

REQUEST FOR EIA SCOPING DIRECTION:
OAKLANDS SOLAR FARM



PREPARED BY



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SRE1113/09/20	Environmental Setting and Constraints	1:25,000
SRE1113/09/23	FIGURE 7.3 – Zone of Theoretical Visibility (ZTV) (2.5km) No Visual Barriers	1:25,000
SRE1113/09/24	FIGURE 7.4 – Zone of Theoretical Visibility (ZTV) (2.5km) Visual Barriers	1:25,000

APPENDIX SCHEDULE

Appendix No.	Title
A	Landscape and Visual Impact Assessment - Panoramic photos
B	Heritage Desk Based Assessment
C	Habitat Plans and Designated Sites

1. INTRODUCTION

1.1 FOREWORD

- 1.1.1 It is generally accepted that Climate Change is one of the biggest threats currently faced by mankind. In response to this challenge, on 9 February 2021 the Welsh Government announced its legal commitment to achieve net zero carbon emissions by 2050 with an ambition to "get there sooner". Generating electricity from solar farms is an important component in achieving this commitment by replacing existing coal and gas fired power stations with clean technology.
- 1.1.2 The renewable share of Wales' total electricity generation increased from 25% in 2018 to 27% in 2019¹. The Energy Generation in Wales 2019 Report also estimates that 51% of electricity consumption comes from renewable sources.
- 1.1.3 Planning Policy Wales Edition 11² confirms that:
- The Welsh Government's highest priority is to reduce demand wherever possible and affordable low carbon electricity must become the main source of energy in Wales.*
- 1.1.4 Solar farms are an effective and unobtrusive way of creating the electricity we all use – with the panels having a low visual impact on the local landscape and creating no noise, pollution, by-products, or emissions. Additionally, solar farms result in minimal disturbance to the ground and can enhance local biodiversity, for example through planting a range species rich wildflower mix in field margins, creating a more diverse habitat and creating pollen rich margins for bees and butterflies. The areas in between the panels can also be used for grazing of sheep. The introduction of native trees and hedgerows on the site can also provide environments for nesting, roosting and foraging opportunities for birds, bats and invertebrates.
- 1.1.5 It is also noted that the non – intrusive nature of the proposal means that after the 40-year lifespan of the panels, they can be lifted and removed from the site and the land can continue to be used for agriculture.

1.2 SUMMARY OF SITE AND PROPOSAL

- 1.2.1 It is proposed to construct and operate a solar farm and energy storage development across a total area of approximately 126ha of farmland located c. 0.7km to the south of the village Bonvilston, Vale of Glamorgan. The city of Cardiff lies c. 12km to the east. The proposal site can be accessed via existing field gates off the A4226.
- 1.2.2 Oaklands Farm will have a grid connection export capacity of circa 50MW of electricity, enough to power circa 22,000 homes per year and offset over 21,700 tonnes of CO₂ every year, the equivalent of taking approximately 5,400 cars off the road.

1.3 PLANNING CONSENTING ROUTE

- 1.3.1 As the scheme comprises an electricity generating station with a potential generating capacity of between 10MW and 350MW, it falls within the definition of a 'Development of National Significance' (DNS) under section 4 of the Developments of National Significance (Specified Criteria and Prescribed Secondary Consents) (Wales) Regulations 2016³, for the purposes of section 62 (D) of the Planning (Wales) Act 2015⁴ ("the Wales Act).
- 1.3.2 A DNS differs from a normal planning application in the way that it is decided. Instead of a Local Planning Authority (LPA) making the decision, an Inspector examines the application and makes a recommendation to the Welsh Minister based on planning merits and national priorities. The Minister

¹ <https://gov.wales/sites/default/files/publications/2021-01/energy-generation-in-wales-2019.pdf>

² https://gov.wales/sites/default/files/publications/2021-02/planning-policy-wales-edition-11_0.pdf

³ 2016 No. 53 (W.23)

⁴ 2015 anaw 4

then decides whether to grant permission. The LPA will be consulted during the determination process.

- 1.3.3 The purpose of the DNS process is to ensure timely decisions are made on those planning applications that are of the greatest significance to Wales because of their potential benefits and impacts.

1.4 REQUIREMENT FOR AN ENVIRONMENTAL IMPACT ASSESSMENT

1.4.1 The Development falls within Category 3 of Schedule 2, 'Energy industry', sub section (a) 'industrial installations for the production of electricity, steam and hot water (unless included in Schedule 1). The Proposed Development exceeds the applicable threshold for EIA development (0.5 hectares) and, as such, the Local Planning Authority must screen the proposal (by the criteria listed in Schedule 3) to ascertain whether there is likely to be the potential for likely significant effects on the environment.

1.4.2 A request for a screening direction was sent to the Planning Inspectorate who deemed the proposal as EIA development on 13 February 2020.

1.5 PURPOSE OF THE SCOPING REPORT

1.5.1 The main purpose of this report is to provide the proposed scope and information required to prepare a Direction under Regulation 33 of the EIA Regulations. The objectives of the scoping report are to:

- Define the proposed content of the Environmental Statement (ES) which will accompany the planning application;
- Anticipate potentially adverse environmental impacts so can be considered at an early stage;
- Define methodologies to be used in the EIA process to assess the effects of the proposal; and
- Provide stakeholders with information on the proposals to refine the scope of assessment.

1.5.2 In accordance with the EIA Regulations, the site has been identified by means of location plan, proposed site boundaries and a summary of the proposal. In addition, the nature and purpose of the development is also described below.

1.5.3 Appendix 3 of the Guidance on Developments of National Significance⁵ provides advice on the implementation of the EIA Regulations, and summarises the information to be included in a Scoping Report. In short, the information comprises:

- A description of the development;
- An outline of the main alternatives to the proposals;
- A description of the aspects of the environment likely to be significantly affected by the development; and
- A description of measures to prevent, reduce and where possible offset, any significant effects of the proposed development.

1.5.4 This report does not seek to assess the environmental effects of the proposed development. Rather, in accordance with the EIA Regulations, this report provides outline information on the proposals and the anticipated significant effects which may need to be considered and assessed. As required by the EIA Regulations, it sets out the proposed format and information which will be included within the ES to accompany the planning application.

1.6 SCOPE OF THE ENVIRONMENTAL IMPACT ASSESSMENT

1.6.1 Information will be gathered for each environmental topic to be studied. This is to ensure that a comprehensive technical assessment of the potentially significant effects of the proposed development is undertaken.

1.6.2 Each of the technical assessments will consider:

- **Context:** This sets out the relevance of each environmental topic in both planning and technical

⁵ <https://gov.wales/topics/planning/developcontrol/developments-of-national-significance/guidance/?lang=en>

terms, including an explanation of the terminology to be used;

- **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 and the selection of potentially sensitive receptors;
- **Baseline Conditions:** It describes baseline environmental conditions relating to the environmental topic and the identification of potentially sensitive receptors;
- **Proposed Development:** An outline of the proposal shall be provided;
- **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 concludes the assessment by summarising 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.
- **Residual Effects:** 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.

1.6.3 The Environmental Impact Assessment will 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
- Neutral – a neutral effect to an environmental resource or receptor.

1.6.4 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.

1.6.5 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 1.1** 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 1.1: Significance of Effects

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

1.6.6 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.

1.6.7 The criteria for determining magnitude of impact is set out below in **Table 1.2**.

Table 1.2: Magnitude of Impact 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.

1.6.8 The sensitivity of a receptor is based on the importance of the receptor using the criteria below in Table 1.3.

Table 1.3: Degrees 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.

1.7 FORMAT OF THE ENVIRONMENTAL STATEMENT

1.7.1 Schedule 4 of the EIA Regulations (Wales) 2017, requires a description of the likely significant effects resulting from:

- 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 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;
- 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.

1.7.2 The description of the likely significant effects should cover 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. The above required information will be incorporated

into an Environmental Statement (ES) 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
- Non-Technical Summary.

Environmental Statement - Volume 1

1.7.3 The first sections will outline the main characteristics of the site and sets out the proposed development in the context of its surroundings. An introduction will outline the proposed development, methodology of assessment and scope of the ES.

1.7.4 Volume 1 – Environmental Statement, will be presented in the following format:

Introduction	Proposed Planning Application Purpose of ES Content of ES Methodology and Consultation Scope of ES
The Site	Site and Environs Topography and Landscape Site Access Existing Uses
The Development	Introduction Background Project Description
Summary of Relevant Planning Policy	National Policy Local Plan Material Considerations
Alternatives	Outline of the main alternatives considered
Hydrology, Hydrogeology and Drainage Ecology and Nature conservation Noise and Vibration Landscape and Visual Impact Historic Environment Climate Change Cumulative Impacts Summary of Environmental Effects	
Conclusions and Residual Effects	

Topics Considered not to be Significantly Affected by the Proposals

1.7.5 The following environmental topic areas are considered unlikely to be materially affected or give rise to significant environmental effects as a consequence of the proposed development. As such, they will not have a standalone ES chapter. A justification is provided in Section 5.7 of this scoping report.

- Major Accidents and/or Disasters
- Soils and Geology
- Public Health and Wellbeing
- Air Quality
- Traffic and Transport, and
- Socio Economic.

1.7.6 The following topic area will be scoped out, but a standalone technical assessment will be undertaken to demonstrate no significant effects will occur:

- Agricultural Land Quality; and
- Glint and Glare (aviation receptors).

Environmental Statement - Volume 2

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

Non-Technical Summary

- 1.7.8 The NTS provides 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 of Proposals
- Summary of main topic areas and predicted environmental effects, and
- Summary and Conclusions

1.8 STAKEHOLDER ENGAGEMENT

- 1.8.1 Indicative proposals will be subject to early-stage stakeholder engagement. This will take the form of notifying residents (via letter), relevant Community Councils, Ward Members, MPs and AMs. There will also be pre-applications discussions with relevant advisory bodies such as CADW, NRW, SAB and the LPA.
- 1.8.2 In addition to the above, Sirius Renewable Energy has created a dedicated website that provides up to date details on the proposal and advises of forthcoming consultation events. The website address is:
<https://www.oaklands-solar.co.uk/>
- 1.8.3 As the scheme progresses, further stakeholder engagement will be undertaken which will include the formal consultation exercise where a draft of the Environmental Statement will be made available for public review.

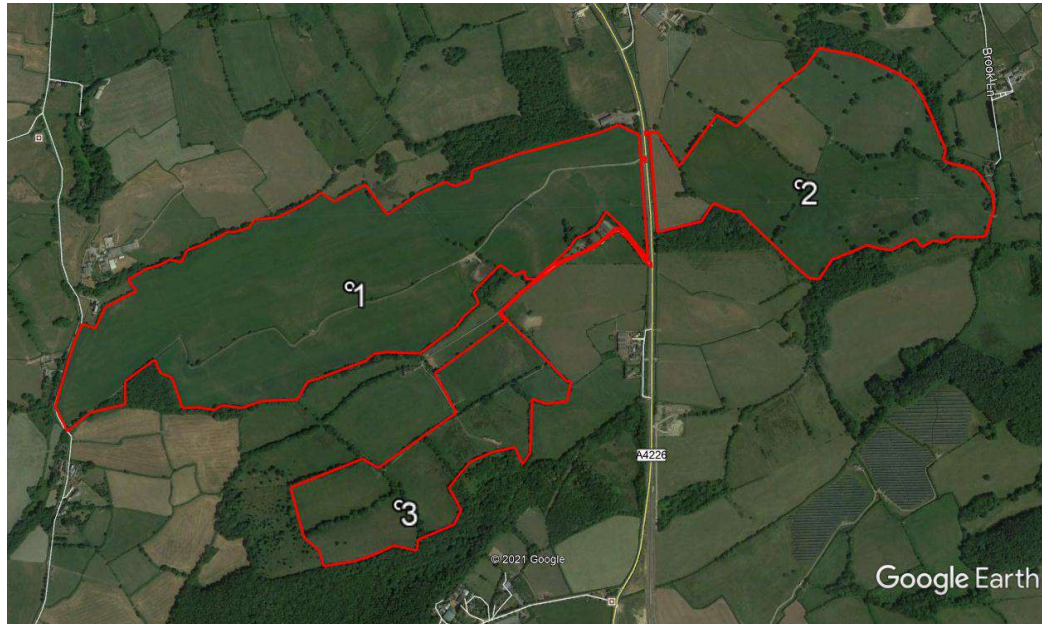


2. THE SITE AND SURROUNDINGS

2.1 INTRODUCTION

2.1.1 The proposal is located c. 0.7km to the south of the village Bonvilston, Vale of Glamorgan and comprises agricultural land located situated east and west of the A4226 (Five Mile Lane). The site location is presented in drawing SRE1113/02/01 and in figure 2.1 below.

Figure 2.1: Site Location



- 2.1.2 The proposal site measures approximately 126ha. The site and surrounding areas are rural in nature, characterised by farmland, scrubland, established hedgerows and woodland blocks. The majority of the site is relatively flat, with the exception of the north west which falls away to the north and the western area of area 1 that falls away to the west.
- 2.1.3 There are two overhead power lines and associated pylons that run across the site, one parallel to the northern boundary in an east to west alignment incorporating metal pylons and the second through the eastern area of the site in a southeast to northwest alignment wooden poles.
- 2.1.4 Along the western boundary of the site is an unnamed lane. A number of farms are located close to the site boundary. Approximately 400m to the south and east is a 6MWp solar farm that has been operational since 2018 (Planning Ref. 2014/00798/FUL).
- 2.1.5 The villages of Bonvilston and St Nicholas are the nearest villages at approximately 0.7km north and approximately 1km, respectively.
- 2.1.6 Access to the proposal site is taken directly from the A4226 (Five Mile Lane) via existing field gates.
- 2.1.7 For ease of reference the proposal site is divided into three areas as per Figure 2.1 above and measure:
- Area 1 – 66ha
 - Area 2 – 39ha
 - Area 3 – 21ha

2.2 DESIGNATIONS

- 2.2.1 The Vale of Glamorgan Local Development Plan (adopted June 2017) designates approximately 62ha of the development site as being within a 'Potential for Solar Energy Area'.
- 2.2.2 Drawing SRE1113/09/20 identifies known constraints. The whole site is located within a Special

Landscape Area and mineral safeguarding area. Approximately 19ha of the western extent of the proposal site lies within a Registered Historic Landscape of Lancarfan.

- 2.2.3 Approximately 190m to the south west of the proposal site boundary is Nant Whitton Woodlands Site of Special Scientific Interest (SSSI). The following Sites of Importance for Nature Conservation (SINC) are located adjacent to the proposal site boundary:
- Coed Quinnet – adjacent to part of the western and southern boundary of area 3.
 - Land South of Ty'n-y-Coed – adjacent to part of the western boundary of area 1.
 - Redland Wood – adjacent to part of the northern boundary of area 1.
 - Coed cym - adjacent to part of the northern boundary of area 2.
 - Land along River Waycock – adjacent to part of the eastern boundary of area 2.
 - Brook Wood – adjacent to part of the southern boundary of area 2.
 - Betty Lucas Wood - adjacent to part of the southern boundary of area 2.
- 2.2.4 Bonvilston Conservation Area is located circa 0.7km to the north and St Nicolas Conservation Area is circa 700m to the north east of the site. Scheduled Ancient Monument (Ty'n-y-Coed Castle Ringwork and Coed y Cwm Ringwork are located in close proximity to the site's northern boundary.
- 2.2.5 There are two overhead power lines that run across the site, a National Grid 275Kv/132kV tower line runs across the site in an east to west alignment and the second, a WPD 33kV line runs through area 1 in a north west-south east alignment.
- 2.2.6 The site has a low risk of flooding as it is located within Zone A as shown on Natural Resources Wales Development Advice Maps.



3. THE PROPOSED DEVELOPMENT

3.1 OUTLINE OF THE PROPOSAL

3.1.1 The proposal will comprise the following:

- Photovoltaic (PV) panels
- Battery Energy Storage System
- Mounting frames - matt finished small section metal structure
- Scheme of landscaping and biodiversity enhancement
- Inverters and transformers and associated cabling (largely below ground)
- 132kV Distribution Network Operator (DNO) substation, DNO meter point, customer substation
- Deer fencing 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 areas
- Internal service roads, and
- Use of existing site access for the construction and operational phases.

3.1.2 The panels will be arranged in rows in an east-west alignment across the site and will be angled between 10° and 35° to the horizontal and orientated south. All panels will be mounted on frames with a maximum height of circa 3m above ground level; the lowest part of the panel will measure approximately 1m above ground level. The rows of panels will be set between 4m and 6m apart to avoid overshadowing and to allow access for scheduled maintenance. Transformer and substations are typically 3m in height.

3.1.3 The batteries will store electricity and provide instant power to the grid when demand is required and when the solar farm is not generating power such as at night-time. The batteries will be accommodated in containers located in a secured compound within the site boundary preferably located close to the point of connection to the local distribution network.

3.1.4 The developer has accepted a grid offer from the Distribution Network Operator (Western Power) to connect into the local distribution network at one of existing tower pylons located on site.

3.1.5 The construction phase will last approximately 6 months after which the solar farm and battery units will operate for 40 years. A temporary set down and vehicle parking area will be provided for the construction phase within the site boundary. As part of decommissioning, all equipment will be removed from site and the land will continue to be used for agriculture.

3.1.6 The deployment areas will be secured by a 2m high deer fence or similar with wooden posts, or an alternative to suit ecological requirements.



4. POLICY CONTEXT, NEED AND ALTERNATIVES

4.1 INTRODUCTION

- 4.1.1 The proposed development will be assessed in the context of the relevant national and local planning policies and material considerations, including national strategies, policy and guidance.
- 4.1.2 An assessment of need for the development and the consideration of alternatives will also be undertaken and presented.

4.2 NATIONAL CONTEXT

- 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 In April 2019, the Welsh Government Minister for the Environment, Energy and Rural Affairs, Lesley Griffiths AM declared a climate 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”. Vale of Glamorgan Council declared a climate emergency in 2019.

Future Wales: The National Plan 2040

- 4.2.3 Future Wales: The National Plan 2040 (Adopted February 2021) is the national plan that sets the direction of development in Wales to 2040. 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.

- 4.2.4 Futures 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.

- 4.2.5 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....

- 4.2.6 Policy 18 – Renewable and Low Carbon Energy Developments of National Significance provides the decision-making framework for renewable and low carbon energy technologies. The Policy 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 of 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 11

4.2.7 Planning Policy Wales (PPW) Edition 11 is the Welsh Government’s policy document, and it describes the land use context for using land sustainably. It recognises that planning and the way land is used contributes to economic development, to maintaining Wales’ natural assets and to health, well-being and the quality of life of individuals and communities. In essence it describes how the land use planning system fulfils the Welsh Government’s objectives.

4.2.8 PPW makes specific reference to renewable energy generation in that:

The benefits of renewable and low carbon energy, as part of the overall commitment to tackle climate change and increase energy security, is of paramount importance. The continued extraction of fossil fuels will hinder progress towards achieving overall commitments to tackling climate change. The planning system should:

- *integrate development with the provision of additional electricity grid network infrastructure;*
- *optimise energy storage;*
- *...*
- *maximise renewable and low carbon energy generation;*
- *...*

4.3 LOCAL CONTEXT

4.3.1 The Vale of Glamorgan Local Development Plan (LDP) 2011-2026 was formally adopted on 28th June

2017. The Plan sets out the vision, objectives, strategy and policies for managing development in the Vale of Glamorgan and contains a number of local planning policies. It makes provision for the use of land for the purposes of housing, employment, retailing, recreation, transport, tourism, minerals, waste, and community uses. A significant proportion of the proposal site is allocated in the Vale of Glamorgan Local Development Plan as within a Potential for Solar Energy Area (reference: Local Search Area 3 – Land west of Five Mile Lane) as per Policy MG30 – Local Search Areas for Solar Energy.

- 4.3.2 Policy SP10 – Built and Natural Environment is a strategic policy in relation emphasises the need to protect the Vale of Glamorgan’s natural and built environmental assets and reinforces that sensitive design and choice of location of new development can have a positive effect. It states that:

“Development proposals must preserve and where appropriate enhance the rich and diverse built and natural environment and heritage of the Vale of Glamorgan including:

- 1. The architectural and / or historic qualities of buildings or conservation areas, including locally listed buildings;*
- 2. Historic landscapes, parks and gardens;*
- 3. Special landscape areas;*
- 4. The Glamorgan Heritage Coast;*
- 5. Sites designated for their local, national and European nature conservation importance;*
and
- 6. Important archaeological and geological features.”*

- 4.3.3 Policy MG17 – Special Landscape Areas is a specific policy to the protection of the designated Special Landscape Areas, which states that:

“The following areas are designated as special landscape areas:

- 1. Castle Upon Alun;*
- 2. Upper & Lower Thaw Valley;*
- 3. Ely Valley & ridge slopes;*
- 4. Nant Llancarfan;*
- 5. Dyffryn basin & ridge slopes;*
- 6. Cwrt-yr-Ala basin.*

Within the special landscape areas identified above, development proposals will be permitted where it is demonstrated they would cause no unacceptable harm to the important landscape character of the area.”

- 4.3.4 Policy MG22 – Development in Mineral Safeguarding Areas is a specific policy safeguarding mineral areas, which it states:

“New development will only be permitted in an area of known mineral resource where it has first been demonstrated that:

- ... 3. The development would have no significant impact on the possible working of the resource by reason of its nature or size.”*

- 4.3.5 Policy MG30 – Local Search Areas for Solar Energy. A significant proportion of the proposal site is allocated in the Vale of Glamorgan Local Development Plan as within a Potential for Solar Energy Area (reference: Local Search Area 3 – Land west of Five Mile Lane). The policy states:

“Local search areas for solar energy are shown on the Proposals map. In these areas proposals for solar energy generation schemes up to 50 mw will be permitted provided there are no unacceptable effects on amenity, heritage assets or the environment.”

4.3.6 Policy MD1 – Location of New Development is a strategic policy which sets out the framework for future development to take place on unallocated sites within the Vale of Glamorgan. It states that:

“New development on unallocated sites should:

1. Have no unacceptable impact on the countryside;

9. Have no unacceptable impact on the best and most versatile agricultural land.”

4.3.7 Policy MD2 – Design of New Development is a strategic policy in relation to the key principles that developers should consider in respect of design, amenity and access which together contribute to attractive, safe and accessible environments. It states that:

“In order to create high quality, healthy, sustainable and locally distinct places development proposals should:

1. Be of a high standard of design that positively contributes to the context and character of the surrounding natural and built environment and protects existing features of townscape or landscape interest;

2. Respond appropriately to the local context and character of neighbouring buildings and uses in terms of use, type, form, scale, mix, and density;

... 8. Safeguard existing public and residential amenity, particularly with regard to privacy, overlooking, security, noise and disturbance;

... 10. Incorporate sensitive landscaping, including the retention and enhancement where appropriate of existing landscape features and biodiversity interests;

... 12. Mitigate the causes of climate change by minimising carbon and other greenhouse gas emissions associated with their design, construction, use and eventual demolition, and include features that provide effective adaptation to, and resilience against, the current and predicted future effects of climate change.”

4.3.8 Policy MD7 – Environmental Protection is a strategic policy protecting people, residential amenity, property and / or the natural environment. It states that:

“Development proposals will be required to demonstrate they will not result in an unacceptable impact on people, residential amenity, property and / or the natural environment from either:

1. Pollution of land, surface water, ground water and the air;

2. Land contamination;

3. Hazardous substances;

4. Noise, vibration, odour nuisance and light pollution;

5. Flood risk and consequences;

6. Coastal erosion or land stability;

7. The loss of the best and most versatile agricultural land; or

8. Any other identified risk to public health and safety.

Where impacts are identified the Council will require applicants to demonstrate that appropriate measures can be taken to minimise the impact identified to an acceptable level. Planning conditions may be imposed or legal obligation entered into, to secure any necessary mitigation and monitoring processes.”

4.3.9 Policy MD8 – Historic Environment is a strategic policy protecting and enhancing the historic environment. It states that:

“Development proposals must protect the qualities of the built and historic environment of the Vale of Glamorgan, specifically:

1. *Within conservation areas, development proposals must preserve or enhance the character or appearance of the area;*
2. *For listed and locally listed buildings, development proposals must preserve or enhance the building, its setting and any features of significance it possesses;*
3. *Within designated landscapes, historic parks and gardens, and battlefields, development proposals must respect the special historic character and quality of these areas, their settings or historic views or vistas;*
4. *For sites of archaeological interest, development proposals must preserve or enhance archaeological remains and where appropriate their settings.”*

4.3.10 Policy MD89 – Promoting Biodiversity seeks to enable appropriate proposals in line with biodiversity conservation. It states that:

“New development proposals will be required to conserve and where appropriate enhance biodiversity interests unless it can be demonstrated that:

1. *The need for the development clearly outweighs the biodiversity value of the site; and*
2. *The impacts of the development can be satisfactorily mitigated and acceptably managed through appropriate future management regimes.”*

4.3.11 Policy MD19 – Low Carbon and Renewable Energy Generation is a strategic policy in relation to renewable energy. It states that:

“Proposals for the generation of low carbon and renewable energy will be permitted where it can be demonstrated that there is no unacceptable impact on the interests of:

- Best and most versatile agricultural land;*
- Aviation safeguarding;*
- Electrical, radio or other communication systems;*
- Landscape importance;*
- Natural and cultural heritage;*
- Nature conservation;*
- Residential amenity; and*
- Soil conservation.*

In assessing such proposals, the cumulative impacts of renewable energy schemes will be an important consideration. Where necessary, proposals should be informed by a landscape and visual impact assessment.

Favourable consideration will be given to proposals that provide opportunities for renewable and low carbon energy and / or heat generation to be utilised within the local community.”

4.3.12 Vale of Glamorgan Council published Supplementary Planning Guidance (SPG) for Renewable Energy in March 2019. The SPG states:

It is intended to provide clear and precise guidance to assist homeowners, land owners, developers and other interested parties involved in the planning process on how to fully consider renewable energy in development proposals.

This SPG represents a material consideration in the determination of planning applications and appeals and will be used to assist officers and Council members in determining planning applications. For applicants seeking to obtain permission for development relating to renewable energy, it is important to take this guidance into account when designing the proposal to increase the likelihood of obtaining planning permission.

4.3.13 These plans and guidance will be used as a context to inform the EIA process.

4.4 ASSESSMENT OF NEED

4.4.1 Paragraph 5.9.15 of Planning Policy Wales Edition 11 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.”

4.4.2 However, a brief commentary on how the proposal will help achieve national and local targets will be presented.

4.5 ASSESSMENT OF ALTERNATIVES

4.5.1 In accordance with Schedule 4 of the EIA Regulations the ES will provide:

‘...an outline of the main alternatives studied by the applicant... and an indication of the main reasons for his choice, taking into account the environmental effects’.

4.5.2 Consideration will be given to the site selection process based on a number of factors including distance and availability of the Local Distribution Network, distance to sensitive receptors, current use of the land, policy designation and guidance and vehicle access.

4.5.3 A significant proportion of the proposal site is allocated in the Vale of Glamorgan Local Development Plan as within a Potential for Solar Energy Area (reference: Local Search Area 3 – Land west of Five Mile Lane). Following the LPA’s assessment process, 6 areas of unconstrained land potentially available for large scale solar farm development was identified.

4.5.4 A major factor that now guides solar deployment is the availability and capacity on the local distribution network. The Distribution Network Operator’s required point of connection to the 132kV line is located on a defined tower within the proposal site thus maximising electrical efficiency of the scheme being as close as possible to the point of connection whilst avoiding the need for lengthy cable routes.

4.5.5 Given the available capacity on the local distribution network, alternative options to generate renewable energy were considered. The Environmental Statement will describe the consideration given to all relevant alternatives relative to their environmental constraints. These include:

- Do nothing scenario;
- Alternative schemes for renewable energy generation;
- Alternative sites; and
- Alternative configuration of sites;



5. ENVIRONMENTAL IMPACT ASSESSMENT CONSIDERATIONS

5.1 INTRODUCTION

- 5.1.1 It is proposed that each chapter will address a 'scoped in' subject matter, set out in a standardised format. The information below sets out the baseline survey work completed to date, proposed approach to assessing potential environmental effects, the anticipated effects and, if required likely mitigation.

5.2 ECOLOGY

Baseline Information

Protected Sites

- 5.2.1 A desk study, including consultation with the South East Wales Biodiversity Records Centre (SEWBRC), was conducted for species within 2km, non-statutory designated sites within 2km, SSSIs within 5km and Natural 2000 sites within 10km.
- 5.2.2 The site is not located within 10km of a European designated site. The nearest is the Severn Estuary (Wales) SAC, SPA & Ramsar located 10.3km east.
- 5.2.3 The site is within 5km of the following Sites of Special Scientific Interest (SSSI):
- Nant Whitton Woodlands (195m)
 - Ely Valley (2.5km)
 - Coedydd Y Barri / Barry Woodlands (2.6km)
 - Fferm Walters (3.9km)
 - Pysgodlyn Mawr (3.9km)
- 5.2.4 Twenty-five non-statutory Sites of Nature Conservation Interest (SNCIs) are located within 2km of the site. The majority were designated as ancient woodland or waterways.
- 5.2.5 Nine SNCIs are located adjacent to the proposal at various locations.
- 5.2.6 Plans showing statutory and non-statutory sites, data records and site habitat plans are shown in Appendix C.

Habitats

- 5.2.7 Phase 1 habitat surveys following the JNCC methodology were conducted across areas 1 and 3 on 9th March 2020, and on area 2 on 8th December 2020.
- 5.2.8 Areas 1 and 3 are formed by multiple pastoral grassland fields that are sheep and/or cattle grazed. The dominant habitat types within the fields are improved and semi-improved grassland. Area 3 has more periodically waterlogged areas in fields dominated by rushes, small areas of which are classified as marshy grassland. Two small ephemeral ponds were present at the time of survey.
- 5.2.9 Area 1 is formed by four large arable fields.
- 5.2.10 Area 3's inner boundaries are mostly formed by high value hedges with numerous mature trees, (mostly sessile oak and ash).
- 5.2.11 Area 2 also contained a number of mature trees, but the hedges are more variable in quality as many were open to grazing that had become either lines of trees or relic hedges. The inner field boundary features on area 1 are low to moderate value hedges.
- 5.2.12 Several watercourses are present. Mostly wooded streams form the northern and southern boundary of area 1 which are headwaters of the river Llancarthan, and headwaters of the river Waycock, including a section of the main channel on the southern boundary, are present on area 2.
- 5.2.13 The remaining boundaries are formed by woodland, the majority of which are covered by the non-

statutory designations above.

Amphibians

- 5.2.14 Records of great crested newt were returned from SEWBRC for Whitton Rosier Farm to the south of Oaklands. Records indicate a small population between 1989 & 2018 present. The ponds are 250m south of the Site.
- 5.2.15 An eDNA survey was attempted on 5th May 2020 of the two ponds present in March on area 3, but both were dry in May despite following a particularly wet winter. The landowner confirmed they dry out annually. An active slurry-pit was present on area 1 but was and not safe to access/assess, nor likely to be suitable for GCN.
- 5.2.16 No other suitable habitat present. The likelihood of GCN presence on site is low.

Badger

- 5.2.17 Several records of badger were returned from SEWBRC, none were within the proposal site. Searches for signs of badger were undertaken during the Phase 1 Habitat and Preliminary Protected Species. Suitable badger habitat is present across the site, but no setts or signs were recorded during the site visits.

Bats

- 5.2.18 Local records returned six bat species and Myotis sp. Lesser horseshoe were the most notable. Bat habitat was assessed during the Phase 1 Habitat and Preliminary Protected Species Surveys. The woodlands, hedges, fields boundaries and water course corridors, and the connectivity across the site and wider landscape, is optimal bat habitat. South Wales is also within the range of almost all UK bat species. A diverse bat assemblage is assumed present utilising mainly the woodlands and field boundaries for foraging and commuting.
- 5.2.19 Mature trees with bat roost features are numerous on areas 2 and 3 and present along most field boundaries. On area 1 mature trees with bat features are present on the outer boundaries only.

Birds

- 5.2.20 Numerous birds were returned from SEWBRC within 2km. On site there were records of common and widespread Section 42 species such as bullfinch and dunnock. There were no records of WCA schedule 1 birds.
- 5.2.21 Breeding bird habitat potential was assessed during the Phase 1. The farmland habitat was typical of that likely to support an assemblage of common generalist and woodland species, rather than a notable arable farmland bird assemblage. Given the quality of the woodland areas abutting the site and many of the hedges, the Section 42 spotted flycatcher and common redstart are likely present on Site (both recorded within 2km). There is potential for WCA Schedule I species such as Barn Owl and Hobby near to site, but the fields themselves and the hedgerows were mostly only suitable for typical widespread species, which will include a variety of the common Section 42 species.
- 5.2.22 No wintering waterfowl or large flocks of passerines were recorded on the Phase I surveys. There were two wintering skylarks on area 1 recorded during the Phase 1.
- 5.2.23 A breeding bird scoping survey was conducted on 5th May 2020, mainly to see if there were ground nesting birds i.e., skylark in significant number. On area 1 five singing male skylark were recorded.

Dormouse

- 5.2.24 No dormouse records were returned from SEWBRC. The hedgerows and woodland, and wider landscape as a whole, provide optimal dormouse habitat. Presence on site is assumed to be highly probable.

Reptiles

- 5.2.25 No reptile records were returned from SEWBRC on Site, and there were three grass snake records within 2km.
- 5.2.26 The majority of habitats on site are sub-optimal for reptiles due to agricultural practices including grazing. Small pockets of suitable habitat are present on field boundaries and the presence of a small population of the common species is likely.

Riparian Mammals

- 5.2.27 No riparian mammal records were returned from SEWBRC. The water courses and adjacent woodland areas are suitable for otter. Water vole are more locally distributed in South Wales and their presence is possible but unlikely due to the lack of dense herbaceous vegetation on the stream banks which are mostly dominated by mature woodland.

Invertebrates

- 5.2.28 Habitats within the Site including scrub, rough grassland, hedgerows and mature trees within the Site offers opportunities for a range of common invertebrate species.

Approach to Assessing Potential Effects

- 5.2.29 The EIA will be supported and informed by the following surveys and information gathering exercises:
- Desk study and local records consultation
 - Phase 1 Habitat and Preliminary Protected Species Surveys of the full redline area - March and December 2020
 - Areas 1 and 3 breeding bird scoping survey - May 2020
 - Bats in trees ground assessment of centrally located trees on area 2 – December 2020
 - Further Surveys as follows (some dependant on proposed layout):
 - Breeding Bird Survey Redlands Farm - Spring 2021. Methodology an adapted version of territory mapping (Bibby et al., 2000)⁶. Will start with an initial scoping survey. Tree with suitable cavities for owls will be considered further if any not retained or likely to be impacted other ways.
 - Targeted bats in trees nocturnal surveys or aerial inspections as required if trees likely to be affected. Will follow bat Surveys for Professional Ecologists, Good Practice Guidelines, 2016⁷.
 - Targeted grassland survey following either a repeat of the Phase 1 with DAFOR, or an established condition assessment methodology (e.g., FEP⁸) on semi-improved fields on Oaklands if affected by panels to re-assess the habitats during the early summer as a precaution.
 - Updated badgers' surveys annually as required. Methodology as outlined by Harris, Creswell and Jefferies (1991)⁹.
- 5.2.30 The assessment of ecological effects will be undertaken in accordance with the ecological impact assessment guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018).
- 5.2.31 In accordance with the CIEEM guidance, the purpose of the ecological assessment is to focus on those features that are most likely to be affected and are either protected or are of sufficient value to merit

6 Bibby, C.J., Burgess, N.D., Hill, D.A. and Mustoe, S.H. (2000). *Bird Census Techniques, 2nd Edition*. Academic Press, London.

7 Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*. The Bat Conservation Trust, London.

8 Natural England (2010) Higher Level Stewardship Farm Environment Plan (FEP) Manual <http://adlib.everysite.co.uk/resources/000/251/202/NE264.pdf>

9 Harris, S., Creswell, P. and Jefferies, D., (1991). (Report) Surveying Badgers. The Mammal. Society, Bristol.

consideration in the EIA process, rather than consider effects upon every feature that may be present, many of which will be common, widespread and robust. Accordingly, those features that are likely to be affected and which are statutorily protected, or are deemed to be of at least local nature conservation value, or are deemed worthy of consideration by consultees will be taken forward for detailed assessment.

- 5.2.32 The likely magnitude of the impacts will be assessed during the construction and operational stages. Both the magnitude of the predicted impact and the value of the feature will be taken into consideration in determining the significance of the effect. The assessment will take into account any measures that form part of the proposed development and to which the applicant is committed. Where necessary, any further mitigation measures will be identified to ensure that the proposed development meets national and local planning policy (by avoiding 'significant harm to biodiversity' and delivering a proportionate net biodiversity gain)

Assessing Potential Effects

- 5.2.33 Based upon the information collated to date, the potential for direct disturbance on site, or indirect effects on off-site features such as water bodies, the following are likely to be Important Ecological Features requiring detailed assessment:

- Nant Whitton Woodlands SSSI
- Nine SNCI's on or bordering the site
- River Llancarthan
- River Waycock
- Woodland (including Ancient Woodland)
- Hedgerows
- Mature trees
- Semi-improved grassland
- Improved grassland
- Amphibians
- Bat (foraging and commuting habitat)
- Bat tree roosts
- Badgers
- Breeding and wintering birds
- Dormouse
- Reptiles
- Riparian Mammals
- Invertebrates

Scoped Out Assessments

- 5.2.34 Several ecological features within the Zone-of-Influence (ZoI) can be scoped-out of the EIA due to the predicted (lack of) impact of a solar farm development in this location. This is either due to a lack of significant ecological pathway to an off-site feature, or because on site the habitats are sub-optimal or will not be affected by the proposals. Certain surveys have also been scoped-out and details are provided. These are listed as follows:

- Severn Estuary (Wales) SAC, SPA & Ramsar located 10.3km east. There will be No Likely Significant Effect from the proposed solar farm on this Natura 2000 site due to its distance from the Site and a lack ecological pathways generated from a solar scheme, and will not require an Appropriate Assessment. A 10km buffer zone will be used as the ZoI for the EIA, and therefore the SAC/SPA & Ramsar will be scoped-out.
- A single SSSI (Nant Whitton Woodlands) has been scoped-in as it borders the site. The following SSSI's are within 5km of the Site, but all are 2.5km or greater from Site and none are designated for a significant population of a mobile species. The following can therefore be scoped-out for the proposals:

- Ely Valley (2.5km)
- Coedydd Y Barri / Barry Woodlands (2.6km)
- Fferm Walters (3.9m)
- Pysgodlyn Mawr (3.9km)
- Twenty-five non-statutory Site of Nature Conservation Interest (SNCIs) were located within 2km of the Site. The majority were designated as ancient woodland and/or waterways. Nine are located adjacent to the boundary at various locations (Drawing SRE1119/09/20), which have all been scoped-in. It is considered sufficient to assess the impacts on these nine sites and the watercourses.
- The following species and species groups have been scoped-in for ecological impact assessment, but as their habitats are predicted to be either largely unaffected or enhanced by the proposals, or in the case of reptiles the habitats on site are largely sub-optimal to support a significant population, all can be fully assessed based on the current survey information without the requirement for “Phase II” protected species surveys. This will be constantly reviewed, and should significant changes occur likely to impact these important ecological features, further survey will be considered.
 - Bat (foraging and commuting habitat)
 - Dormouse
 - Reptiles
 - Riparian Mammals (otter)
 - Invertebrates
- Habitats that are assessed as sub-local value will be excluded from detailed assessment and have been scoped-out (e.g., improved grassland). They will be considered in the report in the context of achieving a net-gain in biodiversity, but not assessed individually.

5.3 LANDSCAPE AND VISUAL IMPACT

- 5.3.1 Landscape and visual impacts of the proposed development have the potential to result in significant environmental effects so the EIA will be fully supported by a Landscape and Visual Impact Assessment (LVIA)
- 5.3.2 The LVIA would consider the potential effects of the proposed development upon the physical landscape elements and features, landscape character and visual amenity within the application site and the surrounding landscape up to a 5km radius study area. Although a 5 km study area is proposed from the outer edge of the deployment areas however more detailed consideration of effects will be considered within a 2.5 km study area.
- 5.3.3 Landscape and visual constraints (district scale) are illustrated on drawing SRE1113/09/20 Site level constraints will be considered during the assessment process.

Baseline Information

- 5.3.4 A high-level review of available baseline data has been undertaken in order to inform the landscape and visual elements of the Scoping Report. Baseline information and sources will be reviewed with the Planning Authority prior to the commencement of the LVIA work. At this stage, the review includes:
 - Review of National and District planning policy documents to provide context for landscape and visual issues, EIA process for the assessment of large-scale infrastructure developments (solar farms)
 - Review of local designations relevant to landscape and visual setting.
 - Review of National, Regional and Local Landscape character assessments; and,
 - Preparation of preliminary ZTV – based on site area only, no detailed site design work currently available.
 - A site walkover initial assessment, to review site landscape parcels, features and areas likely to be

visually sensitive and guidance on range of viewpoint locations.

Landscape Baseline and Receptors

- 5.3.5 The proposal is located c. 0.7km to the south of the village Bonvilston, Vale of Glamorgan and comprises agricultural land located situated both to the east and west of A4226 (Five Mile Lane). The site location is presented in drawing SRE1113/02/01.
- 5.3.6 The site area under consideration measures approximately 126ha. The site and surrounding areas are rural in nature, characterised by arable and pasture farmland, established hedgerows and woodland blocks. The site areas are generally gently sloping between c.45m aod and c.93m aod over the entire site area. The highest point of the site is near to the eastern end of area 1 at the boundary with the A4226 corridor. There are two overhead power lines and associated pylons that run across the site, one parallel to the northern boundary in an east to west alignment incorporating metal pylons and the second through the eastern area of the site in a southeast to northwest alignment wooden poles.
- 5.3.7 The villages of Bonvilston and St Nicholas are the nearest villages at approximately 0.7km north and approximately 1km north east, respectively. Access to the proposal site is taken directly from the A4226 via existing field gates.
- 5.3.8 At this stage, the proposed solar farm comprises 3 main deployment areas linked to the farmland holdings, as shown on Figure 2.1.
- Area 1 – c.66ha. West of the A4226, large scale farmland for haymaking.
 - Area 2 – c.39 ha. East of the A4226. medium scale pastoral farmland.
 - Area 3 – c.21ha. West of the A4226. small scale pastoral farmland.
- 5.3.9 Illustrative panoramic viewpoints of the 3 areas are included within Appendix A to illustrate the local landscape context.

Landscape Character - LANDMAP

- 5.3.10 LANDMAP (Natural Resources Wales) details the Welsh national level approach to landscape assessment. It is a GIS (Geographical Information System) based landscape resource where landscape characteristics, qualities and influences on the landscape are recorded and evaluated into a nationally consistent data set.
- 5.3.11 LANDMAP is formally recognised in Planning Policy Wales (PPW) (2012) as the starting point for landscape assessments in Wales. LANDMAP provides information for all of Wales' landscapes apart from the built-up areas of Cardiff and Swansea. It states that "all EIAs in Wales should therefore include an assessment using the information provided in LANDMAP as part of their ES chapter on landscape and visual effects. In particular, it should be used to inform a thorough understanding of the baseline conditions.
- 5.3.12 The site is located within 2 LANDMAP 'visual and sensory' Aspect Areas. The visual sensory layer is disused within the document (as considered the most relevant to LVIA) however the assessment will consider all the different Aspect Areas. The majority of the site is located within VS146, a smaller area to the east (an area of Redlands) is located within VS608. Key discussion points relating to the Aspect Areas:

VS146 - Central Vale Ridges and Slopes

The area is a rolling lowland, which may be described as a plateau, that is dissected by the Thaw and Nant Llancarfan valleys. The plateau landform offers wide views towards the Bristol Channel and Somerset and feels exposed to the wind and elements. The land slopes southwards with the highest point at approximately 115m AOD to the north east around Pentre Farm and the lowest point at approximately 25m AOD near East Aberthaw. The landcover is dominated by a medium to large field pattern, mainly pasture set in managed

hedgerows. The area is mainly open but there are some clumps of woodland both coniferous and deciduous. These are concentrated towards the west and north east, generally situated on hill tops or steeper slopes where they can be seen from long distances. Settlements consist of farms and hamlets scattered evenly throughout the area. Several minor roads cross the area and the A4226 runs close to the eastern boundary affecting tranquillity in this vicinity.

Overall Evaluation Criteria: Moderate

The aspect area offers many views to hedgerows, fields, and treed areas in harmonious composition. However the flat nature of the aspect area's landscape (level plateau) makes for a less pleasing composition of elements than the more undulating or hilly areas. The integrity of the area has been affected by erosion of hedgerows in places. The area has a sense of place defined in part by its visual relationship with the sea although intrinsically the area does not have a strong character. The area contains many elements typical and representative of the Vale.

VS608 Upper Waycock Valley/Dyffryn Area

The upper Waycock Valley is a broad gently sloping valley traversed by several minor watercourses. The landcover is a mosaic of mostly pastoral fields with some arable enclosed by trimmed hedgerows with trees. Woodlands are dispersed throughout the area, generally on upper valley slopes and spurs. Settlement is centred on Dyffryn, which is an attractive village of stone dwellings, stone walls and a stream running alongside the road. Dyffryn Gardens are a formal designed gardens nearby, with an improved access to the road to the A48 to the north. Farms and occasional dwellings are scattered across the area. These are linked by quiet minor roads and a network of public footpaths and generally the area is tranquil. However, the area borders Barry to the south east as well as the A4226, hence tranquillity is affected here. In general the rural landscape is well maintained and the farms and settlements maintain their character. Detractors are pylons which cross the area to the south and the prominent edge of Barry on the hill top to the south.

Overall evaluation criteria: High

The aspect area has broad, pleasing views to well managed countryside with a coherent field pattern and woodlands with settlements well integrated with the landscape and surrounding vegetation. . The settlements have stone walls and streams also add to the picturesque quality of this area. The area is unspoilt, well managed and is in good and consistent condition throughout. The overall evaluation for the area is therefore high.

Landscapes Working for the Vale of Glamorgan

- 5.3.13 The Vale of Glamorgan Council supported by the then Welsh Development Agency, published a landscape strategy for the Vale in 1997. The Landscape Character Area boundaries broadly follow the Visual Sensory Aspect Area boundaries. The site is located predominantly within LCA 16: Central Slopes and Valleys, but the eastern area again located within LCA 22: Dyffryn.
- 5.3.14 LCA 16 is described as 'well-kept farmland and substantial woodland blocks with scattered settlement of farmhouses and historic settlement. Long views of coast possible'. The area has a 'moderate' visual evaluation.
- 5.3.15 LCA 22 is described as, 'Broad gentle sloping valley running from limestone ridge south towards lower Waycock reaches and overlooked by northern edge of Barry. Arable and pastoral farmland with trimmed hedges, blocks of woodland, scattered settlement focussed on Dyffryn village. Dyffryn Gardens are a local attraction. The area has high value particularly attached to visual and cultural aspects, but also to historical. The area has a 'high' visual evaluation.
- 5.3.16 From an initial review the character and sensitivity of the site areas does vary from the west to the east, the three deployment zones also display individual landscape characteristics that will be explored

further through the assessment process. The site area as a whole and the local and wider study area will be assessed against the characteristics and conclusions of the relevant studies, with an assessment of landscape value, susceptibility to change and sensitivity undertaken within the main assessment.

Landscape Designations

- 5.3.17 The Vale of Glamorgan Local Development Plan (adopted June 2017) identifies approximately 62ha of the site as 'Potential for Solar Energy Areas'.
- 5.3.18 The whole site is located within two Special Landscape Areas (SLA) (Policy MG17 – Special Landscape Areas). The SLAs are separated by the A4226:
- SLA 4 – Nant Llancarfen (west of the A4226)
 - SLA 6 – Drffryn Basin and Ridge Slopes (east of the A4226)
- 5.3.19 The boundaries and reported qualities of the SLAs utilised the LANDMAP layer classifications. The effect of the proposed development upon the characteristics of the SLAs will be considered within the assessment.
- 5.3.20 Approximately 19ha of the western extent of area 1 lies within a Registered Historic Landscape Area (HLA) of Llancarfan. This is a landscape identified as being of outstanding or special historic interest. The allocation seeks to ensure that the 'historic character of the landscape is sustained, and that where change is contemplated, it is well-informed.'
- 5.3.21 Llancarfan and the surrounding area is identified as 'significant as being one of the best surviving, most typical historic section of the whole of the Vale of Glamorgan and where the diversity of past influences which have moulded it into its present form. The ancient settlement and its early church, set within its distinctive valley, preserves its own special historic identity and links with the past' (Gwent Glamorgan Archaeological Trust). Effects upon the setting, and views from, the HLA as a result of the development will be considered within the assessment.
- 5.3.22 There are three Registered Parks and Gardens within the study area:
- Dyffryn Gardens (Grade I) c.0.5km east of the site (Redlands)
 - Coedarhydyglyn House and Gardens (Grade I) c.1.8km north east (Redlands)
 - Pant y Ffynnon limestone quarry, c.1.15km north west (Pancross)
- 5.3.23 Effects upon the setting, and views from the Registered Parks and Gardens will be considered within the assessment.
- 5.3.24 There are no other landscape receptors identified within the study area at this stage. It is expected that designations such as Conservation Areas, Listed Buildings and SSSI are covered within the specialist topic areas. The LVIA will only review these if their landscape setting (or a defined view) is a key element of their value and designation.

Visual Baseline and Receptors - Residential

- 5.3.25 The visual effects upon residential properties within: 50m, 100m, 150m, 200m, 250m, 500m, 1km will be considered within the assessment (but grouped where appropriate). Outside of 1km only main settlements will be considered.
- 5.3.26 The properties within the 0 - 250m distance band (26 in total) will be considered in detail, although it is acknowledged that potential for significant effects is usually limited to those within 100m for a development of this scale (vertical height). Properties outside of this distance will be grouped but only considered where there is the potential for open views to the site / significant visual effects. The properties will be verified during detailed field survey.
- 5.3.27 The number of properties within 1.5km of the site boundary are quantified as follows:

Distance from site boundary	Properties within this distance (approx.)	Overall total (approx.)
50m	5	5
100m	5	10
150m	1	11
200m	7	18
250m	8	26
500m	9	35
1km	295	330
1km – 1.5km	227	557

- 5.3.28 Outline visibility mapping, through the production of a Zone of Theoretical Visibility Plan (ZTV) for the proposed solar farm (full site area) has been undertaken to inform initial field surveys, the proposed viewpoint locations and receptor visibility. The ZTV is a tool used to assist in determining areas where the development theoretically could and would not be seen. See Appendix A for baseline ZTVs related to the solar plot areas extending to a study area of 2.5km.
- 5.3.29 The ZTVs serve to illustrate areas where it may be theoretically possible to view all or part of the proposed development. They are generated using a single representative height point of 3m above ground level set within the representative areas of the site. Two ZTVs are provided, one ‘bare earth’ assuming no screening features are present, based on topography only, and one with the addition of the Ordnance Survey Buildings and Woodland Layer. OS ‘Terrain 5’ data has been used for generating the ground model.
- 5.3.30 The ZTV cannot take account of the screening effects of all buildings, localised landform and vegetation (e.g. hedgerows). As a result, it is highly likely that there may be receptors within the study area which although are shown as having theoretical visibility, are in reality screened or filtered which prevents viewing opportunities. In addition, as only representative points are selected within the site areas, there is the possibility that there may be areas of the site visible from receptors that are shown as having no visibility. It should be noted that these areas would also be subject to the same potential screening features.
- 5.3.31 It is stated that a full walkover of the wider study area is still to be undertaken so the actual receptors to be assessed and viewpoint locations are submitted for discussion only at this stage, further detailed consultation on the scope is expected to take place as part of the overall assessment process.
- 5.3.32 It is considered that there is only likely to be the potential for significant effects to receptors within 500m (but possibly out to 1 km) of the site boundary focussed to higher sensitivity receptors including residential, of which there are a limited number locally, and users of public rights of way and sensitive landscape receptors. These will be considered as part of the assessment process.

Baseline Zone of Theoretical Visibility – No Visual Barriers

- 5.3.33 Theoretical visibility is shown over the majority of the study area, from the settlements of Bonvilston and St Nicholas in the north, and the A48 corridor extending within the central zone and to the rising landscape to the south of the site. A local ridge line in this area restricts visibility from large areas within the southern half of the study area, but visibility remains extensive from the rising land within the eastern and western fringes of the study area. Extensive visibility is shown over the Llancarfan HLA, extending to the fringes of the village.

Baseline Zone of Theoretical Visibility – Visual Barriers

- 5.3.34 Theoretical visibility is illustrated to a focussed c.1km – 1.5km zone of the site boundary, within the

central region of the study area. Mature woodland to the south of the site boundary generally restricts views from the southern zone of the study area. Views are focussed to the central zone, to the west within the western facing slopes of Llancarfen HLA and to the east to the landscape north of Duffryn RPG. Theoretical visibility is shown to the southern fringes of the main settlements of Bonvilston and St Nicholas only. More distant visibility is shown to the elevated fields of the study area (non-populated) to the west and north.

Approach to Assessing Potential Effects

- 5.3.35 Throughout the assessment process consultation will be ongoing with the LPA at key stages, these being baseline, assessment, conclusions. The assessment results and visualisations will then be utilised for the following public consultation phases.
- 5.3.36 The Vale of Glamorgan Council and Natural Resources Wales will be the key landscape and visual consultees, although the assessment will have regard to responses received in relation to ecology and cultural heritage.
- 5.3.37 The methodology for this LVIA will conform 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.
- 5.3.38 Detailed aspects of the methodology including the basis on which judgements are to be made on the sensitivity of the receptors, magnitude of change and level of effects will be agreed with the LPA prior to assessment.
- 5.3.39 The LVIA will be in accordance with the present published guidelines for landscape and visual assessment provided in:
- Guidelines for Landscape and Visual Impact Assessment: Third Edition (GLVIA) (Landscape Institute and Institute of Environmental Management & Assessment, 2013);
 - An Approach to Landscape Character Assessment, Natural England (2014);
 - Planning Policy Wales LANDMAP Guidance Note 1: LANDMAP and Special Landscape Areas (2016);
 - Planning Policy Wales LANDMAP Guidance Note 3: (2013): and
 - Technical Guidance Note 06/19, Visual Representation of Development Proposals (Landscape Institute, September 2019).
- 5.3.40 The LVIA will incorporate a desktop review, field study and modelling of predicted effects through visualisations including photomontages. The evaluation of landscape and visual effects are discussed in separate sections. At the outset of the LVIA it is useful to provide a definition of the terms 'landscape effects' and 'visual effects':
- 5.3.41 Landscape Effects: These consist of the changes in the fabric, character and quality of the landscape which it is predicted would result from the construction and operation of the proposed Solar Farm, "assessing effects on the landscape as a resource in its own right" (GLVIA 2013). Consideration is given to how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. The proposed development will have direct and indirect effects on the landscape. Direct effects physically alter landscape elements (directly attributable to the proposed development), whereas indirect effects can affect the landscape character, often away from the site. In order to establish the potential landscape effects, the value of the landscape needs consideration.
- 5.3.42 Visual Effects: These are the predicted effects on views available from publicly accessible areas and residential dwellings i.e. visual receptors and people's general visual amenity. Specific effects result

from changing the constituent elements within an existing view. This may be caused by the construction of a feature, or the obstruction, or modification of an existing view. The visual assessment also addresses the closer related concept of visual amenity (when required). The requirement has the potential to be undermined if the proposed development would be of such a scale, design or proximity that it would represent an unpleasantly overwhelming and unavoidable presence in main views from a residential property or its garden as to turn an otherwise satisfactory residential property into one that would be an unsatisfactory place to live, “assessing effects on specific views and on the general visual amenity experienced by people” (GLVIA 2013).

- 5.3.43 The significance of any landscape / visual effects is a product of the magnitude of any change and the sensitivity of the receptor, which may include the landscape, landscape receptors or people either at home, using the local roads, cycle ways and public rights of way (PROW) network, visiting viewpoints, tourist attractions, and undertaking recreational activities.
- 5.3.44 Detailed discussion relating to the assessment method, process and assessment tables is included within the methodology, to be discussed further with the Planning Authority.

Assessing Potential Effects

- 5.3.45 A viewpoint assessment will be undertaken to illustrate the extent of visibility to the deployment areas from representative locations within the study area. An assessment of potential effects upon views from each individual viewpoint as a result of the proposed development will be undertaken. A range of viewpoints will be selected to generate photomontages, indicative locations are provided at this stage based on initial high-level work.
- 5.3.46 The photomontages will illustrate the predicted scale of the development within the landscape combined with the addition of any proposed mitigation features. An assessment of visual effects will then be undertaken.
- 5.3.47 Viewpoint locations (and subsequent photomontages) will be determined in consultation with the local planning authority and accompanied field survey work.
- 5.3.48 All Viewpoints will be situated in publicly accessible locations within the extent of the ZTV, with a range of distances and orientation to the site area. They will include a range of receptors of varying sensitivity, but focussed upon the highest sensitivity receptors. Photographs would be taken from each of the chosen Representative Viewpoints and presented in accordance with the Landscape Institute Technical Guidance Note 06/19, Visual Representation of Development Proposals (Landscape Institute, September 2019).
- 5.3.49 It will be the aim that where project programmes allow, that the photographs would be taken during winter, when vegetation is devoid of leaf to show the worst- case (most visible) scenario. Any assessment of effects upon summer views would therefore be necessarily made using professional judgement. If winter photography is not possible, the text will also comment on seasonal variations.
- 5.3.50 Indicative locations are shown on Drawing SRE1113/09/23 and 24 and set out in the below table.

Table 5.1: Indicative Viewpoint Locations

Viewpoint Reference	Sensitivity	Brief Justification
VP1 – Site entrance, A4226	Medium (road users)	View into western site area (1 and 3) from main road corridor within the study area.
VP2 – Site entrance, A4226	Medium (road users)	View into eastern site area (2) from main road corridor within the study area.
VP3 -Llancarfen	High	View from public footpath within more elevated valley side area of the HLA
VP4 – Llancarfen	High	View from public footpath within local landscape of HLA to the north of the site.
VP5 -Bonvilston	High	Small village to the north of the site upon gently rising ground.
VP6 – St Nicholas	High	Small village to the north east of the site upon gently rising ground.
VP7 – Valeways Millennium Heritage Trail	High	Regional trail to the east of the study area, also located close to the boundary of Dyffryn Gardens RPG
VP8 - Llancarfen	High	Footpath to the south of the study area, within the HLA close to the village of Llancarfen
VP9 - Pant y Ffynnon	High / Medium	Location to the west of the site and near RPG, illustrating more distant elevated views.
VP10 – Bonvilston north	High	Footpath to the north of the village upon rising hillside.
VP11 – St Lythans Down	High	Footpath to the east of the study area, potential for cumulative views.
VP12 - Brynhill Gold Club, Barry	High	Footpath on the elevated north eastern fringes of the town.

5.3.51 Please note that a full walkover of the wider study area is still to be undertaken so the actual receptors to be assessed and viewpoint locations are ‘broad areas’ submitted for discussion only at this stage, further detailed consultation on the locations and scope is expected to take place.

Public Rights of Way and Transport Corridors

5.3.52 No public footpaths pass through the site area however a number pass close (<250m) the visual effect upon users from the routes will be considered as part of the assessment. The Valeways Millennium Heritage Trail passes within the study area, this is c.110km circular route through the Vale of Glamorgan. At the closest point the trail is c.500m east of the site area. Views from the main A roads within the study area will also be considered.

Mitigation Options

- 5.3.53 Mitigation proposals will be developed for the deployment area and is an integral part of the design and assessment process. The proposed mitigation and enhancement proposals will be developed to address identified landscape and visual issues, but also informed by ecological assessment and influenced by historical landscape structure of the area.
- 5.3.54 General principles to be followed include:
- All the existing field boundary vegetation, in the form of native hedgerows and trees, including those within the sites, 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. This is of particular note within area 1, close to the HLA. An area that has recently seen large areas of hedgerow removal.
 - Grassland will be managed and enhanced for landscape and ecological benefit, in the form of Tussock, Wet and Wildflower areas.
 - Appropriate development offsets (clear zones) will be initiated from receptors e.g. residential, paths and ecological (and field margins) to ensure effects are not of a significant nature.
 - Development will facilitate the management of the range of semi-natural habitats - mires, trees and hedgerows, found throughout the solar plot and adjoining areas.
 - Development of wider habitats, to serve the dual purpose of providing landscape and visual mitigation and to increase their value and reflect Local Biodiversity Action Plan objectives.

5.4 HERITAGE

- 5.4.1 A draft desk-based assessment (DBA) has been undertaken for the proposal site and is presented in Appendix B. The DBA will be used as a starting point to assess the potential effects of the development proposals on the historic environment. This will help inform future decision making, design solutions and potential mitigation strategies. The aim is to make full and effective use of existing information in establishing the archaeological significance of the site, to elucidate the presence or absence of archaeological material, its character, distribution, extent, condition and relative significance.
- 5.4.2 This work conforms to the Standard and Guidance for Archaeological Desk-Based Assessment, as produced by the Chartered Institute for Archaeologists (CIfA 2014).

Baseline Information

- 5.4.3 There are 136 previously recorded sites of archaeological interest within a 1km study area, and this includes eight Scheduled Monuments and ten Listed Buildings. The DBA determined that fourteen of these sites are located within the proposed development area. Two of these sites comprise cropmarks of an enclosure and field system within Area One (GGAT03998s; NPRN 309275 & NPRN 309284). Baseline survey work has identified three new sites of archaeological interest within Area One: a structure (OFV01), an old quarry/limekiln (OFV02), and a further old quarry (OFV03). However, subsequent studies of historic mapping, aerial photography and a site visit established that OFV03 was outside the development area. The remaining previously recorded sites are located within Area Two, and these are made up of industrial and agricultural post-medieval sites.
- 5.4.4 The Registered Historic Landscape of Llancarfan is partially located within the proposed development site. This landscape is separated into 12 Historic Landscape Characterisation Areas (HLCA), and the site is located within the HLCA 010 Bonvilston Amalgamated Fieldscape.
- 5.4.5 The proposed development does not lie within any Conservation Area or any Registered Parks & Gardens, nor will any be directly affected by the proposal. However, there are six Conservation Areas within the 3km search area, namely Bonvilston, Llancarfan, Llantrithyd, Peterson-Super-Ely, St Nicholas

and Drope. There are four Registered Park and Gardens within the 3km search area, which are Llantrithyd Place, Dyffryn Gardens, Coedarhydyglyn and Wenvoe Castle. Due to the intervening built landscape and the topography, these sites of historic interest indirect affect will be negligible.

- 5.4.6 From the site visit that took place in April 2020, findings included to have no observable evidence of archaeological features. In the western area (1 and 3) of the site there were no visible remains of structure OFV01 or any visible remains of the limekiln (GGAT02617s). Within the central northern area of the site there were no visible remains of the limekiln/quarry or any evidence of cropmarks during the site visit.

Approach to Assessing Potential Effects

- 5.4.7 This section details the methodology to be used to determine the significance of the impacts of the proposal on archaeological and cultural historic assets. The assessment criteria and assignment of significance with respect to archaeology and cultural heritage are based on the following standards and guidance, good practice, consultation and professional judgement:

- Conservation Principles for the Sustainable Management of the Historic Environment in Wales (Cadw 2011);
- Design Manual for Roads and Bridges (DMRB) LA 104 Environmental assessment and monitoring, Version 1, Highways England 2020;
- Design Manual for Roads and Bridges (DMRB) LA 106 Cultural Heritage assessment, Revision 1, Highways England 2020;
- Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs) Version 1.1 (The Welsh Archaeological Trusts, 2018);
- Guidelines for digital archives (Royal Commission on Ancient and Historic Monuments of Wales, 2015);
- Management of Archaeological Projects (English Heritage, 1991);
- Management of Research Projects in the Historic Environment: The MoRPHE Project Managers' Guide (Historic England, 2015);
- Planning Policy Wales, 11th edition (Welsh Government 2021);
- Standard and Guidance for Archaeological Field Evaluation (Chartered Institute for Archaeologists, 2020); and
- Standard and Guidance for Desk-Based Assessment (Chartered Institute for Archaeologists, 2020).

- 5.4.8 Identifying the impact of a development upon historic assets is a four-stage approach. Initially, historic assets potentially impacted need to be identified (Stage 1), whilst their significance (heritage interest) also needs to be understood (Stage 2). Identification of historic assets was undertaken as part of the Desk-based Assessment (DBA) (refer to Archaeology Wales Report 1900 in Appendix B), whilst an initial assessment of significance is undertaken in the DBA and it will be refined as part of ES. Following this, the magnitude of effect needs to be identified (Stage 3) followed by an assessment of impact significance to the historic asset (Stage 4).

- 5.4.9 A historic assets' significance, for the purposes of EIA, is identified as anywhere from negligible (no significant heritage interest) to high (an asset with significant heritage interest) (see Table 1 below). The categories and definitions of heritage significance do not necessarily reflect a definitive level of importance of an asset. They are intended to provide a provisional guide to the assessment of perceived heritage significance, which is to be based upon professional judgement incorporating the evidential, archaeological, historical, aesthetic, architectural and communal heritage values of the asset or assets.

Table 5.2 Definitions of Significance (Heritage interest)

Heritage Significance	Definition
Very High (perceived International Importance)	World Heritage Sites; Historic landscapes of international value, whether designated or not; Extremely well preserved historic landscapes with exceptional coherence, time-depth, or other critical factor(s).
High (perceived National Importance)	Grade I and II* Listed Buildings or structures; Scheduled Monuments; Other listed buildings that can be shown to have exceptional qualities in their fabric or historical associations not adequately reflected in the listing grade; Conservation DAs containing very important buildings; Undesignated structures of clear national importance; Designated historic landscapes of outstanding interest. Undesignated landscapes of outstanding interest; Undesignated landscapes of high quality and importance, and of demonstrable national value; Well preserved historic landscapes, exhibiting considerable coherence, time-depth or other critical factor(s).
Medium (perceived Regional Importance)	Grade II Listed Buildings; Conservation DAs containing buildings that contribute significantly to its historic Character; Historic Townscape or built-up DAs with important historic integrity in their buildings, or built settings (e.g. including street furniture and other structures); Designated special historic landscapes; Undesignated historic landscapes that would justify special historic landscape designation, landscapes of regional value; Averagely well-preserved historic landscapes with reasonable coherence, time-depth or other critical factor(s).
Low (perceived Local Importance)	'Locally Listed' buildings (Scotland Category C(S) Listed Buildings); Historic (unlisted) buildings of modest quality in their fabric or historical association; Historic Townscape or built-up DAs of limited historic integrity in their buildings, or built settings (e.g. including street furniture and other structures); Robust undesignated historic landscapes; Historic landscapes with importance to local interest groups; Historic landscapes whose value is limited by poor preservation and/or poor survival of contextual associations.
Negligible	Buildings of no architectural or historical note; buildings of an intrusive character; Assets with no significant value or archaeological / historical interest; Landscapes with little or no significant historical interest.
Unknown	Buildings with some hidden (i.e. inaccessible) potential for historic significance; Assets with an unknown value or archaeological / historical interest.

5.4.10 A programme of archaeological works will be completed to inform the design of the proposal. The initial DBA has helped define the areas of archaeological interest within the study site and will be followed by a phased programme of archaeological works. The scope of this work will be agreed with relevant consultees. This will allow the extent and nature of any remains to be better understood, and will also inform the scope of any mitigation measures.

5.4.11 General principles to be considered include:

- To minimise the direct impacts on the landscape, construction and any ground disturbance works

should be kept to a minimum;

- To mitigate any visual indirect impacts upon the landscape current field and wooded boundaries should be maintained;
- Consider minimising direct and visual impacts on the Registered Historic Landscape of Llancarfan, possibly by undertaking an Assessments of the Significance of the Impact of the Development on the Historic Landscape (ASIDOHL);
- To undertake targeted geophysical surveys which may provide important information across the western and central part of area 1, and throughout the entirety of area 2 due to the significant number of archaeological sites in this area;

5.4.12 An archaeological watching brief may also be considered appropriate mitigation to mitigate against any potential loss of the archaeological features discussed in this assessment.

Assessing Potential Effects

5.4.13 The DBA identifies the presence of an area of the site within the Registered Historic Landscape of Llancarfan. The Historic Landscape will be directly and indirectly affected by the proposal as the development site lies partially within it. The proposal and any construction that will occur will create a direct impact and will have indirect impact visually on the remainder of the landscape.

5.4.14 Five Listed Buildings, within Bonvilston Conservation Area, had partial views from the proposal site, however due to the distance the development is unlikely to have an impact upon these Listed Buildings. Bonvilston Conservation Area is visible from the site but is some distance away (c 0.7km away) and the proposed development will possibly have minor indirect effect.

5.4.15 Three Scheduled Monuments, Scheduled Monument of Castle Ringwork and Coed y Cwm Ringwork (c. 850m north of the application site) and Castell Moel hillfort (c. 1.75km north west of the site), have the potential to be indirectly impacted by the proposal. During the site visit, both Scheduled Monuments had views to and from the site.

5.4.16 12 points of archaeological interest were identified in area 2, which all have the potential to be impacted.

5.4.17 Potential indirect effects to the setting of identified cultural heritage resources could be created from the proposals. Potential direct impacts from any of the following activities associated with the proposed development could therefore expose, damage or destroy archaeological remains:

- Surface stripping and levelling;
- Construction of infrastructure
- Service installation;
- Any other ground disturbing works

5.5 NOISE

5.5.1 The EIA will consider the potential noise and vibration impacts of the proposal on neighbouring Noise Sensitive Receptors (NSRs) during both the construction and operational phases of the proposed development.

5.5.2 Liaison with the Environmental Health Officer (EHO) at Vale of Glamorgan Council (VGC) will be undertaken to agree the noise and vibration criteria and assessment methodology.

Baseline Information

5.5.3 Whilst the proposal site is located in a rural location, there are a number of residential properties located in close proximity to the proposed deployment area.

Approach to Assessing Potential Effects

5.5.4 The noise and vibration assessment would include the following:

- Liaison with VGCC's EHO to agree on baseline levels at NSRs;
- Assessment of construction noise and vibration impacts in accordance with BS5228-1:2009+A1:2014 'Noise and Vibration Control on Construction and Open Sites';
- An assessment in accordance with BS4142:2014+A1:2019: 'Methods for Rating and Assessing Industrial and Commercial Sound' at NSRs;
- Prediction of the changes in road traffic noise levels resulting from the construction development, using Calculation of Road Traffic Noise (CRTN) calculation methods and DMRB impact assessment;

5.5.5 The impact assessment will be undertaken with reference to the following standards and guidance:

- BS4142:2014+A1:2019 'Method for Rating Industrial Noise affecting Mixed Residential and Industrial Areas';
- BS8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings;
- World Health Organisation (WHO) Guidelines for Community Noise: April 1999;
- World Health Organisation (WHO) Night Noise Guidelines for Europe: 2009;
- Technical Advice Note (Wales) 11: 1997 'Noise'
- The Institute of Environmental Management and Assessment (IEMA) 'Guidelines for Noise Impact Assessment';
- BS5228-1:2009+A1:2014 'Code of Practice for Noise and Vibration Control on Construction and Open Sites';
- Design Manual for Roads & Bridges (DMRB) LA 111 'Noise and Vibration' Rev2 May 2020; and
- ISO 9613-2: 1996 Acoustics – Attenuation of Sound During Propagation Outdoors

Proposed Noise Monitoring Locations

5.5.6 Four noise monitoring locations are proposed on the closest approach to the site which are considered representative of the background levels at noise sensitive receptors (NSRs).

- Location A: Cherry Tree Cottage off Brook Lane ;
- Location B: Blackland Farm off A426 southeast;
- Location C: Whitton Rosser Farm; and
- Location D: Representative of properties Pen-Carreg House, Tyn-Y-Coed Farm & Whitewell Cottages.

5.5.7 To fully understand the baseline conditions a noise survey would be undertaken in the vicinity of the NSRs over a sensitive operational period (e.g. Saturday into Monday period) to establish representative background sound levels based on BS4142:2014+A1:2019 methodology.

Figure 5.1: Proposed Noise Monitoring Locations



- 5.5.8 In terms of noise prediction modelling, information on the proposed site layout, detail of the likely plant list and any available information from equipment suppliers on plant noise levels or research into library data would be reviewed. Where appropriate, empirical noise level data would be referred to as obtained from similar plant operating in the UK.
- 5.5.9 Following the review of the proposed site layout and data available on plant noise levels, noise prediction calculations would be undertaken of the effect of the plant in operation. This would consist of producing a noise model with using computer-based noise modelling software for the operation of the facility (likely to be CADNA), which would apply ISO9613-2 calculation methodology. This would include the cumulative effect of the operation of all facilities on site. The predicted noise levels would assist in establishing the likely impact at the nearest sensitive receptor positions by applying BS4142: 2014.
- 5.5.10 Noise would also be assessed for the construction phase of the development. Information on noise sources likely to be used at site would be derived from the construction phase description and library data. An assessment of the highest likely noise levels would be provided based on the methodology provided within BS BS5228-1:2009+A1:2014 'Code of Practice for noise and vibration control on construction and open sites'.
- 5.5.11 The results of the baseline noise monitoring would be analysed and assessed against the modelled noise impacts. The main noise sources on Site would be assessed in terms of their contribution to noise radiating from the Site at nearest sensitive receptors and results compared with relevant impact criteria.
- 5.5.12 Where appropriate, noise control measures will be considered to ensure that noise levels are within relevant noise criteria guidance. Recommendations for appropriate noise control would be detailed taking BAT (Best Available Techniques) into consideration.
- 5.5.13 Noise arising from road traffic will be determined from the traffic figures provided in the Transport Assessment in accordance with the methodologies provided within 'Calculation of Road Traffic Noise' and the Design Manual for Roads and Bridges Rev 2 2020.

Assessing Potential Effects

- 5.5.14 The possible (likely) environmental noise effects of the proposed development are as follows:
- noise and vibration associated with the construction works relating to the construction of the infrastructure and associated plant affecting NSRs;
 - noise impacts to NSRs from changes in traffic associated with the construction phase of the Proposed Development;
 - noise impacts to NSRs from the operation of associated solar farm plant (e.g. inverters, transformers and battery containerised plant); and
 - potential cumulative operational noise associated with proposed site activities and any identified nearby developments that are operating or consented but not yet operational that generate noise; and
 - Vibration is not expected to be perceptible from site operations at NSRs. As such it is proposed (if agreed) to scope this element out of the operational assessment.

5.6 CLIMATE CHANGE

- 5.6.1 Solar PV converts sunlight to electricity without producing emissions. The EIA does not propose to carry out a life cycle analysis of greenhouse gas emissions associated with the development of the solar farm. Studies have shown that a solar PV system produces many times more energy (and ultimately reduced greenhouse gases) than was required for its production.
- 5.6.2 The proposal is to be in operation for a period of 40 years and over that period will generate enough renewable energy to offset over 868,000 tonnes of CO₂. The equivalent of powering circa 22,000 homes each year and taking approximately 5,400 cars off the road. The EIA will consider the resilience of proposed mitigation and enhancements in terms of projected climate change within its operational life.

5.7 CUMULATIVE EFFECTS

- 5.7.1 The potential for a number of impacts to affect a single receptor and thus represent an overall impact which is greater than the sum of the individual impacts is recognised and will be addressed as part of the EIA.
- 5.7.2 Other potential impacts from proposed developments which do not form the existing baseline conditions will also be considered in the assessment, these will include significant, consented proposals. A review of Local Plan allocations will also be carried out and likely cumulative effects considered.
- 5.7.3 Particular consideration will be given other solar farms with a 5km study area from the site boundary. A search identifies there are 8 operational solar farms within the study area. A DNS scale solar and battery scheme (Dyffryn Parc Solar Farm) is currently going through a Scoping exercise with PINS.

5.8 TOPICS NOT SIGNIFICANTLY AFFECTED BY THE PROPOSALS

HYDROLOGY, FLOOD CONSEQUENCES AND DRAINAGE

- 5.8.1 The EIA will consider the hydrology of the site and surrounding area and will be supported by relevant plans.
- 5.8.2 Although solar farm developments are not strictly flood sensitive infrastructure, some ancillary elements are, such as the associated electrical infrastructure including substations and transformers. Battery storage infrastructure is considered to be flood sensitive. The application site is located within Flood Zone A and therefore considered to be at little or no risk of fluvial or tidal/coastal flooding.
- 5.8.3 Further detail on how the development has been designed in respect of flood risk will be presented in a Flood Consequences Assessment (FCA). The FCA will be a separate but supporting report to the Environment Statement.
- 5.8.4 All new developments of more than 1 dwelling house or where the construction area is 100 square

meters or more, will require sustainable drainage systems (SuDS) for surface water. The SuDS must be designed and built in accordance with Statutory SuDS Standards and must be approved by the Local Authority (acting in its SuDS Approving Body (SAB) role) before construction work begins.

- 5.8.5 A full application for SAB approval will be made in parallel to the planning application.

TRAFFIC AND TRANSPORT

- 5.8.6 Solar developments do not generate significant levels of traffic on a permanent basis. Once the construction phase of the development is complete, visits to site are limited to weekly occurrences by a handful of operatives.
- 5.8.7 To access the proposal site vehicles will exit the M4 motorway at Junction 33 and head south along the A4232. Turning west at the roundabout onto the A48 to Sycamore Cross (east of Bonvilston). From the junction turn south onto the A4226 and the proposal site is circa 1km along with direct access to the 3 plots. This route is the preferred route for vehicles visiting the site during both the construction and operational phase.
- 5.8.8 A formal Transport Assessment (TA) is not required to accompany the planning application as TAs 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 is likely to be short term in duration, the effect on traffic levels will not be significant. The potential effects identified above can be adequately addressed through the production of a Construction Traffic Management Plan (CTMP). The CTMP will be a separate but supporting plan to the application.
- 5.8.9 The CTMP will set out the proposed access arrangements to the proposal site; vehicle routing from the M4; the anticipated construction programme, construction vehicle numbers; construction worker numbers and the proposed construction hours.

AIR QUALITY

- 5.8.10 Solar developments have no direct point source of emissions to the 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 or through the creation of dust.
- 5.8.11 The site is not within or near an Air Quality Management Area and traffic levels on the local roads will not significantly increase during either construction or operation. Excessive dust is unlikely to be generated through anchoring of the frames to the ground as the frames will be secured by either piles or ground screws. Excavation is limited to trenching thus minimising the potential for ground disturbance and the entrainment of dust. Vehicle movements on site will be limited to transportation of equipment from the set down area to solar array development areas.
- 5.8.12 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.
- 5.8.13 Air quality will not be considered as part of the EIA. However, A Construction Management Plan will be implemented during the construction phase and will require all construction activities to be undertaken in accordance with best practice methods.

MAJOR ACCIDENTS AND/OR DISASTERS

- 5.8.14 The benign nature of the proposals such that they are unlikely to release pollutants or any hazardous, toxic or noxious substances to air or land and is unlikely to have a significant effect in terms of pollution and nuisance.
- 5.8.15 There are no establishments that are covered by the Control of Major Accident Hazards (COMAH)

Regulations 2015¹⁰ within 4.8km (3 miles) of the proposal site.

- 5.8.16 Therefore, the potential for major accidents and disasters is low.

SOILS AND GEOLOGY

- 5.8.17 The proposal site has been in agricultural use since the 1800s (determined by mapping regression). As such there is unlikely to be land contamination issued associated with previous uses. Therefore, ground contamination will not be considered as part of the EIA.

- 5.8.18 The nature of the development means that a detailed understanding of local geology is not required. The mounting system and trenching for the below ground cables typically reach a depth of 1.2m. Therefore, geology will not be considered as part of the EIA.

PUBLIC HEALTH AND WELLBEING

- 5.8.19 The proposed development is unlikely to release pollutants or any hazardous, toxic or noxious substances to air or land. 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, including the management of noise and dust generating activities. The solar panels will be inert, static structures and will be finished with an anti-glare coating. No issues relating to the release of light, heat energy or electromagnetic radiation are likely.

SOCIO ECONOMIC

- 5.8.20 The proposed development will generate direct employment opportunities across a range of occupation types and could generate up to approximately 100 positions over the initial first months of construction (out of a six-month construction period). Once operational the equivalent of two positions in maintenance roles would be created.
- 5.8.21 The developer will seek to draw on the local skills base throughout the life of development actively communicating with local enterprises, seeking the local labour and materials supply chains where possible. It is likely that a proportion of the workforce will require temporary accommodation during the six-month construction phase. This will involve staying in a local hotel/self-catered facilities and utilising local shops and restaurants.
- 5.8.22 There will also benefit to landowners that accommodate the proposal by diversifying their agricultural business.
- 5.8.23 Whilst the above is considered a positive for the local economy, given the relatively short construction phase it is unlikely to have a major significant effect on the social or economic well-being of the area. The potential effects on the social and economic fabric of the area is not considered to be significant and will not therefore be considered within the EIA.

5.9 ENVIRONMENTAL TOPICS SCOPED OUT WITH STANDALONE TECHNICAL ASSESSMENT

GLINT AND GLARE

- 5.9.1 Photo voltaic 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 anti-reflective 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 reflected rays.
- 5.9.2 For potential ground based receptors, the established boundary vegetation will play a significant role

¹⁰ <https://notifications.hse.gov.uk/COMAH2015/Search.aspx>

in reducing glint and glare issues. However, given the proximity to Cardiff Airport to the proposal site, consideration will be given to airborne receptors in consultation with the Civil Aviation Authority. The results will be reported as a standalone document to accompany the EIA.

AGRICULTURAL LAND QUALITY

- 5.9.3 Solar farms can operate while the fields continue to be used for grazing, not resulting in the loss of agricultural land. The construction and decommissioning of the solar farm would have little impact on the land quality and the fields would easily be returned to agricultural use on removal of the solar farm and associated infrastructure. According to the Predictive Agricultural Land Classification Map (Wales)¹¹, the majority of the deployment area is a mixture of grade 3a and grade 5, with areas to the north containing land of which is grade 4. Detailed soil assessment will be undertaken to confirm if the site is best and most versatile land. The results will be reported as a standalone document to accompany the DNS application.

¹¹ Predictive Agricultural Land Classification Map (Wales)
<http://lle.gov.wales/map/alc2>



6. SUMMARY & CONCLUSIONS

6.1 CONCLUSION

- 6.1.1 Sirius Renewable Energy is seeking to construct a solar farm and battery units across a total area of approximately 126ha. The deployment site is located to the south of the village Bonvilston. The proposed point of connection is to the existing overhead powerline that passes over the proposal site, thus maximising electrical efficiencies of not having to connect a distance from site and minimising development disruption.
- 6.1.2 This request for a Scoping Direction has identified the key issues in relation to the likely significant environmental effects of the proposed development and sets out the nature and scope of the proposed surveys and assessments which will be undertaken as part of the Environmental Impact Assessment.
- 6.1.3 It is considered that the scope of items featured in this request and proposed reporting format of the Environmental Statement will provide satisfactory data and information to enable a scoping direction to be issued in accordance with the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017.

