07 - Landmap Historic Landscape
- WN1011 07 08 - Landmap Cultural landscape

7.3.8 The LANDMAP Aspect Areas descriptions are set out in Appendix G1. The development site is located within the following host LANDMAP Aspect Areas:

- Visual and Sensory:
  - VS966 - Bettws. 'Moderate' evaluation (northern area of the site), and
  - VS633 - Nant Muchudd. 'Moderate' evaluation (southern area of the site)
- Geological Landscape:
  - GL032 – Upper Ely. 'Moderate' evaluation.
- Landscape Habitats:
  - LH094 – (No Area Name). 'Moderate' evaluation.
- Historic Landscape:
  - HL649 – Nant Castellau and Nant Machudd. 'High' evaluation
- Cultural Landscape:
  - CLS127 – Bettws. 'Moderate' character evaluation, and
  - CLS075 - Nant Muchudd. 'Moderate' character evaluation.

7.3.9 The referenced Aspect Areas are discussed in detail in Appendix G1

District Landscape Character

7.3.10 The area does not have a district level landscape character assessment therefore the assessment is reliant on the use of LANDMAP, and a more detailed site level landscape character assessment conducted by field survey and study area analysis.

Landscape Designations and Receptors

7.3.11 Landscape designations are illustrated on Drawing WN1011/07/01 Landscape Planning Constraints shown in Appendix G2.

Landscape Designations within 2.5 km

7.3.12 Landscape designations within the study area (applicable to this LVIA) are illustrated on **Drawing WN1006/07/01**. Relevant designations include any national landscape designations; Areas of Outstanding Natural Beauty (AONB); and National Parks (NP). Registered Parks and Gardens (RPG); Country Parks (CP); and landscape designations within the Local Plan/Development Framework (if still applicable) such as: Special Landscape Areas (SLA).

Table 7.3: Landscape Planning Designations

Attribute	Coverage within site boundary	Coverage within the 2.5 km Study Area
Landscape Designations		
National Parks	No	No
National Landscape Areas (formally AONBs)	No	No
Historic Landscape Areas	No	No
Special Landscape Area	**Yes**	**Yes**

Green Belt	No	No
Country Parks	No	No
Green Wedge	No	**Yes**
Registered Parks and Gardens	No	No
Open Access Land	No	**Yes**
Protected Heritage Assets, e.g., World Heritage Site, Scheduled Monuments, Conservation Areas, and Listed Buildings are considered in detail within the Cultural Heritage Assessment.		
Ecological Assets such as SSSIs, SINCS and Ancient Woodland are considered in detail within the Ecological Assessment.		
Other Landscape Assets		
Regional / National Recreational Routes	No	Yes (Refer to details below)
Public Rights of Way	No	Yes (Refer to details below)

7.3.13 Landscape receptors where views are an important component of the landscape setting / designation are also considered within the visual effects section e.g. a key viewpoint within a National / Country Park.

7.3.14 Recreational routes and public rights of way are also considered within the visual effects section as the visual environment forms a key setting to these routes, and visual changes would be experienced by users.

Special Landscape Areas (SLA)

7.3.15 Rhondda Cynon Taf Special Landscape Area; Ardal Tirwedd Arbennig (NSA 1, SSA 23)

7.3.16 The SLA covers over the site and much of the upland areas to the north of Talbot Green and Llantrisant. Visibility towards the site from within the SLA is generally limited to the immediate vicinity of the adjacent slopes and near valley floor area due to the nature of the hill and valley topography divided by small plateaus, with woodland blocks scattered across the area which limits intervisibility from one valley to the next and results in the full extent of the site mainly being appreciable from more distant raised vantage points outside of the designated area.

Ancient Woodland

7.3.17 There are many areas of Ancient Woodland across the study area, and an area located beside the north eastern boundary of the site, although entirely outside of the site boundary. There are no physical effects upon Ancient Woodland area and effects are considered within the ecological and arboriculture appraisal. Woodland is discussed within the general landscape baseline of the site area.

Regional / National Recreational Routes

7.3.18 The Taf Ely Ridgeway Walk is c.500m south west of the site at the closest point (within dense woodland). This route passes through the outer edge of the study area to the south west. The walk passes along the line of hills running from Mynydd Maendy in the west, to Caerphilly Common in the east.

Public Rights of Way

7.3.19 There are a limited number of public rights of way within a 1km radius of the site (Rhondda Cynon Taff) the following of which are considered with reference to **Drawing WN1011/07/01** shown in **Appendix G2**.

- Footpath RH/ANT/174/2, c.350m to the east of the site.
- Footpath RH/ANT/222/3, c.650m to the south east of the site.
- PROW, including Footpath RH/RAN/2/2, Llantrisant Forest, c.350m – 500m south west of the site.

7.3.20 Effects upon users of the public rights of way will be considered in the Visual Effects Section.

Open Access Land

7.3.21 Llantrisant Common is a large area of open access land inclusive of several public rights of way within grassland and scrubland habitat.

Local Landscape Character- Site and Immediate Context

7.3.22 An overview of the existing landscape elements and features of the site, and the study area has been determined by observations made during site visits and through review of the published landscape character information up to the defined study area boundaries. Local landscape character is considered in detail at a site level and within the areas adjoining the site boundary.

7.3.23 The local landscape of the site and its immediate surroundings lie within a Special Landscape Area which covers a large proportion of the study area comprised of the valley side / upland area set above the settlements of Ynysmaerdy, the Llantrisant Business Park areas and north of the town of Llantrisant.

7.3.24 The area is one of contrasts as described in the National Landscape Character Area profile with development and settlement concentrated upon the valley floor, as is commonplace in the wider area. The ribbon development in the valley floor includes Llantrisant Business Park, The Royal Mint, Wales Fire and Rescue Service and Royal Glamorgan Hospital. The urban extent of the Talbot Green area stretches either side of Ely Valley Road moving southwards. The town of Llantrisant is set upon rising ground to the south east with land falling away to Llantrisant Common, an area of publicly accessible open scrub land which occupies a transitional area between industrial development in the valley floor and settlement on the southern and eastern hillsides.

7.3.25 The site is set with an existing valley side pasture farm complex, which occupies sloping terrain on the south facing slopes of the Ely Valley, one of a number of small upland valleys in the local area. The surrounding area is populated by several hill farms to the north, east and west of the site. The terrain varies over the site. Moving from the gently sloping fields at the southern end of the farm, at c.80m aod rising upon steeper slopes at the northern end of the site to c. 155m aod. Field sizes are generally small, typical of the area, delineated by mature predominantly hawthorn hedgerows with mature trees and small woodland blocks located at field junctions.

7.3.26 A network of drainage ditches passes through the site from the higher field beyond, the corridors typically contain areas of wet grassland bordered by scrub planting. The landholding contains a number of blocks of mature trees which help provide local enclosure, notably along the drainage ditched through the central area of the site.

7.3.27 The site is influenced by a range of built features; defined by elevation. The lower areas are influenced by the busy road corridors upon the valley floor and the near industrial areas, a semi enclosed rural fringe setting. The upper site areas are more

open, vegetation growth restricted, the site offers panoramic views to the south (although there is no public access). The northern areas influenced by the adjoining solar farm, and two wind turbines, and there also will be visual links to the adjoining consented solar scheme.

7.3.28 A wooden telegraph pole set electrical powerline crosses the central fields of the site heading between Ely Valley Road and the small settlement of Coedely to the west.

7.3.29 The surrounding area displays some characteristics of the semi natural 'Ffridd' habitat as it includes marshland areas within the plateau and lower fields with a diverse mix of grassland types, although the site and adjoining fields are predominantly improved grassland, interspersed with small stands of trees, copses and woodlands.

Landscape Value

7.3.30 The landscape value of a site in its context needs to be assessed as part of carrying out a Landscape and Visual Impact Assessment (LVIA). The current guidance for LVIA/LVA is the third edition of *'Guidelines for Landscape and Visual Impact Assessment'* (GLVIA3; LI and IEMA, 2013) which states that the value of a landscape should be assessed as one of two components of landscape sensitivity. Landscape value is the 'inherent' component, which is independent of the development proposal, while the other component, susceptibility, is development specific.

7.3.31 GLVIA3 recognises that landscape value is not always signified by designation: *'the fact that an area of landscape is not designated either nationally or locally does not mean that it does not have any value'* (paragraph 5.26). GLVIA3 recommends that when undertaking a LVIA/LVA in an undesignated area, landscape value should be determined through a review of existing assessments, policies, strategies and guidelines and, where appropriate, by new survey and analysis (paragraphs 5.27 and 5.28). It is recommended that the process for identifying landscape value outside nationally designated areas is based upon a structured and transparent assessment process including community-based evidence where practical to do so.

7.3.32 Reference is also made to the Landscape Institute's Technical Guidance Note 02/21 on assessing landscape value outside of national designations which provides a list of value factors and indicators used to determine the value of landscapes.

7.3.33 The value of the landscape potentially affected by a proposed development is evaluated when establishing the landscape baseline and is judged as being High, Moderate or Low (in accordance with paragraph 5.44 of GLVIA3). Landscape value is also referred to in the following section as part of the method for 'Assessing the Level of Landscape Effects'.

7.3.34 The landscape value of the site and the immediate adjoining area is considered with reference to the indications of Landscape Value as identified in Table 1.2 of the Methodology (Appendix G1). The following Table 7.4 provides an analysis of each of the indications and classifies the landscape value in accordance with the Methodology.

Table 7.4: Landscape Value Criteria and Assessment

Landscape Indications / Value Considerations	Description	Value Method Criteria	Value Assessment
Natural Heritage (Site and Immediate Context)	The site is largely a working pasture sheep farm which limits the extent of the semi-natural 'Fridd' / wetland type habitat characteristic in the area. The site does contain some valuable grassland habitat areas in the overall landholding which are not proposed to be part of the solar deployment area. This includes the grassland fields to the north east of the site area, and the ecologically sensitive areas to the east. Overall, the sloping fields set as pasture have been continuously grazed are less diverse and are therefore of a lower habitat value. Fringe areas and wetland zones provide more variety.	*The site's landscape is commonplace within the region. Whilst the site is comprised of existing farmland, which is inaccessible to public, the habitats on site do contribute to the sense of place and are of scenic value locally.*	Low-Medium
Natural Heritage (Study Area- Bettws- Nant Muchudd- Mynydd gaer)	LANDMAP has assessed the majority of landscape habitat areas found within the study area to be of 'moderate' value which includes the site and its immediate setting. There are some isolated higher value areas found further afield to the north and east of the study area such as the wooded Nant Muchudd river valley which has adjoining semi natural woodland and marshy grassland habitat. These areas have	*The surrounding wider landscape does present some amenity value by way of access and views with some scenic interest and distinctive features.* *There are some strong urban influences within the valley floor including road corridors and industrial/business parks which are of a lower amenity value.*	Medium

	limited relationship to the site as they are topographically (and visually) separate. The landscape structure outside of the urban areas of the valley floors is well-defined and has a diverse range of landscape habitats including acid and marshy grassland, semi-natural woodland blocks which are interspersed between the hedge lined field structure, which is overall relatively intact, with large plantation woodland areas, which are publicly accessible, in additional to the open areas of Llantrisant Common.		
Cultural Heritage (Site and Immediate Context)	The site contains no features of earth science, archaeological or cultural interest that add to the value of the landscape at a local level.	The site and immediate vicinity is of *'Low importance and rarity at local scale'* with *few cultural heritage features found save for some local farmhouses which are listed as National Monuments.*	Very Low
Cultural Heritage (Study Area- Bettws- Nant Muchudd- Mynydd gaer)	Further afield, the study are does contain cultural heritage features, such as the conservation area of Llantrisant and evidence of historic mining and quarrying activities at Ynysmaerdy with the linked small village. There are also some national monuments distributed across the area which are mainly listed buildings such as farmhouses. This and other cultural features have limited relationship to the site other than their visual setting which will be discussed in the visual assessment if applicable and separately assessed	*Medium importance and rarity limited potential for substation. Some evidence of historic landscape pattern and features further afield.*	**Medium**

	in terms of heritage significance in the Cultural Heritage chapter.		
Landscape Condition (Site and Immediate Context)	The landscape structure of the site is intact with a similar field structure looking back to 1888-1913 historic maps. There has been a reduction in woodland coverage with the expansion of pasture through the amalgamation of some fields to create larger enclosures and removal of field boundaries, although the overall landscape pattern is little changed. The site has few detracting elements apart from the wooden pole powerline crossing the central field and contributes well to the sense of place and is consistent with the prevailing rolling lowland and local landscape that provides a characterful transition to surrounding plateau and upland areas. The fields laid out to pasture are well managed and some recent boundary planting and hedgerow renewal has taken place. The immediate context of the site is influenced by adjoining land uses including renewable energy generating land uses – solar and wind turbines, and the warehousing / industrial manufacturing development at the southern boundary of the site and busy road corridors.	*Areas identified as having some redeeming feature(s) and possibly identified for improvement. Presents some locally distinctive landscape characteristics such as woodland and mature tree groups within and bounding the site with some scenic interest that would have limited potential for substitution but is nevertheless commonplace in the locality.*	Medium

Landscape Condition (Study Area- Bettws- Nant Muchudd- Mynydd gaer)	The study area provides a variety of landscape types in varying states. The valley slopes and plateau found across the local are in good condition with limited public access and consistent land use pattern (pastoral farming) limiting pressures on valued landscape characteristics such as wet grasslands and woodland blocks and field structure. The Llantrisant Forest across the valley to the west (Mynydd gaer) is well managed and provides a series of locally valued walking routes through the plantation woodland and some attractive views out of scenic value. The lower valley slopes and valley floor are heavily influenced by man-made landscapes with light industrial, business parks and other commercial sites combined forming indistinct areas of ribbon development upon the valley floor that are incongruous to the more attractive surroundings seen across the lowland valley slopes and distant uplands. It is notable that many areas of distant uplands are framed by clusters of wind farm developments (in views north)	*Medium importance and rarity with limited potential for substitution at regional and local scale.* Locally designated (SLA) area partially covering the study area. *Provides locally distinctive landscape characteristics including elements of 'Fridd' landscape and accessible woodlands, walking trials.*	Medium
Associations (Site and Immediate Context)	The site is not associated with any historical events or people that contribute to perceptions of natural beauty of the local area and site.	Does not present locally important / distinctive landscape characteristics and distinctions	Very Low
Associations	The study area is not known to be associated with any historical events or people that contribute to	Wider study area to north and east is mainly working landscape of pastoral farmland and so generally is	Low

(Study Area- Bettws- Nant Muchudd- Mynydd gaer)	perceptions of natural beauty of the local area and site.	not known to be associated with important cultural events or people. However, it does *present locally important landscape characteristics and distinctions*.	
Distinctiveness (Site and Immediate Context)	The site does not have any features that aren't commonplace in the local area. The grassland, hedges/hedge trees and woodland provide a commonplace landscape setting upon the hillside.	*Low importance and rarity at a local scale. Presents some locally distinctive characteristics with some scenic interest.*	Low
Distinctiveness (Study Area- Bettws- Nant Muchudd- Mynydd gaer)	The study area does present some characteristic features such as areas of acid and marshy grassland and semi natural woodland blocks as well as hedgerow field boundaries and field copses, but these features are found in numerous locations across the locality and are therefore relatively commonplace.	*Medium importance and rarity with limited potential for substitution. Presents some locally distinctive characteristics with some scenic interest.* *Provides locally distinctive landscape characteristics including elements of 'Fridd' landscape.*	Medium
Recreational Value (Site and Immediate Context)	The site area is not publicly accessible and there are very few public rights of way in the local area. The majority of paths around the site provide links between the surrounding farmsteads, found mostly east of the site and are not easily accessible from local settlements and generally are not intervisible with the site.	*Low importance and rarity at local scale. The site does not present important public amenity value by way of views, quiet enjoyment and access. The immediate setting presents some amenity value by way of views, access, biodiversity, cultural or opportunity for quiet enjoyment (tranquillity)*	Very Low
Recreational Value (Study Area- Bettws- Nant	The wider study area as whole has limited amount of public access particularly in areas close to the site and to the north and east. The wider area does though contain the open access areas of the common (Llantrisant) and Llantrisant Forest. Local	*Presents Locally important amenity value by way of views, access and opportunity for quiet enjoyment . Conversely large tracts of inaccessible pastoral farmland and woodland and urban land uses reduce*	Medium-High

Muchudd- Mynydd gaer)	paths connect farmsteads but provide few links to surrounding settlements. There are however some footpath routes which provide opportunities for quiet enjoyment and are of high scenic value, with character often contrasting strongly between adjacent valleys (urban to rural contrasts) especially away from the edges of settlement. To the west Llantrisant Forest is a valued landscape resource (amenity and views out) with the woodland plantations providing numerous public footpaths. Routes within the woodland connect with regional trails providing connectivity out of the area, including passing through nearby windfarms. The lower fields and valley bottoms are often difficult to negotiate and have few recreational destinations within the urban landscape often dominated by road and industrial infrastructure laid out as ribbon development.	*the overall amenity in terms of public access and wider recreational opportunities.*	
Perceptual (Scenic) (Site and Immediate Context)	The site is within the Special landscape Area covering much of the study area and so is of value as it contributes to some attractive local views more so from elevated vantage points such as from the Llantrisant Forest to the west and the town of Llantrisant to the south east forming a component part of local valley views and is often a midground element to more distant views to upland areas. However, the industrial and commercial land and road corridor found in the valley bottom which is in close proximity to the site does detract from some of these views. Views that include established	*Presents some public amenity by way of views, access, and opportunity for quiet enjoyment. Presents some locally important landscape characteristics* *Presents some locally important landscape characteristics such as accessible plantation woodland and impressive distant views.* Although the location is reasonably well enclosed and inaccessible to the public its position on valley side slopes results in the site being included within some local scenic views.	**Low-Medium**

	elements of renewable energy (2 x turbines and small scale solar) The adjoining industrial and warehousing elements are seen in contrast to the valley side and hill top surroundings.		
Perceptual (Scenic) (Study Area- Bettws- Nant Muchudd- Mynydd gaer)	The immediate area beyond the site to the north, west and east is similar in nature with many pasture farms of a similar scale. The rolling topography subdivided by wooded and hedged valleys offering some seclusion and areas of plateau which provide vantage points to some impressive views. The overall landscape structure found is also broadly similar with hedgerows and small woodland blocks and copses defining the field structure. In general, the wider landscape is more accessible, although in areas surrounding the site links the surrounding farmsteads rather than accessible links to the surrounding settlement for the general public. The scenic quality of the areas is negatively offset by industrial, commercial and settlement land uses served by the busy Ely Valley Road corridor. These rural fringe transitional areas form the focus of views and influence the general scenic feel of the area.	*Presents some public amenity by way of views, access, and opportunity for quiet enjoyment.* *Presents locally important landscape characteristics…* such as 'Fridd' grasslands, valley and plantation woodlands, hedge-lined fields and some impressive distant views.	**Medium**

Perceptual Aspects (wildness and tranquillity) (Site and Immediate Context)	The site is located in a transitional area of landscape at the edge of the valley upon lowland valley fringe landscape. This reduces the degree of tranquillity around the site area as a result of urban elements and transport routes in the valley base, which whilst not always visible are often perceptible in the site's vicinity. Once above the mid slopes, beyond lower fields, parts of the site and adjacent slopes do start to feel more tranquil where woodland (and distance) helps to dissipate disturbance from valley bottom land uses.	The area around the site whilst more tranquil once above the lower slopes and further into the rolling farmed landscape does in general *present few opportunities for quiet enjoyment* given the lack of public access and the fact it is a working farming landscape. The presence of the 2 x Daffodil turbines also impacts the sense of wildness & tranquillity although more in a visual sense as generally not audible from the site.	**Low-Medium**
Perceptual Aspects (wildness and tranquillity) (Study Area- Bettws- Nant Muchudd- Mynydd gaer)	The wider study area whilst containing many areas of urban land uses/transport corridors (which reduces wildness and tranquillity) does also contain larger areas of landscape with no settlements and therefore more opportunities to find tranquil areas, notably to the north of the site / study area. These areas include Llantrisant Forest to the west and Llantrisant Common to the south east with accessible PROW. Large sections of the study area to the north and east/northeast of the site are comprised of a wide expanse of rolling lowland and hillsides divided by small valleys and areas of plateau where tranquillity is greater. This is generally the case when not facing south towards the Talbot Green area. As a result, tranquillity and (sense of) wildness vary greatly within the study area.	The Study area has wide areas of designated landscape (SLA) and presents more '*amenity value by way of views, access, biodiversity, cultural or opportunity for quiet enjoyment (tranquillity).*	**Medium**

Function (Site and Immediate Context)	The site functionality is limited given the majority of the landholding is laid out to pasture and there is no public access. It does however provide a functional link to locally designated ecological sites, with the SINC, SSSI and Ancient Woodland all upon (or close to) the site boundary. The woodland blocks and hedgerows on site are valuable habitat for wildlife and provide landscape structure. These areas will all remain unaffected.	Provides Landscape that *'contributes to the healthy functioning of the landscape, e.g. hydrological systems…woodland…physical link with an adjacent landscape designation (SLA).* *Is a functional part of wider ecological network* *Overall functional value limited in terms of being a Green Space asset*	**Low-Medium**
Function (Study Area- Bettws- Nant Muchudd- Mynydd gaer)	The study area as a whole is more functionally diverse than the site and it's setting with a wide range of land uses present. There are many areas of transitional landscape which provide different functions and character particularly adjacent to the settlement edges and urban/ industrial areas ranging from open common, plantation woodland, rolling grassland slopes and secluded wooded valleys. This is in stark contrast to the more remote plateau and secluded valleys found further afield. Levels of public access do vary which limits the functional relationship between some of these areas and the surrounding valley settlements particularly in the more remote parts of the study area to the north-north east and on more elevated land to the west with limited rights of way.	*Presents some public amenity by way of views, access, biodiversity and opportunity for quiet enjoyment.* *Presents some locally important landscape characteristics such as accessible plantation woodland and impressive distant views.*	**Medium**
Landscape Value of the Site and Immediate Area	Overall, through the consideration of the indicators of landscape value, the site itself is concluded to be of a Low-**Medium** importance and rarity at a local scale. The site's value is influenced by its location, a		**Low-Medium**

Summary	transitional area of landscape with influence still felt from the nearby urban land-uses of the valley floor, road corridors and the nearby wind turbines. The wildlife habitat value of the site is influenced by the land use as it is intensively grazed. The site contains rolling grassland pasture that is found widely across the local area and the scheme has been designed to avoid ecological sensitive areas / landscape features at a site level. The site is not publicly accessible, either through PROW within or upon the site boundary areas. The local area has a very limited network of public access compared to wider zones of the study area including Llantrisant Common and Llantrisant Forest. The site contains no features of archaeological or cultural interest that add to the value of the landscape at a local level. The site is within the Special Landscape Area (which covers much of the study area) and so is of value (LPA designated) as it contributes to some attractive local views and provides setting, but more so from elevated vantage points such as from the Llantrisant Forest to the west and the town of Llantrisant to the south east. The local area of the site forms a component part of local valley views and is often a midground element to more distant views to upland areas. However, the industrial and commercial land and road corridor found in the valley bottom which are in close proximity to the site do detract from some of these views. Views that include established elements of renewable energy (2 x turbines and small scale solar) The adjoining industrial and warehousing elements are seen in contrast to the valley side and hill top surroundings. The landscape structure of the site is relatively intact in terms of field pattern and boundaries. Grassland / woodland areas to the eastern boundary are designated as a SSSI and woodland beside the north eastern boundary is additionally designated as Ancient Woodland. There will be no direct impacts upon these designated areas. The northern fields of the site also benefit from rolling topography transitioning to raised grassland plateau beyond.	

Landscape Value of the Study Area **(Study Area- Bettws- Nant Muchudd- Mynydd gaer)** **Summary**	Outside of the immediate context of the site, the rural land further to the north, north east and north west is similar in nature and part of the same wider Special Landscape Area (SLA). Landscape value varies considerably across the study area ranging from areas of very low value within the valley floor areas, where indistinct industrial and ribbon development detracts from the setting, heavily influencing the transitional landscapes adjacent to it, to zones of higher value habitat such as 'Fridd' marshy grasslands and wooded small valleys dividing localised areas of plateau to the north, east and north east. Elevated hills to the west (high value) often provide an attractive distant backdrop to local views but these are the setting for a series of large scale wind farms. Overall, there is a widescale coverage of similar rolling farmed landscape to that found on site. Furthermore, access whilst limited as a whole does increase away from the site's environs with publicly accessible areas including Llantrisant forest and Llantrisant Common which provide some links to the settlement edges although there is much potential for improvements to the available rights of way network. In general, the settlements feel somewhat displaced from the wider rural landscape with stark transitions seen across the area where landscape character often changes abruptly.	**Medium**

7.4 VISUAL – BASELINE SITUATION

Zone of Theoretical Visibility (ZTV)

7.4.1 Land that may potentially be visually connected with the proposed development is usually identified and mapped at the outset (of a full landscape and visual assessment) in accordance with paragraph 6.6 of GLVIA3. Zone of Theoretical Visibility (ZTV) mapping is produced to determine the area over which the proposed development could theoretically be seen. ZTV maps are generated by computer from a Digital Terrain Model (DTM) representing the bare ground topography overlaid on a map base without significant areas of screening vegetation and built form.

7.4.2 ZTV mapping has been produced to determine the areas over which the proposed solar farm development, which is comprised of rows of 2m high photovoltaic 'tables' could theoretically be seen. The analysis uses:

- The terrain data used EA LIDAR 2m DTM.
- Viewer height used in calculation 1.60m.
- The site consists of a 2m solar panels above existing ground levels.
- 300 Target Points spread evenly across the solar farm location.
- This ZTV includes the screening effects of the following within the study area , including representative heights:
    - Buildings 9m agl.
    - Woodland 12m agl.
    - Hedgerows 2m agl.
    - Unmanaged Hedgerows 5m agl.

7.4.3 The calculation takes into account the effects of the curvature of the earth and light refraction. The calculation does not use mathematically approximate methods.

7.4.4 The addition of the visual barriers over the bare earth topographic model provides a more realistic indication of the potential visibility of the development within the local landscape setting. It is noted however that there are still likely to be other visual barriers not marked including single and small tree groups, recently felled areas of plantation forestry, new (and temporary) development that may not be modelled, so visibility levels are further refined through the site survey and consideration of visibility from the identified receptors; settlements, public rights of way, landscape receptors and the viewpoint assessment. Visibility mapping is presented on 1:20,000 scale OS base mapping (Refer to ZTV Appendix 2 with Viewpoint Locations – Appendix G2).

Geographical Extent of Visibility

7.4.5 The geographical extent of effects is influenced by the landscape setting and established features around the site, the scale of the proposed development (c.2m high photovoltaic 'tables'), the site levels and localised topography.

7.4.6 Verification of the ZTV following a site and study area visit confirmed visibility towards the proposed solar panels is focussed to the areas of Llantrisant Common and the adjacent pasture fields, to the south east of the site, approaching the fringes of the town of Llantrisant, the valley side pastoral areas and woodland to the east of the site approaching Beddau and distant visibility to hill top areas to the far west of the site. Limited visibility is shown over the lower lying valley floor areas to the south of the site; visibility focussed to the near areas only that are directly aligned to the site area.

7.4.7 In general, the degree of visibility towards the proposed solar panels will reduce markedly from c.1km+ outwards due to screening from intervening vegetation (some of which is not included within the ZTV such as field boundary hedgerows, field tree groups and linear roadside tree planting). It is also the case that the main settlements including Llantrisant, Talbot Green and Tonyrefail and Llanharan are located outside

of this zone at 2km and above from the site boundary. The immediate area up to 1km surrounding the site is sparsely populated with residential properties and accessibility via public rights of way is limited.

7.4.8 The viewpoint assessment includes examples of such locations which are representative of publicly accessible locations to illustrate the changing nature of visibility towards the site. The viewpoints are considered to be set at some of the 'most open' locations, in that they have been selected to illustrate the greatest levels of visibility to the proposal. The current small scale solar farm to the east of the site and the two established yellow and green wind turbines also acts as useful visibility markers in the local area.

Key Receptors

7.4.9 The key visual receptors within the study area would consist of (people at) residential properties, leisure and heritage attractions e.g. Registered Parks and Gardens (where views are an important component), users of public rights of way (national trails, cycle ways and footpaths), and users of recreational facilities and transportation networks. The receptors have been identified through site appraisal and desk top surveys.

7.4.10 Through consideration of the scale of development, site survey and desk-top appraisals it is considered that there would be limited potential for Significant adverse effects (if any) on visual receptors over 1.5km from the site boundary and as such are not included as receptors as part of the Visual Assessment.

Residential Properties

7.4.11 Residential properties are considered to have a high sensitivity to visual change as there is the potential for large numbers of receptors (people) to be concentrated in the properties / settlements with continuous fixed views. It should be noted that many individual dwellings and dwellings within settlements, even when close to other proposed developments, may have 'no' or 'limited visibility' of the proposed development. For each individual property close to the development site, the exact degree of visibility will depend on the orientation of the property, the orientation of the windows in the property, and the degree of screening provided by localised landform, trees, hedgerows and surrounding built features. A representative range of properties within the ZTV and no further afield than 2km are assessed.

7.4.12 The visual effects upon residential properties within 500m will be considered in detail within the assessment (but grouped where appropriate). Outside of 500m only main settlements will be considered.

7.4.13 The properties (and groups) within the 0 - 500m distance band (6 no. in total) will be considered in detail, although it is acknowledged that potential for significant effects is usually limited to a closer distance for a development of this scale (of limited vertical height). Properties outside of this distance will be grouped but only considered where there is the potential for open views to the site and/or potential for notable visual effects. The properties will be verified during detailed field survey.

7.4.14 The following properties with theoretical visibility of the proposals are located in the 0-500m distance band:

- R1 - Duffryn Uchaf Farm, Ely Valley Road Ynysmaerdy Llantrisant, c.35 south. (landowners farm)
- R2 - Dyffryn Isaf Farm, Ely Valley Road Ely Valley Road Ynysmaerdy Llantrisant. C.110m south.
- R3 – Signalman's Cottage. Ely Valley Road, Ynysmaerdy, Llantrisant. C.200m south.

- R4 – Ynysmaerdy residential area. C.330m south.
- R5, Farmhouse Rhiwfelin Fawr Farm Heol Sticil-Y-Beddau Llantrisant. C.320m north
- R6 – Pantglas Farmhouse (and associated houses) Cae Pantglass, Ynysmaerdy, Portclun. C.470m west.

7.4.15 Groups of properties out to 1km and main settlements within the study area with theoretical visibility will also be considered in the assessment section, including:

- Ynysmaerdy, c.380m south
- Coedely, c1km north west.
- Llantrisant c. 1.75km to the south east
- Talbot Green c. 1.8km to the south
- Porth, c.2km north west.
- Beddau c.2.3km east

Transportation and Public Access Network

Recreational Routes

7.4.16 There are a limited number of public rights of way within the local study area, namely:

- Footpath RH/ANT/174/2, c.320m to the east of the site.
- Footpath RH/ANT/222/3, c.690m to the south east of the site.
- PROW, including Footpath RH/RAN/2/2, Llantrisant Forest, c.350m – 500m south west of the site.
- Llantrisant Common, open access area, c.950m – 1.5km south east.

7.4.17 To the north and east of these routes the local footpath network becomes more extensive and provides links between farmsteads across the surrounding rolling farmland and minor road network. However, few of these routes connect directly to the nearby settlements of Beddau to the east, Coedely to the west or Llantrisant moving further south (beyond the industrial/business park and open common.

7.4.18 There is one regional trail within the study area, the 'Taf Ely Ridgeway Walk' is c.500m south west of the site at the closest point (within dense woodland. This route passes through the outer edge of the study area to the south west. The walk passes along the line of hills running from Mynydd Maendy in the west, to Caerphilly Common in the east

7.4.19 Ely Valley Road in the valley bottom makes negotiating links between opposing sides of the valley difficult and effectively channels development and land use along the road corridor.

Vehicular Routes

7.4.20 Ely Valley Road (A4119) within the valley floor effectively channels movement through the area, from which urban development has sprawled on the lower levels to all sides. Recent dual carriageway widening works have also taken place at the entrance to the Dyffryn Farm, which also serves as the site entrance. Views from within this road corridor are limited by buildings and roadside vegetation but there is some partial visibility from the section of road corridor between Ynsmaerdy and Talbot Green.

7.4.21 In addition to the Mian Ely Valley Road there are a limited number of minor roads within 1km of the site, focused to the lower lying and valley side areas to the south. generally, visibility is restricted from these areas by tall roadside hedgerows, trees and the topographic profile of the local area.

7.4.22 The roads with the most open visibility are also selected as representative locations

for the viewpoint assessment, see Viewpoints 1, 3, 5, 8 and 9 within the viewpoint assessment section.

Selected Recreational Destinations

7.4.23 Recreational destinations in the local study area include Llantrisant Forest, which is located on valley side to the west of Ely Valley Road, above the small village of Ynysmaerdy. This provides numerous walking trails through the forest plantations as well as parking and picnic facilities. There are few opportunities to see towards the site from the forest save for a limited breaks in the treeline, or where tree felling has occurred (generally away from the publicly accessible areas). Viewpoint 2 is located within Llantrisant Forest. The Royal Mint Experience is an internal attraction, set within an urban area, so it's landscape setting is not a factor affecting user experiences.

Viewpoint Assessment – Baseline Views

7.4.24 Ten viewpoints have been selected on the basis that they provide views to (or illustrate the limited visibility) of the proposed solar arrays and are representative of publicly accessible locations within the study area. A full list of viewpoints including: a description of location; justification for selection; and approximate distance from the site and baseline views is included in the table within the appendix.

7.4.25 Baseline views are considered with reference to:

- The type and relative numbers of people (visual receptors) likely to be affected with consideration of the activities they are involved in.
- The location, nature and characteristics of the chosen viewpoints (representative, specific and illustrative).
- The nature, direction, composition and characteristics of the existing views experienced at the viewpoints; and,
- The visual characteristics and elements of the existing views e.g. nature and extent of skyline, aspects of visual scale and proportion, landform or other elements that may interrupt or otherwise influence views.

7.4.26 A full description of the location, justification for selection and baseline description is included within Appendix G1 prior to the visual assessment tables which then follow. The viewpoint locations are illustrated on **drawing WN1011/07/0.** Visual Receptors and Viewpoint Locations (**Appendix G2**).

7.5 LANDSCAPE AND VISUAL MITIGATION

Mitigation Options

7.5.1 Mitigation is included as it is an integral part of the design and assessment process. The mitigation proposals incorporate features primarily for landscape and visual reasons but are additionally informed by the findings of the ecological assessment where applicable. The Design and Access Statement explains how the site layout has evolved in response to the consultation process and following the site survey and assessment of the landscape and visual baseline.

7.5.2 Visual mitigation of the solar farm development has been developed in tandem with landscape (and ecological) mitigation to serve the wider purpose of mitigating any available views towards/and or into the site and solar deployment areas whilst taking the opportunity to enhance the existing landscape structure and habitats of the site and also to provide additional landscape habitat resource in order to achieve a Net Gain in Biodiversity.

7.5.3 The Solar deployment is set within the existing small scale field structure of the site

with the layout retaining the existing field pattern. The existing field structure will be strengthened and enhanced by additional hedgerow and tree planting to improve the landscape structure and ecological management to filter available views, improve landscape structure so that the solar arrays are more accommodated within the existing setting of the site and assimilated with the surrounding landscape.

7.5.4 General landscape (and ecological) design, mitigation and enhancement features at the site are detailed within **Drawing WN1011/07/07 Landscape Masterplan** and incorporate the following:

7.5.5 General principles to be followed include:

- All the existing field boundary vegetation, in the form of native hedgerows and trees, including those within the site, will be retained where possible and managed to an appropriate height to provide visual screening, but also to enhance landscape and ecological structure.
- Analysis of historic mapping will be undertaken to determine whether there are any lost landscape features that could be reinstated and integrated with the solar development e.g. copses, banking, ditches and hedgerows.
- Grassland will be managed and enhanced for landscape and ecological benefit, Species mixes will be appropriate to the local area and follow recommendations of the project and County Ecologists
- Appropriate development offsets (clear zones) will be initiated from adjacent habitats including the woodland and grassland SINC and neighbouring SSSI as well as field margins to ensure visual effects are not of a significant nature and that existing habitats have a sufficient buffer to enable transition/connectivity between existing and proposed habitat areas.
- Development will facilitate the management of the range of semi-natural habitats – trees, hedgerows and grassland mosaic/upland meadows, found throughout the solar plot and adjoining areas.

7.5.6 Mitigation proposals will serve the dual purpose of providing landscape and visual mitigation and to increase the site's value and reflect Local Biodiversity Action Plan objectives.

7.5.7 Mitigation seeks to integrate the development into the local environment, screen views to the site from sensitive receptors and provide landscape and ecological enhancement using un-utilised land within the application boundary areas, and within the wider landholding if necessary.

7.5.8 The layout of the solar farm is designed to fit within the context of the existing field structure of an existing hill farm laid out to pasture that has no public access. Access to the solar farm will be restricted by unobtrusive security fencing of an agricultural style (Deer Fence), timber post and wire mesh. Non-intrusive CCTV cameras (motion sensitive operation only) will be mounted on poles at locations around the site boundary.

7.5.9 Appropriate buffers are incorporated into the solar farm layout to the existing vegetation (a minimum 4m standoff from hedges / trees to the site security fence) and development is restricted from within the canopy of trees and hedges.

7.5.10 In many places the buffers and standoffs from the solar array 'tables' are wider to incorporate existing site constraints such the electricity wood pole line and the sensitive SINC and neighbouring SSSI habitats.

Grassland specific management – solar deployment area

7.5.11 All areas of existing grassland within the security fence are to be managed under a conservation grazing regime using sheep, with the aim to restore historic acid

grassland.

7.5.12 Grazing may occur at any time of year, provided that the average annual grazing density is maintained at 0.5 Livestock Units (LSU) per hectare. This equates to approximately four breeding ewes grazing continuously throughout the year (with one breeding ewe = 0.15 LSU). If grazing is seasonal, the number of sheep should be adjusted accordingly to maintain the same annual grazing pressure.

7.5.13 Please note – grazing density and timing may be adjusted following the results of the monitoring surveys.

7.5.14 Once every three years, cutting will be required in September to limit the spread of rushes, leaving a sward height of 5cm. Cuttings are to be baled or collected in a box cutter and removed offsite.

Existing connected grassland (outside security fence) – Ground Nesting Bird Habitat

7.5.15 All areas of existing connected grassland outside the security fence (including all large open areas) are to be managed under a conservation grazing regime using sheep, with the aim of managing or restoring acid grassland.

7.5.16 To protect ground nesting birds such as Meadow Pipit from disturbance, all grazing in these areas will be excluded from April to August inclusive.

7.5.17 To maintain an average annual grazing pressure of 0.5 LU per hectare, a higher stocking rate will be used during the permitted grazing period (January - March and September -December). This equates to approximately six breeding ewes per hectare during the grazing months (with one breeding ewe = 0.15 LSU), ensuring the overall annual grazing pressure remains appropriate for habitat maintenance and enhancement.

7.5.18 Please note – grazing density and timing may be adjusted following the results of the monitoring surveys.

7.5.19 Once every three years, cutting will be required in September to limit the spread of rushes, leaving a sward height of 5cm. Cuttings are be baled or collected in a box cutter and removed offsite. Cutting should not be undertaken in the same year as the interior grassland (inside the security fence).

Existing isolated grassland (outside security fence) – Wildflower Fringes

7.5.20 Several field margins are unconnected to the larger areas of grassland outside the security fence. For this reason, it would be unproductive to graze the margins in isolation. These areas include:

- The north, east and southern edges of Field 1.
- The northern edge of Field 2
- The western half of the southern edge of Field 3
- The northeast and southern edges of Field 4
- The western edge of Field 6
- The east and western edges of Field 7
- The southern edge of Field 11

7.5.21 Instead of grazing, these isolated areas of existing grassland will be managed through a cutting regime to help restore historic acid grassland. One annual cut will take place in September, leaving a sward height of 5cm. A staggered approach is to be used, with only 50% of the margin areas cut in any given year. All cuttings are to be baled or collected using a box cutter and removed from the site.

Iterative Site Layout Changes

7.5.22 Following an iterative design process and a review of the likely landscape and visual effects amendments were made to the site layout design to reduce the likely impacts on sensitive habitats such as the SINC, SSSI and Ancient Woodland to provide transitional buffer areas to further support species present in adjacent habitats such as the Marsh Fritillary Butterfly found in the nearby SSSI. Due to the limited intervisibility in the immediate setting of the site due screening from local topography vegetation limited specific mitigation measures relate to nearby residences or public right of way receptors in close proximity to the site. The main changes to the layout in relation to visual mitigation relate to the more distant visual receptors within the study area.

7.5.23 Solar arrays were removed from the north eastern two fields following ecological survey, these fields border the existing solar farm (C1), so this removal reduces the visible spread of development upon one of the most visible areas of the site. This area will also provide an enhanced grassland mosaic habitat for ground nesting birds and to provide a transitional habitat area to existing woodland and the grassland within the solar deployment.

7.5.24 Field to the south of the proposed deployment which are still within the overall landholding will be left outside the proposed solar deployment. This field is close to the nearby residential property, Dyffryn-Isaf, and the reduction in arrays within this field allows a greater development clear zone and also the option for mitigation hedgerow tree planting to filter views further. Grassland within this field will be managed to support ground nesting birds.

7.5.25 All existing woodland and hedgerows will be given suitable standoffs with generous transitional zones around existing woodland in order to provide transitional habitat areas which will enable a significant Net Gain in biodiversity and help with accommodating the proposed solar layout within the existing field structure. Refer to Ecology Chapter for details on specific ecological mitigation measures.

Construction method

7.5.26 The construction process for the solar arrays, the main land use feature of the development, has a light footprint as the solar array mounting steel frame posts are driven directly into the fields (with no additional concrete or stone). This construction method is of a minimal disturbance to ground conditions, the land coverage of the field can remain (if pasture), and the field still remains available to be low intensity grazed or quickly seeded if the field was in previous arable use. The current predominate agricultural characteristic is therefore in part retained throughout the life span of the site.

7.5.27 The mitigation and enhancement proposals are designed to integrate the solar farm with the landscape and reduce the landscape and visual impact of the scheme. Proposals have been developed through an iterative design process and following consultation.

7.6 LANDSCAPE ASSESSMENT

Introduction

7.6.1 Landscape assessment involves assessing the sensitivity of a landscape receptor against the magnitude of change that will be likely to be caused by a development to evaluate the significance of effects upon that receptor.

7.6.2 The significance of the effect of a development on the landscape is not an absolute scale but is a judgement based on the magnitude of the anticipated effect (or scale of change) and the sensitivity of the landscape to development.

Effects on Landscape Character – Landscape Sensitivity

7.6.3 Landscape receptors are assessed in terms of sensitivity which combines judgements of their susceptibility to the type of change or development concerned and the value attached to the landscape. Sensitivity is specific to the project/development.

Susceptibility to change

7.6.4 The susceptibility to change of the landscape to the solar farm development is determined with reference to the baseline assessment of the existing landscape and described as High, Medium, or Low. It is assessed by considering the existing landscape, elements and features, landscape character and key characteristics and landscape value. Landscape characteristics are considered for the wider study area up to 2.5km from the site and for the application site and its immediate surroundings up to c.250m.

7.6.5 The study area is derived from the likely theoretical visual extent of the development and comprises a number of Landmap visual sensory areas which provide landscape character descriptions in the absence of a district level LCA. These include the following named LANDMAP Visual Sensory geographic areas:

- Bettws (Open Rolling Lowland)
- Nant Muchudd (Lowland Valley)
- Mynydd Gaer (Hills, Lower Plateau and Scarp Slopes)
- Llantrisant Business Park (and adjacent commercial land uses of the valley bottom).

7.6.6 The study area is skirted by the edges of the larger surrounding settlements, which are Llantrisant to the south east, Talbot Green to the south, Tonyrefail to the north west and Beddau to the east. The study area also contains the small village of Coedely to the west of the site in the valley bottom off Ely Valley Road.

Effects on Landscape Character - Landmap Aspect Areas and Landscape Receptors

7.6.7 Landscape characteristics of the application site and consequences of the development upon the landscape character of the site and its immediate context (and wider study area) is considered. Due to the absence of a specific district scale landscape character assessment, consideration is given to landscape effects upon the host LANDMAP Aspect Areas (and those within the study area selected for further consideration due to higher level classifications as discussed at Section 4. This discusses the site specific landscape character as described within the baseline landscape descriptions in the appendix and within Table 7.5: 'Landscape Value Criteria and Assessment'.

7.6.8 Detailed assessment tables are included within Appendix G1 and are summarised in Table 7.5 below.

Table 7.5: Assessment of Landscape Effects- Summary Table

Receptor	Landscape Sensitivity	Magnitude of Landscape Effect	Level of Landscape Effect
LANDMAP Category			
Visual and Sensory			
VS966 - Bettws	Medium	Low / Medium	**Moderate (Not**

Receptor	Landscape Sensitivity	Magnitude of Landscape Effect	Level of Landscape Effect
			Significant)
Cumulative		Medium	**Moderate / Major (Not Significant)**
VS633 Nant Muchudd	Medium	Low / Medium	**Moderate / Minor (Not Significant)**
Cumulative		Medium	**Moderate (Not Significant)**
VS006 Llantrisant Business Park	Low	Low / Negligible	**Minor / Neutral (Not Significant)**
Cumulative		Negligible	**Minor / Neutral (Not Significant)**
VS436 Myndd Gaer	High	Negligible	**Minor (Not Significant)**
Cumulative		Negligible	**Minor / Neutral (Not Significant)**
Geological Landscape			
GL032 Upper Ely	Medium	No Change	**Neutral (Not Significant)**
Landscape Habitats			
LH094 - (no name incl. Site Area)	Medium	Low	**Minor (Not Significant)**
LH08 - Grassland mosaic (incl of Llantrisant Common)	High	No Change	**Neutral (Not Significant)**
Historic Landscape / Cultural Landscape Services – not considered, see baseline and appendix.			
Landscape Receptors			
Ardal Tirwedd Arbennig Special Landscape Area (SLA)	Medium	Medium	**Moderate (Not Significant)**
Llantrisant Common	Medium	Medium	**Moderate (Not Significant)**

7.6.9 As presented in Appendix G1 and the above table, following analysis of the published LANDMAP data, it is concluded that there would be no 'significant' effects upon landscape character (LANDMAP Aspect Areas) as a result of the development.

7.6.10 The site is set within the sloping and rolling upland fringe landscape, but in close proximity to the valley floor, adjoining urban land uses of Llantrisant Business Park. Considering the development form and local context (vegetation and topographic elements), it is concluded that the scheme will have a limited adverse impact on the characteristic elements of the surrounding landscape within the defined 2.5km study area covered by the LANDMAP Aspect Areas (AA's). The site (and landscape) changes of the development are focussed upon arrays within the grassland fields

only, which are generally intensively grazed by sheep. The remainder of the landholding, save for the small substation compound and access tracks is not subject to development. When considered at the scale of the Aspect Areas, including allowing for the consideration of the adjacent solar (operational and consented) and 2 wind turbines (and wider wind farms) the site development represents a small scale feature, within an area where renewable and urban industrial development is already present and characteristic. At a study area level, the development of the solar focuses' development to this area, with minimal wider scale effects when moving away from the site (>500m).

7.6.11 Landscape enhancements are proposed which will help the assimilation of the site at a local and AA level, combined with enhanced management of existing and proposed habitats. The greatest level of effects is seen within the site and immediate setting upon Visual Sensory Aspect Areas, VS966 – Bettws and VS436 Myndd Gaer, as expected, as these are host AA and these are also areas that are the most intervisible within the Special Landscape Area (SLA) and Llantrisant Common (an open access area) which is also part of the SLA. However, overall, these effects are of a 'Moderate' level and therefore 'Not Significant'.

Cumulative Effects

7.6.12 The cumulative landscape effects upon the Visual Sensory Aspect Areas are considered as a result of the addition of Ely Valley SF to the consented (but not constructed) Talgren Solar Farm (C3). Moderate/Major and Moderate, 'Not Significant', effects are concluded upon both of the host Aspect Areas, VS966 Bettws and VS633 Nant Muchudd respectively. It is noted that VS966 Bettws which covers the northern area of the site, is also host to the operational solar and the consented Talgren SF. The Aspect Area VS633 Nant Muchudd, which covers the southern half of the site adjoins the Llantrisant industrial estate areas and the urban influences upon the valley floor.

Site Level Effects on Landscape Character

Landscape Sensitivity

7.6.13 The landscape resource is assessed in terms of sensitivity which combines judgements of its susceptibility to the type of change or development concerned and the value attached to the landscape. Sensitivity is specific to the project/development.

7.6.14 Landscape characteristics of the application site and effects of the development (up to ~250m) are considered.

Susceptibility to Change

7.6.15 The susceptibility to change of the landscape to the solar farm development is determined with reference to the baseline assessment of the existing landscape (and described as High, Medium, or Low). It is assessed by considering the existing landscape elements and features, landscape character and key characteristics and landscape value. Landscape characteristics of the application site and immediate surroundings (up to c.250m). Susceptibility as a component of landscape sensitivity considers the ability of a defined landscape receptor (the site in this instance) to accommodate the solar development without undue negative consequences.

7.6.16 With regard to landform within the site, this is varied, transitioning through the valley fringes at c.75m aod rising up to c.150m on the northern fringe of the site. There are two distinct zones at a site level the lower zone to the north of Dyffryn Farm, undulating grassland pasture fields and then a steeper valley side zone, focussed upon the northern third of the site. This valley side zone borders the operational solar scheme and the Daffodil Turbine 1. With regard to landscape pattern and landcover, the site area is typical of the locality, in terms of a fringe hillside pastoral zone,

adjoining but distinctly separate, from the urban and industrial land uses upon the valley floor areas.

7.6.17 Landcover is focused upon grassland, bound by clipped (mainly hawthorn) hedges in the lower areas with more hedgerow trees and tree blocks within the central zone. At a site level the central and upper areas contain many mature hedge trees and tree groups which contribute to enclosing the central area of the site. The upper areas of the site are more exposed with less tree cover along the hedge lines. Urban influences at the site and immediate area include to adjacent Llantrisant Business Park, light industrial area, and the main road corridors upon the valley floor. Away from this area there is little development although the two 'daffodil' turbines are prominent features both at a site level, and local study area. The urban areas affect tranquillity upon the lower c.2/3 of the site although tranquillity increases with elevation, however upper areas influenced by the adjoining operation solar and wind turbine developments.

7.6.18 The susceptibility to change of the site (and near areas) to a solar farm is therefore considered to be **Medium-High**. The main feature under 'threat' from the development is grassland, a commonplace element, however the development has the potential to affect the local area due to the overall ground coverage, and siting upon the elevated (valley side) areas of the site affecting the local setting.

Value of the Landscape Receptor (Site <250m)

7.6.19 The value of the landscape receptor is considered with regard to the baseline landscape value conclusions. The site's value is influenced by its location, a transitional area of landscape with influence still felt from the nearby urban land-uses of the valley floor, road corridors and the nearby wind turbines.

7.6.20 The wildlife habitat value of the site is influenced by the land use, and it is intensively grazed. The site contains rolling grassland pasture that is found widely across the local area and the scheme has been designed to avoid ecological sensitive areas and landscape features at a site level.

7.6.21 The site is not publicly accessible, either through PROW within or upon the site boundary areas. The local area has a very limited network of public access compared to wider zones of the study area including Llantrisant Common and Llantrisant Forest. The site contains no features of archaeological or cultural interest that add to the value of the landscape at a local level.

7.6.22 The site is within the Special Landscape Area (which covers much of the study area) and so is of value (LPA designated) as it contributes to pleasant local views and provides setting, but more so from elevated vantage points such as from the Llantrisant Forest to the west and the town of Llantrisant to the south east. The local area of the site forms a component part of local valley views and is often a mid-ground element within the more distant views to upland areas. However, the industrial and commercial land and road corridor found in the valley floor which are in close proximity to the site do detract from some of these views. Views that include established elements of renewable energy (2 x turbines and small scale solar) The adjoining industrial and warehousing elements are seen in contrast to the valley side and hill top surroundings.

7.6.23 The landscape structure of the site is intact in terms of field pattern and boundaries. Grassland / woodland areas to the eastern boundary are designated as a SSSI and woodland beside the north eastern boundary is additionally designated as Ancient Woodland. There will be no direct impacts upon these designated areas. The northern fields of the site also benefit from rolling topography transitioning to raised grassland plateau beyond.

7.6.24 The only features lost to the development would be the improved grassland considered to be commonplace focussed to the deployment zones.

7.6.25 Overall, the site and near areas are considered to be of a **Low-Medium** landscape value (Refer to **Table 7.3** of the baseline for a full list of landscape value indicators).

Overall Sensitivity of the Landscape Receptor (Site <250m)

7.6.26 The susceptibility to change is concluded to be 'Medium-High' and the landscape value 'Low-Medium'. The landscape sensitivity of the site and near areas to solar farm development is therefore considered to be **'Medium'**. In accordance with the LVIA methodology these are 'Landscape character, elements, and associated land uses which by nature of their character would be able to partly accommodate change of the type proposed'. In this case it includes, 'Medium value landscape, protected at a local level (Area of Important Landscape Value). Comprised of commonplace elements, but with some sense of place with Landscape elements that are partly able to accommodate the proposed development without undue consequences'.

7.6.27 It is further considered that the proposed mitigation and management measures would, over time, improve the landscape and ecological structure and aid the integration of the development, contributing to wider scale improvements to landscape structure and character and local biodiversity gains within the local area.

Magnitude of Landscape Effects (site <250m)

7.6.28 Landscape effects arising as a result of the proposed development are considered with reference to the criteria established in the methodology including size and scale of effect; geographical extent; and duration and reversibility. The type of effect considered includes:

- The potential operational effects upon the landscape fabric within the site (direct effect).
- The potential operational effects on the host Aspect Area and landscape character within the study area derived from the site and study area visit as well as desk based assessment (direct effect), including the consideration of any effects within designated areas; and,
- The potential operational effects on the wider landscape character areas within the study area (indirect effects), including consideration of any effects within designated areas and cumulative landscape effects as a result of other solar farms.

7.6.29 The direct effect of the proposed development upon the landscape character of the site and local area depends on; the key characteristics of the receiving environment (as previously considered), and the degree to which the development may be consistent or at odds with the landscape and how the development would be perceived within the landscape. Perceptions can be influenced by; the distance to the site, weather conditions, appearance/fit of the development (levels of visibility), and relationships to other built and natural features in the landscape.

7.6.30 It is acknowledged that there is an overlap between perception of change to landscape character and visual amenity; landscape character is derived from the combination pattern of landscape elements in the view. The effects of a development on landscape character arise from its relationship to these combinations and patterns.

Scale of Effect

7.6.31 Consideration is given to the scale of the change in the landscape that is experienced as a result of the development and can include both the loss and addition of new features. The development would result in a change to the site area, predominantly an area of improved grassland of c.20.5 ha.

7.6.32 All areas outside of the solar farm security fences (timber post and wire, deer type mesh) will be left unaffected by the development however will be subject to enhanced management for biodiversity gain (see mitigation section).

7.6.33 The main landscape element physically affected is the grassland within the existing fields, as this will host to the array and supporting infrastructure. These grass pasture fields contribute to the landscape structure of the area but are commonplace and less sensitive than the remaining areas of the site. The solar arrays set upon the fields of the site, but within the existing landscape structure, will alter the local landscape character at a site level, the development forming a clear new infrastructure feature within the fields, although large areas will remain as managed grassland, as per the baseline. The development would be contained by established landscape and topographic features around the site boundaries and within the local area. The arrays will form new surface features within the fields, similar to the adjacent solar site C1.

7.6.34 The proposed development (array structures) although partially visible in the landscape, within and adjoining the site, are not considered to markedly change the key characteristics of the site's immediate setting from that which is established valley and hillside grass pasture fields, adjoining industry, existing renewable energy schemes and transportation corridors. The overall scale of effect is considered to be 'Medium', but this is limited to a change in landcover and pattern. Whilst the changes will affect a large extent of the site at a ground level and will be perceptible at the level of the site and near areas, the lost landcover is typical and development in this transitional area is numerous.

Geographical Extent

7.6.35 The geographical extent of effects is influenced by the landscape setting (established features around the site), the scale of the proposed development and localised topography. The geographical extent of effect is distinct from the scale of effect.

7.6.36 The effects consider the form of development, (c.2.6m tall arrays, combined with the established landscape features) and the topographic setting upon a transitional valley side ranging in height from c.75m to c.100m aod. The geographical extent of effects extends over the site and local area including two host visual sensory Aspect Areas and channelled over the lower lying areas of the Ely Valley to the south of the site. The geographical extent of effect is 'Medium' considering the vertical height of the development and overall visibility levels.

Duration and Reversibility of the Landscape Effects

7.6.37 The development is considered long term (40 years) but reversible due to the method of construction, the solar arrays and infrastructure will be removed and the field returned to grassland grazing pasture or meadowland. A 'Medium' level of effect is concluded with regards to duration and reversibility of landscape effects

Overall Magnitude of Landscape Effects

7.6.38 Magnitude is considered with regard to the methodology and the scale, geographical extent, and duration and reversibility of landscape effects. The magnitude of change arising from the proposed development is considered to be **'Medium'**. In accordance with the methodology these are 'Partial loss or moderate alteration to one or more key landscape elements of the baseline and the introduction of elements that may be prominent but not necessarily substantially uncharacteristic with the attributes of the receiving landscape, but which could co-characterise parts of the landscape.'

Overall Level (Significance) of Landscape Effect upon the Site (<250m)

7.6.39 The level of effect is determined by consideration of the landscape sensitivity and magnitude of landscape effect. With reference to the evaluation of the landscape

effects in accordance with the methodology, a 'Medium' landscape sensitivity and a 'Medium' magnitude of change is considered to result in '**Moderate'** level of landscape effect overall, this is a 'Not Significant' effect.

7.6.40 At a site and local level, the solar farm proposal, by nature of its ground coverage scale, would change the character of the local area, within an area of medium landscape value. It is noted that the development avoids the most sensitive areas of the site, ecologically and visually. The development diminishing its sense of place, but notably effects reduce over the wider area.

7.6.41 A Moderate level of effect is considered to be a 'noticeable effect within the context of the wider area, which will conflict with the character (including quality and value) of the landscape, having an adverse impact on characteristic features or elements and cause a medium susceptible to change landscape / site to be markedly changed.' Overall, however, despite being acknowledged as a noticeable effect, it is one that should not, in itself, be considered to be material in the decision-making process.

Assessment of Predicted Effect on Landscape Receptors

7.6.42 As established in the baseline section there are no landscape receptors within the study area with the potential to be significantly affected by the proposed development in terms of its landscape resource. See Appendix G2 for the assessment upon Special Landscape Area and Llantrisant Common.

Assessment of Predicted Landscape Effect during Construction and Decommissioning Phases

7.6.43 Construction activities which have the potential to temporarily affect the landscape character and landscape receptors include:

- Frequency of deliveries to site and vehicle movements on and off site.
- Effects upon local tranquillity by installation of site infrastructure - fencing with CCTV, solar arrays, switchgear, substation and inverters; and
- Formation of temporary construction compound (welfare and construction equipment) and reinstatement works to areas disturbed by construction activities.
- De-commissioning activities which have the potential to affect the landscape character and landscape receptors include:
- Dismantling and removal of all installed infrastructure resulting in increased vehicle movements to and from site.
- Effects upon local tranquillity through the activity of construction operations (machines and movement); and
- Reinstatement works to areas disturbed by de-commissioning activities and time period for reinstatement works to establish.

7.6.44 From the description of the construction and de-commissioning activities as outlined above, any effects on landscape character and landscape receptors during the construction and de-commissioning phases will be temporary and short term in duration. There would be no direct changes to the landscape immediately outside of the site boundaries (no additional requirements for space), the construction and decommissioning operations retained within.

7.6.45 Any damaged fields as a result of de-commissioning activities will be re-seeded with a locally appropriate grassland mix. It is therefore considered that the short-term, reversible and temporary nature of the construction and de-commissioning activities on landscape character will ensure that the overall effects will be, at worst, Minor. These are considered to be limited to the local context of the site boundaries, short term and temporary effects, overall, a 'Not Significant' nature.

Assessment of Cumulative Landscape Effects (Study Area)

7.6.46 With reference to the cumulative section, it is necessary to determine if further cumulative landscape effects would arise from the one additional scheme to the west of the site, the consented, but yet to be constructed, Talgren Solar Scheme, C3. Cumulative landscape effects are considered at the level of the Visual Sensory Aspect Areas.

7.6.47 Table 7.6 summarises the cumulative landscape effects of the proposed scheme, in addition to scheme C3, upon the considered Visual Sensory Aspect Areas within the study area. Moderate/Major and Moderate, 'Not Significant', effects are concluded upon both of the host Aspect Areas, VS966 Bettws and VS633 Nant Muchudd, respectively. It is noted that VS966 Bettws which covers the northern area of the site, is also host to the operational solar scheme C1 and the consented Talgren SF. The Aspect Area VS633 Nant Muchudd, which covers the southern half of the site adjoins the Llantrisant industrial estate areas and the urban influences upon the valley floor.

7.6.48 With regard to effects upon VS966 Bettws, Ely Valley SF in additional to the consented Talgren SF will result in direct effects upon a focussed and small part of the overall AA, set within existing field structure, with established renewable energy infrastructure in the locality. The site is set on the fringe of the AA, close to an urban (light industrial) valley floor developed areas, the wider character and special qualities of the AA beyond these areas will remain. Set beside an existing scheme, development of the same form is focussed, therefore not forming isolated islands of solar throughout the remainder of the AA and forming a unified development form to the field coverage. A Medium magnitude of change is concluded, this is a 'discernible, but not obvious additional change, in conjunction with other developments, to landscape character'. A Moderate / Major, 'Not Significant' cumulative landscape effect is concluded upon the AA.

7.6.49 With regard to effects upon VS633 Nant Muchudd, Ely Valley SF in addition to the consented Talgren SF will result in indirect effects upon this AA, as Talgren is located within VS 966 only. The existing field structure and coverage of the AA is unaltered, but with established renewable energy infrastructure in the locality. The site is set on the fringe of the AA, bordering the urban industrial valley floor, however away from this area, the wider character and special qualities of the AA will remain. Set close to an existing scheme, development of the same form is focussed, therefore not forming isolated islands of solar throughout the remainder of the AA. Due to the near separation distance a Medium magnitude of change is concluded, this is a 'discernible, but not obvious additional change, in conjunction with other developments, to landscape character'. A Moderate, 'Not Significant' cumulative landscape effect is concluded upon the AA.

7.6.50 Overall, due to the close nature of the one cumulative site, the local topographic setting and considering the solar design features which set the array deployment areas within the existing field / vegetation structure, it is predicted that once both sites are constructed, they will be seen as one combined scheme. This combination, from a landscape balance perspective is preferable to a number of disparate schemes upon hillsides in the local area.

7.6.51 The proposed site in addition to C3 site is not considered give rise to sufficient additional change to constitute significant landscape effects over and above the assessed levels. All existing field boundaries and woodland areas will remain and so the solar schemes will be sited within the same established local landscape structure which will also be enhanced with additional boundary planting to further strengthen green infrastructure and provide mitigation to the noticeable effects (change in landcover).

7.7 VISUAL ASSESSMENT

Assessment of Predicted Visual Effects on Residential Properties within 500m

7.7.1 As outlined within the baseline section, there are 6 residential receptors within the study area to be assessed which may have visibility to the proposed development, detailed assessment tables are included within Appendix G1, and a summary is provided in Table 7.6. Visual effects of residential areas in the surrounding settlements are assessed separately in the following section. Effects upon views and visual amenity during the construction and decommissioning phases are also considered separately. Residential receptors are illustrated on Drawing WN1011/07/09 in Appendix G2.

Table 1.6: Assessment of Visual Effects on Residential Properties – Summary Table

Receptor **(distance to closest area of site boundary)**	**Magnitude of Visual Effect**	**Level of Visual Effect (SIGNIFICANCE)** **Cumulative Level of Visual Effect (SIGNIFICANCE)**
R1 - Duffryn Uchaf Farm, Ely Valley Road Ynysmaerdy Llantrisant, c.35 south. (landowners farm)	N/A – as landowner visual effects accepted.	N/A N/A
R2 - Dyffryn Isaf Farm, Ely Valley Road Ely Valley Road Ynysmaerdy Llantrisant. c.110m south.	Medium-Low	Moderate, a 'Not Significant' visual effect
	No Change	Neutral, a 'Not Significant' cumulative visual effect
R3 – Signalman's Cottage. Ely Valley Road, Ynysmaerdy, Llantrisant. c.200m south.	No Change	Neutral, a 'Not Significant' visual effect
	No Change	Neutral, a 'Not Significant' cumulative visual effect
R4 – Ynysmaerdy residential area. c.330m south	Low	Minor-Moderate, a 'Not Significant' visual effect
	Low	Minor-Moderate, a 'Not Significant' visual effect
R5, Farmhouse Rhiwfelin Fawr Farm Heol Sticil-Y-Beddau Llantrisant. c.320m north	No Change	Neutral, a 'Not Significant' visual effect
	No Change	Neutral, a 'Not Significant' cumulative visual effect
R6 – Pantglas Farmhouse (and associated houses) Cae Pantglass, Ynysmaerdy, Portclun. c.470m west.	No Change	Neutral, a 'Not Significant' visual effect
	No Change	Neutral, a 'Not Significant' cumulative visual effect

7.7.2 Groups of properties between 500m to 1km and main settlements within the study area with theoretical visibility will also be considered in the settlement assessment section.

7.7.3 In summary, the residential visual receptors within 500m of the site have been assessed, most of the residences are local farmsteads in what is predominantly a rural / urban fringe farming area. Overall, no residential receptors experience visual effects of a 'significant' nature. The assessment has established that despite the scale of development (ground area coverage) due to localised screening features, the dispersed spread of properties and the height of the proposed arrays, there are very limited residential receptors / groups with the potential for views to or over the development proposal.

Assessment of Predicted Visual Effects on Settlements within 2.5km

7.7.4 As outlined within the baseline section, there are 6 settlements with potential theoretical visibility towards the site, detailed assessment tables are included within Appendix G1, and a summary is provided in Table 7.7 below.

Table 7.7: Assessment of Visual Effects on Settlements – Summary Table

Receptor (distance to closest area of site boundary)	Magnitude of Visual Effect	Level of Visual Effect (SIGNIFICANCE)
Ynysmaerdy, c.380m south	Low	Minor / Moderate, a 'Not Significant' visual effect
Coedely, c1km north west.	No Change	Neutral, a 'Not Significant' visual effect
Llantrisant c. 1.75km to the south east	Low-Medium	Moderate, a 'Not Significant' visual effect
Talbot Green c. 1.8km to the south	No Change	Neutral, a 'Not Significant' visual effect
Porth, c.2km north west.	No Change	Neutral, a 'Not Significant' visual effect
Beddau c.2.3km east	Low	Minor / Moderate, a 'Not Significant' visual effect

7.7.5 In summary, the settlements within 2.5km of the site have been assessed and it is concluded that visibility will be extremely limited. The settlement areas with what is considered to be the most open areas of visibility have also been considered within the viewpoint assessment to understand the visual effects at the specific locations.

7.7.6 This visual assessment considered the settlements as a whole. Llantrisant, c.1.7km to the south of the site (at the closest point) experiences effects of the largest scale, a 'Moderate' level, 'Not Significant' visual effects. The ZTV confirms theoretical visibility is limited to the northern edge of the settlement, including the lower areas bordering the common and then the central elevated areas around the church / castle. These two areas with the greatest levels of visibility are considered within the Viewpoint Assessment, see Viewpoints 5 and 8. It is highlighted that these locations present the areas with expansive views to the north towards the site and generally from within the settlement, views will be restricted by near features or not orientated in the direction of the site. Existing views north also include Llantrisant Business Park,

C1 solar scheme and the two 'Daffodill' wind turbines.

7.7.7 Of the remaining settlements considered within the study area, effects of a 'Not Significant' nature were concluded as in reality, available views to the site area are very limited.

Assessment of Predicted Visual Effects on Public Rights of Way within focussed area of 500m from the site

- Footpath RH/ANT/174/2, c.320m to the east of the site.
- Footpath RH/ANT/222/3, c.690m to the south east of the site.
- PROW, including Footpath RH/RAN/2/2, Llantrisant Forest, c.350m – 500m south west of the site.
- Llantrisant Common, open access area, c.950m – 1.5km south east.

7.7.8 The site is not publicly accessible, and the immediate setting of the site (<500m) has no public rights of way (PROW) from where it is possible to obtain views looking to the site area. The ZTV also demonstrates the limited areas of landscape that has intervisibility with the site. The closest PROW with potential visibility is also assessed within Viewpoint 4, Public Footpath RH|ANT|225/1, Llantrisant Common. Although there would be some open visibility from the route towards the site, considering the setting, separation distance and localised features, a Moderate / Major, 'Not Significant' visual effect is concluded upon the route (as the worst case scenario, for areas with the most open visibility).

7.7.9 PROW no. RH|ANT|174/2 is the closest PROW to the east of the site. Site assessment confirmed that the route has no intervisibility with the deployment area due to screening from topography in addition to mature tree blocks and hedgerows within adjacent fields, Pantybrad Road and that bordering the site.

7.7.10 To the west of the site, PROW within Llantrisant Forest were assessed (including Footpath RH/RAN/2/2), views are generally screened as per Viewpoint 2. PROW from areas on the fringes and outside of the woods are represented by Viewpoint 6: Mynydd Meiros. Not significant visual effects are concluded from the PROW to the west of the site.

7.7.11 Further afield PROW are assessed by representative viewpoints in areas of theoretical intervisibility towards the site and so the further assessment of PROW is considered within the viewpoint assessment with particular reference to Viewpoints 7, 8 and 10.

Assessment of Predicted Visual Effect on Transportation Network within focussed 2.5km Study Area

7.7.12 As outlined within the baseline section, there are a limited number of roads within the study area with the potential for visibility to the site area. The roads with the most open visibility are also selected as representative locations for the viewpoint assessment, see Viewpoints 1, 3, 5, 8 and 9 within the viewpoint assessment section.

Viewpoint Assessment

7.7.13 Visual receptor sensitivity to change is defined as being high, medium, low or negligible depending upon the activity of the receptor. The viewpoint assessment considers:

- The nature of the view of the development e.g. full, partial, glimpse.
- The proportion of the development or features that would be visible e.g. full, most, small, part, none.
- The distance of the viewpoint from the development and whether the viewer would focus on the development due to its scale and proximity or whether the

development would be only a small, minor element in a panoramic view.

- Whether the view is stationary or transient or one of a sequence of views, as from a footpath or moving vehicle.
- The nature of the changes e.g. changes in the skyline profile, a new visual focus, changes in visual simplicity or complexity and alteration of visual scale.

Assessment of Predicted Visual Effects on Viewpoints

7.7.14 The current views from each of the viewpoint locations are shown in the baseline photo plates for Viewpoints 1 – 10, following the baseline photograph a photomontage has been produced illustrating the level of visibility to the development area. Appendix G3. Detailed analysis of the viewpoints is made with reference to the current baseline views and photomontages. The analysis of the magnitude of change, and the predicted visual effect, is considered within the tables at Appendix G1, and a summary is provided in Table 7.8 below.

Table 7.8: Assessment of Visual Effects on Viewpoints – Summary Table

Viewpoint No. / Location	Magnitude of Visual Effect	Level of Visual Effect (SIGNIFICANCE)
VP1: Ynsmaerdy Footway adjacent to roundabout, Ely Valley Road	Low	Minor, a 'NOT SIGNIFICANT' visual effect
	Low / Medium	Minor / Moderate, a 'NOT SIGNIFICANT' cumulative visual effect
VP2: Llantrisant Forest	No Change	Neutral, a 'NOT SIGNIFICANT' visual effect
	No Change	Neutral, a 'NOT SIGNIFICANT' cumulative visual effect
VP3: Layby on dual carriageway Ely Valley Road (A4119)	Low / Medium	Minor / Moderate, a 'NOT SIGNIFICANT' visual effect
	Medium	Moderate, a 'NOT SIGNIFICANT' cumulative visual effect
VP4: Public Footpath RH|ANT|225/1 Hoel-Y-Sarn Llantrisant Common, Llantrisant	Medium	Moderate / Major, a 'NOT SIGNIFICANT' visual effect
	Medium	Moderate / Major, a 'NOT SIGNIFICANT' cumulative visual effect
VP5: Swan Street Car Park, Bullring, Llantrisant	Medium / Low	Moderate, a 'NOT SIGNIFICANT' visual effect
	Medium / Low	Moderate, a 'NOT SIGNIFICANT' cumulative visual effect
VP6: Mynydd Meiros Footpath, ref, close	Low / Medium	Minor / Moderate, a

Viewpoint No. / Location	Magnitude of Visual Effect	Level of Visual Effect (SIGNIFICANCE)
to the Taf Ely Ridgeway Trail		'NOT SIGNIFICANT' visual effect
	Low / Medium	Minor / Moderate, a 'NOT SIGNIFICANT' cumulative visual effect
VP7: Public Footpath RH|ANT|232/1 B4595, Beddau, Llantrisant.	Low / Medium	Minor / Moderate, a 'NOT SIGNIFICANT' visual effect
	Low / Medium	Minor / Moderate, a 'NOT SIGNIFICANT' cumulative visual effect
VP8: Llantrisant Common / Llantrisant	Medium	Moderate, a 'NOT SIGNIFICANT' visual effect
	Medium	Moderate, a 'NOT SIGNIFICANT' cumulative visual effect
VP9: Site Entrance, Ely Valley Road	No Change	Neutral, a 'NOT SIGNIFICANT' visual effect
	No Change	Neutral, a 'NOT SIGNIFICANT' cumulative visual effect
VP10: Taf Ely Ridgeway Walk	No Change	Neutral, a 'NOT SIGNIFICANT' visual effect
	No Change	Neutral, a 'NOT SIGNIFICANT' cumulative visual effect

7.7.15 In summary, the viewpoint assessment through the production of photomontages has demonstrated that the largest visual changes as a result of the solar development would be seen from the public footpaths and open areas upon Llantrisant Common in an area from c.750m out to c.2km south of the site approaching the town of Llantrisant.

7.7.16 Views from the near areas are dominated by busy road corridors and Llantrisant Business Park. The screening from the urban form, then the rising hillside fringe vegetation (woodland and field boundary hedgerows) beyond combine to restrict views into the site at ground level within the immediate setting (up to c.500m). There are very limited publicly accessible areas close to the site and no residential areas that will have near range and expansive views over the proposed solar scheme. Therefore, no viewpoints were considered to experience views of a 'Significant' nature.

7.7.17 This highest magnitude of visual change leading to 'Moderate-Major' visual effects would occur to the south east, from Viewpoint 4 set upon the northern fringe of Llantrisant Common, a distance of c.1.6km from the site. The location illustrates the

typical views from this area, which also includes the Llantrisant Business Park area within the lower lying valley floor beneath the site as well as views to the existing solar development and operational wind turbines upon the hillside to the east of the site.

7.7.18 The site will continue to feel part of its distinct south facing valley side setting framed by woodland on lower slopes and a legible field structure on the mid and upper slopes which is fully retained and strengthened. Additional mitigation planting is proposed to lessen the visual effects on the aforementioned views; in the long term this will enhance the landscape structure of the site and surrounding landscape.

7.7.19 The viewpoint assessment also considered cumulative views with the still to be constructed, solar scheme C4, Talgren. Overall, no significant cumulative visual effects are concluded. When both schemes are present it is considered that both would be seen as one combined development, focussed to and retained by the established field and tree structure of the hillside. In all cases large areas of the sites remain screened, either by existing vegetation, topographic variation and / or the adjoining developments. The two operational 'daffodil' turbines remain the focus of views within the locality.

7.7.20 Of the remaining viewpoints, visual effects are of no greater a scale than a 'Moderate' level and these are often raised vantage points which are less impeded by intermediate topographic or vegetative screening found upon the lower valley sides. Such views towards the site are generally more distant, where the site forms a small component within a wide scale panorama such as from the east at Beddau (VP 7) and Llantrisant (VP 5) to the south; all of which are of a 'Not Significant' Level.

7.8 SUMMARY AND CONCLUSION

Landscape Assessment

Site

7.8.1 The site's landscape value is influenced by its location, a transitional area of landscape with influences exerted from the nearby urban land-uses upon the valley floor, road corridors and the nearby wind turbines. The wildlife habitat value of the site is influenced by the land use, an intensively grazed situation. This rolling grassland pasture that is found widely across the local area and the scheme has been designed to avoid ecological sensitive areas and landscape features at a site level. The site is not publicly accessible, either through PROW within or upon the site boundary areas. The local area has a very limited network of public access compared to wider zones of the study area including Llantrisant Common and Llantrisant Forest. The site contains no features of archaeological or cultural interest that add to the value of the landscape at a local level.

7.8.2 The site is located within the Special Landscape Area (which covers much of the study area) and so is of value (LPA designated) as it contributes to pleasant local views and provides setting, but more so from elevated vantage points such as from the Llantrisant Forest to the west and the town of Llantrisant to the south east. The local area of the site forms a component part of local valley views and is often a mid-ground element within the more distant views to upland areas. However, the industrial and commercial land and road corridor found in the valley floor, which are in close proximity to the site, do detract from some of these views. Views also include established elements of renewable energy (2 x turbines and small scale solar) The adjoining industrial and warehousing elements are seen in contrast to the valley side and hill top surroundings.

7.8.3 The landscape structure of the site is intact in terms of field pattern and boundaries. The only features lost to the development would be the improved grassland

considered to be commonplace, with losses focussed to the deployment zones. Overall, the site and near areas are considered to be of a **Low-Medium** landscape value.

7.8.4 The susceptibility to change is concluded to be 'Medium-High' and the landscape value 'Low-Medium'. The landscape sensitivity of the site and near areas to solar farm development is therefore considered to be **'Medium'**. In accordance with the LVIA methodology these are *'Landscape character, elements, and associated land uses which by nature of their character would be able to partly accommodate change of the type proposed'*. In this case it includes, *'Medium value landscape, protected at a local level (Area of Important Landscape Value). Comprised of commonplace elements, but with some sense of place with Landscape elements that are partly able to accommodate the proposed development without undue consequences'*.

7.8.5 It is further considered that the proposed mitigation and management measures would, over time, improve the landscape and ecological structure and aid the integration of the development, contributing to wider scale improvements to landscape structure and character and local biodiversity gains within the local area

7.8.6 With regard to the magnitude of landscape effects at a site level, the scale of effect established that the development would result in a change to the site area, predominantly an area of improved grassland of c.20.5 ha. The main landscape element physically affected is the grassland within the existing fields, as this will host to the array and supporting infrastructure. These grass pasture fields contribute to the landscape structure of the area but are commonplace and less sensitive than the remaining areas of the site. The solar arrays set upon the fields of the site, but within the existing landscape structure, will alter the local landscape character at a site level, the development forming a clear new infrastructure feature within the fields, although large areas will remain as managed grassland, as per the baseline. The development would be contained by established landscape and topographic features around the site boundaries and within the local area. The arrays will form new surface features within the fields, similar to the adjacent solar site C1.

7.8.7 The proposed development (array structures) although partially visible in the landscape, within and adjoining the site, are not considered to markedly change the key characteristics of the site's immediate setting from that which is established valley and hillside grass pasture fields, adjoining industry, existing renewable energy schemes and transportation corridors. Whilst the changes will affect a large extent of the site at a ground level and will be perceptible at the level of the site and near areas, the lost landcover is typical and development in this transitional area is numerous.

7.8.8 The level (significance) of effect is determined by consideration of the landscape sensitivity and magnitude of landscape effect. With reference to the evaluation of the landscape effects in accordance with the methodology, a 'Medium' landscape sensitivity and a 'Medium' magnitude of change is considered to result in 'Moderate' level of landscape effect overall, this is a 'Not Significant' effect.

7.8.9 At a site and local level, the solar farm proposal, by nature of its ground coverage scale, would change the character of the local area, within an area of medium landscape value. It is noted that the development avoids the most sensitive areas of the site, ecologically and visually. The development diminishing its sense of place, but notably effects reduce over the wider area.

7.8.10 A 'Moderate' level of effect is considered to be a 'noticeable effect within the context of the wider area, which will conflict with the character (including quality and value) of the landscape, having an adverse impact on characteristic features or elements and cause a medium susceptible to change landscape / site to be markedly changed.'

Overall, however, despite being acknowledged as a noticeable effect, it is one that should not, in itself, be considered to be material in the decision-making process

Study Area

7.8.11 As presented in Appendix and following analysis of the published LANDMAP data, it is concluded that there would be no 'significant' effects upon landscape character (LANDMAP Aspect Areas) as a result of the development.

7.8.12 The site is set within the sloping and rolling upland fringe landscape, but in close proximity to the valley floor, adjoining urban land uses of Llantrisant Business Park. Considering the development form and local context (vegetation and topographic elements), it is concluded that the scheme will have a limited adverse impact on the characteristic elements of the surrounding landscape within the defined 2.5km study area covered by the LANDMAP Aspect Areas (AA's). The site (and landscape) changes of the development are focussed upon arrays within the grassland fields only, which are generally intensively grazed by sheep. The remainder of the landholding, save for the small substation compound and access tracks is not subject to development. When considered at the scale of the Aspect Areas, including allowing for the consideration of the adjacent solar (operational and consented) and 2 wind turbines (and wider wind farms) the site development represents a small scale feature, within an area where renewable and urban industrial development is already present and characteristic. At a study area level, the development of the solar focuses' development to this area, with minimal wider scale effects when moving away from the site (>500m).

7.8.13 Landscape enhancements are proposed which will help the assimilation of the site at a local and AA level, combined with enhanced management of existing and proposed habitats. The greatest level of effects is seen within the site and immediate setting upon Visual Sensory Aspect Areas, VS966 – Bettws and VS436 Myndd Gaer, as expected, as these are host AA and these are also areas that are the most intervisible within the Special Landscape Area (SLA) and Llantrisant Common (an open access area) which is also part of the SLA. However, overall, these effects are of a 'Moderate' level and therefore 'Not Significant'.

Cumulative Landscape Effects

7.8.14 With reference to the cumulative section, cumulative landscape effects from the one additional scheme to the west of the site, the consented, but yet to be constructed, Talgren Solar Scheme (C3) are considered. Cumulative landscape effects are assessed at the level of the Visual Sensory Aspect Areas.

7.8.15 Moderate/Major and Moderate, 'Not Significant', effects are concluded upon both of the host Aspect Areas, VS966 Bettws and VS633 Nant Muchudd, respectively. It is noted that VS966 Bettws which covers the northern area of the site, is also host to the operational solar scheme C1 and the consented Talgren SF (C3). The Aspect Area VS633 Nant Muchudd, which covers the southern half of the site adjoins the Llantrisant industrial estate areas and the urban influences upon the valley floor.

7.8.16 With regard to effects upon VS966 Bettws, Ely Valley SF in additional to the consented Talgren SF will result in direct effects upon a focussed and small part of the overall AA, set within existing field structure, with established renewable energy infrastructure in the locality. The site is set on the fringe of the AA, close to an urban (light industrial) valley floor developed areas, the wider character and special qualities of the AA beyond these areas will remain. A Moderate / Major, 'Not Significant' cumulative landscape effect is concluded upon the AA.

7.8.17 With regard to effects upon VS633 Nant Muchudd, Ely Valley SF in addition to the consented Talgren SF will result in indirect effects upon this AA, as Talgren is located

within VS 966 only. The existing field structure and coverage of the AA is unaltered, but with established renewable energy infrastructure in the locality. The site is set on the fringe of the AA, bordering the urban industrial valley floor, however away from this area, the wider character and special qualities of the AA will remain. A Moderate, 'Not Significant' cumulative landscape effect is concluded upon the AA.

7.8.18 Overall, due to the close nature of the one cumulative site, the local topographic setting and considering the solar design features which set the array deployment areas within the existing field / vegetation structure, it is predicted that once both sites are constructed, they will be seen as one combined scheme. This combination, from a landscape balance perspective, is considered preferable to a number of disparate schemes upon hillsides in the local area. The proposed site in addition to C3 site is not considered give rise to sufficient additional change to constitute significant landscape effects over and above the assessed levels.

Visual Assessment

7.8.19 The visual assessment demonstrates that the area over which the proposed solar farm would be visible from would be less in reality than illustrated by the ZTV. This is due to localised screening where intervening vegetation and built form not included as visual barriers in the model would reduce the extent of the visible solar deployment. Views of the arrays would be focussed in distinct zones of intervisibility largely in the mid to long range locations in the south east, far east and elevated western parts of the study area as illustrated by the ZTV (Refer Appendix G2).

7.8.20 Visibility of the development in the immediate setting is well screened by a combination of sloping and undulating topography, mature vegetation around the site. It is also notable that there is a limited number of receptors within the site's immediate context within c.250m of the site. As the site is in a rural area in a distinct setting away from the edges of the surrounding settlements with only a few farmsteads in the vicinity of the site there are no nearby residents or settlements that would be subject to significant visual effects as a result of the development.

7.8.21 The residential visual receptors within 500m of the site have been assessed, most of the residences are local farmsteads in what is predominantly a rural / urban fringe farming area. Overall, no residential receptors experience visual effects of a 'significant' nature. The assessment established that despite the scale of development (ground area coverage) due to localised screening features, the dispersed spread of properties and the height of the proposed arrays, there are very limited residential receptors / groups with the potential for views to or over the development proposal.

7.8.22 The main settlements within 2.5km of the site have been assessed and it is concluded that visibility will be extremely limited. The settlement areas with what is considered to be the most open areas of visibility have also been considered within the viewpoint assessment to understand the visual effects at the specific locations.

7.8.23 This visual assessment considered the settlements as a whole. Llantrisant, c.1.7km to the south of the site (at the closest point) experiences effects of the largest scale, a 'Moderate' level, 'Not Significant' visual effects. The ZTV confirms theoretical visibility is limited to the northern edge of the settlement, including the lower areas bordering the common and then the central elevated areas around the church / castle. These two areas with the greatest levels of visibility are considered within the Viewpoint Assessment, see Viewpoints 5 and 8. It is highlighted that these locations present the areas with expansive views to the north towards the site and generally from within the settlement, views will be restricted by near features or not orientated in the direction of the site. Existing views north also include Llantrisant Business Park, C1 solar scheme and the two 'Daffodill' wind turbines.

7.8.24 Of the remaining settlements considered within the study area, effects of a 'Not Significant' nature were concluded as in reality, available views to the site area are very limited.

7.8.25 With regard to views from PROW, the site is not publicly accessible, and the immediate setting of the site (<500m) has no public rights of way (PROW) from where it is possible to obtain views looking to the site area. The ZTV also demonstrates the limited areas of landscape that has intervisibility with the site. The closest PROW with potential visibility is also assessed within Viewpoint 4, Public Footpath RH|ANT|225/1, Llantrisant Common. Although there would be some open visibility from the route towards the site, considering the setting, separation distance and localised features, a Moderate / Major, 'Not Significant' visual effect is concluded upon the route (as the worst case scenario, for areas with the most open visibility).

Viewpoint Assessment

7.8.26 In summary, the viewpoint assessment through the production of photomontages has demonstrated that the largest visual changes as a result of the solar development would be seen from the public footpaths and open areas upon Llantrisant Common in an area from c.750m out to c.2km south of the site approaching the town of Llantrisant.

7.8.27 Views from the near areas are dominated by busy road corridors and Llantrisant Business Park. The screening from the urban form, then the rising hillside fringe vegetation (woodland and field boundary hedgerows) beyond combine to restrict views into the site at ground level within the immediate setting (up to c.500m). There are very limited publicly accessible areas close to the site and no residential areas that will have near range and expansive views over the proposed solar scheme. Therefore, no viewpoints were considered to experience views of a 'Significant' nature.

7.8.28 This highest magnitude of visual change leading to 'Moderate-Major' visual effects would occur to the south east, from Viewpoint 4 set upon the northern fringe of Llantrisant Common, a distance of c.1.6km from the site. The location illustrates the typical views from this area, which also includes the Llantrisant Business Park area within the lower lying valley floor beneath the site as well as views to the existing solar development and operational wind turbines upon the hillside to the east of the site.

7.8.29 The site will continue to feel part of its distinct south facing valley side setting framed by woodland on lower slopes and a legible field structure on the mid and upper slopes which is fully retained and strengthened. Additional mitigation planting is proposed to lessen the visual effects on the aforementioned views; in the long term this will enhance the landscape structure of the site and surrounding landscape.

7.8.30 The viewpoint assessment also considered cumulative views with the still to be constructed, solar scheme C4, Talgren. Overall, no significant cumulative visual effects are concluded. When both schemes are present it is considered that both would be seen as one combined development, focussed to and retained by the established field and tree structure of the hillside. In all cases large areas of the sites remain screened, either by existing vegetation, topographic variation and / or the adjoining developments. The two operational 'daffodil' turbines remain the focus of views within the locality.

7.8.31 Of the remaining viewpoints, visual effects are of no greater a scale than a 'Moderate' level and these are often raised vantage points which are less impeded by intermediate topographic or vegetative screening found upon the lower valley sides. Such views towards the site are generally more distant, where the site forms a small

component within a wide scale panorama such as from the east at Beddau (VP 7) and Llantrisant (VP 5) to the south; all of which are of a 'Not Significant' Level.

Residual Impacts

7.8.32 This landscape and visual assessment considered the potential for any 'Significant' direct and indirect effects of the proposed development, including the prescribed landscape mitigation measures during construction, operation and decommissioning. Mitigation measures are permanent, and they are considered to positively contribute to the landscape structure of the site and local area.

7.8.33 Landscape and visual impacts were considered during the initial assessment stages, which resulted in changes to the scheme design. This included the removal of deployment from the most elevated north-eastern areas of the site approaching the C1 solar scheme and the western Daffodil turbine and the strengthening of hedgerow and hedge tree planting throughout the site. The identified landscape and visual effects are therefore also the residual effects. Should any specific mitigation proposals alter the long term landscape and/or visual effects, this has been noted in the assessment conclusions.

Final Comment

7.8.34 This assessment demonstrates that the proposed development of Ely Valley Solar Farm could be integrated into the local area without causing extensive harm to the landscape character and visual amenity. No significant landscape effects are concluded upon the identified landscape receptors. Visual effects are focussed to the local study area, a sparsely populated area with limited public access. No significant visual effects are concluded upon any of the identified visual receptors.

7.8.35 The development allows for the provision of enhanced mitigation, strengthening of field boundary structure and the sensitive management of grassland habitats.

8. NOISE AND VIBRATION

8.1 INTRODUCTION

8.1.1 This chapter presents an assessment of the likely significant environmental effects of the proposal with regard to noise and vibration.

8.1.2 Assessment is made to 5 noise sensitive receptors (NSRs) near the site. This assessment includes:

- Results of a survey of the existing baseline sound level climate at two locations representative of the NSRs;
- the expected noise levels from operational noise sources;
- prediction of the noise impact of the operation of the equipment on the NSRs;
- comments on whether noise mitigation measures are likely to be required; and
- a qualitative assessment of the likely effects of noise and vibration during the construction phase.

8.1.3 Groundborne vibration effects are normally only significant if strong vibration sources (e.g. impact piling) are close to vibration-sensitive receptors. In view of the nature of the proposal and the separation distances, vibration effects are not expected to be significant in the construction or operational phases and therefore they have not been considered further.

8.1.4 The assessment of noise during the operational phase covers noise from the operation of the equipment (inverters, transformers, substation and DNO). Other noise during the operational phase (e.g. maintenance vehicle movements) has not been considered because it is not expected to be significant.

8.1.5 Noise Monitoring and Receptor Locations are shown in Appendix J.

8.1.6 This assessment has been based on the proposed layout shown on Drawing No. WN1011/04/03. Appendix J provides details of technical terms used within this chapter. Details of the sound level meters used can be found in Appendix J: Instrumentation, and full noise survey data can be found in Appendix J: Baseline Noise Survey Results.

Competence

8.1.7 This chapter has been prepared by Matthew Gascoigne of NoiseAssess Ltd. Matthew holds a Bachelor of Science degree with Honours in Engineering Science and the Institute of Acoustics' Diploma in Acoustics and Noise Control. Matthew is a Chartered Engineer; a Member of the Institution of Civil Engineers (ICE); and a Member of the Institute of Acoustics (IOA). NoiseAssess Ltd is a member of the Association of Noise Consultants and was formed in 2010. Matthew is a Director and part owner of NoiseAssess Ltd and previously worked in acoustics noise and vibration at other consultancies for 15 years in various roles up to Regional Director level.

8.2 ASSESSMENT APPROACH

Planning Policy and Guidance

8.2.1 Planning policy and guidance documents related to noise are discussed below.

Rhondda Cynon Taf Local Development Plan Policy AW 10

8.2.2 This policy reads as follows:

> *Development proposals will not be permitted where they would cause or result in a risk of unacceptable harm to health and / or local amenity because of:*
>
> *1. Air pollution;*
>
> *2. Noise pollution;*

3. Light pollution;

4. Contamination;

5. Landfill gas;

6. Land instability;

7. Water pollution;

8. Flooding;

9. Or any other identified risk to the environment, local amenity and public health or safety
Unless it can be demonstrated that measures can be taken to overcome any significant adverse risk to public health, the environment and / or impact upon local amenity.

Technical Advice Note (Wales) 11 (TAN11) `Noise': 1997

8.2.3 Welsh planning policy guidance related to noise is given in TAN11. A consultation has taken place on the replacement of this document and draft versions of "Technical Advice Note 11: Air Quality, Noise and Soundscape" and the "Noise and Sound Scape Plan for Wales 2023-2028" are available but are not yet implemented as policy documents.

8.2.4 The introduction to TAN11 states:

"This note provides advice on how the planning system can be used to minimise the adverse impact of noise without placing unreasonable restrictions on development or adding unduly to the costs and administrative burdens of business."

8.2.5 For noise-generating developments, TAN11 refers to BS4142 (see below).

BS4142:2014+A1:2019 `Methods for rating and assessing industrial and commercial sound'

8.2.6 Industrial / commercial sound is normally assessed using BS4142. The scope of BS4142 is given in the extract below.

"1.1 This standard describes methods for rating and assessing sound of an industrial and/or commercial nature, which includes:

Sound from industrial and manufacturing processes;

Sound from fixed installations which comprise mechanical and electrical plant and equipment;

- *Sound from the loading and unloading of goods and materials at industrial and / or commercial premises; and*
- *Sound from mobile plant and vehicles that is an intrinsic part of the overall sound emanating from premises or processes, such as that from forklift trucks, or that from train or ship movements on or around an industrial and / or commercial site.*

The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident."

8.2.7 The standard compares sound from industrial / commercial sources with the background sound level. The standard states in Clause 9.1 that:

"Certain acoustic features can increase the significance of impact over that expected from a basic comparison between the specific sound level and the background sound level". Such features are taken into account by adding a correction to the specific sound level depending on the extent to which the distinguishing acoustic characteristics will attract attention. The standard states the following in Clause 9.2:

"Tonality: For sound ranging from not tonal to prominently tonal the Joint Nordic Method gives a correction of between 0 dB and +6dB for tonality. Subjectively, this can be converted to a penalty of 2 dB for a tone that is just perceptible at the noise receptor, 4 dB where it is clearly perceptible, and 6 dB where it is highly perceptible.

Impulsivity: A correction of up to 9 dB can be applied for sound that is highly impulsive, considering both the rapidity of the change in sound level and the overall change in sound level. Subjectively, this can be converted to a penalty of 3dB for impulsivity which is just perceptible at the noise receptor, 6 dB where it is clearly perceptible, and 9 dB where it is highly perceptible."

NOTE 2: If characteristics likely to affect perception and response are present in the specific sound, within the same reference period, then the applicable corrections ought normally to be added arithmetically. However, if and single feature is dominant to the exclusion of the others then it might be appropriate to apply a reduced or even zero correction for the minor characteristics."

Intermittency: When the specific sound has identifiable on/off conditions, the specific sound level ought to be representative of the time period of length equal to the reference time interval which contains the greatest total amount of on time. This can necessitate measuring the specific sound over a number of shorter sampling periods that are in combination less than the reference time interval in total, and then calculating the specific sound level for the reference time interval allowing for time when the specific sound is not present. If the intermittency is readily distinctive against the residual acoustic environment, a penalty of 3 dB can be applied".

Other sound characteristics: Where the specific sound features characteristics that are neither tonal, nor impulsive, nor intermittent, though otherwise are readily distinctive against the residual acoustic environment, a penalty of 3dB can be applied."

8.2.8 BS4142 provides guidance on the assessment of impacts in Clause 11.

"The significance of sound of an industrial / commercial nature depends upon both the margin by which the rating of the specific sound source exceeds the background sound level and the context in which the sound occurs. An effective assessment cannot be conducted without an understanding of the reason(s) for the assessment and the context in which the sound occurs / will occur. When making assessments and arriving at decisions, therefore, it is essential to place the sound in context.

Obtain an initial estimate of the impact of the specific sound by subtracting the measured background sound level from the rating level, and consider the following:

Typically, the greater this difference, the greater the magnitude of the impact.

A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context.

A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context.

The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context".

8.2.9 BS4142 recommends that the specific sound level during daytime periods 07:00 - 23:00 hours should be determined over a reference time interval of 1 hour and during night-time periods 23:00 - 07:00 hours over a reference time interval of 15 minutes.

8.2.10 BS4142 recommends that the industrial sound should also be assessed in context. For example, this may include consideration of the absolute level of the sound; the character and level of the residual sound compared to the character and level of the specific sound and the sensitivity of the receptors including any mitigation already in place. The consideration of the absolute level of the specific sound often includes comparison with the criteria given in BS8233 to give an indication of the scale of the sound levels anticipated (see below). The comparison with the residual sound often includes consideration of the existing character of the area (i.e. whether the specific sound is a new type of sound for that area) and calculation of how much the specific sound will raise ambient noise levels at the receptors.

BS8233:2014 `Guidance on sound insulation and noise reduction for buildings'

8.2.11 British Standard BS8233 provides recommendations for indoor ambient noise levels within buildings.

8.2.12 The guidance provided in Section 7.7 of BS8233 provides recommended indoor ambient noise levels within rooms in dwellings used for resting, dining and sleeping as shown below.

Table 8.1: BS8233: 2014 Indoor ambient noise levels for dwellings

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living Room	35 dB $L_{Aeq,16hours}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16hours}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hours}$	30 dB $L_{Aeq,8hours}$

8.2.13 Paragraph 7.7.3.2 of BS8233 recommends that for traditional external amenity areas such as gardens and patios, it is desirable that during the daytime the external noise level does not exceed 50 dB$L_{Aeq,T}$ with an upper guideline value of 55 dB$L_{Aeq,T}$ which would be acceptable in noisier environments. The time period is not stated but is assumed to be 16 hours (07:00 hours to 23:00 hours) as in the previous version of BS8233.

8.2.14 It is recognised that the above BS8233 standards are generally referred to for "anonymous" noise sources such as road traffic noise rather than noise from specific industrial sites. Therefore, the primary assessment tool in this case is BS4142. However, BS8233 is useful as an additional reference to indicate the scale of the noise levels anticipated.

8.2.15 The above is a summary of the planning documents and standards/guidelines referred to and is not intended to be exhaustive. Further information is available in the original documents.

Assessment of Significance

8.2.16 The two principal criteria to predict the significance of potential impacts are:

- magnitude of the impact; and
- sensitivity of the receptors

8.2.17 This assessment deals with the noise impact on residential receptors which are considered to be high sensitivity. The Standard normally used for the assessment of energy infrastructure noise impacts on residential receptors is BS4142 which is described above. The scale of effects given in BS4142 is based on the difference between the rating level and the background noise level at the receptor. The rating level is the specific noise level (i.e., the operational noise from the proposal) plus penalties for acoustic features which add to the impact. The standard states that:

"Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context."

and

"A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context."

and

"A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context."

8.2.18 Based on the above statements the following significance levels are considered appropriate unless they are modified by the consideration in context. There is no nationally agreed correlation, and this table is a suggestion based on the wording of the standard and the planning decisions often made by Local Authorities.

Table 8.2: Significance criteria based on BS4142 unless modified by context

Significance of Effect	Difference between BS4142 Rating Level and Background Noise level, dB	BS4142 description
Negligible	Around -10	The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact.
Minor	Around zero	Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.
Moderate	Around +5	A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context
Major	Around +10	A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context

8.2.19 Any effect of Moderate or Major significance is considered to represent a likely significant effect for the purposes of the EIA Regulations.

8.2.20 The criteria in the above table are used in the assessment of operational noise. The impact of construction noise is normally managed through an Environmental Noise Management Plan and has not been assessed quantitively in this chapter.

8.2.21 The matrix given in the table above provides an indication of the possible significance of each predicted noise impact. The significance may be influenced by the consideration in context as required by BS4142.

Consultation

8.2.22 A Scoping Opinion was received on 30 June 2025, see Appendix A.

Assessment Methodology

8.2.23 A baseline survey has been undertaken of the existing ambient and background noise levels at two positions representative of the nearest proposed noise sensitive receptors (NSRs) to determine the baseline for assessing the potential noise effects of the proposal. The baseline noise survey locations are marked A and B on Figure 8.1 in Appendix J.

8.2.24 There are no known significant sources of vibration requiring consideration in the construction or operational phases and therefore this matter is not covered in the assessment.

8.2.25 The likely effects of noise during the construction phase have been assessed qualitatively.

8.2.26 The operational noise from the new equipment associated with the development has been predicted at 5 NSRs using CadnaA acoustic modelling software. The NSRs are marked R1-R5 on Figure 8.1 (Appendix J). The assessment has been based on typical manufacturer's source noise levels for the equipment.

8.2.27 The calculated noise levels have been assessed in accordance with BS4142 which is explained above. In addition, the noise levels have been assessed in the context of the area and of the current ambient noise levels and the standards given in BS8233.

8.2.28 In the preparation of this chapter reference has been made to the following:

- Ordnance Survey LandForm Panorama digital terrain model data;
- The proposed site plan;
- TAN11, 1997;
- BS5228-1:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites – Noise;
- ISO 9613-2: 2024-01(en) Acoustics – Attenuation of Sound During Propagation Outdoors – Part 2: engineering method for the prediction of sound pressure levels outdoors. Organisation for Standardisation;
- BS 4142: 2014 +A1:2019 `Methods for rating and assessing industrial and commercial sound';
- BS8233:2014 `Guidance on sound insulation and noise reduction for buildings'

Limitations

8.2.29 The precise number and location of the string inverters distributed around the array has not been finalised. For the purposes of this assessment, it has been assumed that there would be one inverter on each string. This is probably more than is required as some of the strings are quite short. The string inverters to the west of Dyffryn-uchaf at the southern end of the site will be located at the western end of the strings away from the nearest residential property.

8.2.30 The noise data available for the proposed equipment is indicative at this stage and

the equipment specification may change between consent and construction as new and improved models become available. Therefore, the assessment is indicative based on currently available data and can be checked once the design has been finalised.

8.3 BASELINE CONDITIONS

Baseline Noise Survey

8.3.1 An environmental baseline sound survey has been carried out at two locations representative of the nearest NSRs around the site. The survey locations are marked A and B on Figure 8.1 (Appendix J) and are as follows:

- A: Near the southern site boundary to the west of Dyffryn-uchaf;
- B: Near the north-western corner of the site;

8.3.2 The survey work was carried out from 10:00 hours on Thursday 8 May 2025 to 07:00 hours on Monday 12 May 2025.

8.3.3 The main source of existing noise affecting the noise monitoring locations was road traffic on the A4119, Ely Valley Road to the south. There was also some noise from birdsong and on collection of the meter from Location B noise from the wind turbines to the East was just audible. It is assumed that noise from agricultural work would also be experienced at each location though no work occurred during the time spent on site installing and collecting the equipment.

8.3.4 The noise monitoring was carried out using Class 1 sound level meters. The meters were calibrated with a Class 1 portable calibrator on deployment and on completion of the survey. No significant drift in calibration level was noted. The instrumentation used is detailed in Appendix J. The measurements were taken with the microphones at a height of 1.5m above local ground level in free field conditions.

8.3.5 Based on weather reports the weather conditions during survey were dry with low wind speeds (<5m/s).

Baseline Sound Survey Results

8.3.6 The results of the noise survey are summarised in the table below and detailed measurements can be found in Appendix J. The monitoring was carried out using 5-minute monitoring periods. All results are free-field noise levels. The 5-minute dBL_{Aeq} values have been log-averaged and the 5-minute dBL_{A90} values have been arithmetically averaged to calculate the reference period values (1-hour day and 15-min night) given in the Appendix and the daytime and night-time averages given below. The modal dBL_{A90} values given below have been calculated for daytime and night-time periods based on the daytime 1-hour and the night-time 15-minute dBL_{A90} values. The lowest daytime and sunrise levels are given below, and the assessment has been based on these lowest values. The night-time results are given in the appendix but are not presented here because no noise will be generated 23:00-04:30 hours and therefore those results have not been used in the assessment

Table 8.3: Baseline Noise Survey Results, Daytime, 07:00-23:00 hours

Location	Lowest Average L_{Aeq} dB	Lowest Average L_{A90} dB	Lowest Mode of L_{A90} dB
A	49	41	41
B	44	39	38

Table 8.4: Baseline Noise Survey Results, Sunrise hours, 04:30-07:00 hours

Location	Lowest Average L_{Aeq} dB	Lowest Average L_{A90} dB	Lowest Mode of L_{A90} dB
A	51	43	43
B	44	37	37

8.4 PROPOSED DEVELOPMENT

8.4.1 Details of the proposal are provided in Volume 1 Section 3 and are not reiterated in this chapter.

8.5 ASSESSMENT OF EFFECTS

Construction Noise

8.5.1 The effect of construction noise will vary depending on the construction activity taking place, distance between the works and the noise sensitive receptors, local noise screening or ground attenuation effects, and any noise control measures implemented as part of a Construction Environmental Management Plan (CEMP) which could be secured as a planning condition.

8.5.2 Because construction noise is temporary, it is not appropriate to consider the significance of the noise effects under the same scale as other permanent noise sources. Appropriate steps can be taken to control construction noise where necessary, as set out in BS5228. This standard provides guidance on control of plant and activity noise levels from construction sites. Examples of measures which can be included in the CEMP are given in the mitigation section below.

8.5.3 Some noise from construction is inevitable but it is normally short term and would be restricted to the agreed working hours in the daytime. There will be a range of noise emissions during the works, from particularly noisy (but usually short term) activities, to relatively quiet activities. The noise impact will depend on the proximity of each construction activity to noise-sensitive premises. In view of the distances to noise-sensitive premises from the majority of the site the effect of noise from construction work is likely to be minor for most of the construction phase. There may be periods when the effect is moderate due to noisier construction activities in areas close to the boundary with residential properties. However, these effects will be temporary and control through the CEMP is normally considered sufficient for this type of proposal. The contractors should use the best practice techniques / methodologies to control noise emissions. In general, this will mean using the quietest techniques available although in some cases there may be justification for the use of a noisier technique in order to shorten the duration of noise exposure if that methodology creates the lowest overall noise impact. If necessary, the total level of construction noise from the site at nearby noise sensitive receptors could be limited to less than 65 dB $L_{Aeq(07:00\text{-}19:00hrs)}$ and noise monitoring could be required to ensure compliance. This criterion is taken from the guidance given in BS5228. However, this is not normally necessary for this type of proposal, and it is often found that it is more effective to use the CEMP to ensure that noise is taken into consideration when planning construction techniques.

8.5.4 Examples of general best practice guidance for controlling construction noise and vibration are given in the mitigation section of this chapter.

Construction Traffic

8.5.5 If necessary, consideration can be given to limiting construction vehicle movement times or routes prior to construction commencing to prevent significant effects. This could be dealt with as a condition attached to the planning consent if required.

Operational Noise from the Proposed Development - Source Noise Levels

8.5.6 The only significant proposed noise sources are understood to be the string inverters, the transformers, a customer substation and a DNO. The assessment has been based on the data sheets provided by possible equipment manufacturers to give an indication of the noise impact. The noise assessment can be checked once a final design and more detailed noise data is available. The string inverter noise levels have been based on the internal noise test report for the Sungrow Inverter Type SG320HX/SG350HX which gives a worst-case sound pressure level of 76 dBL_{Aeq} at 1m. This has been converted to a sound power level of 84 dBL_{WA} using a conversion factor of 8 dB(A) for propagation from a point source over a flat plane. No frequency analysis was available and therefore a typical frequency spectrum from similar equipment has been used. The final selected inverter source level should be checked using a manufacturer's sound power level test including frequency analysis. The data sheet provided for the transformers is for the DEKRA MVS6300-LV which gives a sound power level of 67 dBL_{WA}. This has been assumed to be the total sound power level of equipment in each of the 4 squares shown on the plan including the transformers, associated switchgear and any cooling systems. Again, no frequency analysis was available and therefore a typical frequency spectrum from similar equipment has been used. The final selected transformer source level should be checked using a manufacturer's sound power level test including frequency analysis. The Customer Substation and DNO have each been modelled with the same sound power as the transformers because there was no other information available, and that sound power level is likely to also be typical of these items. Again, the figures should be checked at the detailed design stage. The sound power levels used in the modelling are shown below.

Table 8.5: Equipment Source Sound Power Levels

Item	dBL_{WA} at octave band centre frequency, Hz								dBL_{WA}
	63	125	250	500	1k	2k	4k	8k	
String inverter	85	86	88	82	77	74	68	60	84
Transformer/Customer Station/DNO	68	69	71	65	61	57	52	43	67

Noise-Sensitive Receptors

8.5.7 This assessment has been carried out to five representative nearby residential properties as marked R1-R5 on Figure 8.1. The receptors are as follows:

- R1: Dyffryn-uchaf to the south (involved property)
- R2: Dyffryn-isaf to the south
- R3: Rhiwfelin Fach Farm to the east
- R4: Rhiwfelin to the north
- R5: Bedw to the northwest

Noise Modelling

8.5.8 The noise levels from the proposed plant at the NSRs have been calculated in accordance with ISO9613-2 using CadnaA acoustic modelling software, produced by DataKustick GmbH (2024 MR1 updated version in accordance with ISO 9613-2 (2024)). The model takes into account distance attenuation; screening attenuation; ground absorption; atmospheric absorption and reflections.

8.5.9 The string inverters have been modelled with a source height of 1.5m above ground level and the other items with a source height of 3m above ground level.

8.5.10 The string inverters have generally been modelled on the eastern end of each string apart from the ones in Section 5 immediately to the west of R1 and the bottom 5 rows in Section 4 to the northwest of R1 where they have been located on the western end of the string.

8.5.11 It has been assumed that there will be no acoustic fences introduced and therefore the only screening attenuation included in the model is from existing topographical features and the proposed PV panels. The PV panels have been modelled as reflective surfaces with the top edge at 2.45m and the bottom edge at 0.8m above local ground level.

8.5.12 Ground levels have been based on OS Land-Form Panorama data. It is understood that the ground levels will not be changed significantly by earthworks during the implementation of the scheme. The modelling has been based on soft ground (G=1.0). The atmospheric conditions used in the model input were a temperature of 10℃ and a relative humidity of 70%. The modelling calculations have been carried out on the basis of the receptors being downwind of all sources simultaneously and no allowance has been made for directivity. This assumption is conservative.

Noise Modelling Result

8.5.13 The noise levels have been modelled at a height of 1.5m during the daytime representing the ground floors and gardens of the NSRs. During sunrise hours the noise levels at R1 and R2 have also been modelled at a height of 1.5m because they are single-storey properties. The sunrise noise levels at R3-R5 have been modelled at a height of 4m representing first-floor bedrooms. The calculated noise levels at the NSRs are given below.

Table 8.6: Predicted Noise Levels from the Scheme at NSRs, dBL_{Aeq}

Time	R1	R2	R3	R4	R5
Day	39	33	23	24	25
Sunrise	39	33	26	27	28

BS4142 Noise Assessment

8.5.14 The BS4142 assessment of the above noise levels is shown in the tables below. The noise sources are not impulsive, and they will run continuously for long periods rather than switching on and off repeatedly. Therefore, no impulsivity / intermittency penalties have been added. Any tonality is unlikely to be noticeable at receptors R2-R4 because the noise levels produced are low. Therefore, no tonal penalties have been added for these receptors. At R1 a tonal penalty of 2 dB has been added as a precaution in case tonality is just noticeable at this receptor. R1 is an involved property but has been assessed in the same way as the other receptors.

8.5.15 The assessment has been based on the lowest modal or average dBL_{A90} values recorded during the baseline noise survey at the nearest noise monitoring location to each NSR.

Table 8.7: BS4142 Assessment, Daytime

NSR	R1	R2	R3	R4	R5
Specific noise level, dBL_{Aeq}	39	33	23	24	25
Tonal Penalty, dB	2	0	0	0	0
Impulsive/Intermittency penalty, dB	0	0	0	0	0
Rating, dB	41	33	23	24	25
Background noise level, dBL_{A90}	41	41	38	38	38
Rating - background, dB	0	-8	-15	-14	-13

Table 8.8: BS4142 Assessment, Sunrise Hours

NSR	R1	R2	R3	R4	R5
Specific noise level, dBL_{Aeq}	39	33	26	27	28
Tonal Penalty, dB	2	0	0	0	0
Impulsive/Intermittency penalty, dB	0	0	0	0	0
Rating, dB	41	33	26	27	28
Background noise level, dBL_{A90}	43	43	37	37	37
Rating - background, dB	-2	-10	-11	-10	-9

8.5.16 The above results normally indicate a low noise impact in all periods. The assessment also depends on the context as discussed below.

Noise Considered in Context

8.5.17 BS4142 recommends that the noise also be judged in context.

8.5.18 Noise from the proposed equipment will be low when compared with existing noise levels. The BS4142 assessment above is based on the quietest day and sunrise periods during the noise survey. The assessment has been based on all equipment running simultaneously which is the worst-case scenario.

8.5.19 To assist with the consideration of the noise in context, the highest noise level of the plant has been compared with the lowest average ambient noise levels measured at the nearest survey location during the noise surveys. In addition, the plant noise levels have been compared with the criteria given in BS8233. It is recognised that this standard is generally used for anonymous noise sources, and it is used here only to provide additional information on the scale of the noise levels. The results of these comparisons are given below. For ease of presentation the highest predicted specific noise levels have been compared with the lowest measured ambient noise levels from the two survey locations.

Table 8.9: Comparison with ambient noise levels and BS8233 criteria – R1 & R2

Time	Day	Sunrise
Source noise level, dBL_{Aeq}	39	39
Comparison with ambient noise levels		
Ambient noise level, dBL_{Aeq}	49	51
Difference between ambient & source noise level, dB(A)	-10	-12
Ambient + source noise level, dBL_{Aeq}	49	51
Increase in ambient noise level, dBL_{Aeq}†	0	0
Comparison with BS8233 criteria for gardens		
BS8233 Upper limit for private gardens	55	-
Difference between source noise & desired limit, dB(A)	-16	-
Comparison with BS8233 internal noise limiting criteria		
Internal noise level due to source noise, dB(A)††	24-29	24-29
BS8233 recommended internal noise criteria dB(A)	≤ 35	≤ 30

†An increase in ambient noise level of up to 3dB(A) is not considered to be significant
††Attenuation due to partially open window taken as 10-15dB(A)

Table 8.10: Comparison with ambient noise levels and BS8233 criteria – R3-R5

Time	Day	Sunrise
Source noise level, dBL_{Aeq}	25	28
Comparison with ambient noise levels		
Ambient noise level, dBL_{Aeq}	44	44
Difference between ambient & source noise level, dB(A)	-19	-16
Ambient + source noise level, dBL_{Aeq}	44	44
Increase in ambient noise level, dBL_{Aeq}†	0	0
Comparison with BS8233 criteria for gardens		
BS8233 Upper limit for private gardens	55	-
Difference between source noise & desired limit, dB(A)	-30	-
Comparison with BS8233 internal noise limiting criteria		
Internal noise level due to source noise, dB(A)††	10-15	13-18
BS8233 recommended internal noise criteria dB(A)	≤ 35	≤ 30

†An increase in ambient noise level of up to 3dB(A) is not considered to be significant
††Attenuation due to partially open window taken as 10-15dB(A)

8.5.20 The calculated noise from the proposed scheme is well below the measured ambient noise levels and would not result in any significant increase in ambient noise levels.

8.5.21 The comparison with the BS8233 internal noise criteria indicates that in absolute terms the calculated noise levels are low. When accounting for 10-15 dB of attenuation for a façade with an open window, internal noise levels within residential rooms due to noise from the scheme are predicted to be no higher than 29 dBL_{Aeq} during the day and sunrise hours. This is below the recommended internal noise criteria of ≤35 dBL_{Aeq} in the day and ≤30 dBL_{Aeq} at night.

8.5.22 The consideration of the noise in context supports the conclusion of the BS4142 assessment above – i.e., that the noise impact of the proposed scheme will be low at all NSRs in all periods.

8.5.23 Using the significance levels given in Table 8.3 the outcome of the assessment at these equipment noise levels is that the significance of the effect would be minor adverse.

Uncertainty

8.5.24 There are a number of uncertainties which affect the accuracy of all noise assessments. Every effort has been made to ensure that the results are as representative as possible. However, there is a level of uncertainty in noise survey results due to issues such as potential variations caused by meteorological conditions (e.g. wind and temperature gradients) and local conditions. The instrumentation used for the surveys is “Class 1” and the variation allowed within the standard for this class of instrumentation is relatively small compared with the variation in other factors which may affect the results. The calibration drift during the survey was negligible. The modelling has been based on indicative source noise levels and the specification of the equipment may change. However, the use of source levels typical of currently available equipment is sufficient to give an indication of the likely noise impacts. In this case it is considered that the combined uncertainties from all factors are unlikely to affect the overall outcome of the assessment at this stage. A further assessment can be carried out once the equipment has been selected. This can be required by a suitably worded planning condition if required.

8.6 PROPOSED MITIGATION

Mitigation Measures to Control Construction Noise

8.6.1 A Construction Environmental Management Plan (CEMP) would be developed which would include measures to minimise the potential effect of construction noise at noise sensitive locations following the guidance on good practice on noise reduction set out in BS 5228. The CEMP could include a requirement to monitor noise levels to the noise level limit of 65 dB $L_{Aeq(07:00\text{-}19:00hrs)}$ derived from BS5228 if necessary. However, noise monitoring is not always required and normally it is preferable to use the CEMP to ensure that the quietest techniques are used wherever possible. In view of the nature of the work required and the separation distances from most of the site to NSRs it is unlikely that noise monitoring would be required in this case. The following are examples of measures which can be included in the CEMP to minimise the potential effects of noise and vibration:

- Designation of an appointed person who would be responsible for ensuring that noise is taken into account when deciding on construction methodology and who can keep a check on site activities which may generate noise. The responsible person can also log and respond to construction noise complaints and co-ordinate the adjustment of procedures where possible to minimise noise. They can also arrange for local residents to be informed in advance of any activities that may require higher noise levels or out-of-hours working.
- Restriction of construction hours to those agreed with the Local Authority.
- Selection of low noise plant and machinery and ensuring modern plant is used complying with the latest noise emission requirements.
- Ensuring regular and effective maintenance of plant and machinery, e.g. lubrication of bearings, checking the integrity of silencers and repairing/replacing as necessary, checking engine covers close tightly and repairing as necessary, etc.
- Idling of machinery and vehicles between work periods and revving of engines should be avoided.
- Running of machines and vehicles with engine covers/enclosure doors etc. open should be avoided.
- When loading wagons and dumpers, minimise the height from which material is dropped by loader/excavator.
- If piling is required (and ground conditions allow), use non-percussive techniques.
- Fitting suitable acoustic silencers, lagging or covers to equipment where appropriate.
- Use of acoustic enclosures or screens where appropriate.
- Positioning fixed noise sources as far from noise sensitive receptors as possible and consider methods to provide acoustic shielding to protect noise sensitive receptors.
- A site speed limit should be agreed and enforced for construction traffic. Appropriate signage to be used to notify drivers.
- An arrival/departure and route should be agreed for construction site traffic and adhered to by all contractors and sub-contractors. Appropriate signage to be used to identify the route.
- The use of tonal reversing alarms to be avoided wherever possible. Broad-band environmental reversing alarms are preferable.
- Where appropriate, temporary close boarded site hoardings to be used to form a screen between noisy operations and noise-sensitive locations.
- Sequencing of operations to be planned with consideration of noise impact.

8.6.2 All contractors and sub-contractors should be made aware of and comply with the

CEMP for noise and vibration control and should comply with all relevant legislation and Local Authority requirements for the control of construction noise.

Mitigation Measures to Control Operational Noise

8.6.3 The assessment demonstrates that mitigation measures such as acoustic barriers are unlikely to be required.

8.6.4 The equipment sound power levels and heights and placement in this assessment are indicative and may change prior to construction. A check will need to be made at the detailed design stage to ensure that the final design still gives a low noise impact. At most receptors there is significant headroom in this assessment and therefore louder equipment would still have a low noise impact. The exception is R1 which is an involved property. The reason for the higher noise results at R1 is that there are some PV panels relatively close to the property to the west. It has been assumed that these panels would have an inverter on the western end of each string. There is also the DNO and customer substation and a transformer relatively close to the north of R1. If the sound power level of any of the sources increases or any of the sources are closer to R1 then the result of the BS4142 assessment could increase to above the 0 dB low impact point. This may be less of an issue than for the other receptors as a slightly higher impact may be acceptable at the involved property. However, it may be necessary to re-check the impact at R1 at the detailed design stage and move noise sources further away from the property if necessary or ensure the selection of models which have noise levels no higher than used in this assessment.

8.6.5 Further assessment can be carried out at the detailed design stage if variation of the above source noise levels or layout changes are required.

8.7 RESIDUAL EFFECTS AND SUMMARY OF PREDICTED EFFECTS

8.7.1 The use of equipment and layout detailed above results in a low noise impact when assessed in accordance with BS4142. The effect of the operational noise is expected to be minor adverse. Therefore, the residual operational noise effects are not expected to be significant.

8.8 SUMMARY AND CONCLUSION

8.8.1 Construction noise effects are temporary and can be controlled via the CEMP.

8.8.2 Based on the source noise levels and source placement given above the operational noise is expected to have a low impact when assessed in accordance with BS4142. The residual effects are expected to be minor. Therefore, the residual operational noise effects are not expected to be significant.

8.8.3 The noise assessment demonstrates the operational noise would not cause or result in a risk of unacceptable harm to health and / or local amenity and therefore the proposal complies with Rhondda Cynon Taf Local Development Plan Policy AW10.

8.8.4 The noise assessment demonstrates a low impact when assessed in accordance with BS4142 and therefore complies with Technical Advice Note (Wales) 11 (TAN11) ‘Noise’: 1997.

9. ECOLOGY

9.1 INTRODUCTION

9.1.1 The purpose of this chapter is to identify key features of ecology and nature conservation and assess the likely significant effects of the proposed development upon these features. The development proposals are described in Chapter 3 of this ES.

9.1.2 This chapter presents the key features of ecology and nature conservation and assesses the likely significant effects of the proposed development upon these features. It sets out the assessment methodology, the current baseline conditions of the Application Site and its surroundings, the likely significant ecological effects and proposed mitigation measures required to avoid, reduce, or offset any significant adverse effects. Effects on biodiversity which may arise from decommissioning the PV array areas have not been assessed at this stage.

9.1.3 The Site, herein referred to as 'The Site', comprises 11 adjoining fields of pasture farmland, totalling an area of 19.54Ha. 2.08ha of The Site was classified as Acid Grassland (UKHab – other Lowland Acid Grassland), distributed over two fields; and 2.06ha of The Site was classified as a Transitional Grassland between Acid Grassland and Semi-improved Grassland, distributed over another two fields (UKHab – Other Neutral Grassland). The remaining 13.73ha of grassland on The Site was largely classified as Semi-improved Grassland (UKHab - Other Neutral Grassland). Within the fields are 19 separate parcels (1.44ha) of permanently wet ground distributed across The Site, which are dominated by rushes and a range of other wetland plant species. These have been categorised as the same grassland habitat that they are enclosed by.

9.1.4 As the grassland on The Site underwent an NVC survey, grassland types have been referred to by both their NVC classification and the more recent UKHab classification. All other habitats have been referred to using the UKHab classification only.

9.1.5 The following accompanying material has been provided separately to support this assessment:

- Report figures
- Report tables
- References
- Appendices:
    - Site habitat maps
    - Site layout
    - Landscape masterplan
    - Survey location maps
    - Desktop study maps
    - Data search results tables
    - Photographs
    - Protected species legislation

9.2 NATIONAL LEGISLATION AND POLICY

Wildlife and Countryside Act 1981 (as amended)

9.2.1 All bird species, including eggs, young and nests while in use are protected under the Wildlife and Countryside 1981 Act as amended. These include a number of specially protected birds (listed in Schedule 1). Other animals that are afforded protection are listed in Schedule 5 and a number of protected plant species are included in Schedule 8. The nests of certain bird species that re-use their nests are also protected while no longer in use.

Conservation of Habitats and Species Regulations 2010 (as amended)

9.2.2 The habitats and species protection provided within the 'Habitats Directive' (Council Directive 92/43/EEC) is transcribed into UK legislation through the Conservation of Habitats and Species Regulations 2010. The Habitats Regulations 2010 consolidates the Conservation (Natural Habitats, & c.) Regulations 1994 and its several amendments, which provide the original transcription of Habitats Directive into UK legislation. Special Protection Areas and SACs are designated under the Habitats Regulations 2010. These sites, including those throughout the European Union, for a network termed Natura 2000.

9.2.3 The Regulations make provisions for the management of Natura 2000 sites for the benefit of nature conservation, particularly in respect of features for which the sites have been designated, and prevent actions that would otherwise damage the nature conservation value of these sites. The Regulations also require the effect of relevant planning permissions on the integrity Natura 2000 sites to be considered and, subject to certain exceptions, restrict those permissions where the integrity of a Natura 2000 site would be adversely affected.

9.2.4 The Regulations make it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2, or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 4. However, these actions may be permitted through licenses, which may be granted for a number of purposes, such as science and education, conservation, preserving public health and safety, but only if it can be demonstrated that there are no satisfactory alternatives and that such actions will have no detrimental effect on wild population of the species concerned. Schedules 2 and 4 contain lists of species that are protected under the EC Habitats Directive and occur within the UK. Where these species formerly appeared within Schedules 5 and 8 of the Wildlife and Countryside Act 1981 (as amended) they have been removed. These species are termed European Protected Species (EPSs).

Countryside and Rights of Way (CRoW) Act 2000

9.2.5 The CRoW Act 2000 gives greater protection to SSSIs and strengthens wildlife enforcement legislation by the introduction of the offence of 'reckless disturbance'. The Act also requires Government Departments to have regard to biodiversity and conservation; Section 74 of the Act required lists of habitats and species of principal importance to be produced, for which conservation steps should be taken or promoted. The requirement to prepare such lists of habitats and species was extended originally by the NERC Act 2006 which has now been superseded by the Environment Act (Wales) 2016.

Environment (Wales) Act 2016

9.2.6 The Environment Act (Wales) 2016 (EA(W)) was passed by the Welsh Government: "to promote sustainable management of natural resources; to provide for targets for reducing emissions of greenhouse gases; to reform the law on charges for carrier bags; to provide for the separate collection of waste, prohibit disposal of food waste to sewers and provide for prohibiting or regulating disposal of waste by incineration; to make provision about Several Orders and management of fisheries for fish or shellfish; to make provision about fees for marine licences; to establish the Flood and Coastal Erosion Committee; and to make minor changes to the law about land drainage and byelaws made by the Natural Resources Body for Wales".

9.2.7 Parts 1 and 2 of the Act refer to Sustainable Management of Natural Resources and Climate Change respectively.

9.2.8 Section 6 under Part 1 of the Environment (Wales) Act 2016 introduced an enhanced biodiversity and resilience of ecosystems duty (the S6 duty) for public authorities in the exercise of functions in relation to Wales. The S6 duty requires that public authorities must seek to maintain and enhance biodiversity so far as consistent with

the proper exercise of their functions and in so doing promote the resilience of ecosystems.

9.2.9 Part 1, Section 7 of the Act - *Biodiversity lists and duty to take steps to maintain and enhance biodiversity,* includes the provisions of The Natural Environment and Rural Communities (NERC) Act 2006 in Wales where; it imposes a "*duty to conserve biodiversity*" through fulfilment of their functions on all public authorities. Under the Act the Welsh Government must compile and maintain a list of species and habitats considered to be of principal importance for the purpose of conserving biodiversity.

9.2.10 These species are listed in Section 7 of the Act and are currently the same as those listed in Section 42 of the NERC Act 2006. The Welsh Ministers will publish, review and revise lists of living organisms and types of habitat in Wales, which they consider are of key significance to sustain and improve biodiversity in relation to Wales. Section 7 species have been considered throughout this report.

9.2.11 The Welsh Ministers must also take all reasonable steps to maintain and enhance the living organisms and types of habitat included in any list published under this section, and encourage others to take such steps.

9.2.12 Part 1 of the Act, including Sections 6 and 7, came into force on May 21, 2016.

Protection of Badgers Act 1992

9.2.13 Under the Protection of Badgers Act 1992 all badgers and their setts are protected from disturbance. The Act also includes provisions for the grant of licences permitting interference with a badger sett in the course of development. Such a licence will normally incorporate conditions to ensure that undue disturbance and suffering to badgers is avoided in the course of the development works.

Hedgerow Regulations 1997

9.2.14 Under the Hedgerow Regulations 1997, provision is made for the notification of "important" hedgerows. To qualify for notification, hedgerows must fulfil a range of criteria relating to their historical, landscape or wildlife character. In accordance with the Regulations, the intention to remove any hedgerow should be notified to the LPA via a hedgerow removal notice. The planning authority may issue a Hedgerow Retention Notice to prevent the loss of an "important" hedgerow. Where permission is granted to remove an "important" hedgerow, the LPA may impose conditions to mitigate the loss.

Planning Policy

9.2.15 In February 2024 the Welsh Government published Edition 12 of Planning Policy Wales (PPW). PPW sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters.

9.2.16 This ecological report presents the approach taken to ensure the application will be submitted in accordance with provisions made in PPW for protection and enhancement of ecology and biodiversity.

9.2.17 The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental, and cultural wellbeing of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation.

PPW - Sustainable Management of Natural Resources

9.2.18 Section 3.34 'Sustainable Management of Natural Resources' states:

The Environment (Wales) Act 2016 introduces the Sustainable Management of Natural Resources14 (SNMR) and sets out a framework to achieve this as part of decision-making. The objective of the SMNR is to maintain and enhance the resilience of ecosystems and the benefits they provide. The Welsh Government is required to prepare, publish and implement a statutory Natural Resources Policy setting out its priorities in relation to the SMNR while Natural Resources Wales (NRW) is required to produce a 'State of Natural Resources Report' and prepare 'Area Statements' to inform place based action. The Natural Resources Policy and Area Statements are a key piece of evidence which must be taken into account in development plan preparation.

9.2.19 Section 3.36 states:

The planning system is wide in its social, economic environmental and cultural scope and takes an all embracing approach to sustainable development where decisions on short and long-term needs and cost and benefits come together. It secures outcomes where multiple benefits (more than one ecosystem benefit) can be provided as part of plan making strategies or individual development proposals. The key features of the SMNR approach to which the planning system can contribute are:

- *improving the resilience of ecosystems and ecological networks;*
- *halting and reversing the loss of biodiversity;*
- *maintaining and enhancing green infrastructure based on seeking multiple ecosystem benefits and solutions;*
- *ensuring resilient locational choices for infrastructure and built development, taking into account water supplies, water quality and reducing, wherever possible, air and noise pollution and environmental risks, such as those posed by flood risk, coastal change, land contamination and instability;*
- *taking actions to move towards a more circular economy in Wales; and*
- *facilitating the move towards decarbonisation of the economy.*

9.2.20 Section 3.37 states:

The health and well-being of people and places and the need to address the climate emergency and its consequences provide added impetus for proactive action through the planning system. Consideration of these principles will affect strategic choices, both locational ones and those aimed at improving the quality of the built and natural environment. The translation of SMNR into the planning system is an integral part of the essential components of sustainable places and through encouraging approaches based on identifying and securing outcomes which deliver multiple ecosystem benefits.

PPW - Placemaking in Rural Areas

9.2.21 Section 3.38 notes that:

The countryside is a dynamic and multi-purpose resource. In line with sustainable development and the national planning principles and in contributing towards placemaking outcomes, it must be conserved and,

where possible, enhanced for the sake of its ecological, geological, physiographic, historical, archaeological, cultural and agricultural value and for its landscape and natural resources. The need to conserve these attributes should be balanced against the economic, social and recreational needs of local communities and visitors.

PPW - Biodiversity and Ecological Networks

9.2.22 'Biodiversity and Ecological Networks' refers to the s6 Duty under the Environment (Wales) Act 2016 and Section 6.4.3 states that:

The planning system has a key role to play in helping to reverse the decline in biodiversity and increase the resilience of ecosystems, at various scales, by ensuring appropriate mechanisms are in place to both protect against loss and to secure enhancement. Recognising that development needs to take place and some biodiversity may be impacted, the planning system should ensure that overall there is a net benefit for biodiversity and ecosystem resilience, resulting in enhanced well-being. Addressing the consequences of climate change should be a central part of any measures to protect, maintain and enhance biodiversity and the resilience of ecosystems. Information contained in SoNaRR, Area Statements, Local Nature Plans, Local Nature Recovery Action Plans, Local Biodiversity Action Plans and held by Local Environmental Record Centres should be taken into account. Development plan strategies, policies and development proposals must consider the need to:

- *support the maintenance and enhancement of biodiversity and the resilience of ecosystems;*
- *ensure action in Wales contributes to meeting international responsibilities and obligations for biodiversity and habitats, including the most recent targets set out in the 2022 UN Global Biodiversity Framework;*
- *ensure statutorily and non-statutorily designated sites and habitats are properly protected and managed and their role at the heart of resilient ecological networks is safeguarded;*
- *safeguard protected species and species of principal importance and existing biodiversity assets from direct, indirect or cumulative adverse impacts that affect their nature conservation interests and compromise the resilience of ecological networks and the components which underpin them, such as water, air and soil, including peat; and*
- *secure the maintenance and enhancement of ecosystem resilience and resilient ecological networks by improving diversity, extent, condition and connectivity.*

PPW - Biodiversity and Resilience of Ecosystems Duty (Section 6 Duty)

9.2.23 Section 6.4.5 states that:

Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This means development should not cause any significant loss of habitats or populations of species (not including non native invasive species), locally or nationally and must work alongside nature and it must provide a net benefit for biodiversity and improve, or enable the improvement, of the resilience of ecosystems. A net benefit for biodiversity is the concept that development should leave biodiversity and the resilience of

ecosystems in a significantly better state than before, through securing immediate and long-term, measurable and demonstrable benefit, primarily on or immediately adjacent to the site. The step-wise approach outlined below is the means of demonstrating the steps which have been taken towards securing a net benefit for biodiversity. In doing so, planning authorities must also take account of and promote the resilience of ecosystems, in particular the following attributes, known as the DECCA Framework 125:

- *diversity between and within ecosystems;*
- *the extent or scale of ecosystems;*
- *the condition of ecosystems including their structure and functioning;*
- *the connections between and within ecosystems; andadaptability of ecosystems including their ability to adapt to, resist and recover from a range of pressures likely to be placed on them through climate change for example.*

PPW - Protection and Management of Designated Sites

9.2.24 Section 6.4.20 states:

Statutorily designated sites must be protected from damage and deterioration, with their important features conserved and enhanced by appropriate management. The contribution of the designated site to wider resilient ecological networks should be recognised and captured as part of a strategic approach to planning policy and decision making. The links between planning and wider management activity for the restoration and recovery of nature should be made. Complementary, and joint, action between all sectors and beyond the boundaries of the designated sites themselves is necessary to improve extent, connectivity and adaptability and address the nature emergency

9.2.25 Section 6.4.24 that deals with 'Sites of Special Scientific Interest' states:

SSSIs are of national importance. The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act 2000, places a duty on all public bodies, including planning authorities, to take reasonable steps, consistent with the proper exercise of their functions, to further the conservation and enhancement of the features by reason of which a SSSI is of special interest. SSSIs can be damaged by developments within or adjacent to their boundaries, and in some cases, by development some distance away.

9.2.26 Section 6.4.26 and 6.4.27 that deals with constructing near 'Sites of Special Scientific Interest' states:

There is also a presumption against development not within a SSSI but likely to damage a SSSI. In such cases, proposals must be carefully assessed to ensure that effects on those nature conservation interests which the designation is intended to protect are clearly understood and development should be refused where there are adverse impacts on the features for which a site has been designated. International and national responsibilities and obligations for conservation should be fully met, and, consistent with the objectives of the designation, statutorily designated sites should be protected from damage and deterioration, with their important features conserved and enhanced and the capacity for restoration demonstrate

In wholly exceptional circumstances and only where development is considered to be appropriate and is not likely to damage a SSSI and there is broad and clear agreement for mitigation and enhancement as part of a development plan should development be proposed. This means that development will be considered unacceptable in the absence of an agreed position in a development plan which indicates that it is acceptable in terms of its effect on the notified features of a SSSI.

9.2.27 Section 6.4.29 is concerned with 'Special Protection Areas, Special Areas of Conservation and Ramsar Sites'. It states that:

'SACs and SPAs are of European importance. Under the Conservation of Habitats and Species Regulations (2017) (the Habitats Regulations), all public bodies (including planning authorities) must have regard to the requirements of the EC Habitats and Birds Directives when carrying out their functions. SACs and SPAs on land are underpinned by notification as SSSIs and hence subject to protection afforded by the SSSI provisions. Before authorising development or adopting a land use plan which is likely to have a significant effect on a SACor SPA (including where outside the boundary of the SAC or SPA), planning authorities must carry out an appropriate assessment of the implications for the designated features, consult NRW and have regard to NRW's representations. The development can normally only be authorised or the plan adopted, if the planning authority ascertains that it will not adversely affect the integrity of the site, if necessary taking into account any additional measures, planning conditions or obligations. Development or policies in land use plans for which there is no alternative solution and which must be carried out for imperative reasons of over-riding public interest may be authorised notwithstanding a negative assessment of the implications, subject to notifying Welsh Ministers. Any necessary compensatory measures to protect the overall coherence of the network of SACs and SPAs must be secured.'

9.2.28 In section 6.4.31, 'Protection for Non-statutory Designations' is presented:

'Although non-statutory designations do not have a statutory process for their protection, Sites of Importance for Nature Conservation, Local Wildlife Sites, Local Nature Reserves, and Regionally Importance Geodiversity Sites make a vital contribution to delivering an ecological network for biodiversity and resilient ecosystems, and they should be given protection in development plans and the development management process. Non-statutory sites can form the core of a vital network of threatened habitats, play an essential role in protecting, maintaining, connecting and restoring biodiversity and contribute to nature recovery and a net benefit for biodiversity. Before authorising development likely to damage a local wildlife designation, planning authorities should give notice of the proposed operation to the local authority Ecologist and third sector environmental organisations.'

PPW - Protected Species

9.2.29 Section 6.4.35 states:

The presence of a species protected under European or UK legislation, or under Section 7 of the Environment (Wales) Act 2016 is a material consideration when a planning authority is considering a development proposal which, if carried out, would be likely to result in disturbance or harm to the species or its habitat and to ensure that the range and population of the species is sustained. Planning authorities should advise anyone submitting a planning application that they must conform with any statutory

species protection provisions affecting the site, and potentially the surrounding area, concerned. An ecological survey to confirm whether a protected species is present and an assessment of the likely impact of the development on a protected species may be required in order to inform the development management process. It is considered best practice that screening to determine the presence of protected species should be carried out by a competent ecologist on the basis of data provided by the relevant Local Environmental Record Centre.

9.2.30 Paragraph 6.4.36 further states:

'Developments are always subject to the legislation covering European protected species regardless of whether or not they are within a designated site.'

The Planning (Wales) Act 2015

9.2.31 The Planning (Wales) Act 2015 also contains information regarding Sustainable Development and states that:

"The function must be exercised, as part of carrying out sustainable development in accordance with the Well-being of Future Generations (Wales) Act 2015, for the purpose of ensuring that the development and use of land contribute to improving the… environmental… well-being of Wales".

Schedule 14 of the Environment Act 2021 (Biodiversity Net Gain)

9.2.32 BNG is an approach to development. It makes sure that habitats for wildlife are left in a measurably better state than they were before the development.

9.2.33 In England, BNG is mandatory under Schedule 7A of the Town and Country Planning Act 1990 (as inserted by Schedule 14 of the Environment Act 2021). Developers must deliver a BNG of 10%. This means a development will result in more or better-quality natural habitat than there was before development.

9.2.34 BNG is not mandatory in Wales, instead a similar approach is followed, termed the net-benefits for biodiversity or NBB. As stated by CIEEM, 2024: The NBB approach by the Welsh Government has the same intent to BNG , which is to deliver an overall improvement in biodiversity, however it does not utilise a metric. Instead, NBB puts the emphasis on proactive consideration of biodiversity and wider ecosystem benefits within a placemaking context early in the design process. The aim is that the planning system will encourage the use of high calibre ecological expertise and early discussions with planning teams to design developments on a case-by-case basis that positively impact ecosystem resilience. There is no mandatory length of time that management is required for in Wales.

Local context - Rhondda Cynon Taf County Borough Council Local Development Plan (2011)

9.2.35 The Rhondda Cynon Taf County Borough Council Local Development Plan was adopted on 2nd March 2011. Policy AW8 relates to the protection and enhancement of the natural environment:

Rhondda Cynon Taf's distinctive natural heritage will be preserved and enhanced by protecting it from inappropriate development. Development proposals will only be permitted where:-

1. They would not cause harm to the features of a Site of Importance for Nature Conservation (SINC) or Regionally Important Geological Site (RIGS) or other locally designated sites, unless it can be demonstrated that:-

The proposal is directly necessary for the positive management of The Site; or

The proposal would not unacceptably impact on the features of The Site for which it has been designated; or

The development could not reasonably be located elsewhere and the benefits of the proposed development clearly outweigh the nature conservation value of The Site.

2. There would be no unacceptable impact upon features of importance to landscape or nature conservation, including ecological networks, the quality of natural resources such as air, water and soil, and the natural drainage of surface water.

All development proposals, including those in built up areas, that may affect protected and priority species will be required to demonstrate what measures are proposed for the protection and management of the species and the mitigation and compensation of potential impacts.

Development proposals must be accompanied by appropriate ecological surveys and appraisals, as requested by the Council.

Development proposals that contribute to the management or development of Ecological Networks will be supported.

9.3 APPROACH TO ASSESSMENT AND METHODOLOGY

9.3.1 In this section the approach to assessing baseline conditions of ecology and the methodology for undertaking the EIA is presented.

Desktop study

9.3.2 A background data search was acquired from the Local Environmental Records Centres (LERC) Wales on 12th May 2025 for statutory and non-statutory protected sites and protected and notable species recorded within a 2km radius of The Site boundary. A search was also conducted using the Multi-Agency Geographic Information for the Countryside (MAGIC) database for EU protected sites within 10km, species EPS mitigation licenses granted within 5km of The Site, and priority habitats and ancient & semi-natural woodland within 2km of The Site.

9.3.3 A further search was conducted using Ordnance Survey and aerial maps taken from the MAGIC website for ponds and waterways both within The Site and within a 250m radius of The Site boundary. The National Habitats Network map on MAGIC was also consulted for information about the potential for habitat restoration in line with the surrounding landscape.

Habitat surveys

9.3.4 To assess the current ecological status of The Site, an initial habitat walkover survey was undertaken by Joseph Monkhouse MSc of Wychwood Biodiversity on the 18th of November 2022. This was followed by a comprehensive habitat survey and habitat condition assessment which took place on the 1st August, 7th August and 17th August 2023 to cover areas within the initial Site boundary; and then the 22nd and 23rd of February 2024 to cover further land parcels added to The Site boundary.

9.3.5 The Site was also repeatedly assessed by Joseph Monkhouse over the course of the species-specific surveys, which allowed the habitats and associated species to be observed during the winter, spring, and summer months of 2022 to 2023.

9.3.6 Habitat surveys were carried out in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) guidelines for Ecological Impact

Assessment (CIEEM, 2018). Habitat types were classified according to the UKHab Category Definitions, following current best practise guidance. The potential for each habitat type to support protected and notable species was also assessed. The results were used to ascertain the need for further survey work for protected and notable species and habitats.

Field habitats and associated botany

9.3.7 In consultation with the County Ecologist for Rhondda Cynon Taff, Wychwood Biodiversity were advised to undertake a Phase II botanical survey of the grassland within The Site. This recommendation followed the identification of several notable plant species during earlier habitat surveys, suggesting the presence of potentially valuable grassland requiring detailed assessment.

9.3.8 Consequently, a Phase II botany survey was carried out by Ilex Ecology on the 17th and 18th of April 2025. The entire site was initially assessed using walkover methodology, followed by targeted sampling of areas of interest using National Vegetation Classification (NVC) methodology. For each identified community, five 2 x 2 m quadrats were recorded to ensure an accurate assessment of habitat types.

9.3.9 To maintain consistency with Phase II survey report, grassland habitats in this report are referred to using their respective NVC codes. However, they have also been translated into UKHab definitions to align with the habitat classifications used for defining other habitats identified on The Site, such as mixed scrub.

Protected and Key Species

9.3.10 All signs of protected species or groups encountered during the survey visits were recorded. The structure and quality of the habitats present were assessed for their suitability to support fauna, paying particular attention to detecting signs of occupation by or suitability for protected species.

9.3.11 The following key species or groups were given particular consideration during the surveys, as per best practice for baseline surveys.

Badger

9.3.12 All areas deemed suitable for Badger foraging, or that could support a Badger sett, were surveyed and any evidence was recorded. Potential signs included evidence of active or disused setts; evidence of digging or foraging; latrines and dung pits; and footprints and Badger hairs.

Otter

9.3.13 All streams were assessed for their potential to support Otter and all accessible stream banks were examined for evidence of holts, feeding remains and spraint.

Dormouse

9.3.14 The suitability of linear and woody habitats including hedgerows and woodland was assessed for Dormice. Hazel nuts were examined for signs of Dormouse foraging and any nests were noted. The connectivity of the landscape was also assessed, with consideration to other suitable habitats in the wider locality.

Hedgehog

9.3.15 Hedgerows and other wooded habitats were assessed for their potential to support Hedgehogs, and droppings were noted.

Bats

9.3.16 Mature trees on site were assessed for their potential to support roosting Bats, paying particular attention to ivy covering, crevices, peeling bark and holes in trunks or

branches. Linear and open habitats were assessed for their potential foraging and commuting value.

9.3.17 Bat surveys were undertaken by Mike Bird BSc (Hons), MSc, MCIEEM, M. Arbor A, and involved three Bat transect surveys between May to September 2023 and the deployment of static Bat detectors in two locations on site during that period. The full methodology is described in the separate Bat activity survey report (Calyx Environmental, 2024).

Breeding birds

9.3.18 Evidence of breeding birds was recorded during the initial ecological surveys. The proposed development site and surrounding habitats, including open fields, hedgerows, scrub, trees, and ponds, were assessed for their potential to support breeding bird populations.

9.3.19 A comprehensive breeding bird survey consisting of four separate visits was conducted between April and July 2023 by Joseph Monkhouse of Wychwood Biodiversity.

9.3.20 To update the assessment, two refresher surveys were carried out on the 25th of April and the 16th of May 2025. These aimed to reassess The Site and focussed on any significant changes in the breeding bird assemblage or the presence of protected or notable species that could be affected by the proposed development. The full methodology is described in the separate breeding bird survey report (Wychwood Biodiversity, 2025b).

Wintering birds

9.3.21 Three winter bird surveys were undertaken between November 2022 and January 2023. Wintering inland wading and wildfowl species (Target Species), such as Lapwing, Snipe, and Woodcock using the fields as a winter foraging resource are of particular importance as they would be directly impacted by construction and the presence of solar panels. Consequently, additional attention was paid during surveys to accurately count individuals using the fields, and carefully observe activity.

9.3.22 To update the assessment, two refresher surveys were carried out on the 23rd December 2024 and 25th January 2025. These aimed to reassess The Site and identify any significant changes in the wintering bird assemblage or the presence of protected or notable species that could be affected by the proposed development. The full methodology is described in the separate winter bird survey report (Wychwood Biodiversity, 2025c)

Reptiles

9.3.23 Habitat features that could provide suitable hibernacula, shelter, foraging, or basking areas were noted. Extant refugia were lifted and examined for evidence of reptiles, such as live or dead individuals and sloughs (shed skins).

9.3.24 To further assess for reptile presence on site, ten 50x50cm square roofing felt mats were distributed in suitable locations across The Site on the 15th of May 2023. The selected locations were considered suitable basking spots, adjacent to cover in the form of piled stones or vegetation. Stones were placed on the corners of each mat to secure them in place during periods of high winds. The mats were checked on 25th May, 4th July, 1st August, and 17th August 2023, between 09:00 and 13:00.

Amphibians

9.3.25 All accessible ponds and drainage ditches on site, and within 500m of the boundary, were assessed for their suitability to support great-crested Newts (GCN) and the entire site was assessed for typical amphibian shelter, foraging, or commuting

habitat; and potential refugia were lifted to search for sheltering individuals.

9.3.26 Considering no permanent ponds were present within The Site or within a 250m radius of The Site boundary, GCN habitat suitability assessments were not undertaken nor GCN eDNA sampling.

Terrestrial invertebrates

9.3.27 Habitat structure and diversity on site was assessed for suitability in supporting invertebrates, and flowering plants (including particularly notable larval foodplants of key species); refugia; and any live or dead invertebrates were noted.

9.3.28 To assess the diversity of pollinators (bees and butterflies) within The Site, and isolate beneficial areas for these species, opportunistic pollinator surveys were undertaken on the 26th May, 10th August and 17th August 2023, alongside other biodiversity surveys that encompassed the entire site. Registrations of each individual were plotted on a GPS map and subsequently transferred to QGIS to display the points on a map. All pollinators were recorded, with a particular focus on marsh fritillary and small pearl bordered fritillary butterflies.

9.3.29 A targeted survey for Marsh Fritillary was also conducted on the 8th of July 2025. The entire site was walked, with a focus on potentially suitable Marsh Fritillary habitat. The location of any individuals observed was plotted, and activity noted.

Assessment Methodology

Determining the Value of Ecological Features

9.3.30 The value and sensitivity of ecological features was determined based on the guidance given in 'Guidelines on Ecological Impact Assessment' produced by CIEEM. Individual ecological features (habitats and species that could be affected by the scheme) were assigned levels of importance for nature conservation in one of the following categories, determined by geographic context:

- International;
- National;
- Regional;
- Metropolitan, County or Vice County;
- Local; or
- Within the immediate zone of influence (ZoI) only.

9.3.31 For a given feature, determination of value includes consideration of the size, conservation status and quality of the species or feature.

Valuation of Habitats

9.3.32 Some sites are assigned a nature conservation value through designation and the reason for designation is taken into account in EcIA. Designated sites are considered at the following levels:

- International – Special Areas of Conservation (SAC), Special Protected Areas (SPA) and Ramsar Sites. World Heritage Sites also are considered to be of international value at the site level, but not necessarily in terms of their ecological value.
- National – Sites of Special Scientific Interest (SSSI) in England, Scotland or Wales and Areas of Special Scientific Interest (ASSI) in Northern Ireland
- County– sites designated by Local Authorities or County Wildlife Trusts and others.
- Habitats that are not subject to specific nature conservation designations have been valued against published selection criteria where possible, including the

following:

- Habitats Directive, 1992;
- Guidelines for the section of biological SSSI; and
- Species and habitats included in the Section 7 list (list of species and habitats of principal importance in Wales), as required under The Environment Act (Wales) 2016.

9.3.33 In determining the value of habitats, consideration is also given to national and local Biodiversity Action Plans in conjunction with critical appraisal of the size, status and quality of the habitat affected.

Valuation of Species

9.3.34 The value of species populations is determined based on the legal status of species, as well as their size and status on the site and within the geographic area. Certain species receive legal protection, which has been taken into account when determining value. Relevant legislation includes:

- The Conservation (Natural Habitats &c.) Regulations, 2010;
- The Wildlife and Countryside Act, 1981 (as Amended); and
- The Environment Act (Wales) 2016.

9.3.35 The presence of invasive alien species, injurious weeds or legally controlled plants is considered to be a negative ecological feature.

Zone of Influence

9.3.36 The 'zone of influence' for a project is the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is likely to extend beyond the project site, for example where there are ecological or hydrological links beyond the site boundaries.

9.3.37 The study area incorporates the application area within the red line boundary, and also includes watercourses within 30m, ponds within 500m, non-statutorily designated sites within 2km and Natura 2000 sites within 15km of the site.

Characterising Ecological Impacts

9.3.38 The purpose of the EIA is to identify the likely significance of environmental effects (positive or negative) arising from a development. In broad terms, environmental effects are described as:

- negative – adverse or negative effects to an environmental resource or receptor;
- positive – beneficial or positive effect to an environmental resource or receptor; or
- negligible – a neutral effect to an environmental resource or receptor.

9.3.39 Effects are assessed in terms of:

- Magnitude–the degree of alteration (both positive and negative) from the baseline state; and
- The sensitivity of the receptor(s)– this may relate to the value of a resource and the reversibility of impacts.

9.3.40 The criteria for determining the magnitude of impact are set out below in Table 9.1. Criteria for determining the sensitivity of receptors are displayed in Table 9.2.

Table 9.1: Magnitude of Impact

Magnitude of impact	Criteria
High	Total loss or major/substantial alteration to elements/features of the baseline (pre-development) conditions such that the post development character/composition/attributes will be fundamentally changed.
Medium	Loss or alteration to one or more elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
Low	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but the underlying character/composition/attributes of the baseline condition will be similar to the pre-development.
Negligible	Very little change from baseline conditions. Change not material, barely distinguishable or indistinguishable, approximating to a 'no change' situation.

Table 9.2: Sensitivity Criteria

Sensitivity	Criteria
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character or is of international or national importance.
Medium	The receptor/resource has moderate capacity to absorb change without significantly altering its present character or is of high and more than local (but not national or international) importance.
Low	The receptor/resource is tolerant of change without detrimental effect, is of low or local importance.
Negligible	The receptor/resource can accommodate change without material effect, is of limited importance.

9.3.41 Significance of effect is evaluated as a combination of the sensitivity of the receptor and the magnitude of change the development results in. The matrix in Table 9.3 below is designed to demonstrate an objective rationale to reach a conclusion about the significance of effect, but a degree of professional judgement is a key element in the evaluation process.

Table 9.3: Significance of Effects

		Sensitivity of Receptor			
		High	Medium	Low	Negligible
Magnitude of impact	High	Major Adverse/Beneficial	Major - Moderate Adverse/Beneficial	Moderate - Minor Adverse/Beneficial	Negligible
	Medium	Major - Moderate Adverse/Beneficial	Moderate - Minor Adverse/Beneficial	Minor Adverse/Beneficial	Negligible
	Low	Moderate - Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor Adverse/Beneficial - Negligible	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

9.3.42 Any effect of Moderate or Major significance is considered to represent a likely significant effect for the purposes of the EIA Regulations. Significance of effects would be considered before and after mitigation.

9.3.43 When characterising ecological impacts, reference will be made to the following characteristics as required:

- Positive or negative;
- Extent;
- Magnitude;
- Duration;
- Frequency and timing; and
- Reversibility

9.3.44 Positive and negative impacts and effects should be determined according to whether the change is in accordance with nature conservation objectives and policy:

- positive – a change that improves the quality of the environment e.g. by increasing species diversity, extending habitat or improving water quality. This may also include halting or slowing an existing decline in the quality of the environment.; or
- negative – a change which reduces the quality of the environment e.g. destruction of habitat, removal of foraging habitat, habitat fragmentation, pollution.
- Extent - the spatial or geographical area over which the impact/effect may occur under a suitably representative range of conditions (e.g. noise transmission under water).
- Magnitude - refers to size, amount, intensity and volume. It should be quantified if possible and expressed in absolute or relative terms e.g. the amount of habitat lost, percentage change to habitat area, percentage decline in a species population.
- Duration - should be defined in relation to ecological characteristics (such as the lifecycle of a species) as well as human timeframes. For example, five years, which might seem short-term in the human context or that of other long-lived species, would span at least five generations of some invertebrate species. The duration of an activity may differ from the duration of the resulting effect caused by the activity. For example, if short-term construction activities cause disturbance to birds during their breeding period, there may be long-term implications from failure to reproduce that season. Impacts and effects may be described as short, medium or long-term and permanent or temporary.
- Frequency and timing - the number of times an activity occurs will influence the resulting effect. For example, a single person walking a dog will have very limited impact on nearby waders using wetland habitat, but numerous walkers will subject the waders to frequent disturbance and could affect feeding success, leading to displacement of the birds and knock-on effects on their ability to survive. The timing of an activity or change may result in an impact if it coincides with critical life-stages or seasons e.g. bird nesting season.
- Reversibility - an irreversible effect is one from which recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it. A reversible effect is one from which spontaneous recovery is possible or which may be counteracted by mitigation. In some cases, the same activity can cause both reversible and irreversible effects.
- The assessment only needs to describe those characteristics relevant to understanding the ecological effect of the impacts and determining its significance. For example, timing of the removal of a hedgerow is unlikely to be of particular relevance to the assessment of the effect on hedgerows, although

it may be relevant in assessing the effect on a species using the hedgerow, such as nesting birds.

Limitations

9.3.45 It is possible that survey timings or adverse weather conditions prevented further ecological features from being recorded, or animal activity from being observed. However, despite limitations, the author considers that survey effort presents a detailed picture of the ecological conditions within The Site during the period when surveys took place.

9.4 BASELINE CONDITIONS

9.4.1 The combined results of the desktop study, data search and ecological surveys are presented below, and maps showing all habitats identified within The Site boundary are presented in Appendix H.

EU protected sites

9.4.2 The data search returned two EU protected sites within 10km of The Site boundary. Please refer Appendix H - section IX (b) for a map displaying the location of each EU protected site.

Blackmill Woodland SAC

9.4.3 Blackmill Woodland Special Area of Conservation (SAC) is located 9.64km west of The Site boundary. This 31.24ha site is an example of old sessile oak woods at the southern extreme of the habitat's range in Wales, and contributes to representation of the habitat in Wales and in south-west England. The main habitat features of Sessile Oak (*Quercus petraea*) canopy, acidic ground flora of Vaccinium myrtillus and Wavy Hair-grass, and moderate fern and bryophyte cover are present.

Cardiff Beech Woods SAC

9.4.4 Cardiff Beech Woods is located 8.87km southeast of The Site boundary. This 114.45ha site contains one of the largest concentrations of Asperulo-Fagetum beech forests in Wales, and represent the habitat close to the western limit of its past native range in both the UK and Europe. The woods show mosaics and transitions to other types, including more acidic beech woodland and oak and ash woodland. Characteristic and notable species in the ground flora include ramsons, sanicle, bird's-nest orchid, and yellow bird's-nest.

9.4.5 The Sites proximity to the two EU protected sites may trigger the requirement for an HRA. This will assess the likelihood of the proposal impacting Blackmill Woodland SAC and Cardiff Beech Woods SAC. The HRA may be limited to a Phase 1 screening if it can be demonstrated that no significant impacts will occur.

Statutory protected sites

9.4.6 The data search returned two statutory protected sites for wildlife within 2km of the site:

Rhos Tonyrefail (SSSI)

9.4.7 Rhos Tonyrefail is a large Lowland site divided into several parcels of land, one of which lies adjacent to The Site boundary, and borders the south boundaries of Fields 10 and 11, the east boundaries of Fields 4 and 7. This 244.71ha site is designated as a Special Site of Scientific Interest (SSSI) due to its marshy grassland, acid flush, species-rich neutral grassland, Acid Grassland, wet heath, and blanket mire. The Site is also of special interest for its population of Marsh Fritillary butterfly (*Euphydryas aurinia)*.

Llantrisant Common and Pastures (SSSI)

9.4.8 Llantrisant Common and Pastures is located 0.71km north of The Site boundary at its closest point. This 113ha site is a designated SSSI due to its extensive areas of acidic marshy grassland, and smaller areas of species-rich neutral grassland, dry acidic grassland and flush. It is also of special interest for its populations of two rare plants: Cornish moneywort (*Sibthorpia europaea*) and Bog Earwort (*Scapania paludicola*).

Non-statutory protected sites

9.4.9 The data search returned two non-statutory protected sites for wildlife within 2km of the site:

Rhiwfelin Fawr (SINC)

9.4.10 Rhiwfelin Fawr Site of Importance for Nature Conservation (SINC) (AW.8.110) is located 0.09km northwest of The Site boundary. Although a non-statutory designation, SINCs are afforded a high level of protection within the planning system. Development that negatively impacts on a SINC may only be permitted in exceptional circumstances where mitigation can be proven. The SINC forms part of a habitat connectivity area for the Marsh Fritillary metapopulation, supported by the adjacent Rhos Tonyrefail SSSI.

Y Gweria Pasture Wildlife Trust Reserve

9.4.11 Y Gweria Pasture Wildlife Trust Reserve is located 1.59km east of site boundary. This 7ha site is made up of a mosaic of wet heath, mire, and marshy grassland dominated by Purple Moor Grass (*Molinia caerulea*). Much of the grassland has plenty of Tormentil (*Potentilla erecta*), together with species such as Sheep's Fescue (*Festuca ovina*), Mat Grass (*Nardus stricta*), and Heath Rush (*Juncus squarrosus*), and supports a strong, large population of Petty Whin (*Genista anglica*).

Priority areas

9.4.12 The data search six priority area types, located within 2km of the site.

Ancient Semi Natural Woodland

9.4.13 These are broadleaf woodlands comprising mainly native tree and shrub species which are believed to have been in existence for over 400 years. The ground vegetation will reflect the naturalness of these woodlands and will frequently feature species which provide clear indication of long and continued woodland cover.

9.4.14 Forty-three Ancient Semi Natural Woodland Sites are present within the data search area, occupying a combined area of 53.39ha. The closest parcel is located adjacent to The Site boundary, bordering the southern boundaries of Fields 8, 10, and 11.

Restored Ancient Woodland Site

9.4.15 These are woodlands which are predominately broadleaves now and are believed to have been continually wooded for over 400 years. They will have gone through a phase when canopy cover will have been more than 50% non-native conifer tree species and now have a canopy cover of more than 50% broadleaf.

9.4.16 Five Restored Ancient Woodland Sites are present within the data search area, occupying a combined area of 8.85ha. The closest parcel is located 0.16km northwest of The Site boundary.

Plantation on Ancient Woodland Site

9.4.17 These are sites which are believed to have been continuously wooded for over 400

years. They have been replanted with native or non-native species, most Commonly with conifers. They currently have a canopy cover of more than 50% non-native conifer tree species. They will have varying levels of remnant features of ASNW.

9.4.18 Twelve Plantation on Ancient Woodland Sites are present within the data search area, occupying a combined area of 27.19ha. The closest parcel is located approximately 0.3km south of The Site boundary, bisected by a road.

Ancient woodland site of unknown category

9.4.19 One Ancient woodland site of unknown category is present within the data search area, occupying 2.47ha and located approximately 1.42km south of The Site boundary, bisected by road.

NRW Priority Areas

9.4.20 NRW Priority habitat areas are large scale areas which were prioritised for targeted conservation work, based on factors including the habitats within them.

9.4.21 Approximately 27.19ha of the data search area is classified as a NRW Priority Area (Woodland – PAWS). The edge of this area lies approximately 0.3km south at closest point, bisected by road.

9.4.22 In total, 1011.99ha of the data search area is classified as NRW Priority Area (Lowland Wetland) and overlaps with the entire Application Site.

9.4.23 696.77ha of the data search area is classified as NRW Priority Area (Heathland and Grassland) and partially overlaps with The Site boundary (Fields 4 and 5).

Biodiversity Lines (B-Lines)

9.4.24 B-Lines are a series of insect pathways running through the UK countryside where wide strips of permanent wildflower-rich habitats are encouraged that link existing wildlife areas together to create a network. B-lines cross The Site in two places, overlapping with Fields 4 and 5.

Habitats

9.4.25 Approximately 2.08ha of The Site was classified as Acid Grassland (UKHab – Other Lowland Acid Grassland) covering all of Field 10 and part of Field 9; and approximately 2.06ha of The Site was classified as a transitional grassland between Acid Grassland and Semi-improved Grassland, covering all of Field 11 and part of Field 8. The remaining 13.73ha of grassland within The Site boundary was classified as Poor Semi-improved Grassland (UKHab - Other Neutral Grassland). Within the fields are 19 separate parcels of permanently wet ground, which range in size and are dominated by rushes and a range of other wetland plant species. The results of the Phase II botanical survey determined these areas were not distinct habitats, such as Rhos Pasture.

9.4.26 A total of 3.88km of vegetated field boundaries are present throughout The Site occupying a land coverage of 2.09ha, of which, 1.35km are classified as Species-rich Native Hedgerows, 0.74km are Native Hedgerows (species poor), and 1.79km are Ecologically Valuable Lines of Trees. In addition, five streams and one wet ditch run through The Site, covering a combined distance of 1.06km. The southern edge of Fields 10 and 11 is bordered by a parcel of Lowland Mixed Deciduous Woodland that forms part of the Rhos Tonyrefail SSSI; approximately 0.08ha of this woodland overlaps with The Site boundary. A map of all area habitats (i.e., woodland, scrub and grassland) is shown in Appendix H – section I (a); and a map of all linear woody habitats (i.e., hedgerows and lines of trees) is shown in Appendix H -section II (b).

Acid grassland

9.4.27 This area of grassland occurred on the steeper slopes at the northeastern corner of The Site: 1.07ha of Field 10 and 1ha of Field 9. The sward was co-dominated with Common Bent and Sweet Vernal-grass, as was seen on much else of The Site, but there was almost total absence of Perennial Rye. Of most significance was the presence of Tormentil (*Potentilla erecta*) and Sheep's-fescue (*Festuca ovina*), which were sampled in the majority of plots. Other supporting evidence for this being Acid Grassland was the presence of Silver Birch (*Betula pendula*) and Pedunculate Oak (*Quercus robur*) trees in the hedge-line (both indicators of acid conditions) and the occurrence of granite bedrock at or near the surface.

9.4.28 The NVC analysis did in fact produce MG5c Cynosurus cristatus-Centaurea nigra grassland, Danthonia decumbens sub-community as the top match, but at just one percent lower had a match to U4b Festuca ovina-Agrostis capillaris-Galium saxatile grassland, MG5d Holcus lanatus-Trifolium repens sub-community is the sub-community of this meadow community most associated with more acidic soils, and U4b is the transitional community of Acid Grassland where it gradates back into neutral. The relatively low coefficient occurred due to a lower number of species recorded - a combination of it being early in the season and the influence of sheep grazing on the land, resulting in a thicker more grass-dominated sward supporting a lower diversity of species. Nonetheless, the presence of Tormentil, combined with Common Bent and Sweet Vernal-grass would definitively place this in the category of Lowland Acid Grassland.

9.4.29 Under UKHAB this would be classified as g1d 'Other Lowland Acid Grassland'

9.4.30 Please refer to Table 4 (Appendix H) for a list of all plant species identified within the area of Acid Grassland and their levels of abundance

Transitional grassland

9.4.31 This area of grassland throughout Field 11 and the southern half of Field 8 was highly transitional in character between the Semi-improved Grassland found on most of The Site, and the Acid Grassland in Field 1. As such, a full NVC analysis was carried out to elucidate its exact character.

9.4.32 The MATCH analysis showed the closest match was with MG6b Lolium perenne-Cynosurus cristatus grassland, Anthoxanthum odoratum sub-community, the same as the grassland found across most of The Site. However, the analysis also produced a number 2 result for U4b Festuca ovina-Agrostis capillaris-Galium saxatile grassland, Holcus lanatus-Trifolium repens sub-community. This was 10% lower than the match for MG6b, so technically this grassland could be considered as semi-improved, although with a much higher affinity towards Acid Grassland. As such, this area offers considerable potential to be converted into Acid Grassland of higher conservation value with appropriate management. Please refer to Table 5 for a list of all plant species identified within the sampled area of Transitional Grassland and their levels of abundance.

9.4.33 Under UKHAB this would be classified as g3c 'Other Neutral Grassland'

9.4.34 Please refer to Table 5 for a list of all plant species identified within the sampled area of Transitional Grassland and their levels of abundance.

Rush dominated areas

9.4.35 Scattered rush dominated areas were found sporadically throughout the majority of the meadows, all of which have been delineated and shown in Appendix H- section I (a). They were generally associated with areas of impeded drainage and supported a narrow range of wetland plants beyond the rushes themselves, apart from in two

areas, R12 and R1, which are described below.

9.4.36 From the presence of what appeared to be a regular management regime of topping the grassland, it is likely that these scattered rush areas will have to be closely managed to prevent them spreading across wider areas of grassland, and future management of The Site should take this into consideration.

9.4.37 Two larger areas of rush-dominated vegetation were recorded, which did support a narrow, but not insignificant, range of wetland species. The first of these was area R12, at the base of The Site, where the damp vegetation was concentrated along a small stream (S) which ran through the centre of the area. This area supported a narrow range of wetland vegetation, including Brooklime (*Veronica beccabunga*), Water-purslane (*Lythrum portula*), Marsh Thistle (*Cirsium palustre),* Jointed Rush (*Juncus articulatus*), Lady's-smock (Cardamine pratensis), Bog Stitchwort (*Stellaria alsine*) and Lesser Spearwort (*Ranunculus flammula*). Beyond the ditch structure the vegetation was dominated by dense stands of Soft Rush (*Juncus effusus*) which supported a less diverse assemblage.

9.4.38 The other area of significance was R1, within Field 9. This occurred where a wet flush was emanating from the hillside. The more acidic nature of the grassland surrounding this had led to the formation of a somewhat transitional habitat between Acid Grassland and wet flush. The vegetation had been recently topped, which hindered the collection of a full dataset. In order to accurately ascertain the true character of this vegetation, NVC plots were recorded in the top area of R1, which was felt to be the most promising stand of vegetation. Even though it was impossible to get a close match to any wetland/damp grassland communities, the analysis showed this community did not have any significant match to the communities associated with Rhos Pasture (referred to as f2b5 - Purple Moor Grass and Rush Pastures under UKHab), lacking virtually all the relevant constituent indicator species of this community.

9.4.39 Please refer to Table 6 (Appendix H) for a list of all plant species identified within the rush dominated area (R1) and their levels of abundance.

Semi-improved grassland

9.4.40 All remaining grassland throughout The Site was classified as Poor Semi-improved Grassland. This grassland was characterised by a relatively species-poor grass-dominated sward, which had either been fairly tightly grazed or topped, with arisings left in situ.

9.4.41 The sward was dominated by Common Bent (*Agrostis capillaris*) and Sweet Vernal-grass (*Anthoxanthum odoratum*), with few forbs, including Meadow Buttercup (Ranunculus acris), Ribwort Plantain (*Plantago lanceolata*) with occasional Dandelion (*Taraxacum officinale*), Creeping Thistle (*Cirsium arvense*) and Common Sorrel (*Rumex acetosa*). Grasses and legumes associated with elevated levels of nutrients, such as White Clover (Trifolium repens), Perennial Rye-grass (*Lolium perenne*) and Cock's-foot (*Dactylis glomerata*) were present, but at very low levels.

9.4.42 This grassland would be classified as Poor Semi-improved Grassland under Phase 1. Due to character of the surrounding land and underlying geology this vegetation clearly originally derived from Acid Grassland, but lacked sufficient indicator species to be considered in this category, which leads to the 'poor' classification, in that it was both species-poor, but also of low affinity to its original state

9.4.43 The NVC analysis of this area came back with a high match for MG6b Lolium perenne-Cynosurus cristatus grassland, Anthoxanthum odoratum sub-community. MG6 grasslands are, on the whole, poor-quality agriculturally modified grasslands, but this sub-community represents a better example of this community, usually found

where it is overlying acidic ground rocks. In terms of species assemblage it is somewhat transitional in character between the two communities. Nonetheless, with an average of 6 species/m2 recorded, this would be considered to be a grassland of low conservation value.

9.4.44 Under UKHab this would be classified as g3c 'Other Neutral Grassland'.

9.4.45 Please refer to Table 9.7 (Appendix H) for a list of all plant species identified within the fields of Semi-improved Grassland and their levels of abundance.

Native hedgerows

9.4.46 Approximately 1.35km of Species-Rich Native Hedgerows, and 0.74km of Native Hedgerows (Species Poor) were identified within The Site. The shrub species most Commonly found in hedgerows included Common Hazel (*Corylus avellana*), Common, Common Holly, Blackthorn (*Prunus spinosa*), and Bramble (*Rubus sp.*). Species less Commonly present include Sycamore (*Acer pseudoplatanus*), Common Dogwood (*Cornus sanguinea*), European Crab Apple (*Malus sylvestris*), Pedunculate Oak, Grey Willow (*Salix cinerea*), Elder (*Sambucus nigra*), Rowan (*Sorbus aucuparia*), and Common Gorse (*Ulex europaeus*). Several hedgerows supported climbing plants: these included Dog Rose (*Rosa canina*), Common Honeysuckle (*Lonicera periclymenum),* Climbing Nightshade (*Solanum dulcamara),* and Black Bryony (*Tamus communis*).

9.4.47 Ground flora was observed sporadically throughout the hedgerows on site, particularly along H1, H2, H3, H5, H6, H8, H11, H12, H13 and H16. Species included Rosebay Willowherb (*Chamerion angustifolium*), Field Thistle (*Cirsium arvense),* Marsh Thistle, Common Foxglove (*Digitalis purpurea*), Male Fern (*Dryopteris filix-mas*), Herb Robert (*Geranium robertianum*), Marsh Cudweed (*Gnaphalium uliginosum*), Common Ivy (*Hedera helix*), Bristly Ox-tongue (*Helminthotheca echioides*), Common Hogweed (*Heracleum sphondylium*), Yellow Pimpernel (*Lysimachia nemorum*), Common Fleabane (*Pulicaria dysenterica*), Pedunculate Oak (seedling), Bramble, Bracken (*Pteridium aquilinum*), Rock Soapwort (*Saponaria ocymoides*), Red Campion (*Silene dioica*), Marsh Stitchwort (*Stellaria palustris*), and Common Nettle (*Urtica dioica*).

Lines of trees

9.4.48 Twelve Ecological Valuable Lines of Trees were present on site, ranging from 10 to 20m in height, and occupying approximately 1.79km of the field boundaries. Mature tree species comprised: Sycamore, Black Alder, Silver Birch, Common Hazel, Common Hawthorn, European Ash (*Fraxinus excelsior*), Common Holly, Blackthorn, Bracken, Pedunculate Oak, and Grey Willow, with the following species present as understory shrubs: Common Hazel, Common Hawthorn, European Ash, Common Ivy, Common Holly, European Crab Apple, Blackthorn, Bracken, Dog Rose, Bramble, Grey Willow, and Rowan.

9.4.49 Ground flora observed beneath the Lines of Trees included Hard Fern (*Blechnum spicant*), Common Ivy, English Bluebell (*Hyacinthoides non-scripta*), Creeping Buttercup (*Ranunculus repens*), and Common Nettle.

9.4.50 Please refer to Table 8.1 & 8.2 (Appendix H) for a list of all shrub species identified along each hedgerow or line of trees.

Bramble scrub

9.4.51 A 0.18ha parcel of Bramble Scrub (UKHab code: h3d) is present in the southeast corner of Field 8.

Lowland mixed deciduous woodland

9.4.52 A 3.6ha parcel of Lowland Mixed Deciduous Woodland lies adjacent to the southern boundaries of Fields 10 and 11, which is a component of the Rhos Tonyrefail SSSI. Approximately 0.09ha of the woodland is within The Site boundary. Being on the edge of The Site, the woodland was not surveyed extensively, however the trees visible on the northern fringe included Black Alder (*Alnus glutinosa*), Silver Birch, Common Hazel, Common Hawthorn (*Crataegus monogyna*), Common Holly (*Ilex aquifolium*), European Ash, and Pedunculate Oak.

9.4.53 A second parcel of this habitat lies adjacent to the southern edge of Field 1, though it does not overlap with The Site boundary.

Watercourses

9.4.54 Five streams and one wet ditch were identified within The Site, with a combined distance of 1.06km. Three stream sections S4.1 and S6.1 were noted to support a range of riverine or wetland plant species, and these have been discussed below.

9.4.55 S2 - This stream begins as a spring by the gate between Fields 1 and 2, then runs south east along the southern part of Field 1 and exits by the fence. Plant species recorded during biodiversity surveys include: Water Starwort sp. *(Callitriche sp.*), Cuckooflower (*Cardamine pratensis*), Bittercress sp. (*Cardamine sp* .), Lesser Spearwort, Ragged Robin (*Silene flos-cuculi*), and Brooklime.

9.4.56 S4.1 - This section of stream runs north–south across the centre of Field 9. Plant species recorded during biodiversity surveys include: Soft Rush, Lady Fern (*Athyrium filix-femina*), Marsh Thistle, Great Hairy Willowherb (*Epilobium hirsutum*), Purple-leaved Willowherb (*Epilobium ciliatum*), Hemlock Water Dropwort (*Oenanthe crocata*), Bramble, Red Campion, and Common Nettle.

9.4.57 S6.1 - This section of stream runs astride H12 along the east boundary of Field 6. Plant species recorded during biodiversity surveys include: Soft Rush, Wild Angelica (*Angelica sylvestris*), Marsh Thistle, Common Male Fern (*Dryopteris filix-mas*), Greater Hairy Willowherb, Marsh Willowherb (*Epilobium palustre*), Common Horsetail (*Equisetum arvense*), St. Peter's Wort (*Hypericum tetrapterum*), Gypsywort (*Lycopus europaeus*), Field Mint (*Mentha arvensis*), Mild Water Pepper (*Persicaria hydropiper*), Tormentil, Bramble, Common Chickweed (*Stellaria media),* and Brooklime.'

Ponds

9.4.58 No permanent ponds were identified within The Site; however, a small pool was observed adjacent to three springs within the woodland bordering Field 11, and a second pool adjacent to a spring in Field 1. These pools were expected to appear due to rising water following rainfall and would not be classified as ponds. An additional small waterbody was identified beneath the mixed scrub in Field 7. This waterbody is connected to the wet ditch that runs along the north boundary of Field 6, though it is dry during periods of low rainfall.

Protected and Notable Species

9.4.59 The biodiversity data search, habitat surveys and species-specific surveys confirmed the following information for protected and notable species.

9.4.60 Data search records were obtained within a 2km radius of The Site boundary, covering at 10-year period from May 2015 to May 2025.

Badger

9.4.61 LERC Wales returned no records of Eurasian Badger (*Meles meles*) within the defined search parameters.

9.4.62 No evidence of Badger was detected during habitat surveys. However, all areas of Lowland Mixed Deciduous Woodland bordering The Site boundary are considered suitable for supporting Badger setts and the grassland habitats throughout The Site are suitable for Badger foraging.

Otter

9.4.63 LERC Wales returned eight records of Eurasian Otter (*Lutra lutra*) within the defined search parameters, all records were of field signs denoting Otter presence. The nearest record was obtained 0.81km from The Site boundary along the River Ely.

9.4.64 No evidence of Otter was recorded during biodiversity surveys, however the stream running along the west boundary of Field 1 (S1) is considered potentially suitable for use by the individuals using the nearby River Ely.

Hedgehog

9.4.65 LERC Wales returned eight records of West European Hedgehog (*Erinaceus europaeus*) within the defined search parameters. The closest record was obtained 0.56km from The Site boundary near Coed Ely.

9.4.66 No evidence of Hedgehog was recorded during ecological surveys, however all hedgerows and woodland associated with The Site are considered suitable for supporting Hedgehog populations.

9.4.67 Bats

9.4.68 LERC Wales returned records of 19 Bat species within the defined search parameters. Please refer to Table 9, which lists each recorded species in order of proximity, based on the closest record to The Site boundary.

9.4.69 A comprehensive list of all Bat records returned from the biodiversity data search is displayed in Appendix H – section X(a).

9.4.70 Lesser Horseshoe Bats (Rhinolophus hipposideros) were the rarest and only Annex II species recorded during Bat surveys, being detected at both static logger locations, and with a limited number of passes detected for each transect. For the static loggers, activity was only detected in three nights in May (two nights by L1 and another night by L2), three nights in July (but only by L1), and three nights in September (two nights for each logger). The number of passes on each night of activity was also relatively low apart from a slight increase in July, and likely attributable to a single or very small number of Bats making multiple passes. During transects, there were four passes detected during the May session, another four recorded during the July and one during the September session. Overall, the level of Lesser Horseshoe Bat activity recorded is assessed to be low (Calyx Environmental, 2024). It is possible that the Lesser Horseshoes using The Site are associated with a nearby maternity colony listed in the LERC data provided (570m south of the nearest boundary).

9.4.71 Moderate levels of Myotis spp. activity were recorded by logger L2 on the northern edge of a small woodland and connected tree belt, which would be expected to be of relatively high habitat value for species within this genus. Average passes per night do not vary greatly across the seasons but an exceptionally high number (578) was recorded by L2 on one night in July. This is an anomaly and on other nights during July, the passes per night recorded by this logger were between one and thirteen. Myotis spp. were detected over the whole site during transects along vegetated edges and substantial treelines / hedgerows within The Site.

9.4.72 Both Common Pipistrelle (Pipistrellus pipistrellus) and Soprano Pipistrelle (Pipistrellus pygmaeus) were detected with moderate levels of activity and a peak in July as would be expected when lactating females are feeding young. Activity levels

were significantly higher for both species at the L2 location, which represents ideal edge habitat for them. However, moderate levels of activity were detected along most the tree lines and hedgerows during transects.

9.4.73 Additional species included Noctule (Nyctalus noctule), which was recorded once on transect and once at L2; one unidentified Nycatalus / Eptesicus spp (Noctule/Leisler's or Serotine), at L2; and one pass of a Plecotus sp. also at L2, which is likely to be Brown Long-eared Bat.

9.4.74 Detailed results of Bat surveys can be found in the separate Bat survey report (Calyx Environmental, 2024).

Harvest Mouse

9.4.75 LERC Wales returned four records of Harvest Mouse (*Micromys minutus*) within the defined search parameters. The nearest record was obtained at Rhos Tonyrefail SSSI, 1.38km from The Site boundary.

9.4.76 No evidence of Harvest Mouse was observed during biodiversity surveys; however, some areas of grassland that have been allowed to grow long are considered potentially suitable for this species.

Hazel Dormouse

9.4.77 LERC Wales returned one record of Hazel Dormouse (*Muscardinus avellanarius*) within the defined search parameters. The record was obtained at Llantrisant Common, 1.35km from The Site boundary.

9.4.78 It is understood by information provided by the County Ecologist for Rhonda Cynon Taff, that a Dormouse colony is present adjacent to The Site. Though the exact location has not been made available.

9.4.79 Individual dormice were not observed during biodiversity surveys; however gnawed nuts were found during a habitat condition assessment on 17th August 2023. It was not clear by the markings on the nuts whether they could be attributed to Dormouse or another rodent such as Wood Mouse (*Apodemus sylvaticus*) or Grey Squirrel (*Sciurus carolinensis*). The nuts were located by the gate between Fields 3 and 7, which is where three species rich hedgerows intersect (H9, H11 and H13).

Breeding birds

9.4.80 Over the course of the four initial breeding bird survey visits, a total of 50 species were recorded within The Site. Four were confirmed to breed on site, including one notable species: Meadow Pipit (*Anthus pratensis*); and 15 were considered probable breeding birds, including seven notable species: Willow Warbler (*Phylloscopus trochilus*), Eurasian Wren (*Troglodytes troglodytes*), Song Thrush (*Turdus philomelos*), Mistle Thrush (*Turdus viscivorus*), Spotted Flycatcher (*Muscicapa striata*), Dunnock (*Prunella modularis*), and European Greenfinch (*Chloris chloris*).

9.4.81 Post-survey territory mapping indicated that Meadow Pipits were nesting in areas designated for development. A total of six territories were mapped within The Site: five territories distributed across Fields 1, 2, 3, 4, 6 and 7, and one territory in the north section of Field 8. Please refer to Figure 5 (Appendix H) for a map showing the approximate location of each territory, based on registrations of individuals displaying breeding behaviour.

9.4.82 Twenty-one species were registered as possible breeding birds, of which eleven are notable: Common Cuckoo (*Cuculus canorus*), Stock Dove (*Columba oenas*), Common Wood Pigeon (*Columba palumbus*), Red Kite (*Milvus milvus*), European Green Woodpecker (*Picus viridis*), Eurasian Skylark (*Alauda arvensis*), Common Starling (*Sturnus vulgaris*), Long-tailed Tit (*Aegithalos caudatus),* House Sparrow

(*Passer domesticus*), Eurasian Bullfinch (*Pyrrhula pyrrhula*), and Common Linnet (*Linaria cannabina*).

9.4.83 Two additional notable species, Common Swift (*Apus apus*) and Common House Martin (*Delichon urbicum*), were observed only foraging on site; and three notable species, Mallard (*Anas platyrhynchos*), European Herring Gull (*Larus argentatus*), Lesser Black-backed Gull (*Larus fuscus*), and Red Crossbill *(Loxia curvirostra*) were only observed flying over The Site.

9.4.84 An additional 11 non-notable species were registered as confirmed or probable breeding birds, and 12 were registered as possible breeding birds.

9.4.85 During the two refresher survey visits undertaken in April and May 2025, no additional notable or non-notable species were identified within The Site. One Meadow Pipit territory was identified on the southern edge of Field 9.

9.4.86 Detailed results of breeding bird surveys will be found in the separate breeding bird survey report (Wychwood Biodiversity, 2025c). All species observed during the initial suite of breeding bird surveys in presented in Appendix H – section VII(a).

Wintering birds

9.4.87 Over the course of the initial three winter bird surveys, no target wintering bird species were observed within The Site, however 33 other species were identified, largely residing in boundary woody habitats. Of these, 14 are notable: Common Wood Pigeon (*Columba palumbus*), European Herring Gull (*Larus argentatus*), Eurasian Sparrowhawk (*Accipiter nisus*), European Green Woodpecker (*Picus viridis*), Eurasian Wren (*Troglodytes troglodytes*), Common Starling (*Sturnus vulgaris*), Song Thrush (*Turdus philomelos*), Mistle Thrush (Turdus viscivorus), Redwing (*Turdus iliacus*), Fieldfare (*Turdus pilaris*), Dunnock (*Prunella modularis*), Meadow Pipit (Anthus pratensis), Common Linnet (*Linaria cannabina),* and Lesser Redpoll (*Acanthis cabaret*).

9.4.88 Woody habitats, i.e., hedgerows, Lines of Trees, and woodland, were estimated to have a high value for wintering birds. Twenty-eight species were observed in these habitats, ten of which are notable. The results indicate this habitat supports a comparatively high diversity of wintering birds, primarily songbirds either holding territories through the winter, or migratory birds attracted by the foraging opportunities.

9.4.89 The grassland habitats present within The Site were estimated to have a relatively low value for wintering birds. Five species were observed in these habitats on six singular occasions, four of which are notable: Song Thrush, Mistle Thrush, Redwing, and Meadow Pipit. These results indicate the grassland habitats support a comparatively low avian diversity; however, considering three of the six observations were concentrated in Field 2, this field may hold slightly more foraging value compared with the other fields within The Site.

9.4.90 Detailed results of winter bird surveys can be found in the separate winter bird survey report (Wychwood Biodiversity, 2025c).

9.4.91 As with the main suite of survey, no target bird species were observed using The Site during the two refresher surveys undertaken in December 2024 and January 2025. The only notable observations included a flock of 60 Starling foraging on Field 8, and a flock of 20 Meadow Pipit foraging on the offsite field adjacent to Field 5, both observed on Survey 2.

Herptiles

9.4.92 LERC Wales returned records of seven protected or notable herptile species within

the defined search parameters. Please refer to Table 11, which lists each recorded species in order of proximity, based on the closest record to The Site boundary.

9.4.93 During reptile mat inspections, a population of Common Lizards (*Zootoca vivipara*) was identified in the now offsite field to the east of Field 7, falling outside the current Application Site boundary. One individual was observed beneath the mat during Check 2, and two individuals were spotted during Check 3. Notably, no reptiles were found under mats deployed within The Site. Considering the proximity of the Common Lizard population (located 150m away from The Site boundary and the presence of suitable habitat within The Site, it is conceivable that reptiles are present within The Site, though were undetected during surveys.

9.4.94 No amphibian species were recorded during ecological surveys, however all terrestrial habitats within The Site are considered suitable commuting, foraging, or hibernating habitat for amphibian species, in addition to the various streams that run through The Site.

Terrestrial invertebrates

9.4.95 LERC Wales returned records of 37 protected or notable invertebrate species within the defined search parameters. Please refer to Table 12, which lists each recorded species in order of proximity, based on the closest record to The Site boundary.

9.4.96 Five Common Butterfly species were recorded within The Site during the two opportunistic pollinator surveys. These included Orange Tip (*Anthocharis cardamines*), Meadow Brown (*Maniola jurtina*), Speckled Wood (*Pararge aegeria),* Large White (*Pieris brassicae*), and Small White (*Pieris rapae*). Please refer to Figure 6 for a map displaying the location of each pollinator registration.

9.4.97 No notable invertebrate species, including Marsh Fritillary were observed during ecological surveys.

Fungi

9.4.98 LERC Wales returned records of 44 protected or notable fungi species within the defined search parameters. Please refer to Table 14, which lists each recorded species in order of proximity, based on the closest record to The Site boundary.

9.4.99 Three species of locally important fungi were identified within The Site: Butter Waxcap (*Hygrocybe chlorophana*), Heath Waxcap (*Gliophorus laetus*), and Meadow Waxcap (*Cuphophyllus pratensis*), which are all Local Biodiversity Action Plan species. Other fungi species observed during biodiversity surveys included Bolete sp. (*Boletales sp.*), Clouded Agaric (*Clitocybe nebularis*), Parasol (*Macrolepiota procera*), Petticoat Mottlegill (*Panaeolus papilionaceus*), Scarlet Waxcap (*Hygrocybe coccinea*), and Smoky Spindles (*Clavaria fumosa*).

9.4.100 As shown in Table 15 and Figure 7 (Appendix H), there was a notable concentration of fungi observed on Fields 1 and 10, particularly waxcaps (four species collectively). This assemblage of species is indicative of mycologically rich unimproved grassland, which have not been subjected to agricultural inputs, ploughing or tilling for a significant period of time.

Notable plants

9.4.101 LERC Wales returned records of 33 protected or notable plant species within the defined search parameters. Please refer to Table 16, which lists each recorded species in order of proximity, based on the closest record to The Site boundary.

9.4.102 The BAP priority English bluebell was the only notable species observed, located along the north boundary of Field 2, as ground flora below the Line of Trees (H20).

9.4.103 Details of the other plant species observed can be found in the habitat results section of this report, and the linear habitat botanical checklist displayed in Appendix H - section V.

Invasive plants

9.4.104 The LERC Wales returned records of 15 invasive non-native plant species within the defined search parameters. Please refer to Table 17, which lists each recorded species in order of proximity, based on the closest record to The Site boundary.

9.4.105 No invasive plant species were observed during ecological surveys; however, a large cluster of Himalayan Balsam (Impatiens glandulifera) was observed on land 210m east of Field 7.

Other species

9.4.106 One adult Red Fox (Vulpes vulpes) was observed on Field 10 during a winter bird survey on the 19/11/22.

9.4.107 One introduced Grey Squirrel was recorded during a winter bird survey on the 07/11/22. The individual was observed along a Line of Trees (H20) on the north boundary of Field 2.

9.5 IDENTIFED RECPTORS

Key ecological features

9.5.1 The following key ecological receptors (Table 9.4) have been identified for inclusion in the impact assessment taking into consideration the results of the baseline studies and the design of the proposed development.

Table 9.4. Summary of Key Biodiversity Elements Identified On Site

Key biodiversity element	Status on site
Statutory protected site – (SSSI)	**Confirmed (adjacent) -** *Rhos Tonyrefail is* a large Lowland site divided into several parcels of land, one of which borders the south boundaries of Fields 10 and 11, the east boundaries of Fields 4 and 7. This 244.71ha site is designated as a Special Site of Scientific Interest (SSSI) due to its marshy grassland, acid flush, species-rich neutral grassland, Acid Grassland, wet heath, and blanket mire. The Site is also of special interest for its population of Marsh Fritillary butterfly.
Woodland	**Confirmed** - Two blocks of Lowland Mixed Deciduous Woodland adjoin The Site boundary. One, to the north, is a component to Rhos Tonyrefail SSSI.
Hedgerows	**Confirmed** – Species-Rich Native Hedgerows (h2a5) and Ecological Valuable Lines of Trees (w34) occupied the majority of field boundaries, with some Native Species Poor Hedgerows (h2a) present to a lesser degree.
Trees	**Confirmed** - In addition to mature trees present along 'Lines of Trees' and woodland edge, a number of native mature hedgerow trees are present across The Site.
Medium distinctiveness grassland (Semi-improved Grassland)	**Confirmed** – 2.06ha of The Site was classified as a classified as a Transitional Grassland between Acid and Semi-improved, occupying all of Field 11 and part of Field 8, as such it has been considered Semi-improved Grassland for the purpose of this study (UKhab: g3c - Other Neutral Grassland). The remaining 13.73ha of The Site was classified as Poor Semi-improved Grassland (UKhab : g3c Other Neutral Grassland)

High distinctiveness grassland (Acid Grassland)	**Confirmed** – 2.08ha of The Site was classified as Acid Grassland (UKhab: g1d - Other Lowland Acid Grassland) occupying all of Field 10, and parts of Field 9. It is likely the entire site was originally Acid Grassland prior to modern agricultural activities**.**
Waterways	**Confirmed** - Five streams and one wet ditch were identified within The Site, with a combined distance of 1.06km. Two stream sections S4.1 and S6.1 were noted to support a range of riverine or wetland plant species,
Badgers	**Possible** – No signs of Badger or active setts were identified within the survey area, but suitable woodland exists along the boundaries for Badger setts, and suitable foraging habitat within The Site.
Otter	**Possible -** No evidence of Otter was recorded during targeted surveys or other biodiversity surveys, however the stream running along the west boundary of Field 1 (S1) is considered potentially suitable for use by the individuals using the nearby River Ely.
Hazel Dormouse	**Probable -** Individual Dormice were not observed during biodiversity surveys, however possible gnawed nuts were found during a habitat condition assessment on 17th August 2023. The nuts were located by the gate between Fields 3 and 7, which is where three species rich hedgerows intersect (H9, H11 and H13).
Hedgehog	**Probable -** No evidence of Hedgehog was recorded during ecological surveys, however all hedgerows and woodland associated with The Site are considered suitable for supporting Hedgehog populations.
Foraging and commuting Bats	**Confirmed** – At least six species of Bats were recorded during Bat transects and static logger surveys: the rare Annex II Lesser Horseshoe Bat, Noctule, Long-eared Bat sp., Soprano Pipistrelle, Common Pipistrelle, and *myotis sp.*. The hedgerows were proved to be suitable commuting and foraging resources, and the woodland edge was considered valuable to Bats, particularly *myotis sp*..
Ground nesting birds (Meadow Pipit)	**Confirmed** - Post-survey territory mapping indicated that Meadow Pipits were nesting in grassland within The Site. A total of six territories were mapped: five territories distributed across Fields 1, 2, 3, 4, 6 and 7, and one territory in the north section of Field 8
Tree or hedgerow nesting birds	**Confirmed** - Three tree or hedgerow nesting bird species were confirmed to breed on site; and 15 were considered probable breeding birds, including seven notable species: Willow Warbler, Wren, Song Thrush, Mistle Thrush, Spotted Flycatcher, Dunnock, and Greenfinch.
Wintering birds	**Confirmed -** 14 notable bird species were recorded using The Site during winter bird surveys: Common wood pigeon, Herring Gull, Sparrowhawk, Green Woodpecker, Wren, Starling, Song Thrush, Mistle Thrush, Redwing, Fieldfare, Dunnock, Meadow Pipit, Linnet, and Redpoll. A small number of passerines were observed using the fields sporadically.
Reptiles	**Probable (confirmed offsite) -** A population of Common Lizards was identified in the now offsite field to the east of Field 7, falling outside the current Site boundary. Notably, no reptiles were found under mats deployed within The Site boundary. Considering the proximity of the Common Lizard population (located 150m away from The Site boundary) and the presence of suitable habitat within The Site, it is conceivable that reptiles are present within The Site, though were undetected during surveys. No other reptiles were observed during biodiversity surveys.
Amphibians	**Probable** - No amphibian species were recorded during ecological surveys, however all terrestrial habitats within The Site are considered suitable commuting, foraging, or hibernating habitat for amphibian species, in addition to the various streams that run through The Site.
Waxcap fungi	**Confirmed** - Three species of locally important fungi were identified within The Site: Butter Waxcap, Heath Waxcap, and Meadow Waxcap. There was a notable concentration of fungi observed on Fields 1 and 10, particularly waxcaps (four species collectively). This assemblage of species is indicative of mycologically rich unimproved grassland, which

	have not been subjected to agricultural inputs, ploughing or tilling for a significant period of time

9.6 PROPOSED DEVELOPMENT

9.6.1 The proposed development comprises the construction, operation, maintenance and decommissioning of a ground-mounted solar farm plus ancillary infrastructure including the following:

- Photovoltaic (PV) panels;
- Mounting frames – matt finished small section metal structure;
- Scheme of landscaping and biodiversity enhancement;
- Inverters and transformers and associated cabling (largely below ground);
- Distribution Network Operator (DNO) substation and customer cabins;
- Deer fencing, sympathetic to the area, and infra-red CCTV (CCTV cameras
- would operate using motion sensors and would be positioned inward only to ensure privacy to neighbouring land and property);
- Temporary set down area;
- Internal service roads; and
- Site access for the construction, operational and decommissioning phases.

9.6.2 The panels will be arranged in rows in an east-west alignment across the deployment fields and will be angled between 15° and 25° to the horizontal and orientated south. The height of the panels will be a maximum height of 2.6m above ground level; the lowest part of the panel will measure approximately 0.8m above ground level. The rows of panels are expected to be 3.5m apart to avoid shadowing and allow for scheduled maintenance although this will be dependent on local topography.

9.6.3 The mounting frames will be matt finished galvanised steel that will be fixed to the ground employing a pile mounting system, depending on ground conditions. The piles will be pushed into the ground via a mobile piling rig.

9.6.4 Cabling from the inverters/transformer to the substation for each field will be below ground. An earth cable will be required around the perimeter of each field. Trench depths will vary from 0.4m to 1.3m depending on whether they are for earthing or AC cabling.

9.6.5 Each field will be secured by up to a 2m stock fence or similar. Infra-red (non-visible at night), inward facing pole mounted CCTV cameras (c. 2.5m – 3m in height) will also be provided at appropriate intervals along the boundary fence. These will enable remote surveillance of The Site.

9.6.6 The solar deployment areas will be connected to the substation (point of connection to the local distribution network) using below ground cabling, and utilising roads where possible.

9.6.7 Where the cabling crosses natural habitat, a full assessment of potential impacts will be made once the exact route is finalised. This will include assessment of potential impacts to protected species and habitats along the route affected by the construction process, as well as suitable reinstatement measures.

9.6.8 The construction of the solar farm is expected to last approximately 6 months and employ up to 50 staff at the peak of the construction period. The CTMS accompanying this Environmental Statement provides details of proposed access arrangements, the anticipated programme, construction vehicle numbers and type, construction worker numbers and the proposed construction hours.

9.6.9 A Construction Environmental Management Plan (CEMP) will be prepared prior to

development works commencing on site and summarised in the Biodiversity Management Plan (BMP). A Site Waste Management Plan (SWMP) will be prepared as part of the CEMP.

Inherent Mitigation

9.6.10 Mitigation measures incorporated into the scheme design are often described as 'inherent mitigation' or 'mitigation by design'. This can include the re-design of the layout of the scheme or adjusting the location of certain activities. Mitigation by design is particularly beneficial as there is a greater certainty that it will be delivered. Through interactive working with the engineering and technical consultant team, Wychwood have ensured the following inherent mitigation measures are fundamental parts of this scheme. Further mitigations and enhancements are outlined later in this report.

Tree and hedgerow root protection areas

9.6.11 Root protection areas (RPAs) will be outlined around important veteran and mature trees, in accordance with BS 5837:2012 to avoid compaction from construction machinery. Zones vary in size depending on the size and veteran status of the tree. RPAs of less important trees and of hedgerows are also avoided by solar panels and other infrastructure. A perimeter security fence will be installed at the commencement of construction to protect all boundary hedgerows, and buffers for internal hedgerows will be suitably marked.

Hedgerow buffers

9.6.12 Security fencing is to be installed at a minimum of 5m from any hedgerows, leaving an undisturbed grassland buffer. During operations, these areas will only be accessed for occasional habitat maintenance such as hedgerow and grass cutting. In very localised areas the fence will be required to cross hedgerows and enter into the 5m zones; in such cases a method statement will be prepared to detail appropriate mitigations. The removal of hedgerows will be avoided wherever possible, however, any small sections of hedgerows that may need to be removed to install fence crossings will be compensated through extensive hedgerow infilling taking place on site.

Woodland buffers

9.6.13 15m wide buffers will be instated around all woodland within and adjacent to The Site to protect the tree root systems and sensitive woodland biodiversity such as foraging and commuting Bats.

9.6.14 In very localised areas fencing may be required to enter the 15m buffer zones and cross the RPA's of trees; in such cases a method statement will be prepared to detail appropriate mitigations.

Waterway buffers

9.6.15 5m buffers are to be instated around all waterways within The Site to protect sensitive riverine biodiversity.

Mammal access

9.6.16 Mammal access is to be retained for medium sized mammals present in the locality, including Badgers, throughout The Site, to enable access post-construction. This will be provided in the form of security fencing incorporating regular 200mm gaps at the base, along the entire fence line. Alternatively, badger gates can be installed at the entire fence line at 50m intervals.

Hedgerow gaps

9.6.17 Existing hedgerow gaps are to be used for site access wherever possible. Any

remaining gaps not utilised for access are to be infilled with native shrub species of local provenance.

Mitigation Hierarchy

9.6.18 A sequential process has been adopted to avoid, mitigate and compensate negative ecological impacts and effects in order to achieve a net gain for biodiversity. This process is often referred to as the 'mitigation hierarchy'. Avoidance, mitigation, compensation and enhancement measures have been applied in turn as part of the EcIA process.

Avoidance

9.6.19 Negative impacts should always be avoided where possible, for example by deciding not to locate a project in a particular area or making a change to scheme layout to avert negative impacts to priority biodiversity. Avoidance can be spatial or temporal, for example careful timing of an activity to prevent an impact occurring.

Mitigation

9.6.20 Where avoidance has been applied but residual impacts are still predicted, then mitigation options will be applied to address the impacts. Mitigation can cover a range of activities, from construction practices to equipment selection to operational controls, each designed to minimise a particular impact. For example, selecting low ground pressure vehicles for construction work will minimise the risk of soil compaction and sediment release during construction.

Compensation

9.6.21 Compensation describes measures taken to offset residual effects resulting in the loss of, or permanent damage to, ecological features despite mitigation. For example, it may take the form of replacement habitat or improvements to existing habitats. Compensation can be provided either within or outside the project site (defined by the red line of a planning application). Compensation should always be seen as a last resort, when all other mitigation options have been exhausted.

9.6.22 As a general rule, compensation should be focused on the same type of ecological features as those affected and equivalent levels of ecological 'functionality' sought. There will be cases when it is not possible to achieve ecological equivalence through compensation. Any replacement area should be similar in terms of ecological features and ecological functions that have been lost or damaged, or with appropriate management have the ability to reproduce the functions and conditions of those ecological features. Compensation should be provided as close as possible to the location where effects have occurred and benefit the same habitats and species as those affected.

9.6.23 Where the delivery of compensation measures, including biodiversity offsets, is likely to involve access to land, or land purchase, outside a scheme footprint and a commitment to long-term management through legal agreements, this has been flagged in the EIA.

Enhancement

9.6.24 Enhancement is improved management of ecological features or provision of new ecological features, resulting in a net benefit to biodiversity, which is unrelated to a negative impact or is 'over and above' that required to mitigate/compensate for an impact. For example, mitigation for bats may involve erecting bat boxes in a woodland to replace suitable bat roosting features that have been removed, and the woodland habitat itself may be enhanced for foraging bats by increased woodland planting and the creation of glades. Enhancement could be linked to the delivery of wider socio-

economic benefits such as wetland restoration and flood risk management. Enhancement measures are described further in the relevant sections of this EIA.

9.7 ASSESSMENT OF EFFECTS

9.7.1 This examination considers potential construction and operational effects on the key ecological receptors, and after implementing the mitigation hierarchy (avoid, compensate, etc.), determines the resulting significance of these effects. The assessment follows the Environmental Impact Assessment (EIA) protocol outlined in the methodology.

9.7.2 Mitigations applicable to each ecological receptor are outlined where relevant. Comprehensive details regarding the establishment and management of these mitigations can be found in the Biodiversity Management plan (Wychwood Biodiversity, 2025a).

Construction Phase

9.7.3 The installation of solar panels, transformer buildings, fencing, and maintenance tracks will remove habitat within their footprint, including equipment (substation/transformers) foundations, access track footprints and piles supporting the solar panel frames. Equipment foundations will replace approximately 0.012ha (123m²) of Poor Semi-improved Grassland and 0.001ha (14m²) of transitional grassland. The permanent maintenance track, made of semi-permeable hardcore, will allow some plant growth between stones. This track will replace approximately 0.44ha of Poor Semi-improved Grassland and 0.1ha of transitional grassland.

9.7.4 A temporary compound and access road will be established in agricultural fields, minimising biodiversity impacts. Once decommissioned, the soil will be deep-ploughed, reseeded with a diverse grass mix, and managed to reinstate the habitat within two years.

9.7.5 Noise, vibration, and human presence may temporarily disturb nearby hedgerows and lines of trees during work hours.

9.7.6 Any work near tree root protection zones could impact tree health due to soil disturbance or compaction.

Operational Phase

9.7.7 Approximately 3.5ha of Poor Semi-improved Grassland and 0.52ha of Transitional Grassland will be shaded by solar panels. The fixed-tilt solar arrays may alter grassland biodiversity as shading beneath panels can reduce diversity; however, research indicates that well-managed sites can foster species rich grassland swards between and outside the panel rows.

9.7.8 Perimeter fencing may limit the movement of medium to large sized mammals such Otter, Badger, Hare and Deer.

9.7.9 Ongoing maintenance activities (e.g., occasional vehicle visits, panel cleaning, and grass cutting) will have minimal disturbance impacts.

EU protected sites

9.7.10 Given that Blackmill Woodland (SAC) & Cardiff Beech Woods (SAC) are located >8km from the proposed development, there is judged to be little potential for negative effects during construction and operations for both protected sites. For this reason, the significance of any operational effects is judged to be negligible at this stage. However, a Habitats Regulation Assessment (HRA) may be required due to the international importance of these sites.

Statutory protected sites - Rhos Tonyrefail (SSSI): construction

9.7.11 Given The Site's close proximity to the proposed development (0km), there is potential for negative effects during construction to species groups such as Bats and breeding birds through noise, lighting and human presence. This is likely to be temporary for a period of approximately 6 months and only affecting those areas close to the construction site.

9.7.12 There is potential for accidental pollution from hydrocarbons during construction, resulting in significant negative effects upon the water and habitat quality of the SSSI. However, this risk will be mitigated through strict adherence to fuel management requirements in the CEMP.

9.7.13 The sensitivity of the receptor is high, owing to its importance at the national scale. However, as the nature of the impact is such that it is both temporary (6 months in total), >50m from the construction zone and reversible over a small area, the sensitivity is considered to be local. Considering the distance from the construction area the impacts of construction disturbance upon Rhos Tonyrefail SSSI are considered to be adverse and of low magnitude, therefore the overall the significance of effect is minor-negligible (adverse).

Rhos Tonyrefail (SSSI): operations

9.7.14 Given the benign nature of the solar farm once operational, the solar farm is not expected to negatively affect the Rhos Tonyrefail SSSI habitats, as there will be little noise, no lighting, and only occasional visits by engineers for maintenance purposes. Furthermore, the proposed habitat enhancement measures are expected to deliver a minor positive impact to surrounding wildlife habitats, including the SSSI.

9.7.15 The sensitivity of the receptor is high, owing to its importance at the national scale. However, considering the inherent mitigations and the proposed grassland management measures, the impacts of operations on the receptor are judged to be negligible, and of negligible magnitude, therefore the overall the significance of effect is negligible.

Llantrisant Common and Pastures (SSSI): construction

9.7.16 Given The Site's distance of 0.71km from the proposed development, there is judged to be little potential for negative effects during construction through noise, lighting, and human presence. For this reason, the impacts of construction on the receptor are judged to be negligible, and of negligible magnitude, therefore the overall the significance of effect is negligible.

Llantrisant Common and Pastures (SSSI): operations

9.7.17 Given The Site's distance of 0.71km from the proposed development, there is judged to be little potential for negative effects during operations. For this reason, the impacts of operations on the receptor are judged to be negligible, and of negligible magnitude, therefore the overall the significance of effect is negligible.

Non-statutory protected sites - Rhiwfelin Fawr SINC: construction

9.7.18 Given The Site's close proximity to the proposed development (0.09km), there is potential for negative effects during construction through noise, lighting and human presence. These effects could apply to sensitive breeding birds; foraging, commuting or roosting Bats; and other species of mammal that are present within the SINC. This is likely to be temporary for a period of approximately 6 months and only affecting those areas close to the construction site.

9.7.19 There is potential for accidental pollution from hydrocarbons during construction, resulting in significant negative effects upon the water and habitat quality of the SINC.

However, this risk will be mitigated through strict adherence to fuel management requirements in the CEMP.

9.7.20 The sensitivity of the receptor is high, owing to its importance at the regional scale. However, as the nature of the impact is such that it is both temporary (6 months in total), >50m from the construction zone and reversible over a small area, the sensitivity of the receptor is judged to be local. Considering the inherent mitigations and providing the CEMP prescriptions are adhered to, the impacts of construction disturbance upon Rhiwfelin Fawr SINC are judged to be adverse, temporary, and of low magnitude, therefore the overall the significance of effect is minor-negligible.

Rhiwfelin Fawr SINC: operations

9.7.21 Given the benign nature of the solar farm once operational, the solar farm is not expected to negatively affect the Rhiwfelin Fawr SINC habitats, as there will be little noise, and no lighting on site.

9.7.22 The sensitivity of the receptor is high, owing to its importance at the national scale. However, the impacts of operations on the receptor are judged to be negligible, and of negligible magnitude, therefore the overall the significance of effect is negligible.

Y Gweria Pasture Wildlife Trust Reserve: construction

9.7.23 Given The Site's distance of >1km from the proposed development, there is judged to be little potential for negative effects during construction through noise, lighting, and human presence.

9.7.24 The sensitivity of the receptor is medium, owing to its importance at the regional scale. However, the impacts of construction on the receptor are judged to be negligible, and of negligible magnitude, therefore the overall the significance of effect is negligible.

Y Gweria Pasture Wildlife Trust Reserve: operations

9.7.25 Given The Site's distance of >1km from the proposed development, there is judged to be little potential for negative effects during operations. For this reason, the impacts of operations on the receptor are judged to be negligible, and of negligible magnitude, therefore the overall the significance of effect is negligible.

Habitats

9.7.26 The potential construction and operational impacts to the following habitats have been assessed using the 'Guidelines on Ecological Impact Assessment' produced by CIEEM, following the procedure detailed in Impact Assessment section of the Methodology.

Acid grassland construction

9.7.27 Both fields containing Acid Grassland are to be excluded from construction activities and therefore the habitat will not be adversely affected by this phase of the project.

9.7.28 The sensitivity of the receptor is high, owing to its importance at the National scale. Considering no construction activities are to take place within Fields 9 and 10, the impact to Acid Grassland is judged to be negligible and negligible in magnitude, therefore the overall significance of effect is negligible.

Acid grassland: operations

9.7.29 The sheep grazing regime proposed for areas of connected grassland outside the security fence, including the acid grassland, is expected to improve the condition of this habitat over time

9.7.30 The sensitivity of the receptor is high, owing to its importance at the national scale.

However, considering the fields exclusion from panel deployment and the proposed grassland management measures, the impacts of operations on the receptor are judged to be beneficial, and of low magnitude, therefore the overall the significance of effect is minor (beneficial).

Semi-improved grassland (incl. transitional grassland): construction

9.7.31 These habitats will be directly impacted during construction by the movement of vehicles and construction activities such as trenching and pile driving which will scuff and in places remove surface vegetation, leading to bare soil in areas of heavy traffic. Compacted and bare soil can lead to weed infestation. The impact would be temporary, i.e., over the 6-month period of construction, but the effects could last much longer, i.e., until soil conditions and vegetation have returned to a natural state.

9.7.32 Impacts would be avoided in some areas of the habitat through inherent mitigation. There will be 15m buffers from the edge of woodland and buffers of at least 5m from hedgerows and streams, in addition to root protection zones around Lines of Trees.

9.7.33 To minimise impacts, low pressure tracked vehicles will be used wherever possible to limit rutting and soil inversion. Cessation of plant operation in periods of extended high rainfall to avoid excessive poaching, compaction and killing of vegetation.

9.7.34 A system of intelligent traffic design and control will ensure vehicle movements are minimised, and traffic is routed to minimise impacts to the existing vegetation.

9.7.35 The sensitivity of the receptor is low, owing to its importance at the local scale. Considering the proposed mitigation measures, the impact to this habitat is judged to be adverse and low in magnitude, therefore the overall significance of effect is minor-negligible (adverse).

Semi-improved grassland (incl. transitional grassland): operations

9.7.36 The management of grassland within the solar farm through extensive grazing is likely to maintain and may improve the quality of the Semi-improved Grassland over time. The stocking density of sheep is designed to maintain the sward to a height that promotes Acid Grassland, and this may gradually contributing to restoring this historic habitat.

9.7.37 Shading of grassland beneath the solar panels could result in changes to botanical species composition and dominance. The area of deep shading is small, given the movement of the sun throughout the day and throughout the year. However, within this area there is likely to be a reduction in density of meadow species present which are used to full sun.

9.7.38 Poor Semi-improved Grassland is important at the local scale and its sensitivity is low. With the conservation grazing regime in place throughout most of The Site to promote botanical diversity, and a cutting regime along isolated margins, which will also be timed to promote botanical diversity, the impact to this habitat during operations is judged to be negligible and negligible in magnitude, therefore the overall significance of effect is negligible.

Hedgerows, scrub, Lines of Trees and freestanding trees: construction

9.7.39 Hedgerows, trees, and shrubs occur throughout The Site and potential negative effects from construction include soil compaction and direct impacts from trenching, piling and road construction in the root zones.

9.7.40 Inherent mitigations include establishing setbacks of 5m to 15m from hedgerows and Lines of Trees will be established throughout The Site and protected with fencing during construction. Root protection areas (RPAs) will be outlined around important veteran mature trees, to avoid compaction from construction machinery. Zones vary

in size depending on the size and veteran status of the tree. RPAs of less important trees and of hedgerows are also avoided by solar panels and other infrastructure, and if access road runs through these zones, the road will be built using a no-dig method that will avoid directly impacting roots.

9.7.41 Existing hedgerow gaps will be used for site access wherever possible. New hedgerow planting is integral to the design.

9.7.42 The sensitivity of the receptor is medium, owing to its importance at the regional scale. Considering that sufficient ecological protected zones will be instated around all woody habitat, the impacts of construction disturbance upon hedgerows, trees and shrubs is judged to be negligible and negligible in magnitude, therefore the overall significance of effect is negligible.

Hedgerows, scrub, Lines of Trees and freestanding trees: operations

9.7.43 During operations, all hedgerows would be managed sympathetically to improve structure and flowering / fruiting by following national guidance for hedgerow management.

9.7.44 Considering the infilling of all remaining hedgerow gaps throughout The Site and the planting of new hedgerow trees, the impact to this habitat during operations is judged to be beneficial and low in magnitude, therefore the overall significance of effect is minor (beneficial).

Lowland Mixed Deciduous Woodland: construction

9.7.45 Given the woodland's close proximity to the proposed development, there is potential for negative effects during construction through noise, lighting and human presence. This is likely to be temporary for a period of approximately 6 months and only affecting those areas close to the construction site.

9.7.46 The sensitivity of the receptor is high, owing to its importance at the national scale. However, as the nature of the impact is such that it is both temporary (6 months in total), and reversible over a small area, the sensitivity of this receptor is judged to be low. Considering the proposed mitigation measures, the impacts of construction disturbance upon woodland is judged to be adverse and low in magnitude, therefore the overall significance of effect is minor-negligible (adverse).

Lowland Mixed Deciduous Woodland: operations

9.7.47 Woodlands at the edge of site are unlikely to be affected by the solar farm during operations owing to the benign nature of the development, resulting in a negligible impact through the life of the project.

9.7.48 The sensitivity of the receptor is high, owing to its importance at the national scale. Considering the proposed mitigation measures, the impacts of operations upon woodland is judged to be negligible and negligible in magnitude, therefore the overall significance of effect is negligible.

Ponds, ditches, and waterways: construction

9.7.49 There is the risk of negative effects on water courses during construction from sediment and accidental release of hydrocarbons or other hazardous materials flowing into the waterways.

9.7.50 Water courses will be protected through mitigation including sediment control structures and procedures as defined in the CEMP, use of low pressure construction vehicles to minimise compaction and vegetation wear; minimisation of vehicle movements through smart controls and limited access routes. These actions will minimise the creation of bare soil and sediment flow into water courses. There will also be no deployment or construction activities within 5m of water courses. These

buffers will be fully vegetated, so further minimising the risk of sediment entering water courses.

9.7.51 The risk of an accidental spill of hydrocarbons or other hazardous materials will be mitigated by applying the fuel and hazardous materials management requirements, as part of the CEMP for the construction period.

9.7.52 The sensitivity of this receptor is low, being important at the local scale. Considering the proposed mitigation measures, the impact to watercourses from construction is judged to be negligible and negligible in magnitude, therefore the overall significance of effect is negligible.

Ponds, ditches, and waterways: operations

9.7.53 Any vegetation damage post-construction is likely to recover quickly, with areas of compaction being treated and re-seeded, so sediment risk will remain low. Therefore, there should be no negative effects from the operations of the solar farm.

9.7.54 Considering the proposed mitigation measures, the impact to watercourses from operations is judged to be negligible and negligible in magnitude, therefore the overall significance of effect is negligible.

Protected and Notable Species

9.7.55 The potential construction and operational impacts to the following species have been assessed using the 'Guidelines on Ecological Impact Assessment' produced by CIEEM, following the procedure detailed in Impact Assessment section of the Methodology.

Badger: construction

9.7.56 During construction, Badgers within the construction area could be injured or killed through falling into excavations or becoming trapped in wire or other construction materials. Construction close to a sett could cause the sett to be abandoned and Badgers to be injured or breeding to be affected.

9.7.57 Surveying for Badgers immediately prior to construction, setting back construction at least 15m from any active sett and implementing a watching brief during construction to ensure all excavations are covered and construction materials are safely stored should mitigate any impacts to Badgers during construction. The temporary loss of foraging habitat is not seen to be significant, given the abundance of similar habitat within the wider landscape.

9.7.58 The sensitivity of Badgers is low, these species being considered important at the local scale. Considering the lack of Badger signs, and the above mitigation, the impact to this species during construction is judged to be adverse, temporary, and low in magnitude, therefore the overall significance of effect is minor-negligible (adverse).

Badger: operations

9.7.59 Providing Badgers have continued access to The Site, this is species is unlikely to be affected by the solar farm during operations owing to the benign nature of the development.

9.7.60 The sensitivity of Badgers is low, reflecting their importance at the local scale. Considering that access will retained for badgers throughout operations, the impact to Badgers from operations is judged to be negligible and negligible in magnitude, therefore the overall significance of effect is negligible.

Otters: construction

9.7.61 The proposed 5m buffer from the stream and ditches should minimise direct impacts to Otter habitat during construction. Further, existing watercourse crossing points will be used by construction traffic and where possible to minimise impacts to ditches and associated species. However, if Otters are present on site during the construction period, there is likely to be disturbance from noise, vibration, and human presence.

9.7.62 Otters are important at the local scale and are therefore considered to be low sensitivity. With inherent mitigations in place, the impacts to these species (if present on site) will be adverse, temporary, and low in magnitude, therefore the overall significance of effect is minor-negligible (adverse).

Otters: operations

9.7.63 No significant negative impacts are predicted for Otters during the operation of the solar farm. The impact to Otters during operations is judged to be negligible and negligible in magnitude, therefore the overall significance of effect is negligible.

Hazel dormouse: construction

9.7.64 Hazel dormice are most likely to use hedgerows and woodland. During construction they would be impacted by the removal of hedgerows or woodland habitats and disturbance from construction activities close to these habitats.

9.7.65 Inherent mitigations include no plans for hedgerows or trees to be removed as part of this development. If any hedgerows are to be removed, they should be surveyed for the presence of dormice, and appropriate action taken to protect this species should it be present. Further, a 5m buffer from all hedgerows and a 15m buffer from woodland will help to minimise impacts from noise and vibration.

9.7.66 Dormice are considered to be important at the National scale and are therefore considered to be high sensitivity. However, the nature of the impact is such that it is both temporary (6 months in total), and reversible over a small area. For this reason, the sensitivity is considered to be local. With inherent mitigations in place, impacts are judged to be adverse, temporary, and low in magnitude, therefore the overall significance of effect is minor-negligible (adverse).

Hazel dormouse: operations

9.7.67 If present on site, Hazel dormice are most likely to use hedgerows and woodland. During operations, there should be no negative effects to these habitats, and managing the hedgerows more extensively through the life of the project for improved structure and fruiting should benefit this species where present.

9.7.68 Dormice are important at the National scale and are therefore considered to be high sensitivity. Considering the proposed hedgerow enhancements, the planting of new hedgerow trees, and the installation of eight Dormouse boxes, the impact to dormice during operations is judged to be beneficial and low in magnitude, therefore the overall significance of effect is moderate-minor (beneficial).

Hedgehog: construction

9.7.69 If present on site, Hedgehogs are most likely to utilise the field margins and bases of hedgerows within The Site. During construction, any Hedgehogs within the construction area could be injured or killed through falling into excavations or becoming trapped in wire or other construction materials.

9.7.70 The setting back of construction 5m from hedgerows and implementing a watching brief during construction to ensure all excavations are covered and construction materials are safely stored, should minimise impacts to Hedgehogs during

construction.

9.7.71 The sensitivity of Hedgehogs is low, these species being considered important at the local scale. With inherent mitigations in place, impacts are judged to be adverse, temporary, and low in magnitude, therefore the overall significance of effect is minor-negligible (adverse).

Hedgehog: operations

9.7.72 No significant negative impacts are predicted for Hedgehogs during the operation of the solar farm.

9.7.73 Considering the proposed hedgerow enhancements and the planting of a new Line of Trees, the impact to Hedgehogs during operations is judged to be beneficial and low in magnitude, therefore the overall significance of effect is minor-negligible (beneficial).

Bats: construction

9.7.74 If construction occurs in summer months when Bats are actively foraging, then construction activities could affect roosting, foraging and commuting activities through lighting, as artificial lighting is known to result in a range of impacts including roost desertion and delayed emergence of roosting. If construction occurs in winter months, then construction impacts would be limited to Bat roosts.

9.7.75 To mitigate this impact, artificial lighting will be restricted to the laydown areas and will be directional, so the impacts should be temporary and limited to a small area of The Site.

9.7.76 Removal of trees containing roosting Bats could result in mortality. The protection of existing trees and hedgerows and the setback of 15m from woodland should avoid direct impacts to roosting Bats. However, there is the potential for disturbance of Bat roosts from noise, vibration and human disturbance during the day.

9.7.77 Bats are considered to be important at the National scale and are therefore considered to be high sensitivity. However, the nature of the impact is such that it is both temporary (6 months in total), and reversible over a small area. Therefore, for this reason the sensitivity is considered to be local. With inherent mitigations in place, impacts to Bats during construction are judged to be adverse, temporary, and low in magnitude, therefore the overall significance of effect is minor-negligible (adverse).

Bats: operations

9.7.78 The proposed development should not affect Bat roosting during operations. However, the changed nature of grassland through addition of solar panels could potentially disrupt foraging habitat.

9.7.79 Inherent mitigations include the buffers of 5m to the hedgerows and 15m to woodland which will avoid impacts to Bat foraging along these linear features at The Site's boundary and internally.

9.7.80 Artificial lighting will not be utilised during the operation of the solar farm.

9.7.81 Considering 5m wide buffers are to be instated along hedgerows and waterways, 15m wide buffers along woodland edges, the proposed conservation grazing regime across The Site, in addition to the planting of new hedgerows and hedgerow trees, the impact to bats during operations is judged to be beneficial and low in magnitude, therefore the overall significance of effect is moderate-minor (beneficial).

Ground nesting birds: construction

9.7.82 In the absence of mitigation, construction during the breeding season (March – July)

would result in impacts to ground nesting birds from noise, dust, vibration, and human presence and would likely result in disruption to breeding within the abovementioned fields and potentially on adjoining land. Furthermore, in the absence of mitigation, the presence of solar panels and trackways has a high potential to displace ground nesting birds, putting pressure on the local population due to a reduction of suitable nesting habitat in the locality.

9.7.83 The sensitivity of Meadow Pipit is medium, being important at the Regional scale. To avoid the loss of nesting habitat for Meadow Pipit 3-5ha of suitable land within the vicinity of The Site is to be enhanced and managed for nesting Meadow Pipit.

9.7.84 If construction occurs during the breeding season (1st March – 31st August), disturbance to Meadow Pipits is anticipated from piling and construction activities through noise, vibration, and dust. These impacts are judged to be adverse, temporary, and high in magnitude, therefore the overall significance of effect is major-moderate (adverse). If construction activities are undertaken during the breeding season, a pre-construction survey should be conducted by an ecologist to search for Meadow Pipit nests. If active nests are found, no construction activities are to take place within 50m of the nest until all chicks are confirmed to have fledged. Providing these avoidance measures are implemented, the overall significance of effect is considered to be minor (adverse). If construction occurs outside the breeding season, the overall significance of effect is considered to be negligible.

Ground nesting birds: operations

9.7.85 The presence of solar panels and other infrastructure has the potential to displace nesting Meadow Pipits putting pressure on the local population by reducing suitable nesting habitat. To avoid the loss of nesting habitat for Meadow Pipit, approximately 3ha of land on The Site is to remain free from development and managed as Meadow Pipit nest mitigation. The land is to be conservation grazed outside the period of April to August, inclusive, to avoid livestock disturbance to active nests.

9.7.86 The sensitivity of Meadow Pipit is medium, being important at the Regional scale. Considering the above mitigation measures, impacts to this species' breeding during the operation of the solar farm are judged to be medium in magnitude, therefore the overall significance of effect is minor (adverse).

Notable hedgerow, scrub & woodland breeding birds: construction

9.7.87 All hedgerow, scrub & woodland breeding birds would be adversely affected by the removal of woody habitats. However, no removal of hedgerows, trees or woodland is planned during the construction phase, so direct impacts to nesting habitat for notable hedgerow, scrub and woodland birds will be avoided.

9.7.88 Some disturbance to breeding birds, is anticipated from piling and construction activities through noise, vibration and dust and human presence. During construction a buffer of 5m will be maintained from all hedgerows and a 15m buffer will be maintained from all woodland across The Site. These buffers will protect hedgerows, trees, and woodland from impacts during construction and maintain their value as nesting and foraging habitat for birds.

9.7.89 The sensitivity of the red listed birds is high, these species being important at the National scale. However, the nature of the impact is such that it is both temporary (6 months in total), and reversible over a small area. Therefore, the sensitivity of red listed birds is considered to be local. If construction occurs during the breeding season (1st March – 31st August), some disturbance to breeding birds, is anticipated from piling and construction activities through noise, vibration, and dust. These construction impacts are judged to be adverse, temporary, and medium in magnitude, therefore the overall significance of effect is minor (adverse).

9.7.90 If construction occurs outside the breeding season, then the overall significance of effect to red listed birds is judged to be negligible.

9.7.91 The sensitivity of the amber listed birds is moderate, these species being important at the regional scale. However, the nature of the impact is such that it is both temporary (4 months in total), and reversible over a small area. Therefore, the sensitivity of amber listed birds is considered to be local. If construction occurs during the breeding season (1st March – 31st August), some disturbance to breeding birds, is anticipated from piling and construction activities through noise, vibration, and dust. These construction impacts are judged to be adverse, temporary, and medium in magnitude, therefore the overall significance of effect is minor (adverse).

9.7.92 If construction occurs outside the breeding season, then the overall significance of effect to amber listed birds is judged to be negligible.

Notable hedgerow, scrub & woodland breeding birds: operations

9.7.93 All notable hedgerow, scrub & woodland breeding birds will benefit from the planting of sections of new species-rich hedgerow, infilling of existing gappy hedgerows, and the relaxation of management for the existing hedgerows, leading to improved structure and Greater availability of flowers and fruits.

9.7.94 The sensitivity of the red listed birds is high, these species being important at the National scale. Considering the proposed hedgerow enhancements, 15m wide diverse grassland buffers around woodland, and the planting of new hedgerow trees, the impact of operations upon these species is judged to be beneficial and low in magnitude, therefore the overall significance of effect is moderate-minor (beneficial).

9.7.95 The sensitivity of the amber listed birds is medium, these species being important at the regional scale. Considering the proposed hedgerow enhancements, 15m wide diverse grassland buffers around woodland, and the planting of new hedgerow trees, the impact of operations upon these species is judged to be beneficial and low in magnitude, therefore the overall significance of effect is minor (beneficial).

Notable wintering birds: construction

9.7.96 If construction occurs in winter, then wintering birds using woody habitat could be disturbed along hedgerows and woodland edges due to noise from piling and other construction activities, vibration, dust, and human presence.

9.7.97 The inherent mitigation of a 5m buffer between site and hedgerows, and 15m to woodland habitat will help to minimise disturbance, but some birds may be disturbed locally.

9.7.98 If construction occurs in winter, then wintering birds using field habitats could be disturbed due to noise from piling and other construction activities, vibration, dust, and human presence.

9.7.99 The sensitivity of red listed bird species is high, these species being considered important at the national scale. However, as the nature of the impact is such that it is both temporary (6 months in total), and reversible over a small area, the sensitivity of the receptor is judged to be local. Considering the inherent mitigations, the impacts to these species will be adverse, temporary and of medium magnitude, therefore the overall significance of effect is considered to be minor (adverse).

9.7.100 The sensitivity of amber listed bird species is medium, these species being considered important at the national scale. However, as the nature of the impact is such that it is both temporary (6 months in total), and reversible over a small area, the sensitivity of the receptor is judged to be local. Considering the inherent mitigations, the impacts to these species will be adverse, temporary and of medium

magnitude, therefore the overall significance of effect is considered to be minor (adverse).

Notable wintering birds: operations

9.7.101 The presence of solar panels and other infrastructure has the potential to displace wintering birds foraging on field habitats. Considering field habitats were estimated to have a low-moderate value for wintering birds, with birds generally observed in low densities, it is anticipated these areas of retained grassland throughout The Site will provide sufficient winter foraging habitat for birds during operations.

9.7.102 The sensitivity of red listed birds is high, being important at the National scale. With 5m wide buffers along hedgerows and waterways, 15m wide buffers along woodland edge, and the proposed habitat creation, enhancement and management measures, the impacts to red listed wintering birds during the operation of the solar farm are judged to be negligible and negligible in magnitude, therefore the overall significance of effect is negligible.

9.7.103 The sensitivity of amber listed birds is medium, being important at the Regional scale. With 5m wide buffers along hedgerows and waterways, 15m wide buffers along woodland edge, and the proposed habitat creation, enhancement and management measures, the impacts to amber listed wintering birds during the operation of the solar farm are judged to be negligible and negligible in magnitude, therefore the overall significance of effect is negligible.

Amphibians and reptiles: construction

9.7.104 It is not anticipated that primary on-site habitats would be lost as a result of the proposed development. No ponds or water bodies will be removed or altered in any way. All hedgerows will remain intact and no mature boundaries, including ditches, will be lost.

9.7.105 However, some areas of species rich grassland and rush dominated areas will be impacted by construction activities. In these habitats there is potential for direct impacts to any amphibians and reptiles within the construction area through disturbance, injury and mortality without appropriate mitigation.

9.7.106 The CEMP will include a watching brief to ensure all contractors are aware of protected species and habitats. Further, all excavations will be covered and a means of escape included. The CEMP will also include measures to protect amphibians and reptiles should they be discovered during construction operations.

9.7.107 The sensitivity of amphibians and reptiles is low, being important at the local scale. Considering the inherent mitigations and proposed CEMP prescriptions, the impacts to amphibians and reptiles during the construction phase are judged to be adverse, temporary, and medium in magnitude, therefore the overall significance of effect is minor (adverse).

Amphibians and reptiles: operations

9.7.108 No breeding habitat is considered to be affected by the proposed development. During operations, no impacts are anticipated to amphibians or reptiles. A setback of 5m will be maintained from all watercourses across The Site. In addition, a 5m buffer will be maintained between hedgerows and 15m from woodland, which will maintain the value of these marginal habitats as foraging and commuting habitat for amphibians and reptiles.

9.7.109 The management of the field margins (between the boundary feature and the security fence) as tussocky grassland should benefit foraging amphibians and reptiles, as should the maintenance of the main solar farm through extensive grazing, leading to

a variable sward length. Further, the cessation of agricultural inputs should improve the water quality in the surrounding waterways.

9.7.110 Considering the inherent mitigations and the habitat creation, enhancement and management proposals, the impacts to reptiles and amphibians during operations are judged to be negligible and negligible in magnitude, therefore the overall significance of effect is negligible.

Fungi (waxcaps)

9.7.111 Low-pressure tracked vehicles are to be used to minimise rutting and soil disturbance. Operations are to cease during extended periods of heavy rainfall.

9.7.112 A system of traffic control is to be implemented to reduce vehicle movements and avoid unnecessary impact to grassland/fungi.

9.7.113 The sensitivity of the Waxcap fungi identified on The Site is low, being important at the local scale. Considering the inherent mitigations and proposed CEMP prescriptions, the impacts to fungi during the construction phase are judged to be adverse, temporary, and low in magnitude, therefore the overall significance of effect is minor-negligible (adverse).

Fungi (waxcaps)

9.7.114 Solar deployment spacing allows retained grassland areas to remain suitable for a range of grassland fungi. The proposed grassland enhancement management plan will ensure that overall, the extent of high-quality grassland suitable for a range of fungi increases overall, and offsets grassland impacted by panel shading or replaced with tracks and equipment footprints. Considering this, the impacts to fungi during the operational phase are judged to be negligible and negligible in magnitude, therefore the overall significance of effect is negligible.

Step-wise approach and Net Benefit for Biodiversity

9.7.115 To adhere to section 6.4.5 of Planning Policy Wales Edition 12, a step-wise assessment table has been prepared to accompany this ES (Appendix H – section XIII).

9.8 PROPOSED MITIGATION AND ENHANCEMENTS

9.8.1 Mitigations and enhancements to safeguard protected species and habitats, address any potential impacts, and ensure a biodiversity net gain are summarised here, commencing with construction controls.

Construction control summary

9.8.2 Avoiding impacts to natural boundary features

- All existing woodland, lines of trees, and hedgerows are to be retained where practicable and protected in accordance with BS 5837:2012. A perimeter fence is to be installed prior to construction, with a minimum 5m buffer from the boundary to prevent root damage.
- Buffer zones are to be clearly marked (e.g., with red and white tape) and are to remain free from any construction activity or vehicle access.

9.8.3 Minimising impacts to natural boundary features

- Where trenching affects existing grassland, turf is to be lifted, stored appropriately, and reinstated immediately following backfilling.
- All site operatives are to be briefed prior to works on the location, protection measures, and status of retained vegetation and boundary features.

9.8.4 Avoiding impacts to grassland

- Fields 9 and 10 (Figure 1 – Appendix H) are to be excluded from all construction access to avoid impacts to all existing Acid Grassland on The Site.
- Buffers of 15m from woodland edges and a minimum of 5m from other field boundaries are to be implemented to protect Semi-improved Grassland.
- Minimising impacts to grassland (excluding Acid Grassland)
- Low-pressure tracked vehicles are to be used to minimise rutting and soil disturbance. Operations are to cease during extended periods of heavy rainfall.
- A system of traffic control is to be implemented to reduce vehicle movements and avoid unnecessary vegetation impact.

9.8.5 Avoiding impacts to Badgers

- A Badger survey is to be undertaken no more than one month before construction commences. If active setts or burrows are identified within or near The Site (within 30m), appropriate buffers are to be implemented, and no work is to occur within these zones.
- Where works within established buffer zones are unavoidable, a licence is to be obtained from Natural Resources Wales and works are to be conducted under ecological supervision during the active season (March - October).
- All contractors are to be briefed on the potential presence of Badgers and the required protocol. Works are to cease immediately if Badgers or active setts are discovered, pending advice from an ecologist.

9.8.6 Avoiding impacts to ground nesting birds

- Construction works are to be scheduled outside the main bird nesting season (March - July inclusive) where possible.
- If construction during the nesting season is unavoidable, a pre-construction bird survey is to be undertaken to identify active nests within The Site.
- Minimising impacts to ground nesting birds
- A 50m exclusion zone is to be maintained around any active nest sites until fledging is confirmed, under Ecological Clerk of Works (EcoW) supervision.
- All workers are to receive a toolbox talk from the EcoW detailing procedures for nest identification and response protocols.

9.8.7 Avoiding impacts to Great Crested Newts (GCN)

- A toolbox talk is to be delivered by a licensed ecologist to inform all workers of the legal status of GCNs and the appropriate actions if encountered during works.
- If GCN are found during works, works are to cease immediately and the LPA and ecologist are to be consulted.

9.8.8 Avoiding impacts to Dormice

- If evidence of Dormice is recorded, a Dormouse Method Statement is to be prepared. In the absence of evidence, pre-clearance checks are to be undertaken by a licensed ecologist.
- Due to the confirmed presence of Dormice in the immediate locality, hedgerow removal is to take place only in May or late September to reduce risks to breeding Dormice.
- Hedgerows are to be removed in sections no greater than 10m per day to allow undetected Dormice to disperse.
- Toolbox talks are to be delivered to inform workers of Dormouse presence and protection procedures.
- If Dormice or signs of activity are found during works, all activity within 15m is to cease immediately and the LPA and ecologist are to be consulted.

9.8.9 General measures to avoid impacts to wildlife from injury or death

- Where hedgerows are removed, species-specific surveys are to be undertaken and works are to be supervised accordingly, covering species such as nesting birds, Badgers, amphibians, and reptiles.

9.8.10 General measures to minimise impacts to wildlife from injury or death

- All trenches or pits are to be either covered overnight or fitted with escape ramps, and checked daily. If animals are trapped, an ecologist is to be contacted immediately.
- All work is to cease and a suitably qualified ecologist is to be consulted if protected species are encountered during construction.

9.8.11 Avoiding disturbance impacts to wildlife

- Security fencing is to incorporate 200mm ground-level gaps or Badger gates at 50m intervals to allow continued wildlife access.

9.8.12 Minimising disturbance impacts to wildlife

- All construction lighting is to be directional, downward-facing, manually controlled, and positioned away from sensitive habitats. Headlights only are to be used during dusk hours (November - mid-March).
- No permanent lighting is to be used during the operational phase, except for health and safety lighting on equipment.

9.8.13 COSHH regulations

- All chemicals and pollutants are to be stored and disposed of in accordance with COSHH regulations during construction and operation.
- All operatives are to be briefed on secure storage procedures and the pollution prevention plan.

Habitat creation and enhancement

9.8.14 Approximately 3ha of The Site is to be excluded from development and managed for the ground nesting Meadow Pipit through conservation grazing and excluding livestock during the nesting season.

9.8.15 Approximately 0.2km of new hazel hedgerows is to be planted in designated field boundaries throughout The Site.

9.8.16 All gaps in existing hedgerows are to be infilled with hazel whips.

9.8.17 Approximately 35 native tree standards are to be planted along designated field boundaries.

9.8.18 Eight dormouse nest boxes are to be installed along designated hedgerows.

9.8.19 Twenty bat boxes are to be installed along suitable boundary trees.

9.8.20 Twenty nest boxes for cavity nesting birds are to be installed on suitable boundary trees.

9.8.21 Two barn owl boxes are to be installed on designated mature trees in Fields 5 and 9.

9.8.22 Log piles are to be assembled adjacent to woody habitats throughout The Site using tree branches found within fields during construction, or dead trees removed from field boundaries.

Management of new and existing habitats

9.8.23 All areas of existing grassland within the security fence are to be managed under a conservation grazing regime using sheep, with the aim to restore historic Acid

Grassland. Grazing may occur at any time of year, provided that the average annual grazing density is maintained at 0.5 Livestock Units (LSU) per hectare.

9.8.24 All areas of existing connected grassland outside the security fence are to be managed under a conservation grazing regime using sheep, with the aim to manage existing or restore historic Acid Grassland. To protect ground nesting birds such as Meadow Pipit from livestock disturbance, grazing in these areas will be paused from April to August inclusive. To maintain an average annual grazing pressure of 0.5 LU per hectare, a higher stocking rate will be used during the permitted grazing period.

9.8.25 Once every three years, cutting throughout all grazed grassland will be required in September to limit the spread of rushes. Cutting interior and exterior grassland should not be undertaken in the same year.

9.8.26 The remaining isolated unconnected margins throughout The Site are to be managed with cutting once every 2-3 years in September on rotation, leaving 50% of the habitat intact at any time.

9.8.27 New hazel hedgerow whips are to be trimmed in the spring after the first growing season and cut lightly in year 3. Weeds are to be controlled with additional mulch and damaged and diseased whips replaced as required. Once established, new hedgerows are to be treated as existing hedgerows (see below).

9.8.28 New hazel hedgerows (once established), and the existing hedgerows throughout The Site are to be allowed to grow to a height of 3-4m and a width of 3-4m, cut every 2-3 years on rotation in winter to promote blossoming and fruiting.

9.8.29 New hedgerow tree standards are to be checked twice a year in the first 4 years for weeds and signs of damage or disease. Weeds are to be controlled, and damaged or diseased shrubs and trees are to be replaced as required.

9.8.30 Bird, bat and dormouse boxes will require occasional cleaning and small-scale maintenance from time to time, which can be incorporated into other works on site. Dormouse box and bat box inspections must be undertaken by a licensed ecologist.

9.8.31 No specialist management is required for log piles. Additional material can be added to these features during management activities on site.

Further ecological surveys

Habitats Regulation Assessment (HRA)

9.8.32 The Sites proximity to the two EU protected sites may trigger the requirement for an HRA. This will assess the likelihood of the proposal impacting Blackmill Woodland SAC or Cardiff Beechwoods SAC. The HRA may be limited to a Phase 1 screening to demonstrate no significant impacts will occur.

Hazel Dormouse survey

9.8.33 Due to the potential evidence of Hazel Dormouse within The Site, and the known population in the locality. Following determination of the application, a Dormouse survey would be required prior to any hedgerow removal or cut throughs that take place during construction. This survey would focus on the hedgerows impacted by the activities and must be undertaken by a licensed ecologist.

Fungi survey

9.8.34 A specialist grassland fungi survey, which may involve fungi eDNA sampling is to be undertaken in Autumn 2025 to further assess the extent of the waxcaps present within The Site. This will be undertaken with a literature review on the impacts of solar panel shading on waxcap grassland.

9.9 SUMMARY AND CONCLUSIONS

9.9.1 The Site comprises eleven adjoining pasture fields covering approximately 20.3ha and supports a mosaic of grassland habitats. Key features include 2.08ha of Acid Grassland and 2.06ha of transitional habitat between Acid and Semi-improved Grassland. The majority of the Site (13.73ha) is classified as Poor Semi-improved Grassland. Nineteen permanently wet areas occur across the Site, supporting rushes and other wetland flora, although none meet the criteria for distinct habitat types such as Rhos Pasture. Boundary features extend over 3.88km (occupying 2.09ha) and include 1.35km of species-rich native hedgerows, 0.74km of species-poor native hedgerows, and 1.79km of ecologically valuable lines of trees. Five streams and one wet ditch, totalling 1.06km, also traverse the Site. A small parcel (0.08ha) of Lowland Mixed Deciduous Woodland, part of the Rhos Tonyrefail SSSI, lies along the southern boundary of Fields 10 and 11. The SSSI also borders the majority of the Site's eastern edge.

9.9.2 Surveys confirmed the presence of six bat species, including the Annex II-listed Lesser Horseshoe Bat, with foraging and commuting activity concentrated along hedgerows and woodland edges, particularly by Myotis species. Breeding Meadow Pipits were recorded within the grassland (six active territories), alongside 18 bird species nesting in trees or hedgerows, of which seven are protected or notable. Although wildfowl and waders were absent during winter surveys, 14 notable bird species were observed using boundary habitats, with occasional use of fields by small passerines. Three locally important waxcap fungi were identified in two fields, indicating the presence of unimproved grassland. While no direct evidence of Dormice was found, their presence is considered likely due to suitable habitat and nearby records.

9.9.3 The proposed solar farm complies with Planning Policy Wales (Edition 12) and the Environment (Wales) Act 2016, fulfilling the Section 6 duty to enhance biodiversity and ecosystem resilience. The design follows the principles of Sustainable Management of Natural Resources (SMNR) (PPW Sections 3.34–3.37), ensuring positive contributions to ecosystem services by protecting and enhancing key habitats.

9.9.4 The development aims to deliver a Net Benefit for Biodiversity (NBB), consistent with PPW Section 6.4.5, through measures such as planting 0.2km of native hedgerows and improving grassland distinctiveness through a specific conservation grazing regime across The Site, aiming to support the restoration of historically widespread Acid Grassland.

9.9.5 All existing Acid Grassland has been excluded from the development footprint, and semi-improved and transitional grasslands within buffer zones (5m around hedgerows and watercourses, 15m around woodlands) will be preserved during construction and operation. The areas between and around the solar panels will remain undisturbed, with only temporary disturbance during installation.

9.9.6 Short-term impacts to species such as bats, birds, and Dormice, due to noise, vibration, or human activity, will be mitigated through buffer zones and construction controls. Any necessary hedgerow removal for access or fencing will adhere to strict Dormice protection protocols. If works coincide with the bird nesting season, pre-construction surveys will prevent disturbance to active nests.

9.9.7 The risk of soil compaction in sensitive grasslands will be minimised through low-pressure machinery and work suspension during wet conditions. Traffic management will limit vehicle movement across sensitive habitats, particularly fungi-rich fields and transitional grassland. Hydrocarbon pollution risks will be managed through best-practice fuel handling protocols outlined in the Construction Environmental

Management Plan (CEMP). In addition, the design ensures there are no adverse effects on the adjacent Rhos Tonyrefail SSSI, with buffer zones and sensitive construction methods in place to protect this designated site, in accordance with PPW Sections 6.4.26 -6.4.27.

9.9.8 Locally, the proposal aligns with Policy AW8 of the Rhondda Cynon Taf Local Development Plan, safeguarding Sites of Importance for Nature Conservation (SINCs), protected species, and ecological networks. Comprehensive surveys and a robust mitigation strategy ensure that the scheme adheres to PPW Section 6.4.31.

9.9.9 Mitigation measures will protect foraging bats, nesting birds, Dormice, waxcap fungi, and other species such as Badgers, reptiles, and amphibians. Following construction, ongoing habitat management and monitoring will ensure that any residual impacts are negligible.

9.9.10 In conclusion, the solar development complies with national and local planning policies, with embedded mitigation strategies designed to protect biodiversity. With long-term habitat enhancement and monitoring, it is expected to result in a measurable, long-term net gain for biodiversity.

10. CUMULATIVE

10.1 INTRODUCTION

10.1.1 Chapters 7 to 9 of the Environmental Statement have considered the proposed development relative to the current baseline conditions, which exist at the site and the surrounding area. Where appropriate, mitigation measures have been proposed and the residual effects of the development have been assessed.

10.1.2 **Table 10.1** below presents a concise summary of the predicted residual environmental effects of the proposed development

Table 10.1: Summary of Predicted Environmental Effects

	Phase	Summary of Predicted Effect Prior to Mitigation	Summary of Predicted Residual Effects (Post Mitigation)	Sensitivity
Landscape and Visual Impact	**Construction/ Decommissioning**	**Landscape Character–** The short-term and reversible nature of these activities on landscape character will ensure that the overall effects will be, at worst, **moderate adverse**. These will be limited to the local context of the site boundaries, short term and temporary effects. **Visual Impact -** The short-term and reversible nature of these activities on views and visual receptors will ensure that the overall effects will be, at worst, **minor adverse**. These will be experienced by a small number of receptors and form small features in the overall view.	**Landscape Character–** The short-term and reversible nature of these activities on landscape character will ensure that the overall effects will be, at worst, **moderate adverse**. These will be limited to the local context of the site boundaries, short term and temporary effects. **Visual Impact -** The short-term and reversible nature of these activities on views and visual receptors will ensure that the overall effects will be, at worst, **minor adverse**. These will be experienced by a small number of receptors and form small features in the overall view.	**Local** **Local**
	Operational	**Landscape Character** In terms of landscape value the site is of a **Low-Medium** landscape value. The susceptibility to change is concluded to be 'Medium-High' and the landscape value 'Low-Medium'. With reference to the evaluation of the landscape effects in accordance with the methodology, a 'Medium' landscape sensitivity and a 'Medium' magnitude of change is considered to result in 'Moderate' level of landscape effect overall, this is a 'Not Significant' effect.	**Landscape Character** In terms of landscape value the site is of a Low-Medium landscape value. The susceptibility to change is concluded to be 'Medium-High' and the landscape value 'Low-Medium'. With reference to the evaluation of the landscape effects in accordance with the methodology, a 'Medium' landscape sensitivity and a 'Medium' magnitude of change is considered to result in 'Moderate' level of landscape effect overall, this is a 'Not Significant' effect	**Local**

	Phase	Summary of Predicted Effect Prior to Mitigation	Summary of Predicted Residual Effects (Post Mitigation)	Sensitivity
		Visual Impact Views from the near areas are dominated by busy road corridors and Llantrisant Business Park. The screening from the urban form, then the rising hillside fringe vegetation (woodland and field boundary hedgerows) beyond combine to restrict views into the site at ground level within the immediate setting (up to c.500m). There are very limited publicly accessible areas close to the site and no residential areas that will have near range and expansive views over the proposed solar scheme. Therefore, no viewpoints were considered to experience views of a 'Significant' nature. Effects ranged from '**no change**' to **major moderate** effect for users of Llantrisant Common.	**Visual Impact** No significant visual effects are expected to result. Whilst there are some localised visual effects predicted it is considered these localised visual effects are not effects that are considered to be material in the overall decision making process. In summary the proposed solar farm development could be successfully integrated into the surrounding landscape **without causing Significant harm** to the landscape character and visual amenity in the local area. Long term residual effects ranged from '**no change**' to **major moderate** which is considered to be '**Not Significant'** following the implementation and establishment of the scheme of landscape mitigation.	**Local**
Noise	**Construction/ Decommissioning**	**Noise at Residential Receptors** Any increase in noise, as a result of construction, is likely to result in an impact up to **minor adverse** level of effect at receptors, without mitigation.	**Noise at Residential Receptors** Following implementation of measures contained within a CEMP, noise at residential receptors would result in up to **minor adverse** effect at receptors.	**Local**

	Phase	Summary of Predicted Effect Prior to Mitigation	Summary of Predicted Residual Effects (Post Mitigation)	Sensitivity
		Road Traffic Noise The increase in road traffic noise would be **negligible** effect **Vibration** **Negligible** effect. **Cable Route** **Negligible to slight adverse** effect. At the end of its operational life, it is anticipated that the ducting for the cable connection would be capped off and left in situ.	**Road Traffic Noise** Following inherent traffic routes, the increase in road traffic noise would be result in a **negligible** effect. **Vibration** No mitigation is required. The residual effect would therefore remain **negligible** effect. **Cable Route** Following implementation of measures contained within a CEMP would result in a **negligible to slight adverse** effect. At the end of its operational life, it is anticipated that the ducting for the cable connection would be capped off and left in situ.	**Local** **Local** **Local**
	Operational	**Noise at Residential Receptors** The effect of the operational noise is expected to be **minor adverse** effect**.** This applies to daytime and night time hours. **Road Traffic Noise** The minor increase in road traffic noise would result in a **negligible** effect.	**Noise at Residential Receptors** The effect of the operational noise is expected to be **minor adverse** effect. This applies to day and night time hours. **Road Traffic Noise** The minor increase in road traffic noise would result in a **negligible** effect.	**Local** **Local**

	Phase	Summary of Predicted Effect Prior to Mitigation	Summary of Predicted Residual Effects (Post Mitigation)	Sensitivity
		Vibration A **negligible** effect is predicted. **Cable Route** **Negligible** effect.	**Vibration** A **negligible** effect is predicted. **Cable Route** **negligible** effect.	**Local** **Local**
Ecology	**Construction / Decommissioning**	**Designated Sites** Effects range up to **Major Adverse** (on Rhos Tonyrefail SSSI). **Habitats** Effects range from **Minor Adverse** (on the Acid Grassland, semi improved grassland, hedges, scrub and trees) to **Negligible**. **Species** Effects range from **Minor Adverse** to **Negligible**.	**Designated Sites** Effects range from **Negligible to Minor Adverse** due to implementation of a CEMP. **Habitats** Effects range from **Negligible to Minor Adverse** due to implementation of the CEMP. **Species** Effects range from **Minor Adverse** to **Negligible**.	**Local to National** **Local to National** **Local to International**

	Phase	Summary of Predicted Effect Prior to Mitigation	Summary of Predicted Residual Effects (Post Mitigation)	Sensitivity
	Operational	**Designated Sites** Considering the proposed grassland management measures, the effects of operations on Rhos Tonyrefail SSSI are judged to be **Negligible**. **Habitats** Effects range from **Minor Adverse** (on the Acid Grassland, semi improved grassland, hedges, scrub and trees) to **Negligible**. **Species** Effects range from **Minor Adverse** to **Negligible**.	**Designated Sites** Proposed habitat enhancement measures are expected to deliver a minor positive impact to surrounding wildlife habitats. **Minor Beneficial**. **Habitats** Effects are predicted to be **Minor Beneficial**. **Species** Effects range from **Negligible to Minor Beneficial**.	**Local to National** **Local to National** **Local to International**

10.2 CUMULATIVE IMPACTS

10.2.1 In isolation, a proposed development may be considered to have insignificant environmental impacts. However, these effects have the potential to be magnified when considered in conjunction with other existing or proposed developments. These are referred to as cumulative impacts and such impacts have the potential to occur in the following ways:

- Whether any of the individual environmental effects of the proposed development will combine to create a cumulative effect that is greater than the sum of the individual effects, this is known as combined impacts; and
- How effects from the proposed development could be combined with similar effects from other sites to result in significant cumulative effects.

10.2.2 **Table 10.1** provides a summary of the predicted residual environmental effects resulting from the proposed development. These effects have been identified by the EIA as those remaining following mitigation. It must be remembered that the baseline assumed as part of the EIA accounts for current land-uses in the vicinity of the application site.

10.2.3 Of the environmental topic areas considered as part of the EIA, the significance of impacts from the proposed operations considered to be greater than negligible are:

- Landscape and Visual;
- Noise and Vibration; and
- Ecology.

10.2.4 With regards to landscape and visual matters during the construction and decommissioning phases there are predicted to be temporary **moderate adverse** impacts on landscape character and in visual impact terms when mitigation is implemented.

10.2.5 During the operational period, following implementation of mitigation measures a **moderate** effect is predicted on site and in the immediate area on landscape character. In terms of visual impact, long term residual effects range from 'no change' to **major moderate** which is considered to be '**Not Significant'** following the implementation and establishment of the scheme of landscape mitigation.

10.2.6 Noise during the construction and decommissioning phases is expected to result in a temporary **minor adverse** effect. **Minor Adverse** effect is expected during the operational phase.

10.2.7 With regards to ecology matters, during the construction and decommissioning phases, effects on designated ecological sites following mitigation measures range from **Negligible to Major Adverse** effects, on habitats and species are expected to range from Negligible to **Minor Adverse** effects.

10.2.8 During the operational phase effects on designated sites, habitats and species are predicted to be **Negligible to Minor Beneficial**.

10.2.9 The proposed development will be operational for 40 years, generating significant renewable energy benefits. Following this period the site will be restored back to agriculture.

Assessing Cumulative Impact – Site Based

10.2.10 In terms of assessing the interactive impacts from the Proposed Development in isolation, it is considered that the following topics will have an adverse effect:

- Minor effects to landscape character and some nearby visual receptors during

the 6 months construction/decommissioning phases

- Moderate effects to landscape character and for some nearby visual receptors during the operational phase.
- Up to minor adverse effects to the noise climate for nearby residential properties and wildlife during the 6 month construction phase;
- Moderate adverse effects to species during the temporary 6 months construction phase.

10.2.11 It is considered there is no synergistic characteristics between temporary impacts to certain site based species, landscape character/visual amenity and noise generation during the construction and decommissioning phases.

10.2.12 During the operational phase potential impacts to nearby visual receptors and landscape character were assessed. It is considered that opportunities for synergistic effects to increase the impacts on identified receptors beyond that assessed individually are negligible given the different sensitivities of the identified receptors

10.3 ASSESSING CUMULATIVE IMPACT – OFF-SITE

10.3.1 A review of planning applications has been undertaken within the Local Planning Authority within a 2.5km radius of the application site. Four consented cumulative solar sites were identified. Table 10.2 provides details of the four solar schemes.

Table 10.2: Summary of Cumulative Sites

Planning Ref.	Proposal	Capacity	Site area	Decision Date	Operational, consented, in planning or screening?	Address	Distance from site
20/0553/10	C1. Solar farm including substation, fencing and below ground cabling. (revised drainage strategy received 17th July 2020) (REF 01)	c.2MW	2ha	16 Nov 2020	Operational	Land Off Pantybrad Road, Llantrisant Road, Ynysmaerdy, Llantrisant, CF72 8YY	300m east
21/1613/10	C2. Development of solar scheme and associated infrastructure.	c.0.5MW	0.5ha	21 March 2022	Consented	Land At Rhiwfelin Fach Farm, Llantrisant Road, Ynysmaerdy, Llantrisant, Pontyclun, CF72 8LQ	c.700m east
22/1413/10	C3. TALGREN SOLAR Construction and operation of a solar photovoltaic farm including access, fencing, CCTV, internal service tracks, ancillary equipment and	9.9MW	21.5 ha		Consented	Land At Rhiwfelin Fach Farm, Llantrisant Road, Ynysmaerdy, Llantrisant, Pontyclun, CF72 8LQ	50m west

	scheme of landscaping						
23/0994/08	C4. Coed Ely Solar Farm including ground mounted solar panels, sub stations, inverters, access tracks, security fencing and private wire.	6MW	-	23rd November 2023	Operational	Land At Former Coed Ely Colliery, Off the A4119, Coed Ely	c.1.6km north west

10.3.2 The LVIA Chapter of this ES concludes that overall, due to the close nature of the one cumulative site, the local topographic setting and considering the solar design features which set the array deployment areas within the existing field / vegetation structure, it is predicted that once both sites are constructed, they will be seen as one combined scheme. This combination, from a landscape balance perspective, is considered preferable to a number of disparate schemes upon hillsides in the local area. The proposed site in addition to C3 site is not considered give rise to sufficient additional change to constitute significant landscape effects over and above the assessed levels.

10.3.3 There will be no cumulative noise or vibration effects arising from the proposed development in combination with the identified developments during either the construction/decommissioning or operational phases.

10.3.4 No cumulative effects are expected to occur with regards to ecology given the residual benefits of the proposal.

10.3.5 There are no topic areas where there will be an adverse residual impact which is greater than minor. It is considered that when the minor effects are combined across topic areas there would be no synergistic effects which would mean that the **effects would be greater than minor**.

10.4 CONCLUSION

10.4.1 Overall, the effects of the development are not considered to be significant either by way of the land use and location of the scheme or by virtue of the proposed operation. The potential impacts have been fully assessed for the development and where appropriate mitigated as a result of an iterative review process and through careful consideration of process management, abatement techniques and landscape design. Therefore, as there are no residual impacts which are considered to be significant in terms of intensity or characteristics, there is limited potential for the creation of cumulative impacts resulting from the proposed development.

11. SUMMARY AND CONCLUSIONS

11.1 CONCLUSION

Introduction and Background to the Proposal

11.1.1 This Environmental Statement (ES) has been prepared on behalf of Windel Solar 8 Limited to accompany a planning application for the construction and operation of a solar farm on land located c.0.4km north of Ynysmaerdy and 0.8km east of Coedely. The application site totals approximately 20.9ha.

11.1.2 The Application Site is situated within the administrative area of Rhondda Cynon Taf County Borough Council (RCTCBC).

11.1.3 The proposed solar farm will have a generating capacity of up to 9.9MW renewable electricity, enough to power over 2,678 homes per year and offset nearly 2,850 tonnes of CO2 every year.

11.1.4 The panels are to be arranged in rows in an east to west alignment and angled south.

11.1.5 The total height of the solar panels will be 2.6m above the ground, with a gap of at least 0.8m above the ground at a minimum.

11.1.6 A private drive provides access from Ely Valley Road to the proposed solar farm site.

11.1.7 The application will be submitted following community engagement as part of the Pre-Application Consultation exercise. This will include a project website, letter drop and site notices. The consultation methods and feedback will be summarised in a Consultation Report which will be submitted with the planning application.

11.2 BIODIVERSITY ENHANCEMENTS AND LANDSCAPING

11.2.1 The landscape and visual impact assessment and ecology chapters (ES chapters 7 and 9 respectively) provide full details of the enhancement proposals, but in summary these include:

- The existing field boundary vegetation, in the form of native hedgerows and trees, including those within the site, will be retained where possible and managed to an appropriate height to provide visual screening, but also to enhance landscape and ecological structure.
- Analysis of historic mapping will be undertaken to determine whether there are any lost landscape features that could be reinstated and integrated with the solar development e.g. copses, banking, ditches and hedgerows.
- Grassland will be managed and enhanced for landscape and ecological benefit, Species mixes will be appropriate to the local area and follow recommendations of the project and County Ecologists
- Appropriate development offsets (clear zones) will be initiated from adjacent habitats including the woodland and grassland SINC and neighbouring SSSI as well as field margins to ensure visual effects are not of a significant nature and that existing habitats have a sufficient buffer to enable transition/connectivity between existing and proposed habitat areas.
- Development will facilitate the management of the range of semi-natural habitats – trees, hedgerows and grassland mosaic/upland meadows, found throughout the solar plot and adjoining areas.
- Mitigation proposals will serve the dual purpose of providing landscape and visual mitigation and to increase the site's value and reflect Local Biodiversity Action Plan objectives.

11.3 ENVIRONMENTAL ASSESSMENT

11.3.1 Of the environmental topic areas considered as part of the EIA, the significance of

impacts from the proposed operations considered to be greater than negligible are:

- Landscape and Visual;
- Noise and Vibration; and
- Ecology.

11.3.2 With regards to landscape and visual matters during the construction and decommissioning phases there are predicted to be temporary **moderate adverse** impacts on landscape character and in visual impact terms when mitigation is implemented.

11.3.3 During the operational period, following implementation of mitigation measures a **moderate** effect is predicted on site and in the immediate area on landscape character. In terms of visual impact, long term residual effects range from 'no change' to **major moderate** which is considered to be '**Not Significant'** following the implementation and establishment of the scheme of landscape mitigation.

11.3.4 Noise during the construction and decommissioning phases is expected to result in a temporary **minor adverse** effect. **Minor Adverse** effect is expected during the operational phase.

11.3.5 With regards to ecology matters, during the construction and decommissioning phases, effects on designated ecological sites following mitigation measures range from **Negligible to Major Adverse** effects, on habitats and species are expected to range from Negligible to **Minor Adverse** effects.

11.3.6 During the operational phase effects on designated sites, habitats and species are predicted to be **Negligible to Minor Beneficial**.

11.3.7 The proposed development will be operational for 40 years, generating significant renewable energy benefits. Following this period the site will be restored back to agriculture.

11.3.8 There is limited potential for the proposed development to create cumulative effects with schemes that have been consented but not yet implemented or have become operational. No significant effects are predicted in this regard.

11.4 CONCLUSION

11.4.1 The potential environmental impacts have been fully assessed for the development and where appropriate mitigated as a result of an iterative design process and through careful consideration of process management, abatement techniques, landscape design and biodiversity enhancement. The limited, identified residual impacts would be heavily outweighed by the significant amount of renewable electricity that will be generated, the considerable investment in the local economy and major benefits to local biodiversity.

11.4.2 The EIA and this ES confirms that the proposed development and operation of Ely Valley Solar Farm will not lead to unacceptable impacts on identified receptors so long as the proposed mitigation and enhancement measures are implemented


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