

Proposed installation of a ground mounted Photo Voltaic (PV) solar farm development on Land to the east of the A48 and Land to the south-west of Tycroes

Landscape and Visual Impact Assessment (LVIA)

Prepared by Amalgam Landscape Limited
On behalf of Spring

April 2020

www.amalgamlandscape.co.uk

Document Control Sheet

Project Name: Proposed installation of a ground mounted Photo Voltaic (PV) solar farm development on Land to the east of the A48 and Land to the south-west of Tycroes

Project Reference: P0415

Report title: Landscape and Visual Impact Assessment (LVIA)

Date: April 2020

	Name	Position	Date
Baseline prepared by:	P. Shephard	Senior Consultant	November 2019
Graphics prepared by:	P. Shephard	Senior Consultant	November 2019
Report prepared by:	A.J Watts	Director	December 2019
Reviewed by:	A.E Watts	Director	December 2019
For and on behalf of Amalgam Landscape Ltd			

Revision	Date	Description	Prepared	Reviewed
V1	23/12/19	For project team comment	A.J Watts	B. Lewis (RenPlan) H. House(Spring)
V2	8/1/20	Sensitivity information added and comments incorporated	A.J Watts	B. Lewis (RenPlan) H. House(Spring)
V3	16/1/20	For submission	A.J Watts	-
V4	26/3/20	Comments from Unitary Authority incorporated	A.J Watts	B. Lewis (RenPlan) H. House(Spring)
Final	9/4/20	Final	A.J Watts	-

This report has been prepared by Amalgam Landscape with all reasonable skill, care and diligence, within the terms and conditions of the Contract with the Client. The report is confidential to the Client and Amalgam Landscape accepts no responsibility of whatever nature to third parties whom this report may be made known.

No part of this document may be reproduced without the prior written approval of Amalgam Landscape.

© Amalgam Landscape Limited 2020

Contents

Summary

1. Introduction
2. Methodology
3. Existing Conditions
4. Design and Mitigation Measures
5. Construction and De-commissioning Impacts and Effects
6. Operational Impacts and Effects, including Residual Impacts and Effects
7. Cumulative Impacts and Effects
8. Conclusions

Appendices

A - References

B – Technical Information

Figure List

1 – Location Plan

2 - Cumulative Solar Schemes

3A – Site Analysis (Area 1 – Eastern Site and Area 2 – Central Site)

3B – Site Views A and B

3C – Site Views C and D

4A – Site Analysis (Area 3 - Western Site)

4B – Site View E

4C – Site Views F and G

5 - Landscape Relevant Designations

6 – National Landscape Character

- 7A – LANDMAP – Visual and Sensory
- 7B – LANDMAP – Historic Landscape
- 7C – LANDMAP – Cultural Landscape
- 7D – LANDMAP – Geological Landscape
- 7E – LANDMAP – Landscape Habitat
- 8 - Topography
- 9 - Principal Visual Amenity Receptors
- 10A – Zone of Theoretical Visibility (Whole Site)
- 10B - Zone of Theoretical Visibility (Area 1 - Eastern Site)
- 10C - Zone of Theoretical Visibility (Area 2 - Central Site)
- 10D - Zone of Theoretical Visibility (Area 3 - Western Site)
- 11 – Viewpoint 1
- 12A – Viewpoint 2 (Existing View)
- 12B – Viewpoint 2 (Proposed View – Year 1)
- 12C – Viewpoint 2 (Proposed View – Year 5)
- 13A – Viewpoint 3 (Existing View)
- 13B – Viewpoint 3 (Proposed View – Year 1)
- 14A – Viewpoint 4 (Existing View)
- 14B – Viewpoint 4 (Proposed View – Year 1)
- 15A – Viewpoint 5 (Existing View)
- 15B - Viewpoint 5 (Proposed View – Year 1)
- 16A – Viewpoint 6 (Existing View)
- 16B - Viewpoint 6 (Proposed View – Year 1)
- 17A – Viewpoint 7 (Existing View)
- 17B - Viewpoint 7 (Proposed View – Year 1)
- 18A – Illustrative Landscape Masterplan (Area 1 – Eastern Site and Area 2 - Central Site)
- 18B - Illustrative Landscape Masterplan (Area 3 - Western Site)

1. Introduction

Purpose of this Report

- 1.1. Amalgam Landscape, a Registered Practice of the Landscape Institute, has produced this Landscape and Visual Impact Assessment (LVIA) on behalf of Spring for a proposed 40MWp solar farm (*the proposed development*) on Land to the east of the A48 and Land to the south-west of Tycroes, Carmarthenshire.
- 1.2. The purpose of the LVIA is to identify and outline the existing landscape character and visual amenity receptors within the study area and to assess the potential magnitude of impact and level of effect on these receptors as a result of the proposed development. Mitigation measures are proposed, including during the initial design phase, to reduce the impacts and effects of the proposed development. Impacts and effects are assessed at significant stages in the life of the proposed development, including construction, operation and de-commissioning. Residual impacts and effects, following the implementation of any mitigation measures, such as planting, are also assessed.
- 1.3. The LVIA also considers the cumulative effects of the proposed development when perceived with other solar energy schemes that are operational, under construction, consented and pending planning¹ within the study area.
- 1.4. In summary, the LVIA will assist decision makers, members of the public and other interested parties by providing a clear and common understanding of the predicted landscape and visual impacts and effects of the proposed development in an impartial and professional way.

The Proposed Development

- 1.5. The location of the proposed development is illustrated on **Figure 1**.
- 1.6. The proposed development will consist of:
 - A 40MWp solar scheme of fixed ground mounted photo-voltaic (PV) panels;
 - The PV panels will be mounted no higher than 3.5m from ground level and orientated southwards to maximise power generation;
 - The PV panels will be arranged in rows and spaced to avoid shadowing from panel to panel;
 - The PV panels will be mounted on metal frames with support posts inserted into the ground to a depth of approximately 1-1.5m, depending on ground conditions, thereby avoiding the use of concrete foundations, unless required;
 - A 2.4m high perimeter post and wire (deer) fence will surround the proposed development, punctuated by CCTV camera masts at intervals along the boundary fencing;

¹ 'Pending planning' – solar schemes that have been submitted for a planning application decision. This does not include solar schemes in screening or scoping or those that have been refused planning permission.

- Private switchgear, DNO substation and inverters; and
- Access tracks (for construction and operation), approximately 4m wide largely following existing farm tracks and utilising existing entrances. The existing farm tracks within the site will be improved as required by adding additional 300mm granular material. Where additional tracks are required for construction, these will be created using interlocking sheet material of either reinforced plastic or aluminium.

1.7. The proposed development will involve the following distinct phases:

- Construction phase – approximately 18-24 weeks;
- Operation phase – 40 years; and
- De-commissioning phase – approximately 18-24 weeks.

Scope of the LVIA

1.8. The LVIA:

- Identifies the methodology, including defining the extent of the study area and the detailed technical approach. The study area is a minimum of **5km radius** offset from the boundaries of the proposed development site as this is where the most ‘noticeable’ effects may occur;
- Describes the proposed development site and the surrounds and the existing landscape character, including landscape relevant designations and visual amenity receptors and their views within the study area;
- Identifies operational, under construction, consented and pending planning solar schemes within the study area. Operational, under construction and consented solar schemes form part of the existing conditions assessment;
- Proposes mitigation measures which aim to avoid, reduce or compensate for any effects. Mitigation through siting and design during the earliest stages is critical in reducing the potential landscape and visual effects of the proposed development. ‘Additional’ mitigation measures are also proposed, including new planting;
- Describes the magnitude of impact and the level of effect, including any residual impacts and effects, on the existing landscape character and visual amenity receptors and their views as a result of the proposed development. Use is made of a computer generated Zones of Theoretical Visibility (ZTVs) to identify the locations in the study area where the proposed development could be potentially visible. Panoramic photographic views and photomontages are also used to illustrate the potential impacts and effects of the proposed development from publicly accessible viewpoints including immediately following construction and selectively after 5 years (assuming growth of any landscape mitigation measures);
- Assesses the additional cumulative effects of the proposed development in combination with other operational, under construction, consented and pending planning solar schemes on the surrounding landscape character and views from visual amenity receptors; and
- Provide conclusions on the overall landscape and visual effects of the proposed development.

The Study Areas

- 1.9. The 'main' study area is 5km radius offset from the boundaries of the proposed development.
- 1.10. In addition, different study areas for the five aspect areas of LANDMAP are also considered as follows:
- Visual and Sensory – 5km radius offset from the boundaries of the proposed development;
 - Historic Landscape – 5km radius offset from the boundaries of the proposed development;
 - Cultural Landscape – 2.5km radius offset from the boundaries of the proposed development;
 - Geological Landscape – 2.5km radius offset from the boundaries of the proposed development; and
 - Landscape Habitats – 2.5km radius offset from the boundaries of the proposed development.

2. Methodology

- 2.1 The LVIA is carried out by experienced chartered landscape architects. They apply professional judgements in a structured and consistent way, following the guidelines produced by the relevant professional bodies concerned with landscape and visual impact assessment.
- 2.2 These guidelines are identified in **Appendix A**.
- 2.3 In line with the *Guidelines for Landscape and Visual Impact Assessment² (GLVIA)*, the primary guidance in respect of LVIA, the methodology used for this assessment has three iterative key stages, as follows:
- **Existing conditions** (or baseline assessment) – this includes the gathering and description of information to inform the assessment, including information on operational, under construction and consented solar schemes within the study area;
 - **Design** – this includes input into the design at key stages including defining the site boundary and extent of development, identification of opportunities and constraints, review of initial design layout, discussion and recommendation of mitigation measures; and
 - **Assessment of Impacts and Effects** – this includes an assessment of the potential landscape and visual effects of the proposed development, including any residual effects following the growth of landscape mitigation measures and any cumulative effects.

² *Guidelines for Landscape and Visual Impact Assessment (GLVIA), Third Edition*, 2013, The Landscape Institute and the Institute of Environmental Management and Assessment

Existing Conditions Assessment Methodology

- 2.4 The description of the existing conditions establishes the baseline situation against which the effects of the proposed development are assessed.
- 2.5 The description of the baseline conditions includes:
- **Cumulative information** – which includes information on solar schemes that are operational, under construction and consented. Pending planning solar schemes do not form part of the existing conditions assessment;
 - **Site description** – which is the description of the proposed development site, the boundaries and the immediate surrounds;
 - **Landscape relevant designations** – which is the description of areas or features recognised for their landscape value, at a national, regional and local scale. These help inform the sensitivity and importance, attributed by the national and local government, to areas or features within the proposed development site and study area;
 - **Landscape character** - which is the description of the physical characteristics of the landscape and their sensitivity to change. The landscape is divided into discrete areas of similar characteristics called ‘landscape character areas.’ Reference is made to previously published landscape character assessments at a national and local scale, including LANDMAP³; and
 - **Visual amenity receptors** – which is the identification of people and a description of their views. Views from settlements including towns, villages, hamlets and individual residential properties and farms, country parks, national cycle routes, recreational routes, open access areas, local public rights of way, bridleways and cycleways, major and minor roads and railway lines are assessed. The sensitivity of the visual amenity receptors is also described.
- 2.6 Existing information is collected through a combination of desk studies, site surveys and consultation.

Desk Study

- 2.7 An initial desk study was undertaken to review existing map and written data, relevant to the study area. Details of sources of information are found in **Appendix A**. A summary of the desk study is outlined below:
- Internet search and review of relevant development plans for policies and designations to gain an understanding of the ‘importance,’ ‘value’ and ‘sensitivity’ of designated features attributed to the landscape and visual resource by the national and local government;
 - Previously published landscape character assessments at a national, regional and local scale to gain an understanding of the overall character, quality and sensitivity of the existing landscape within the study area;
 - Maps and internet data to gain an understanding of the landform and landscape pattern as well as for information on location of public rights of way and visitor attractions; and

³ LANDMAP website (www.naturalresources.wales)

- Internet data to find information on operational, under construction, consented and pending planning solar schemes. The information is constantly changing and was last updated at the end of November 2019.

Site Survey

- 2.8 A site survey, including a photographic survey, was undertaken in fine weather in November 2019 by an experienced chartered landscape architect.
- 2.9 The proposed development site was visited and the survey within the study area was undertaken from selected publicly accessible areas, such as public highways and public rights of way. Views from private properties, such as houses and settlements, were estimated from the closest publicly accessible location and checked using aerial photography.
- 2.10 The site survey helped to gain an understanding of the existing landscape character and visual amenity receptors and their views within the study area and the potential impacts and effects as a result of the proposed development.
- 2.11 The site survey also helped to inform the proposed development design including defining the layout and extent and identifying mitigation measures to reduce any potential effects. This supplemented the available information collected during the desk study.

Consultation

- 2.12 A non-EIA screening direction was received from The Planning Inspectorate on 12th July 2019 and replaced by a further non-EIA screening direction on 20th December 2019. A number of issues were raised of relevance to the LVIA, as follows:
- The eastern site adjoins the existing Clawdd du solar farm and there is some potential for cumulative visual impact;
 - The eastern site adjoins a Special Landscape Area;
 - There are public rights of way in the vicinity and crossing the eastern site. However any impacts on these routes would be localised and of a relatively limited nature; and
 - The proposed development is currently green fields, which would be lost to the development. However, the bulk of the proposed alterations would be largely reversible at the end of the project life span.
- 2.13 A response from Natural Resources Wales (NRW) on 3rd July 2019 recommended that the Landscape Officer at Carmarthenshire County Council (CCC) be contacted for advice regarding the potential landscape and visual impacts of the proposed development.
- 2.14 The potential viewpoints to inform the LVIA were issued to Landscape Officer at CCC for comments on 25th July 2019.
- 2.15 A response was received from the CCC Landscape Officer on 11th September 2019.
- 2.16 The CCC Landscape Officer advised that the potential viewpoints to inform the LVIA were broadly acceptable although additional viewpoints were suggested including from the public right of way to the east of the westernmost site, between Cefn-gwili and Tir-isaf, from public right of way between the western and central sites, that passes through Pen-crug-isaf and from the public right of way that passes through the easternmost site.

- 2.17 These suggested viewpoints were visited during the site survey. The views from the public right of way to the east of the westernmost site, between Cefn-gwili and Tir-isaf and from public right of way between the western and central sites that passes through Pen-crug-isaf were very enclosed.
- 2.18 Views from the public right of way that passes through the easternmost site have been included within the LVIA as **Viewpoint 3 (Figures 13A-13B)** and **Viewpoint 4 (Figures 14A-14B)**.
- 2.19 Further detail was also added on the impacts and effects from close-proximity residential properties, following feedback from the CCC Landscape Officer.
- 2.20 The indicative landscape masterplans were also updated to show more technical detail relating to the proposed development including information on fencing, CCTV cameras and access tracks.

Landscape Character and Visual Amenity Receptor Sensitivity Methodology

- 2.21 Landscape character and visual amenity receptors are assessed according to their sensitivity to change by combining the considerations of susceptibility and value.
- 2.22 The sensitivity of both landscape character and visual amenity receptors are evaluated according to a five-point scale. The criteria used to assess the sensitivity of landscape character and visual amenity receptors are outlined in **Table 1**. The susceptibility to change referred to relates specifically to the proposed development.

Table 1 Broad criteria for assessing the sensitivity of landscape and visual receptors

Sensitivity	Landscape character description	Visual amenity receptor description
High	<p>Distinctive landscape elements and/or character, with very limited ability to accommodate change.</p> <p>Includes areas with a very strong positive character with valued features that combine to give an experience of unity, richness and harmony.</p> <p>Landscapes in excellent condition that are considered to be of particular importance to conserve and which may be particularly sensitive to the proposed development. No detractors present.</p> <p>Likely to be designated and <u>could</u> include very highly valued landscapes of strong scenic quality and rarity on a national/international scale (World Heritage Sites, National Parks/Areas of Outstanding Natural Beauty).</p> <p>Broadly comparable to the LANDMAP defined 'outstanding' category.</p>	<p>Residents of residential properties and settlements (ground floor – where it is assumed this is the 'main' living area, including gardens).</p> <p>Users of public rights of way/open access land in nationally/internationally designated areas of landscape value (World Heritage Sites, National Parks/Areas of Outstanding Natural Beauty).</p> <p>Users of national trails.</p> <p>Visitors to valued viewpoints (for example promoted or well-known viewpoints, key designed views or panoramic viewpoints marked on maps).</p>
Medium-high	<p>Highly valued landscape elements and/or character with limited ability to accommodate change.</p> <p>These are landscapes in very good condition that are considered to be of</p>	<p>Residents of residential properties and settlements (first floor – where it is assumed these are bedrooms/bathrooms – not the main living area).</p> <p>Users of public rights of way/open access</p>

Sensitivity	Landscape character description	Visual amenity receptor description
	<p>importance to conserve and which may be sensitive to the proposed development. No or few detractors present.</p> <p>Likely to be designated and <u>could</u> include valued landscapes of scenic quality and rarity on a regional or local scale (SLAs, designed landscapes).</p> <p>Broadly comparable to the LANDMAP defined 'high' category.</p>	<p>areas which <u>could</u> be locally recognised (for example SLAs) or in locations where the users are likely to pause to appreciate the view, such as at benches, key views to/from local landmarks.</p> <p>Users of outdoor recreational facilities with high interest in surrounding environment including visitors to attractions or heritage assets.</p> <p>Users of recognised cycle routes and recreational routes.</p> <p>Travellers along identified scenic road routes.</p>
Medium	<p>Moderately valued or 'everyday' landscape elements and/or landscape character, with some ability to accommodate change.</p> <p>These are landscapes in good condition which <u>could</u> be appreciated by the community but has little or no wider recognition.</p> <p>Some detractors likely to be present.</p> <p>Broadly comparable to the LANDMAP defined 'moderate' category.</p>	<p>Users of public rights of way/open access land.</p> <p>Recreational users travelling at low speeds on bridleways/cycle paths.</p> <p>Visitors to cemeteries.</p> <p>Visitors staying at a caravan/camping sites.</p> <p>Outdoor sporting facilities and users of recreational facilities with low interest in surrounding environment.</p>
Medium-low	<p>Reasonably valued landscape elements and/or landscape character, with good ability to accommodate change.</p> <p><u>Could</u> include features/areas that exhibit positive character but which may have evidence of alteration, degradation and erosion of features resulting in areas of more mixed character.</p> <p>Some detractors likely to be present.</p> <p>Broadly comparable to the LANDMAP defined 'low' category.</p>	<p>Travellers along most minor roads.</p> <p>Outdoor sporting facilities and users of recreational facilities with low interest in surrounding environment.</p>
Low	<p>Weak landscape structure, partly degraded with frequent detractors with very good/substantial ability to accommodate change.</p> <p>Highly likely to be a non-designated landscape in poor condition which <u>could</u> include elements and/or areas that are generally negative in character with few, if any, valued features.</p>	<p>Static office workers and workers in industrial facilities/indoor non-static environments.</p> <p>Travellers with limited opportunity to enjoy the view due to speed of travel (for example on motorways, trunk roads or rail routes).</p>

Design Methodology

2.23 A leading role was played by the chartered landscape architect in informing the design during the assessment process, including informing the extent of the site, site layout and development design as well as determining the landscape mitigation measures.

- 2.24 During the assessment process and as a result of the site survey, fields to the east of the western site and the majority of the central site were removed from the development design, mainly for ecological reasons.
- 2.25 This resulted in the final design being more logical and compact, less ‘visible’ and better integrated into the immediate and wider landscape.

Assessment of Impacts and Effects Methodology

- 2.26 The existing conditions descriptions and the determination of sensitivity help to assess the magnitude of impact and level of effect on the landscape character and visual amenity receptors as a result of the proposed development.

Magnitude of Impact Methodology

- 2.27 An ‘impact’ is defined as a change likely to occur as a result of the construction, operation and de-commissioning of the proposed development.
- 2.28 The scale or magnitude of impact is determined through the assessment of the duration and extent of the changes to the landscape and visual resource as a result of the proposed development.
- 2.29 The duration of impact determines the time period over which the changes as a result of the proposed development occurs. Most impacts as a result of the proposed development would be long-term, however medium or short-term impacts may be identified where mitigation such as planting is proposed. For example, it is expected that the maturing of proposed planting will screen views over time. In addition, the construction impacts will also be short-term.
- 2.30 The extent of the impact indicates the geographic area over which the changes as a result of the proposed development occur. The extent of the impacts could be limited (for example, only a small part of the site or view); localised; intermediate or wide.
- 2.31 The magnitude of impact on both landscape character and visual amenity receptors are evaluated according to a six-point scale. The broad criteria for assessing the magnitude of impacts are outlined in **Table 2**.

Table 2 Broad criteria for assessing the magnitude of impact on landscape character and visual amenity receptors

Magnitude of impact	Landscape character description	Visual amenity receptor description
High	<p>High levels of change to landscape elements/ landscape character.</p> <p>The proposed development will be very prominent in the landscape and will be perceived as a determining factor of the landscape character.</p> <p>The proposed development will lead to a major alteration to the landscape character.</p> <p>The proposed development, when perceived with other solar schemes, will be immediately apparent and contribute to a</p>	<p>Receptors would experience an immediately apparent change to their views, arising from major alteration to the key characteristics of the existing view or the introduction of elements that will be totally uncharacteristic of the view.</p> <p>The proposed development will dominate the field of view and be impossible not to notice.</p> <p>The proposed development, when perceived with other solar schemes, would be immediately apparent and contribute to a</p>

Magnitude of impact	Landscape character description	Visual amenity receptor description
	'landscape with solar schemes.'	view dominated by solar schemes.
Medium-high	<p>Prominent level of change to landscape elements/landscape character.</p> <p>The proposed development will be obvious in the landscape and will generally be perceived as a determining factor in local landscape character.</p> <p>The proposed development, when perceived with other solar schemes, would be obvious and contribute to a 'landscape with solar schemes.'</p>	<p>Receptors would experience an apparent change to their views.</p> <p>The proposed development would be prominent in views or would be perceived as the determining factor within the field of view and be difficult not to notice.</p> <p>The proposed development, when perceived with other solar schemes, would be obvious and contribute to a view influenced by solar schemes.</p>
Medium	<p>Partial levels of change to landscape elements/landscape character.</p> <p>The proposed development will be noticeable but not necessarily a determining factor of the landscape character.</p> <p>The proposed development would lead to a change to the landscape character.</p> <p>The proposed development, when perceived with other solar schemes, would be apparent and contribute to a 'landscape with solar schemes.'</p>	<p>Receptors would experience a readily apparent change to their view, arising from partial alteration to the key characteristics of the existing view or the introduction of elements that may be prominent but will not dominate the field of view.</p> <p>The proposed development, when perceived with other solar schemes, would be apparent and contribute to a view influenced by solar schemes.</p>
Medium-low	<p>Minor levels of change to landscape elements/landscape character.</p> <p>The proposed development will be perceived but will not be a determining factor of the landscape character.</p> <p>The proposed development, when perceived with other solar schemes, would be noticeable and may contribute to a 'landscape with solar schemes.'</p>	<p>Receptors would experience an apparent but minor change in their view, arising from an alteration to the view.</p> <p>The proposed development will be present in views but will form only a minor element.</p> <p>The proposed development, when perceived with other solar schemes, would be noticeable and may contribute to a view influenced by solar schemes.</p>
Low	<p>Low levels of change to landscape elements/landscape character.</p> <p>The proposed development will be present and will be perceived as a background feature of the wider landscape character.</p> <p>The proposed development would lead to a minor change to the landscape character.</p> <p>The proposed development, when perceived with other solar schemes, will not be immediately noticeable, although it may contribute to a 'landscape with solar schemes.'</p>	<p>Receptors would experience a low level of change to views. The proposed development will be present in the wider landscape but will be perceived as a background component of views and easily go unnoticed.</p> <p>The proposed development would lead to a minor change to the view.</p> <p>The proposed development, when perceived with other solar schemes, will not be immediately noticeable, although it may contribute to a view with solar schemes.</p>
No change	Indiscernible level of change. Equivalent to no change.	Indiscernible level of change. Equivalent to no change.

Level of Effect Methodology

- 2.32 An ‘effect’ is defined as the degree of change likely to occur as a result of the construction, operation and de-commissioning of the proposed development.
- 2.33 The level of the effects on landscape character and visual amenity receptors is determined by balancing the sensitivity of the receptor and the magnitude of impact as a result of the construction, operation and de-commissioning of the proposed development.
- 2.34 The correlation between the sensitivity of the landscape character and visual amenity receptor, and the magnitude of impact to determine the level of effect is summarised in **Table 3**. The matrix is however not a prescriptive tool and the analysis of the level of effects requires the exercise of professional judgement.

Table 3 Overall determination of level of effect on landscape character and visual amenity receptors

		Sensitivity of receptor				
		High	Medium-high	Medium	Medium-low	Low
Magnitude of impact	High	Major	Major or Moderate	Moderate	Moderate or Minor	Minor
	Medium-high	Major or Moderate	Moderate	Moderate	Moderate or Minor	Minor
	Medium	Moderate	Moderate	Moderate	Minor	Minor or Negligible
	Medium-low	Moderate or Minor	Minor	Minor	Minor or Negligible	Negligible
	Low	Minor	Minor or Negligible	Minor or Negligible	Negligible	Negligible
	No change	Neutral	Neutral	Neutral	Neutral	Neutral

- 2.35 The level of effect on both landscape character and visual amenity receptors are evaluated according to a five-point scale. The broad criteria for assessing the level of effect are outlined in **Table 4**.

Table 4 Broad criteria for assessing the level of effect on landscape character and visual amenity receptors

Level of effect	Landscape character description	Visual amenity receptor description
Major	Where the proposed development would be highly noticeable and/or noticeably alter a recognised landscape or landscape feature; the proposed development would be the defining element within the landscape.	Where the proposed development would be uncharacteristic or would substantially alter a valued/ very important view or view of high quality.
Moderate	Where the proposed development would be noticeable and/or partially alter a recognised landscape or landscape feature.	Where the proposed development would be readily apparent within the existing view.
Minor	Where the proposed development would have a discernible but limited effect on the landscape character and/or landscape elements.	Where the proposed development would be noticeable with the existing view.

Level of effect	Landscape character description	Visual amenity receptor description
Negligible	Where the proposed development would have a slightly discernible effect on the landscape character and/or landscape elements.	Where the proposed development would provide a small change to the existing view.
Neutral	The proposed development would have no change.	The proposed development would have no change.

Positive, Negative and Neutral Effects

2.36 It is important to note that effects can be positive (beneficial), negative (adverse) or no change (neutral). The definitions are outlined in **Table 5**.

Table 5 Broad criteria for assessing the beneficial, adverse and neutral effects on landscape character and visual amenity receptors

Level of effect	Landscape character description	Visual amenity receptor description
Beneficial	Improvement to landscape elements and/or features. Improvement to the value of landscape character and resource. This could also include removal of existing detractors of the landscape character.	Introducing elements that improve the view. This could also include removal of existing detractors to the view.
Adverse	Removal of landscape elements and/or features. Degradation of landscape character and resource.	Introducing elements that degrade the view.
Neutral	Changes to landscape character or landscape elements that would be neither positive nor negative. Could include the addition of elements within the landscape that already exist which would not involve the degradation of removal of valued aspects of the landscape resource.	Changes to views that would be neither positive nor negative. Could include the addition of elements within the view that already exists which would not involve the degradation of removal of valued aspects of the view.

Cumulative Assessment Methodology

2.37 Cumulative assessment is concerned with the ‘additional’ effects of the proposed development when perceived with other operational, consented or pending planning solar schemes.

2.38 Within the cumulative assessment, the proposed development is considered ‘in addition’ to:

- Operational, under construction and consented solar schemes in the study area, where they already exist or are highly likely to exist; and
- ‘Pending planning’ solar schemes within the study area, where there is only the potential that they will exist.

2.39 The cumulative assessment considers the additional impacts and effects on landscape character, landscape relevant designations and visual amenity receptors and their views.

- 2.40 In relation to visual amenity receptors, there are two types of impact. These include:
- Combined impacts which occur when the receptor is able to perceive two or more developments from one viewpoint, in combination or in succession; and
 - Sequential impacts which occur when the receptor has to move to another viewpoint to see different solar developments, travelling along regularly used routes such as major roads or popular or recognised public rights of way.

3. Existing Conditions

- 3.1 The description of existing conditions establishes the landscape character and visual amenity context within the study area and forms the basis of the LVIA.
- 3.2 The existing conditions include descriptions of the proposed development site and its immediate surrounds and landscape relevant designations, landscape character and visual amenity receptors and their views within the study area.
- 3.3 The existing condition descriptions also help to inform the future design of the site, including ensuring the proposed development retains a ‘sense of place’ and is in keeping with the key characteristics of the overall landscape and in views.

Cumulative

- 3.4 The presence of operational, under construction and consented solar schemes within the study area is also included within the descriptions of existing conditions.
- 3.5 The cumulative solar schemes, as identified through a search of relevant planning applications and databases, are illustrated in **Figure 2** and described in **Table 6**.

Table 6 Solar schemes in the study area

Name	Capacity	Direction from proposed development	Distance from proposed development (km)	Status
Land at former Cynheidre Shafts (Pont Andrew)	1.3MW	West	4.6km	Operational
Pentre Farm	5.5MW	West	3.7km	Operational
Land at Clawdd du	12MW	South-west (of Area 1 - Eastern Site)	Adjacent	Operational
Land adjacent to Pontardulais Road	5MW	North	450m	Consented
Land east of Saron Road	5MW	North	3km	Operational
Land at Pen y Cae	3MW	North	1.6km	Operational
The Sewage Works Garnswllt	348kW	North-east	1.9km	Pending planning

- 3.6 In summary:
- There are five operational solar schemes, one consented solar scheme and one pending planning solar scheme within the 5km radius study area;
 - The solar schemes vary in size from small scale at 348KW to larger schemes at 12MW;
 - The majority of the solar schemes are broadly located to the north of the study area; and
 - The closest operational solar scheme is located immediately to the south-west of Area 1 (Eastern Site) boundary. It is separated by a hedgerow field boundary.
- 3.7 The key point to note from the baseline cumulative assessment is that the majority of the operational, consented and pending planning solar schemes within the study area are largely separated from the proposed development by a combination of gently undulating landform, punctuated by development and mature vegetation, with the exception of the close proximity and adjacent operational solar scheme immediately to the south-west of the Area 1 (Eastern Site).
- 3.8 The solar schemes within the study area appear to be absorbed within the gently undulating and well-vegetated landscape that is characteristic of the study area. Solar schemes largely do not dominate the landscape or views.

The Proposed Development Site and Surrounds

- 3.9 The proposed development site is situated on regular gently sloping fields, set within a wider well-vegetated agricultural landscape.
- 3.10 The proposed development site is sub-divided into three separate areas – Area 1 (Eastern Site), Area 2 (Central Site) and Area 3 (Western Site).
- 3.11 An analysis of the proposed development site and immediate surrounds is illustrated in **Figures 3A and 4A**, with panoramic photographs of the site and immediate surrounds illustrated in **Figures 3B and 3C** and **Figures 4B and 4C**. The proposed development site is described in more detail below:
- Area 1 (Eastern Site)
- 3.12 Area 1 (Eastern Site) consists of a series of broadly regular fields gently sloping down from the north to the south.
- 3.13 The regular fields are divided by generally trimmed and well-managed hedgerows. There are a few trees present in the hedgerows although trees are largely restricted to the small woodlands and linear tree belts that border the proposed development site to the north and east.
- 3.14 A farm track connects with an existing entrance and gateway to the north and a minor road, well-enclosed by dense hedgerows occurs to the south.
- 3.15 The regular fields are also bisected by a public right of way that connects with the existing farm track and gateway to the north. The public right of way largely follows the field boundaries through the proposed development site to the north, before splitting to head to the east and south respectively.

- 3.16 An operational solar scheme also occurs to the west and south, adjacent to the proposed development site boundary. The existing solar panels are perceived from the public rights of way that bisect the proposed development site, although intermittently screened by the hedgerow field boundary.

Area 2 (Central Site)

- 3.17 Area 2 (Central Site) consists of a regular field, gently sloping down broadly from the north to the south.
- 3.18 The regular field is bordered by generally trimmed and well-managed hedgerows. There are a few trees present in the hedgerows although trees are largely restricted to the small woodland copse and linear tree belts that border the proposed development site to the south.

Area 3 (Western Site)

- 3.19 Area 3 (Western Site) consists of a series of broadly regular fields gently sloping down from the east to the west and from the north to the south, from a high point to the north-west.
- 3.20 The regular fields are divided by generally trimmed and well-managed hedgerows. There are a few trees present in the hedgerows although trees are largely restricted to the often substantial woodlands and linear tree belts that border the proposed development site.
- 3.21 A farm track bisects the proposed development site, connecting with the A48 to the west. The farm track initially passes through woodland that separates the proposed development site from the nearby major road and then becomes well-enclosed by dense hedgerows before connecting to the farm house to the south-east.
- 3.22 The farm house and surrounding agricultural buildings occurs to the south-east (outside the proposed development site boundary).

Landscape Character

Landscape Relevant Designations

- 3.23 The proposed development site is **not** recognised for its importance or value through any landscape relevant designations.
- 3.24 There are, however, landscape relevant designations within the study area. These are identified on **Figure 5** and are described below^{4 5}.
- There are four Special Landscape Areas (SLAs) in the study area, including:
 - Llŵchwr Valley SLA immediately to the south of Area 1 (Eastern Site) which extends from the north-east to the south-west, following the river corridor.

⁴ The LVIA considers historic landscape designations in terms of their role in defining landscape character, such as Scheduled Monuments and Listed Buildings and the potential impacts and effects on their setting are considered from a landscape and visual perspective.

⁵ All distances are measured from the closest boundary of the proposed development site.

The Llŵchwr Valley SLA on the Carmarthenshire/Swansea boundary is described as a wide and level flood plain with steeply rising valley sides.

The flood plain is open and is characterised by large irregular fields and some drainage channels. In contrast, the slopes on the Carmarthenshire side support an attractive mix of woodland and agricultural land, the woodland often being associated with watercourses that run down the slopes. Small irregular fields with a mix of outgrown and cut hedge boundaries are also a feature of these slopes. There is little access to the flood plain other than for farming purposes, there is no settlement in it other than Pontarddulais to the south and Ammanford to the north. The slopes are sparsely settled with scattered farms. The railway runs along the valley (mostly in Swansea), the track making a strong line in the landscape in contrast to the meandering river. Pylons cross the valley in the south but are partly masked by the wooded slopes to the west;

- Cwm Cathan SLA, approximately 2.5km to the east of Area 1 (Eastern Site), which extends to the eastern fringes of the study area. The Cwm Cathan SLA is described as impressive and steep sided river valley running from the upland area of Mynydd Betws to the lowland Llŵchwr valley.

It is well wooded with semi-natural broadleaved woodland - including area of birch woodland, as well as semi-improved grasslands and scrub and bracken areas.

The variety of vegetation provides texture in this landscape and creates a network of semi-natural habitats across the area. Some hedgerows are becoming lines of trees and these also contribute to the enclosed and well-wooded appearance of the area. Holly-rich hedges are a feature.

This is an intimate enclosed, unspoilt and natural landscape, and not without views of the surrounding areas. With narrow twisty roads and being sparsely settled, this quiet area feels some distance from Ammanford;

- Mynydd y Betws SLA, approximately 4.3km to the east of Area 1 (Eastern Site), which extends to the eastern fringes of the study area. The Mynydd y Betws SLA is described as an extensive area of exposed undulating upland moorland extending into Swansea.

It is an area of unenclosed, grazed common land, with a mix of grasses and some smaller areas of heather and wetland habitats.

There are impressive views from Mynydd y Betws over south-east Carmarthenshire and towards the Brecon Beacons. The area is interrupted by the road that crosses the mountain and where this enters the common on its northern side at Scot's Pine, by the telegraph poles and larger pylons and a mast. These elements detract from the integrity of the area but this is restricted to this small part of the whole.

Elsewhere within the area there is a considerable degree of unity and little interrupts the rest of this landscape. There are no trees or shrubs and there is a striking difference between this area and the enclosed land at lower elevations on the northern slopes. Today there are no settlements here, but the area is rich in archaeology, with several sites clearly discernible on the ground, illustrating the history of this area; and

- Carmarthenshire Limestone Ridge SLA, approximately 4.8km to the north of Area 3 (Western Site), on the fringes of the study area. The Carmarthenshire Limestone Ridge SLA is described as an undulating ridge (reaching 280m AOD) of higher exposed upland and is the only extensive area of limestone in Carmarthenshire.

The ridge has a distinct and varied landscape, which includes unenclosed common land, with bracken and heather and rock exposures, limestone quarries and extensive areas of small fields, mature hedges and woodland. Llyn Lech Owain Country Park lies on the ridge.

The ridge provides views over the adjacent valleys and over much of south Carmarthenshire. It is crossed by several roads, the busiest being the A48(T) but is also very tranquil in parts. Settlements include scattered farms and linear settlements that are often related to the quarries, and this is reflected in the vernacular architecture.

SLAs are recognised by CCC⁶ in Policy EQ6 as a non-statutory designation where *“proposals for development which enhance or improve the Special Landscape Area through their design, appearance and landscape schemes will be permitted...”*

- There are numerous scattered Scheduled Monuments in the study area, consisting of standing stones within the undulating farmland, burial chambers, cairns, barrows and earthworks on the exposed uplands and earthworks, castle mounds and churches along the river corridor.

The closest Scheduled Monuments to the proposed development site include:

- Bryn-y-Rhyd Standing Stone, approximately 1.1km to the south of Area 2 (Central Site);
- Two Burial Chambers on Graig Fawr, approximately 2.9km to the south of Area 1 (Eastern Site);
- Earthwork on Graig Fawr, approximately 2.7km to the south-east of Area 1 (Eastern Site); and
- Bryn Maen Standing Stone, approximately 2.8km to the south-west of Area 3 (Western Site).

Scheduled Monuments are protected by CCC in Policy EQ1 which states that *“proposals for development affecting landscapes, townscapes, buildings and sites or features of historic or archaeological interest which by virtue of their historic importance, character or significance within a group of features make an important contribution to the local character and the interests of the area will only be permitted where it preserves or enhances the built and historic environment.”*

Scheduled Monuments are also protected by Swansea Council (SC)⁷ in Policy HC2 which recognises that *“the County’s buildings and features of historic importance will be preserved or enhanced through... the preservation or enhancement of Scheduled Ancient Monuments and their settings.”*

- There are scattered Listed Buildings in the study area, the majority focussed within the centre of Ammanford.

The closest to the proposed development site, nestled within the undulating and well-vegetated farmland landscape include:

- Plas-Newydd Mill, Grade II, approximately 650m to the south of Area 3 (Western Site);
- Lofted stable range at Llwyd Coed Fawr Farm, Grade II, approximately 2.1km to the west of Area 3 (Western Site);

⁶ Carmarthenshire County Council, Local Development Plan, 2006-2021

⁷ Swansea Council, Adopted Local Development Plan, 2010-2025, Adopted February 2019

- Plas Mawr (formerly known as Cwrt y Ceidrim), Grade II, approximately 920m to the east of Area 1 (Eastern Site); and
- Capel Hendre and Vestry, Grade II, approximately 1.6km to the north of Area 2 (Central Site).

Listed Buildings are protected by CCC in Policy EQ1 which states that “*proposals for development affecting landscapes, townscapes, buildings and sites or features of historic or archaeological interest which by virtue of their historic importance, character or significance within a group of features make an important contribution to the local character and the interests of the area will only be permitted where it preserves or enhances the built and historic environment.*”

- There are scattered generally linear Ancient Woodlands present within the study area, generally focussed within the undulating farmland, adding to the overall well-vegetated character of the landscape.

The closest Ancient Woodlands to the proposed development site include:

- Woodland to the north of Cwmdy Farm, approximately 100m to the east of Area 1 (Eastern Site);
- Woodland to the north of Gelli Organ Farm, approximately 220m to the south of Area 1 (Eastern Site);
- Woodland adjacent to eastern boundary of Area 3 (Western Site);
- Woodland to the east of New Lodge Farm, approximately 125m to the north of Area 3 (Western Site); and
- Woodland south of Ty-isaf, approximately 55m to the south-east of Area 3 (Western Site).

Ancient Woodlands are protected by CCC in Policy EQ4 and EQ5.

Landscape Character

National Landscape Character

- 3.25 The Natural Resources Wales (NRW) *Landscape Character Map for Wales*⁸ is referred to for a strategic understanding of landscape character within the study area. This outlines the wider setting for the proposed development and provides a context for the description of local landscape character.
- 3.26 Within the study area there are three national landscape character areas.
- 3.27 The proposed development site, including the majority of the study area is within the *Gwendraeth Vales national landscape character area (33)*.
- 3.28 The national landscape character area descriptions are summarised in **Table 7**. Their locations are illustrated in **Figure 6**.

⁸ National Landscape Character Areas for Wales (www.naturalresources.wales)

Table 7 National landscape character areas

No.	National landscape character area	Description
33	Gwendraeth Vales	<p>Containing the proposed development site and extending in a broad band from the north-east to the south, extending to the western fringes of the study area, this is described as:</p> <ul style="list-style-type: none"> - An area of rolling hills, ridges and minor valleys, comprising the area between the coastal and valley parts of the Tywi, the South Wales Valleys and the Black Mountain part of the Brecon Beacons; - Unified through its geology; - Heavily mined for coal and quarried for limestone. In consequence, this part of the area has developed a distinctive linear or ribbon pattern of settlement along roads; - Today, modern residential and industrial estate development breaks the ribbon pattern but nevertheless focuses new development around existing settlements and road crossings; - The countryside setting contrasts entirely, being a complex network of small geometric fields surrounded by lush, high hedgerows and small copses; - Seasonally waterlogged soils in the valleys support rushy grazing of poor agricultural quality while well drained coarse loamy and sandy soils across much of the character area are used for sheep and dairy pasture; and - Significant areas have now been reclaimed from former quarries and mines and the somewhat simpler and less mature restoration field layouts can be picked out, despite the inclusion of new woodland planting belts.
37	South Wales Valleys	<p>Broadly to the east of the proposed development site, extending from the north-east to the south of the study area, this is described as:</p> <ul style="list-style-type: none"> - Many deep, urbanised valleys dissect an extensive upland area; - Combined with industrial heritage and the distinct identity of its people, the South Wales Valleys provide some of Wales' most widely known and iconic national images; - Extensive ribbon development fills many valley bottoms and lower slopes; - Their urban and industrial character is juxtaposed with dramatic upland settings with steep hillsides, open moors or forests; - Networks of railways and roads connect valley settlements; - Topography constrains passage between valleys, and there are only a limited number of high passes between valleys; - The noise and business of many valleys contrast with the relatively remote and wild qualities of adjacent hill plateaux; - Underlying geology and mineral deposits provided the resources that fuelled a rapid spread of industrial development in the 19th century; - Once rail transport became possible, new coal, steel and iron industries created an extensive infrastructure of large buildings, furnaces, towers, chimneys, viaducts, spoil heaps and levels; - Housing for workers resulted in the extensive and iconic rows of terraced houses that run along hillsides. Their needs in turn brought chapels, shops, schools and other facilities to create new settlements with an urban character; - The way of life and harsh environment resulted in the image of a tough, rugby playing and radically minded society. But the decline of industries in the late 20th century resulted in the closure, removal, abandonment or redevelopment of many former industrial sites. These changes continue today, as do the consequential social changes to the way of life and community identity; - The area is now seen as part of a wider, increasingly post-industrial, 'city

No.	National landscape character area	Description
		region', the largest in Wales; - A new iconic image is at times unclear, but heritage-based activities set within a softer, greener environment are emerging as part of this. While greenness is returning to some former industrial landscapes many of the new woodlands are coniferous; - Waterways are slowly welcoming back fish, and mammals such as otters; and - The importance of wildlife conservation being undertaken hand-in-hand with economic regeneration is being recognised as one of the keys to the sustained revitalisation of this most iconic Welsh 'bro', in the Heads of the Valleys and Valleys Regional Park initiatives.
38	Swansea Bay	Broadly to the south of the proposed development site, extending to the southern fringes of the study area, this is described as: - A narrow coastal plain linking the lowlands of Glamorgan to those of Gwendraeth; - Major river estuaries issue within the area, including those of rivers Loughor, Neath and Tawe; - Character is urban and suburban with large housing and industrial estates; and - Heavy industries and settlement have made use of these strategically important locations, between coalfield and sea.

Local Landscape Character - LANDMAP Aspect Areas

- 3.29 The NRW LANDMAP⁹ landscape character information is referred to for an understanding of landscape character within the study area. This outlines the setting for the proposed development within the study area.
- 3.30 The five LANDMAP aspect areas are illustrated in **Figures 7A-7E** and described in more detail below. The gently undulating to sloping landform that dominates the majority of the study area, rising up to a series of ridges to the east, south-east and south and to the north-west and west is illustrated in **Figure 8**.

Visual and Sensory

- 3.31 Within the study area, there are numerous aspect areas, as defined by the visual and sensory layer of the LANDMAP assessment. There are a diverse range of sensitivities within the study area, varying from low (medium-low) to high (medium-high). There are 7 aspect areas with high (medium-high) sensitivity – where the assessment will be focussed.
- 3.32 The location of the visual and sensory aspect areas within the study area, including their sensitivity, is illustrated in **Figure 7A**.
- 3.33 The aspect areas defined as high (medium-high) are broadly situated within the expansive uplands and hills landscape focussed towards the fringes of the study area to the north, east, south as well as along the river corridors immediately to the east and south and to the south-west.

⁹ LANDMAP website (www.naturalresources.wales)

- 3.34 The low (medium-low) sensitivity aspect areas are largely focussed within the densely developed areas focussed around the towns to the north-east and south. Moderate (medium) sensitivity aspect areas dominate the majority of the study area, including covering the proposed development site.
- 3.35 The main influence will be on the visual and sensory aspect area in which the proposed development is situated.
- 3.36 The proposed development site is situated within the moderate (medium) sensitivity *Llanelli Hills aspect area*.
- 3.37 The *Llanelli Hills aspect area* is an area of rolling hills and small valleys that descend from Mynydd Sylen (upland) to the urban area around Llanelli. The area is enclosed, with a strong network of hedges around relatively small fields and some woodland. There are scattered farms and narrow lanes with high hedges throughout the area, and a few small but growing settlements. It remains largely rural in character. Pylons cross sections of this area.
- 3.38 The *Llanelli Hills aspect area* is of moderate importance for its rural landscapes and provides an attractive area of countryside in the hinterland of Llanelli.
- 3.39 The key objectives of the *Llanelli Hills aspect area*, as defined by LANDMAP, in its recommendations are:
- Resist further piece-meal development in rural areas; and
 - Conserve the semi-natural habitats that exist in this area as they add diversity to the landscape.
- 3.40 Immediately to the south of Area 1 (Eastern Site) is the high (medium-high) sensitivity *Llwchyr Valley aspect area*.
- 3.41 The *Llwchyr Valley aspect area* consists of a wide level and straight valley floor with the associated valley sides. In contrast to the valley sides the floodplain is open and has fairly large irregular fields and some drainage channels. The slopes are more wooded with deciduous woodland, often associated with watercourses and have smaller irregular fields with a mix of outgrown and cut hedge boundaries. The floodplain is barely accessible other than for farming, and has no settlement, although the urban settlement of Pontarddulais lies adjacent to the south. The slopes are sparsely settled with scattered farms. The railway runs along the valley [mostly in Swansea], the track making a strong line in the landscape, while the river meanders. Spectacular meanders can be seen from the M4 crossing. Pylons cross the valley in the south but are partly masked by the wooded slopes to the west.
- 3.42 The *Llwchyr Valley aspect area* is focussed on the river with a harmonious agricultural landscape within a tranquil unspoilt valley. The area is in fairly good condition with consistent character with only the pylons at the southern end to interrupt this landscape. The distinctive sinuous river course of the Loughor, the level and straight flood plain and the emptiness of this area give it a distinct sense of place with the attractive valley side backcloth and a mosaic of fields and riparian vegetation. The area is one of only a few river valleys of this scale in the county. The distinctive sinuous river course of the Loughor, the level and straight flood plain and the emptiness of this area give it a distinct sense of place with the attractive valley side backcloth and a mosaic of fields and riparian vegetation and as a result has a high (medium-high) sensitivity.

- 3.43 The key objectives of the *Llwydyr Valley aspect area*, as defined by LANDMAP, in its recommendations are:
- Resist development in this area that may detract from its rural undeveloped qualities; and
 - Ensure agricultural practice conserve the range of visual elements associated with this landscape - flood plain grazing levels, scrub, hedgerows, trees, woodlands.
- 3.44 Further afield, the assessment is focussed on those areas identified as having a high (medium-high) sensitivity.
- 3.45 To the east and south-east of the proposed development site, dramatically rising up from the Llwydyr Valley is the high (medium-high) sensitivity *Pentwyn Mawr aspect area*, flanked by the moderate (medium) sensitivity *West of Graig Fawr aspect area* and the *South East of Graig Fawr aspect area*.
- 3.46 The *Pentwyn Mawr aspect area* consists of strongly rolling hills of between 250m and 400m AOD. Land cover is predominantly rough grazing/moorland with distinct upland feel generated by exposure, elevated views and lack of human presence/detractors. Windfarm to north is prominent.

Historic Landscape

- 3.47 Within the study area, there are numerous aspect areas, as defined by the historic landscape layer of the LANDMAP assessment. There are a diverse range of sensitivities within the study area, varying from low (medium-low) to outstanding (high). There are 32 aspect areas with an outstanding (high) or high (medium-high) sensitivity – where the assessment will be focussed.
- 3.48 The location of the historic landscape aspect areas within the study area, including their sensitivity, is illustrated in **Figure 7B**.
- 3.49 The aspect areas defined as outstanding (high) are broadly situated within the expansive uplands and hills landscape focussed towards the fringes of the study area to the north, east, south.
- 3.50 High (medium-high) sensitivity aspect areas dominate the majority of the study area, including covering the proposed development site.
- 3.51 The moderate (medium) and low (medium-low) sensitivity aspect areas are largely focussed to the north, north-east and north-west and to the south within the developed areas focussed around the towns and villages.
- 3.52 The main influence will be on the historic landscape aspect area in which the proposed development is situated.
- 3.53 Area 1 (Eastern Site) and Area 2 (Central Site) is within the high (medium-high) sensitivity *Bryniau Llanedi aspect area* which extends to the fringes of Tycroes to the north and southwards towards Llanedi.
- 3.54 The *Bryniau Llanedi aspect area* is an area of irregular field enclosures, with a small area of possible strip field remnants, and a settlement pattern mainly of dispersed farmsteads and cottages with two small nucleations of roadside dwellings. There is a moderately large solar farm at Clawdd du Farm to the south of Tycroes. Most significant

archaeological elements include lost Medieval Agricultural/Industrial landscape, Early Medieval/Medieval settlement and agriculture.

- 3.55 Area 3 (Western Site) is within the high (medium-high) sensitivity *Cwm Gwili aspect area* which extends in a band to the north and south. The *Cwm Gwili aspect area* is a good example of a Carmarthenshire agricultural landscape with a little modern intrusion. It is not a rare landscape type, and contains no elements of national importance.
- 3.56 Further afield, the assessment is focussed on those areas identified as having an outstanding (high) and high (medium-high) sensitivity.
- 3.57 Outstanding (high) sensitivity aspect areas dominate towards the fringes of the study area to the east, south-east and south as well as to the north.
- 3.58 In particular, outstanding (high) sensitivity aspect areas dominate to the east and south-east including the river valley and adjacent slopes and ridges including the *Northern Upland Commons aspect area*.
- 3.59 The *Northern Upland Commons aspect area* consists of a well-preserved upland landscape retaining most of its original character, form and function, highly visible and easily understood with a range of characteristic relict features: industrial extractive (e.g. coal adits, levels etc), funerary and ritual (e.g. round and ring cairns, round barrows, chambered tombs), settlement (e.g. platform houses, and upland farmsteads), and defensive features (e.g. ring works, hill forts) and a medieval castle. This is an aspect area of outstanding integrity, survival, rarity and potential, with surviving elements generally with a high condition rating and therefore outstanding overall evaluation.

Cultural Landscape

- 3.60 The location of the cultural landscape aspect areas within the study area, including their sensitivity, is illustrated in **Figure 7C**.
- 3.61 There are a diverse range of aspect areas within the study area, varying from low (medium-low) to outstanding (high). There are five aspect areas with an outstanding (high) or high (medium-high) sensitivity - where the assessment will be focussed.
- 3.62 The main influence on cultural landscape will be on the aspect area in which the proposed development is situated.
- 3.63 The proposed development site is within the high (medium-high) sensitivity *Rural Carmarthenshire aspect area*. This covers the majority of the study area and extends to the north, east, south and west of the proposed development site.
- 3.64 The *Rural Carmarthenshire aspect area* has a multi-faceted appearance but largely homogenous cultural use in the form of farming. The county of Carmarthenshire is so large, and indeed so topographically, culturally and socially diverse as between its various components, that it is not possible within resources to characterise all its cultural features other than those which have a special resonance. However, on the basis that historically, and currently, the principal cultural activity is farming, and recognising that the landscape changes from coastal flats to rugged and inaccessible high points riven by mountain river and stream valleys with undulating landscapes of soothing attractiveness, this catch-all designation appears to be appropriate.

Geological Landscape

- 3.65 The location of the geological landscape aspect areas within the study area, including their sensitivity, is illustrated in **Figure 7D**.
- 3.66 The aspect areas within the study area are defined as moderate (medium) and low (medium-low) sensitivity. There are no aspect areas with an outstanding (high) or high (medium-high) sensitivity.
- 3.67 The main influence on geological landscape will be on the aspect area in which the proposed development is situated.
- 3.68 Area 1 (Eastern Site) is within the moderate (medium) sensitivity *Pen-y-Groes aspect area* which extends to the north, towards the fringes of the study area. This comprises a broad gently undulating platform dominated by Upper Carboniferous 'Coal Measures'. Areas of glacial clay cover is widespread, including on valleys slopes to the west and east. Industrial and urban development is significant, including opencast coal mining near Tycroes.
- 3.69 Area 2 (Central Site) is within the moderate (medium) sensitivity *Fforest aspect area* which extends to the south and east. This comprises a broadly y-shaped area of Upper Carboniferous 'Coal Measure' sandstone outcrop creating a low rim.
- 3.70 Area 3 (Western Site) is within the moderate (medium) sensitivity *Cross Hands aspect area* which extends to the north and west. This comprises the lower valley slopes and depressions with glacial clay cover or infill and the lower slopes of the Upper Carboniferous 'Coal Measures' escarpment.

Landscape Habitats

- 3.71 The location of the landscape habitat aspect areas within the study area, including their sensitivity, is illustrated in **Figure 7E**.
- 3.72 There are a diverse range of sensitivities within the study area, varying from low (medium-low) to high (medium-high). There are two aspect areas with a high (medium-high) sensitivity - where the assessment will be focussed.
- 3.73 The main influence on landscape habitats will be on the aspect area in which the proposed development is situated.
- 3.74 Area 1 (Eastern Site) is within the moderate (medium) sensitivity *Llangennech aspect area*. This extends along the adjacent river corridor to the southern fringes of the study area.
- 3.75 The *Llangennech aspect area* is described as a rolling landscape on the flanks of the lower Loughor valley dominated by improved grasslands but including rough grassland, scrub and woodland on steeper slopes and bordering watercourses. Its improved agricultural landscape with semi-natural habitat of field boundaries, steep slopes and watercourses forming the focus of biodiversity interest result in the moderate (medium) sensitivity.
- 3.76 Area 2 (Central Site) and Area 3 (Western Site) is within the high (medium-high) sensitivity *Carmarthen Coalfield aspect area*. This covers the majority of the study area, extending to the east, north, west and south-west.

3.77 The *Carmarthen Coalfield aspect area* is described as a largely improved agricultural landscape with a high proportion of semi-improved neutral and marshy grasslands supporting notable species, particularly the Marsh Fritillary butterfly. The area is also characterised by fields of generally small size with infrequently managed boundaries often supporting mature trees and frequently associated with small woodlands or areas of scrub. The aspect area is particularly important for its Marsh Fritillary (*Eurodryas aurinia*) populations but other protected mammal species including Dormice (*Muscardinus avellanarius*) and Otter (*Lutra lutra*) are present. Wet heath and marshy grassland associated with the Mynydd Mawr Common support species including Bog Myrtle (*Myrica gale*) and formerly Marsh Gentian (*Gentiana pneumonanthe*), result in the high (medium-high) sensitivity.

Carmarthenshire Solar PV Development: Landscape Sensitivity and Capacity Study

3.78 The Carmarthenshire Landscape Sensitivity and Capacity Study¹⁰ purpose “*is to provide guidance to inform the appropriate design and siting of solar PV development through setting out a baseline assessment of landscape and visual sensitivity and capacity in relation to different development classifications.*”

3.79 The proposed development site is within *Area 47: Mynydd Sylen, Llanelli Hills and Pembrey Coastal Hills – East*.

3.80 This relatively large Landscape Unit is characterised by rolling hills and small valleys with a strong network of field boundary hedgerows and some small patches of woodland. There are scattered farms and several larger settlements. It is traversed by the A48 trunk road and high-voltage overhead lines carried on steel lattice towers. There are a number of operational and consented wind turbines present, and a number of field-scale solar PV installations.

3.81 *Area 47: Mynydd Sylen, Llanelli Hills and Pembrey Coastal Hills – East* has a **medium** sensitivity to large scale solar schemes, particularly in areas with fewer receptors and where landform and strong field boundaries provide some degree of enclosure. In addition, in areas influenced by high-voltage electricity lines carried on steel towers, the sensitivity is reduced even further. The proposed development, at over 7.5MW capacity, is classified as a large-scale development.

3.82 ‘Medium’ sensitivity is defined as “*the key characteristics of the Landscape Unit may be vulnerable to change but could accommodate some field-scale solar PV development of the specified typology, if sensitively designed and sited.*”

3.83 The indicative overall capacity of *Area 47: Mynydd Sylen, Llanelli Hills and Pembrey Coastal Hills – East* is “*there is some capacity for small to large scale development in areas where there will be no effect upon the special qualities of the Registered Historic Landscape and the SLAs. Detailed field survey work has identified some areas where enclosure provided by the rolling landform and landcover, particularly in combination with existing infrastructure, may provide opportunities to locate solar PV development.*”

3.84 The proposed development will therefore be acceptable, with reference to the Landscape Sensitivity and Capacity Study, and is:

- Within a ‘medium’ sensitivity landscape unit;

¹⁰ Carmarthenshire County Council, *Carmarthenshire Solar PV Development: Landscape Sensitivity and Capacity Study* (no date)

- Will have no effect on the registered historic landscape or SLAs;
- Will be largely enclosed by the surrounding rolling landform and landcover; and
- Will be sensitivity designed to retain and enhance landscape features, within the existing landscape pattern.

Visual Amenity Receptors and their Views

3.85 An overview of the visual amenity receptors and their views within the study area is described below. The location of principal visual amenity receptors is illustrated on **Figure 9**.

Settlements – Towns, Villages and Hamlets

- 3.86 There are scattered settlements present within the study area including:
- Tycroes, approximately 60m to the north of Area 1 (Eastern Site) and 140m to the north of Area 2 (Central Site) at their closest points;
 - Ammanford, approximately 2.5km to the north-east of Area 1 (Eastern Site) at its closest point; and
 - Pontarddulais, approximately 4.4km to the south of Area 1 (Eastern Site) at its closest point.
- 3.87 Largely contained and enclosed by surrounding vegetation, longer distance views from their settlement fringes across the wider gently undulating and sloping landscape are often restricted by a combination of subtle variations in landform and numerous lines of mature vegetation.
- 3.88 It is only from the fringes of these closest settlements, including Tycroes, as lines of houses stretch out along the major and minor roads, that glimpsed views towards Area 1 (Eastern Site) and Area 2 (Central Site) are possible.
- 3.89 As illustrated in **Viewpoint 5 (Figure 15A-15B)**, from in close proximity and from gaps in the surrounding enclosure, glimpsed views from the settlement fringes towards Area 1 (Eastern Site) are possible.

Scattered Residential Properties and Farms

- 3.90 There are also individual residential properties and farms scattered within the gently sloping farmland that covers the majority of the study area, often situated on or adjacent to the network of enclosed roads. Those properties whose residents are involved with the project are identified as 'involved' in the discussion below.
- 3.91 Many of the scattered houses and farms have restricted views into the surrounding landscape. A combination of mature garden vegetation enclosing many properties, screening provided by adjacent development as well as subtle variations in landform and mature hedgerow, trees and woodland vegetation in the immediate and wider landscape, including lining the adjacent road corridors, screens the majority of views.
- 3.92 The closest residential properties and farms to the proposed development site include:
- Collection of two storey houses to the north-west of the Tycroes Business Park, stretched out along the access road leading off the A483, approximately 125m to the

north-west of Area 1 and 245m to the north of Area 2. As illustrated in **Viewpoint 5 (Figure 15A-15B)** oblique views, from the upper stories, may be possible towards Area 1, although largely limited by the intervening clutter of buildings associated with the Tycroes Business Park. Views from the rear of these properties may also be possible towards Area 2, although the intervening lines of mature vegetation surrounding the gardens, in the fields as well as surrounding the proposed development site and subtle variations in landform, limit the majority of views;

- A mixture of scattered two storey and single storey properties are scattered along the southern boundary of the A483 to the north and north-west of Area 2, the closest a bungalow, approximately 75m to the north-west. As illustrated in **Viewpoint 2 (Figure 12A-12C)**, from a gateway adjacent to the bungalow, glimpsed views are possible from gaps in enclosure along the road, towards the proposed development site. However, intervening development (such as sheds and garages) as well as mature vegetation in the gardens and surrounding the intervening fields, including the proposed development site, restricts many views from the scattered residential properties;
- Clawdd-du farmhouse (an 'involved' property), approximately 100m to the south-west of Area 1. As illustrated in **Viewpoint 4 (Figures 14A-14B)**, the two storey house is set amidst a cluster of buildings associated with the farm, with wider views restricted by the intervening buildings as well as mature vegetation enclosing the surrounding fields. Views of the adjacent operational solar scheme are possible;
- Garn-fach, approximately 335m to the north-east of Area 1. Situated immediately to the north of a minor road, the two storey detached house is orientated to the south, overlooking the adjacent road, with only the gable end (no windows) facing towards the proposed development site. Intervening agricultural buildings and sheds to the west also help to screen any potential oblique views from the property and garden; and
- Ty-isaf (an 'involved' property), immediately to the south and east of Area 3. As illustrated in **Site View F (Figure 4C)**, the two storey farmhouse is situated on lower ground than the adjacent sloping fields, although views from the upper stories are possible above the intervening hedgerow.

Country Parks

- 3.93 Llyn Llech Owain Country Park occurs on the fringes of the study area, approximately 5km to the north of Area 3 (Western Site).
- 3.94 Separated from the proposed development site by development, undulating landform and extensive mature vegetation as well as distance, any wider views, including towards the proposed development site, are very restricted.

National Cycle Routes

- 3.95 National Cycle Route (NCR) 47 passes from the north-west to the west of the study area approximately 3.7km to the north-west of Area 3 (Western Site) at its closest point.
- 3.96 NCR 437 also passes through Ammanford, approximately 2.5km to the north-east of Area 1 (Eastern Site) at its closest point.
- 3.97 Largely passing through or on the fringes of settlements, any wider views, including towards the proposed development site, are restricted by surrounding development, undulating landform and intervening mature vegetation.

Recreational Routes

- 3.98 St Illtyd's Walk recreational route passes through the study area from the east to the south, approximately 2.7km to the south-east of Area 1 (Eastern Site) at its closest point.
- 3.99 Largely crossing the high and expansive grassland ridge landscape to the east and south-east in close proximity, as illustrated in **Viewpoint 6 (Figures 16A-16B)** and **Viewpoint 7 (Figures 17A-17B)**, expansive views are possible from this open and elevated route over the lower farmland landscape. Views are also possible over the operational solar scheme at Clawdd du, nestled within the regular and well-vegetated farmland landscape, scattered with settlements and infrastructure.

Local Public Rights of Way, Bridleways and Cycleways

- 3.100 A public right of way crosses Area 1 (Eastern Site), passing through the gently sloping fields from north to south, as well as dividing to the centre of the site to head to the south and east respectively.
- 3.101 As illustrated in **Site View A (Figure 3B)** and **Site View C (Figure 3C)** as well as **Viewpoint 3 (Figures 13A-13B)** and **Viewpoint 4 (Figures 14A-14B)**, open views are possible across the immediately adjacent fields, enclosed by a diverse mixture of hedgerows scattered with mature trees and small woodlands. Views of the operational solar scheme at Clawdd du are also possible, nestled in the adjacent sloping fields.
- 3.102 However, for the public rights of way further afield, set within a well-vegetated and gently undulating and sloping agricultural landscape, any views, including towards the proposed development site, are largely restricted by a combination of subtle variations in landform and extensive mature woodland, hedgerows and trees surrounding the routes and in the wider well-vegetated farmland landscape.

Open Access Areas

- 3.103 There are often substantial open access areas in the study area, largely focussed on the high ground to the east, south-east and south of the proposed development site and to the north.
- 3.104 Open access areas dominate the high and expansive grassland ridge landscape to the east and south-east. As illustrated in **Viewpoint 6 (Figures 16A-16B)** and **Viewpoint 7 (Figures 17A-17B)**, expansive views are possible from these open and elevated locations over the lower farmland landscape. Views are also possible over the operational solar scheme at Clawdd du, nestled within the regular and well-vegetated farmland landscape, scattered with settlements and infrastructure.

Major Roads, including Motorways

- 3.105 Numerous major roads, including the M4 motorway, pass through the study area.
- 3.106 The A483 and A48 connect at a roundabout (and the Pont Abraham Services) with the M4, approximately 1.6km to the south of Area 3 (Western Site).
- 3.107 The A48 branches northwards, passing immediately to the west of Area 3 (Western Site). As illustrated in **Viewpoint 1 (Figure 11)**, the A48 is very well-enclosed by mature vegetation and any wider views, including towards the proposed development site, are very restricted by surrounding mature vegetation.

- 3.108 The A483 heads to the north-east from the motorway roundabout, passing through the settlement fringes of Tycroes and Ammanford, approximately 130m to the north of Area 2 (Central Site) at its closest point. Largely enclosed by a combination of mature vegetation and development, it is only from gaps in this enclosure, as illustrated in **Viewpoint 2 (Figures 12A-12C)**, that at worst, glimpsed views into the surrounding undulating farmland landscape, including the proposed development site are possible.

Minor 'B' Roads and Unclassified Roads

- 3.109 Numerous minor roads cross the study area linking the scattered farms, houses and settlements. The minor roads are largely enclosed by mature vegetation, including hedgerows, hedgebanks and scattered trees as well as woodland, which restrict views into the wider sloping and undulating agricultural landscape, including towards the proposed development site.
- 3.110 Glimpsed views are generally only possible into the surrounding agricultural landscape from the network of enclosed minor roads from open locations, such as gateways. Even from the minor road immediately to the south of Area 1 (Eastern Site), the enclosure by dense hedgerows restricts the majority of views towards the proposed development site including the adjacent operational solar scheme.
- 3.111 Even when more open views are possible, such as from selected elevated locations, more distant views, including towards the proposed development site, are often restricted by subtle variations in landform and extensive intervening mature vegetation.

Railway Lines

- 3.112 A railway line crosses the study area from the north-east to the south, approximately 1.3km to the south-east of Area 1 (Eastern Site) at its closest point.
- 3.113 Passing through the settlements of Ammanford to the north-east and Pontarddulais to the south and running along the fringes of the enclosed river valley, any views towards the proposed development site are restricted by intervening development, subtle variations in the valley landform and mature vegetation surrounding the railway line itself and in the wider agricultural landscape.

4. Design and Mitigation Measures

- 4.1 Mitigation measures to help minimise the potential impacts and effects have been incorporated into the distinct phases of the proposed development, including:
- During the site selection process (by avoiding sensitive designations, areas and receptors and containing the proposed development within regular large fields. Large, geometric fields are well suited to solar farms in terms of landscape and visual effects and the proposed development is focussed on such fields);
 - Through the assessment process (by removing from the development design fields associated with Area 2 – Central Site, mainly for ecological reasons). This also resulted in the final design being more logical and compact, less 'visible' and better integrated into the immediate and wider landscape);
 - Through the design process (designed in mitigation such as retention of boundary and internal vegetation and using existing access points); and

- Incorporating additional mitigation measures (such as new planting and planning for construction, operation and de-commissioning).
- 4.2 Design and mitigation measures have also been informed through reference to the strategy and guidelines of the landscape as defined by the LANDMAP assessment and the CCC Landscape Sensitivity and Capacity Study.
- 4.3 The proposed development design also promotes and follows relevant policies within the CCC Local Plan, in particular Policy SP14: Protection and Enhancement of the Natural Environment.
- 4.4 Policy SP14 states that “*development should reflect the need to protect, and wherever possible enhance the County’s natural environment.*”

Mitigation through selection and siting of the proposed development

- 4.5 The proposed development site was selected because of the opportunities that exist to enable grid connection as well as the lack of major environmental constraints, whilst taking into account commercial and technical considerations.
- 4.6 The proposed development site is also focussed on the less ‘productive’ farmland.
- 4.7 The sloping location of the proposed development site, contained within large regular fields, as well as its enclosure by existing mature vegetation will restrict its visual profile in the immediate and wider landscape and will help to reduce the proposed development site’s visibility and wider effects on landscape character. In addition, there will be minimal ‘overlooking’ from close proximity sensitive vantage points (such as housing and settlements) and the potential wider visibility of the proposed development will be limited.
- 4.8 Any buildings or structures associated with the proposed development will also be situated in locations to strike a balance between operational requirements and restricting their wider visibility and coloured light grey or dark green to minimise their influence.
- 4.9 The proposed development was also designed to minimise direct effects on landscape elements. Existing access points, including gateways, will be used where possible, thereby minimising disruption to landscape elements and pattern. The existing farm tracks within the site will be improved as required by adding additional 300mm granular material which will weather over time. Where additional tracks are required for construction, these will be created using interlocking sheet material of either reinforced plastic or aluminium.
- 4.10 Existing hedgerows and trees will be retained on the boundaries and internally within the development design and limited vegetation will be lost during the construction, operation and de-commissioning of the proposed development.
- 4.11 The existing boundary vegetation will be protected during construction and retained and enhanced during the operation of the proposed development. The strong hedgerow structure network, scattered with mature trees, will remain intact, be conserved, enhanced and sympathetically managed to encourage species diversity and enhanced wildlife habitats. The protection and retention of the existing landscape boundary features will provide immediate screening, retain the landscape character and pattern and help reduce the effects of the proposed development.

- 4.12 The proposed development, which will be located within relatively contained fields, will also not disrupt the surrounding and established landscape pattern. The proposed development will 'fit' into the existing landscape pattern, not be out of scale with the character of the local landscape and will be absorbed within the wider landscape.

Additional landscape mitigation measures incorporated into the proposed development design

- 4.13 Landscape relevant additional mitigation measures incorporated into the proposed development design include:
- All existing hedgerows surrounding and within the proposed development site will be retained and enhanced, where appropriate and maintained at a minimum of 3.5m in height. Proposed native species rich 'gap' filling planting will be introduced into the existing retained vegetative structure. This will strengthen and give additional height to the existing vegetative structure, where required and reinforce the surrounding regular landscape pattern. In addition, the reinforcement of existing hedgerow boundaries will also help to restrict views from the surrounding limited visual amenity receptors;
 - Proposed planting will reflect the existing landscape character within the study area through the sensitive selection of species that will enhance the proposed development and the wider landscape. This will ensure that the proposed development complements the existing landscape. Locally sourced native tree and shrub species will include plants commonly found in the surrounding hedgerows;
 - A rough grassland corridor will be managed between the proposed security fence and field boundaries which will only be intermittently and lightly grazed. This will provide nature conservation and biodiversity benefits; and
 - Any gaps or areas of bare or disturbed ground in the existing grassland, following construction will be re-seeded with a species rich, shade resistant sheep grazing grassland mix, specifically for solar parks.
- 4.14 The landscape mitigation measures are illustrated on **Figures 18A and 18B**.

Construction

- 4.15 Mitigation measures, relevant to the LVIA during the construction period, include:
- There will be limited vegetation loss;
 - Existing access points and farm tracks will be used. Access tracks for construction will largely follow existing farm tracks and utilise existing entrances. The existing farm tracks within the site will be improved as required by adding granular material which will weather over time. Where additional tracks are required for construction, these will be created using interlocking sheet material of either reinforced plastic or aluminium; and
 - The temporary construction compound will be located within or alongside the proposed development site minimising direct and indirect effects on landscape elements, landscape character and visual amenity receptors and their views. It should be noted that this compound is permitted development.

Operation

- 4.16 Mitigation measures, relevant to the LVIA during the operation period, will include:
- The existing hedgerows along the boundaries and within the proposed development will be maintained at a minimum of 3.5m high and of sufficient thickness and density to be stock-proof and to provide screening of the proposed development. However to enhance and maintain the health of the hedgerows within and on the boundaries of the site, allowance should be made for rotational laying of selected sections of hedgerows over the 40 year term. Reference should be made to specific measures as stated in the hedgerow management plan which will be implemented if permission is forthcoming;
 - Ongoing hedgerow management to be relaxed with trimming once every two to three years, staggered across the site to encourage flowering and fruiting and thereby provide greater abundance of foraging resources for wildlife, including birds and invertebrates. Trimming should be carried out in late winter to prolong habitat resources during winter but prior to the commencement of the bird nesting season; and
 - Existing entrances and farm tracks will be used, thereby minimising direct effects on landscape elements.
- 4.17 However, it should be acknowledged that the operational effects of the proposed development will be temporary, given the 40 year operation period and the proposed development is reversible.

De-commissioning

- 4.18 The proposed development will be operational for 40 years, at the end of which it will be dismantled and removed and the site reinstated to previous conditions.
- 4.19 Mitigation measures, relevant to the LVIA during the de-commissioning period will be similar to the construction period, and will include:
- De-commissioning compound and all disturbed and excavated areas will be reinstated following completion of de-commissioning activities. Any concrete foundations (if used) will be broken up or left in situ and covered to make up levels;
 - There will be limited vegetation loss;
 - Existing entrances, tracks and access points will be used (including temporary access tracks where required); and
 - The site will be reinstated to previous use.

5. Construction and De-commissioning Impacts and Effects

- 5.1 Construction activities which have the potential to temporarily affect the landscape character and views from visual amenity receptors include:
- Deliveries to site and vehicle movements on and off site;

- Installation of fencing punctuated with CCTV camera masts, solar panels, private switchgear, DNO substation and inverters; and
 - Reinstatement works to areas disturbed by construction activities.
- 5.2 De-commissioning activities which have the potential to affect the landscape character and views from visual amenity receptors include:
- Dismantling and removal of all installed infrastructure; and
 - Reinstatement works to areas disturbed by de-commissioning activities.
- 5.3 From the description of the construction and de-commissioning activities as outlined above, any effects on landscape character and visual amenity receptors and their views during the construction and de-commissioning phases will be very temporary in duration.
- 5.4 Any disruption to the fields as a result of de-commissioning activities will be re-seeded with a species rich grassland mix.
- 5.5 Therefore, the short-term, reversible and temporary nature of the construction and de-commissioning activities on both landscape character and visual amenity receptors and their views will ensure that the overall effects will be, at worst, **negligible adverse**.

6. Operational Impacts and Effects, including Residual Impacts and Effects

Overview

- 6.1 Zones of Theoretical Visibility (ZTV), as illustrated in **Figures 10A-10D**, have been calculated to the height of the solar panels (no higher than 3.5m) covering the 5km radius study area.
- 6.2 The ZTV illustrates the area of potential visibility of all of the proposed development, as well as Area 1 (Eastern Site), Area 2 (Central Site) and Area 3 (Western Site) based on landform data across the study area. However, the ZTV does not take into account the screening effects from local features such as subtle variations in landform, linear vegetation cover such as hedgerows, woodlands, linear tree belts and development that are key characteristics of the landscape and also offer substantial screening. Therefore, the ZTV represents the 'worst-case' scenario but is a starting point for assessing the operational impacts and effects of the proposed development, and the different areas, on landscape character (including landscape relevant designations) and visual amenity receptors and their views.
- 6.3 As illustrated on the ZTVs (**Figures 10A-10D**), the main extent of potential visibility is immediately surrounding the proposed development (including Areas 1-3) and extending broadly over the high ground to the east and south-east.
- 6.4 This restricted extent of visibility is reflected in the selection of the viewpoints, which generally include views from very close proximity to the proposed development or from elevated views further afield to the east and south-east.

- 6.5 Further afield a combination of screening by subtle variations in landform, numerous lines of mature vegetation and enclosure by development restricts the majority of wider views.
- 6.6 Details on the preparation of the ZTVs, photomontages and photographic analysis to inform the LVIA are found in **Appendix B**.

Viewpoint Analysis

- 6.7 Seven viewpoints have been selected to inform the LVIA and help determine and describe the magnitude of impact and level of effect of the proposed development. The viewpoints are found on **Figures 11-17**. The location of the viewpoints is illustrated on the ZTVs on **Figures 10A-10D**.
- 6.8 The agreed viewpoints, determined through analysis of existing conditions, site survey and consultation, have been specifically sought out to represent potentially the most 'exposed' views of the proposed development, from the most 'sensitive' receptors, broadly surrounding the proposed development from all directions of view. The viewpoints therefore show a 'worst-case' scenario.
- 6.9 Six of the viewpoints have been interpreted into photomontages, determined through technical analysis to have the potential to perceive the proposed development. A photomontage is a computer rendered image of the proposed development superimposed onto the existing photographic view.
- 6.10 The photomontages have been produced to show the 'worst-case' of the operation of the proposed development immediately following the completion of construction. Selected photomontages are also shown at Year 5, assuming the growth of landscape mitigation measures over time.
- 6.11 Effects are also described in stages, immediately following the completion of construction activities and after approximately 5 years, as illustrated on selected photomontages, when it is assumed that the additional landscape mitigation measures have had time to mature.
- 6.12 Analysis of **Viewpoints 1 – 7 (Figures 11-17)** is also provided in the overview of operational impacts and effects, including residual impacts and effects, on landscape character and visual amenity receptors and their views as described below.

Operational Impacts and Effects on Landscape Character, including Residual Impacts and Effects

Landscape Relevant Designations

- 6.13 The proposed development site is **not** recognised for its importance or value through any landscape relevant designations. There will be **no** direct impacts or effects on any landscape relevant designations as a result of the proposed development.
- 6.14 However, with reference to the ZTVs and the viewpoints, there will be the potential for indirect impacts and effects on the setting of selected landscape relevant designations as a result of the operation of the proposed development, as follows:
- The Carmarthenshire Limestone Ridge SLA, approximately 4.8km to the north of Area 3 (Western Site), on the fringes of the study area is excluded from the ZTV and will experience no indirect influence on its setting as a result of the proposed development.

There will be no influence on the setting, key characteristics, local distinctiveness and quality of the Carmarthenshire Limestone Ridge SLA as a result of the proposed development.

A combination of distance and screening by intervening development and vegetation will also ensure there will be no indirect influence on the setting of the Cwm Cathan SLA, approximately 2.5km to the east of Area 1 (Eastern Site), and Mynydd y Betws SLA, approximately 4.3km to the east of Area 1 (Eastern Site), which both extend to the eastern fringes of the study area.

The magnitude of impact will be **no change**, the level of effect will be **neutral**.

It will only be from the closest SLA, the Llŵchwr Valley, immediately to the south of Area 1 (Eastern Site) which extends from the north-east to the south-west, following the river corridor that will have the potential to be influenced by the proposed development.

However, the dense vegetative enclosure within this wide and level flood plain with steeply rising valley sides will ensure that despite its proximity to Area 1 (Eastern Site), any indirect influence on its setting as a result of the proposed development will be difficult to perceive. The magnitude of impact will be **no change**, the level of effect will be **neutral**.

- There are numerous scattered Scheduled Monuments in the study area, consisting of standing stones within the undulating farmland, burial chambers, cairns, barrows and earthworks on the exposed uplands and earthworks, castle mounds and churches along the river corridor.

A combination of undulating landform and mature vegetation will ensure there will be no indirect influence on the setting of Scheduled Monuments within the undulating farmland and river valleys.

It will only be from the elevated, open and exposed ridges to the east and south-east, scattered with burial chambers, earthworks and cairns that will have the potential to be indirectly influenced by the proposed development.

As illustrated in **Viewpoint 6 (Figures 16A-16B)**, adjacent to Earthwork on Graig Fawr, approximately 2.7km to the south-east of Area 1 (Eastern Site) and **Viewpoint 7 (Figures 17A-17B)**, adjacent to Two Burial Chambers on Graig Fawr, approximately 2.9km to the south of Area 1 (Eastern Site), the proposed development (Area 1 – Eastern Site) and Area 2 (Central Site), have the potential to be perceived from the elevated ridge. However, set amidst an expansive lower and well-vegetated farmland landscape, the presence of the proposed development, set adjacent to the operational Clawdd du solar scheme, does not dominate. At worst, the magnitude of impact will be **low**, the level of effect will be **minor adverse**.

- There are scattered Listed Buildings in the study area, the majority focussed within the centre of Ammanford. These will be screened from any indirect influence on their setting as a result of the proposed development by intervening development.

Even for the scattered Listed Buildings nestled within the surrounding farmland landscape, a combination of subtle variations in landform and mature vegetation in the intervening landscape, as well as surrounding the proposed development, will ensure there will be no indirect influence on the setting of Listed Buildings as a result of the proposed development.

For the majority of Listed Buildings in the study area, the magnitude of impact will be **no change**, the level of effect will be **neutral**.

- No Ancient Woodlands will be directly affected by the proposed development.

The closest Ancient Woodland to the proposed development is adjacent to the eastern boundary of Area 3 (Western Site).

The magnitude of impact will be **no change**, the level of effect will be **neutral**.

Landscape Character

Landscape Elements

- 6.15 There will be limited removal of hedgerow, tree or shrub vegetation as a result of the proposed development.
- 6.16 The retention of the mature hedgerow and scattered tree vegetative boundaries, the growth and management of the existing hedgerows as well as 'in-fill' planting to the existing boundaries will result in **minor beneficial effects** to landscape elements.
- 6.17 The retention and improvement to the existing field boundaries will also strengthen the landscape pattern, increase screening and improve biodiversity with associated **minor beneficial effects**.

Landscape Character Areas

- 6.18 The operation of the proposed development will introduce a new built element, including solar panels and associated buildings, perimeter fencing punctuated by CCTV camera masts and access tracks within the landscape which will potentially influence its character, albeit the development will be contained within regular and relatively enclosed fields, within a wider well-vegetated and enclosed agricultural landscape.
- 6.19 With reference to the ZTVs (**Figures 10A-10D**) and viewpoints (**Figures 11-17**), the proposed development will be potentially perceived over a very limited area, mainly immediately surrounding the proposed development and from the elevated open ridge to the south-east. However, the gently sloping and undulating landscape that is characteristic of the site and the study area, along with the strong hedgerow, scattered trees, linear tree belts and woodland vegetative screening, will reduce even further the potential influence the operation of the proposed development will have on the landscape within the study area.
- 6.20 The main impacts and effects of the proposed development will be on the landscape in close proximity and the elevated land to the south-east.

Visual and Sensory

- 6.21 The main influence on the visual and sensory landscape will be on the moderate (medium) sensitivity aspect area in which the proposed development is situated as well as indirectly on the high (medium-high) sensitivity elevated ridgeline to the south-east.
- 6.22 The proposed development is situated within the rolling hills and small valleys of the moderate (medium) sensitivity *Llanelli Hills aspect area*.
- 6.23 Other than the 'footprint' of the proposed development, there will be limited impacts on the moderate (medium) sensitivity aspect area in which the proposed development will be situated. The sensitive design and layout avoids and minimises the influence on the fields and woodland, scattered farms and narrow lanes with high hedges that is characteristic of the aspect area.

- 6.24 The proposed development will however introduce built elements to this rural landscape, already influenced by pylons and the operational solar scheme at Clawdd du. The magnitude of impact will be **low**, the level of effect will be **minor adverse**.
- 6.25 However, the proposed development will be retained for grazing, with improved hedgerow boundaries and rough grassland buffers around the periphery, in character with the aspect area, with associated **low impacts** and **minor beneficial effects**.
- 6.26 Immediately to the south of Area 1 (Eastern Site) is the high (medium-high) sensitivity *Llwchyr Valley aspect area*.
- 6.27 Any indirect influence on the setting of this sparsely settled wide level and straight valley floor will be restricted by the wooded and well-vegetated valley sides as well as the vegetative enclosure around the proposed development itself. The magnitude of impact will be **no change**, the level of effect will be **neutral**.
- 6.28 Further afield, the assessment is focussed on those areas identified as having a high (medium-high) sensitivity.
- 6.29 To the east and south-east of the proposed development, dramatically rising up from the Llwchyr Valley is the high (medium-high) sensitivity *Pentwyn Mawr aspect area*, flanked by the moderate (medium) sensitivity *West of Graig Fawr aspect area* and the *South East of Graig Fawr aspect area*.
- 6.30 The proposed development (Area 1 – Eastern Site and Area 2 – Central Site) has the potential to be perceived, in combination with the operational Clawdd du solar scheme, from the strong rolling hills of the high (medium-high) sensitivity *Pentwyn Mawr aspect area*. However, as illustrated in **Viewpoint 6 (Figures 16A and 16B)** and **Viewpoint 7 (Figures 17A and 17B)**, the proposed development (Area 1 – Eastern Site and Area 2 – Central Site), in combination with the operational Clawdd du solar scheme, will be perceived as contained built elements, set within the expansive lower, well-vegetated agricultural landscape. The proposed development, although selectively perceived from this open and elevated landscape, will not dominate or indirectly influence the character of this upland landscape, already influenced by the adjacent wind farm. The magnitude of impact will be **low**, the level of effect will be **minor adverse**.

Historic Landscape

- 6.31 The main influence on historic landscape will be on the high (medium-high) sensitivity aspect areas in which the proposed development is situated as well as indirectly on the outstanding (high) sensitivity elevated ridgeline to the south-east.
- 6.32 Area 1 (Eastern Site) and Area 2 (Central Site), including the Clawdd du operational solar scheme, is within the high (medium-high) sensitivity *Bryniau Llanedi aspect area* which extends to the fringes of Tycroes to the north and southwards towards Llanedi.
- 6.33 Area 3 (Western Site) is within the high (medium-high) sensitivity *Cwm Gwili aspect area* which extends in a band to the north and south.
- 6.34 Other than the ‘footprint’ of the proposed development, there will be limited impacts on the high (medium-high) sensitivity aspect areas in which the proposed development will be situated. The sensitive design and layout avoids and minimises the influence on the irregular field enclosures and agricultural landscape that dominates the aspect areas.

- 6.35 The proposed development will however introduce built elements to this diverse farming landscape. The magnitude of impact will be **low**, the level of effect will be **minor adverse**.
- 6.36 There will however be the potential for indirect influence on the outstanding (high) sensitivity aspect areas dominate towards the fringes of the study area, particularly to the south-east including the river valley and adjacent slopes and ridges of the *Northern Upland Commons aspect area*.
- 6.37 The proposed development (Area 1 – Eastern Site and Area 2 – Central Site) have the potential to be perceived from the well-preserved upland landscape retaining most of its original character, form and function of the *Northern Upland Commons aspect area*. However, as illustrated in **Viewpoint 6 (Figures 16A and 16B)** and **Viewpoint 7 (Figures 17A and 17B)**, the proposed development, in combination with the operational Clawdd du solar scheme will be perceived, set within the expansive lower, well-vegetated agricultural landscape. It will however, not dominate or largely indirectly influence the character of this uplands landscape. The magnitude of impact will be **low**, the level of effect will be **minor adverse**.

Cultural Landscape

- 6.38 The main influence on cultural landscape will be on the aspect area in which the proposed development is situated.
- 6.39 The proposed development is within the high (medium-high) sensitivity *Rural Carmarthenshire aspect area*. This covers the majority of the study area and extends to the north, east, south and west.
- 6.40 Other than the ‘footprint’ of the proposed development, there will be limited impacts on the *Rural Carmarthenshire aspect area*. The sensitive design and layout avoids and minimises the influence on this aspect area recognised for its multi-faceted appearance but largely homogenous cultural use in the form of farming.
- 6.41 The proposed development will however introduce built elements to this diverse farming landscape. The magnitude of impact will be **low**, the level of effect will be **minor adverse**.

Geological Landscape

- 6.42 The main influence on geological landscape will be on the area in which the proposed development will be situated.
- 6.43 Area 1 (Eastern Site) is within the moderate (medium) sensitivity *Pen-y-Groes aspect area* which extends to the north, towards the fringes of the study area.
- 6.44 Area 2 (Central Site) is within the moderate (medium) sensitivity *Fforest aspect area* which extends to the south and east.
- 6.45 Area 3 (Western Site) is within the moderate (medium) sensitivity *Cross Hands aspect area* which extends to the north and west.
- 6.46 Other than the ‘footprint’ of the proposed development, there will be limited impacts on the geological aspect areas. The sensitive design and layout, including construction methods, avoids and minimises the influence on these aspect areas. The magnitude of impact will be **no change**, the level of effect will be **neutral**.

Landscape Habitats

- 6.47 The main influence on landscape habitats will be on the area in which the proposed development will be situated.
- 6.48 Area 1 (Eastern Site) is within the moderate (medium) sensitivity *Llangennech aspect area*. This extends along the adjacent river corridor to the southern fringes of the study area.
- 6.49 Area 2 (Central Site) and Area 3 (Western Site) is within the high (medium-high) sensitivity *Carmarthen Coalfield aspect area*. This covers the majority of the study area, extending to the east, north, west and south-west.
- 6.50 Other than the 'footprint' of the proposed development, there will be limited impacts on the *Llangennech aspect area* and the *Carmarthen Coalfield aspect area*. The sensitive design and layout avoids and minimises the influence on these aspect areas.
- 6.51 The proposed development will barely influence the rolling landscape dominated by improved grasslands of the moderate (medium) sensitivity *Llangennech aspect area* and largely improved agricultural landscape with a high proportion of semi-improved neutral and marshy grasslands of the high (medium-high) sensitivity *Carmarthen Coalfield aspect area*. The proposed development will however introduce built elements to the landscape. The magnitude of impact will be **low**, the level of effect will be **negligible adverse**.
- 6.52 However, the proposed development will be retained for grazing, with improved hedgerow boundaries and rough grassland buffers around the periphery with associated **low impacts** and **minor beneficial effects**.

Operational Impacts and Effects on Visual Amenity Receptors and their Views, including Residual Impacts and Effects

Visual Amenity Receptors

Settlements – Towns, Villages and Hamlets

- 6.53 Many of the **high** sensitivity settlements within the study area are excluded or largely excluded from the ZTV and would experience no potential views towards the proposed development including Ammanford, approximately 2.5km to the north-east of Area 1 (Eastern Site) and Pontarddulais, approximately 4.4km to the south of Area 1 (Eastern Site) at their closest points.
- 6.54 The enclosure by the intervening gently sloping and undulating landform, as well as mature vegetation will restrict views towards the proposed development. For the majority of **high** sensitivity settlements, the magnitude of impact will be **no change**, the level of effect will be **neutral**.
- 6.55 Even when the close proximity settlements are within the ZTV, including Tycroes, approximately 60m to the north of Area 1 (Eastern Site) and 140m to the north of Area 2 (Central Site) at their closest points, a combination of screening on the settlement fringes by development and vegetation will restrict the majority of views towards the proposed development. Subtle variations in the surrounding sloping and gently undulating landform

and mature vegetation in the immediate and wider landscape, that dominates the majority of the study area, will also provide enclosure and screening.

- 6.56 It is only from the fringes of Tycroes, as lines of houses stretch out along the major and minor roads, that glimpsed views towards Area 1 (Eastern Site) and Area 2 (Central Site) will be possible.
- 6.57 As illustrated in **Viewpoint 5 (Figure 15A-15B)**, from in close proximity and from gaps in the surrounding enclosure, glimpsed views from the settlement fringes towards Area 1 (Eastern Site) will be possible. However, perceived through gaps in enclosure, amidst mature vegetation, within a view influenced by development and pylons, the proposed development will not dominate the view. At worst, these glimpsed views towards the proposed development from the **high** sensitivity settlement fringes, will have a **low impact** and **minor adverse effects**.

Scattered Residential Properties and Farms

- 6.58 This enclosure by numerous lines of mature vegetation and subtle variations in landform continues around the individual residential properties and farms scattered within the gently sloping and undulating farmland that covers the majority of the study area, often situated on or adjacent to the network of enclosed roads.
- 6.59 Many of the scattered houses and farms are outside the ZTV and will have no potential views towards the proposed development. Even if within the ZTV, the majority of the houses and farms will have restricted views into the surrounding landscape towards the proposed development from a combination of vegetation enclosing many properties, screening provided by adjacent development as well as subtle variations in landform and vegetation in the immediate and wider landscape, including lining the adjacent roads and transport corridors. For the majority of **high** sensitivity individual residential properties and farms within the study area, direct visibility of the proposed development will be extremely limited and the magnitude of impact will be **no change**, the level of effect will be **neutral**.
- 6.60 There may be the potential for some of the closest scattered houses and farms, set within the gently sloping well-vegetated farmland, to perceive the proposed development. However, largely enclosed by adjacent buildings, mature vegetation or subtle variations in landform and set within a strong well-enclosed vegetative framework, any potential views of the proposed development will not dominate.
- 6.61 The closest residential properties and farms to the proposed development include:
- Collection of two storey houses to the north-west of the Tycroes Business Park, stretched out along the access road leading off the A483, approximately 125m to the north-west of Area 1 and 245m to the north of Area 2.
- As illustrated in **Viewpoint 5 (Figure 15A-15B)**, oblique views from the upper stories, may be possible towards Area 1, although will be largely limited by the intervening clutter of buildings associated with the Tycroes Business Park. Views from the rear of these properties may also be possible towards Area 2, although the intervening lines of mature vegetation surrounding the gardens, in the fields as well as surrounding the proposed development and subtle variations in landform, will limit the majority of views, particularly over time through the growth of the vegetation enclosing the proposed development.
- At worst, these glimpsed views towards the proposed development from the **medium-high** sensitivity (first floor) residential properties adjacent to the Tycroes Business Park, will have a **low impact** and **minor adverse effects**.

- A mixture of scattered two storey and single storey properties are scattered along the southern boundary of the A483 to the north and north-west of Area 2, the closest a bungalow, approximately 75m to the north-west.

As illustrated in **Viewpoint 2 (Figure 12A-12C)**, from a gateway adjacent to the bungalow, glimpsed views will be possible from gaps in enclosure along the road, towards the proposed development. However from the rear of the bungalow, intervening development (such as sheds and garages) as well as mature vegetation in the gardens and surrounding the intervening fields, including the proposed development, will restrict views. Views will also be further restricted with time through the managed growth of the vegetation enclosing the proposed development.

Broadly, from the **high** sensitivity scattered properties along the southern boundary of the A483, glimpsed views from the rear of the houses may be possible, above and amidst the intervening vegetation, although any potential views will reduce over time through the managed growth of the vegetation surrounding the proposed development. At worst, these glimpsed views towards the proposed development from the **high** sensitivity scattered houses, will have a **low impact** and **minor adverse effects**.

- Clawdd-du farmhouse (an 'involved' property), approximately 100m to the south-west of Area 1. As illustrated in **Viewpoint 4 (Figures 14A-14B)**, the two storey house is set amidst a cluster of buildings associated with the farm, with wider views restricted by the intervening buildings as well as mature vegetation enclosing the surrounding fields. Views of the adjacent operational solar scheme are also possible.

The proposed development will have the potential to be perceived from the upper stories of the farmhouse, although set behind the operational solar scheme, the addition of the proposed development will not dominate the view.

At worst, these glimpsed views towards the proposed development from the **medium-high sensitivity** (first floor) residential property, will have a **low impact** and **minor adverse effects**.

- Garn-fach, approximately 335m to the north-east of Area 1. Situated immediately to the north of a minor road, the two storey detached house is orientated to the south, overlooking the adjacent road, with only the gable end (no windows) facing towards the proposed development. Intervening agricultural buildings and sheds to the west also help to screen any potential oblique views from the property and garden.

The magnitude of impact will be **no change**, the level of effect will be **neutral**.

- Ty-isaf (an 'involved' property), immediately to the south and east of Area 3. As illustrated in **Site View F (Figure 4C)**, the two storey farmhouse is situated on lower ground than the adjacent sloping fields, although views from the upper stories over the proposed development will be possible above the intervening hedgerow.

The introduction of the proposed development will have a change of view, although only perceived from the upper stories.

At worst, the views towards the proposed development from the **medium-high sensitivity** (first floor) residential property, will have a **medium impact** and **moderate adverse effects**.

Country Parks

- 6.62 Llyn Llech Owain Country Park occurs on the fringes of the study area, approximately 5km to the north of Area 3 (Western Site).

- 6.63 Largely excluded from the ZTV and separated from the proposed development by a combination of distance, existing development, undulating landform and extensive mature vegetation, any wider views towards the proposed development will be very restricted.
- 6.64 The magnitude of impact from this **medium-high** sensitivity receptor will be **no change**, the level of effect will be **neutral**.

National Cycle Routes

- 6.65 National Cycle Route (NCR) 47 passes from the north-west to the west of the study area approximately 3.7km to the north-west of Area 3 (Western Site) at its closest point. Excluded from the ZTVs, the users of this **medium-high** sensitivity route will experience no potential views towards the proposed development.
- 6.66 NCR 437 also passes through Ammanford, approximately 2.5km to the north-east of Area 1 (Eastern Site) at its closest point.
- 6.67 Largely passing through or on the fringes of settlement, any wider views, including towards the proposed development will be restricted by surrounding development, undulating landform and intervening mature vegetation.
- 6.68 The magnitude of impact from these **medium-high** sensitivity receptors will be **no change**, the level of effect will be **neutral**.

Recreational Routes

- 6.69 St Illtyd's Walk recreational route passes through the study area from the east to the south, approximately 2.7km to the south-east of Area 1 (Eastern Site) at its closest point.
- 6.70 Largely crossing the high and expansive grassland ridge landscape to the east and south-east in close proximity, as illustrated in **Viewpoint 6 (Figures 16A-16B)** and **Viewpoint 7 (Figures 17A-17B)**, expansive views will be possible from this open and elevated route over the lower farmland landscape. Views towards the proposed development (Area 1 – Eastern Site and Area 2 - Central Site only) as well as the adjacent Clawdd du operational solar scheme will be possible. Nestled within the regular and well-vegetated farmland landscape, scattered with settlements and infrastructure, the proposed development, in combination with the operational solar scheme will be perceived, but will not dominate the view.
- 6.71 At worst, the magnitude of impact from the open and elevated section of the **medium-high** sensitivity recreational route will be **medium-low**, the level of effect will be **minor adverse**.

Local Public Rights of Way, Bridleways and Cycleways

- 6.72 A public right of way crosses Area 1 (Eastern Site), passing through the gently sloping fields from north to south, as well as dividing to the centre of the site to head to the south and east respectively.
- 6.73 As illustrated in **Site View A (Figure 3B)** and **Site View C (Figure 3C)** as well as **Viewpoint 3 (Figures 13A-13B)** and **Viewpoint 4 (Figures 14A-14B)**, from the public right of way that crosses the proposed development, open views will be possible. The solar panels will feature as an extension to the existing Clawdd Du solar farm which dominates the existing view. The potential for **high impacts** however will be offset by the

presence of the existing solar farm. There would however be **moderate adverse effects** from this short stretch of **medium** sensitivity public right of way.

- 6.74 However, for the public rights of way further afield, set within a well-vegetated and gently undulating and sloping agricultural landscape, any views, including towards the proposed development will be largely restricted by a combination of subtle variations in landform and extensive mature woodland, hedgerows and trees surrounding the routes and in the wider well-vegetated farmland landscape. For the majority of public rights of way in the study area, any views towards the proposed development will be restricted. The magnitude of impact from the majority of **medium** sensitivity public rights of way in the study area will be **no change**, the level of effect will be **neutral**.

Open Access Areas

- 6.75 The often substantial open access areas in the study area are largely focussed on the high ground to the east, south-east and south of the proposed development and to the north.
- 6.76 Largely dominating the high and expansive grassland ridge landscape to the east and south-east in close proximity, as illustrated in **Viewpoint 6 (Figures 16A-16B)** and **Viewpoint 7 (Figures 17A-17B)**, expansive views will be possible from these open and elevated areas over the lower farmland landscape. Views towards the proposed development (Area 1 – Eastern Site and Area 2 - Central Site only) as well as the adjacent Clawdd du operational solar scheme will be possible. Nestled within the regular and well-vegetated farmland landscape, scattered with settlements and infrastructure, the proposed development, in combination with the operational solar scheme will be perceived, but will not dominate the view.
- 6.77 At worst, the magnitude of impact from the elevated medium sensitivity open access areas will be **medium-low**, the level of effect will be **minor adverse**.

Major Roads, including Motorways

- 6.78 Numerous major roads, including the M4 motorway, pass through the study area.
- 6.79 The M4 is excluded from the ZTV and will experience no potential views towards the proposed development. The magnitude of impact from this **low** sensitivity receptor will be **no change**, the level of effect will be **neutral**.
- 6.80 The A483 and A48 connect at a roundabout (and the Pont Abraham Services) with the M4, approximately 1.6km to the south of Area 3 (Western Site).
- 6.81 The A48 branches northwards, passing immediately to the west of Area 3 (Western Site). As illustrated in **Viewpoint 1 (Figure 11)**, the A48 is very well-enclosed by mature vegetation and any wider views, including towards the proposed development, will be very restricted by surrounding mature vegetation. The magnitude of impact from this **low** sensitivity receptor will be **no change**, the level of effect will be **neutral**.
- 6.82 The A483 heads to the north-east from the motorway roundabout, passing through the settlement fringes of Tycroes and Ammanford, approximately 130m to the north of Area 2 (Central Site) at its closest point. Largely enclosed by a combination of mature vegetation and development, it is only from gaps in this enclosure, as illustrated in **Viewpoint 2 (Figures 12A-12C)**, that glimpsed views into the surrounding undulating farmland landscape towards the proposed development will be possible. The proposed

development will be set back from the road and nestled within the sloping and well-vegetated farmland and the magnitude of impact will be **low**, the level of effect will be **negligible adverse**, reducing even further through the managed growth of boundary vegetation over time.

Minor 'B' Roads and Unclassified Roads

- 6.83 Numerous minor roads cross the study area linking the scattered farms, houses and settlements.
- 6.84 The minor roads are largely enclosed by mature vegetation, including hedgerows, hedgebanks and scattered trees as well as woodland, which restrict views into the wider sloping and undulating agricultural landscape, including towards the proposed development. For the majority of **medium-low** sensitivity minor roads within the study area, views towards the proposed development will be extremely restricted and the magnitude of impact will be **no change**, the level of effect will be **neutral**.
- 6.85 Glimpsed views of the proposed development will generally only be possible from the network of enclosed minor roads from open locations, such as gateways. Even from the closest minor road immediately to the south of Area 1 (Eastern Site), the enclosure by dense hedgerows will restrict the majority of views towards the proposed development including towards the adjacent operational solar scheme.
- 6.86 From selected field gates, the proposed development will be perceived nestled within the agricultural landscape, largely enclosed by intervening mature vegetation. At worst, from these few glimpsed and fleeting views from gateways along the closest minor **medium-low** sensitivity road, the magnitude of impact will be **medium-low**, the level of effect will be **minor adverse**. The growth of the existing boundary and in-fill proposed planting of native tree and hedgerow species will help to further enclose and integrate the proposed development, although glimpsed views will still be possible. Over time, the impacts will be reduced to **low**, the level of effect **negligible adverse**.

Railway Lines

- 6.87 A railway lines crosses the study area from the north-east to the south, approximately 1.3km to the south-east of Area 1 (Eastern Site) at its closest point.
- 6.88 Passing through the settlements of Ammanford to the north-east and Pontarddulais to the south and running along the fringes of the enclosed river valley, any potential views towards the proposed development will be restricted by intervening development, subtle variations in the valley landform and mature vegetation surrounding the railway line itself and in the wider agricultural landscape.
- 6.89 There will be no potential views from users of the railway line as a result of the proposed development. The magnitude of impact from this **low** sensitivity receptor will be **no change**, the level of effect will be **neutral**.

7. Cumulative Impacts and Effects

- 7.1 The proposed development is considered 'in addition' to:
- Operational and consented solar schemes in the study area, where they already exist or are highly likely to exist; and
 - 'Pending planning' solar schemes within the study area, where there is only the potential that they will exist.
- 7.2 There are 5 operational, 1 consented and 1 pending planning solar schemes within the study area, including the operational Clawdd du solar scheme, immediately to the south-west of Area 1 (Eastern Site).

Landscape Character

- 7.3 The proposed development and the operational solar scheme immediately to the south-west of Area 1 (Eastern Site) are situated within the same LANDMAP aspect areas.
- 7.4 Separated by mature hedgerow vegetation and set within the gently sloping regular agricultural landscape that is characteristic of the wider area, the addition of the proposed development will not have a significant additional material influence on overall landscape character.
- 7.5 The characteristic strong field pattern screens the wider cumulative influence of solar schemes on the landscape.
- 7.6 The solar schemes are well-absorbed in the landscape and do not influence the wider landscape character or the setting of landscape relevant designations. Although the solar schemes have the potential to be perceived from selected locations, set within a well-vegetated landscape, the perception of a number of solar schemes will not indirectly influence the wider landscape character. The addition of the proposed development will not create a landscape dominated by solar schemes which will influence the setting or the integrity landscape relevant designations or change the landscape character into one influenced by solar energy. The addition of the proposed development, even in combination with the adjacent operational solar scheme, will not dominate the landscape.

Visual Amenity Receptors and their Views

- 7.7 The enclosure provided by the gently sloping, well-vegetated regular farmland ensures that the proposed development and the operational, consented and pending planning solar schemes within the study area will not dominate the view.
- 7.8 Even when perceived in combination with the adjacent operational solar scheme, from a few locations in close proximity and from more distant elevated locations focussed to the south-east, solar schemes will not dominate the view. The perception of numerous solar schemes will not dramatically influence views. The addition of the proposed development will not create views dominated by solar schemes.
- 7.9 In addition, there is the potential for the proposed development (Area 1 – Eastern Site) to be perceived sequentially with the adjacent operational solar scheme in particular from the minor road to the south.

- 7.10 However, enclosed by mature vegetation with glimpsed views restricted to gaps in the enclosure such as gateways, in reality, any sequential cumulative effects on visual amenity receptors will be extremely restricted.
- 7.11 The addition of the proposed development, even in combination with the adjacent operational solar scheme, will not dominate views or journeys from visual amenity receptors.

8. Conclusions

- 8.1 Overall, the landscape around the proposed development consists of gently sloping to undulating farmland of medium to large regular fields surrounded by mature hedgerows, linear tree belts, mature trees and woodland. Within the gently sloping to undulating landscape, the numerous mature trees, copses, woodlands and hedgerows, provide enclosure and restrict the majority of views from nearby visual amenity receptors. Visual amenity receptors consist of scattered residential properties, farms and small towns and villages connected by a network of transport corridors including major and minor roads, railway lines and public rights of way. Selected views are only possible from the limited scattered receptors, generally only where gaps in vegetation cover or when elevated open land allows occasional open views.
- 8.2 The proposed development site is not recognised for its value through any landscape relevant designations, although there are locally recognised Special Landscape Areas (SLA) present, including the Llchwyr Valley SLA which occurs immediately to the south of the proposed development site (Area 1 - Eastern Site) at its closest point. There are however other scattered landscape relevant designations within the study area. Scattered Scheduled Monuments are present and Listed Buildings are focussed within the settlements, as well as sparsely scattered within the farmland landscape. Numerous Ancient Woodlands are also present adding to the overall well-vegetated character of the study area.
- 8.3 Mitigation measures during the site selection and design stages have ensured that the proposed development will have minimal direct effects on landscape elements and no noteworthy degree of landscape vegetation such as hedgerows or trees will be lost.
- 8.4 The proposed development's location set in large and relatively contained regular fields within a gently sloping and undulating well-vegetated landscape are appropriate for solar development, as identified within the Landscape Sensitivity and Capacity Study. The sensitive siting and location of the proposed development also minimises the wider impacts on landscape character, landscape relevant designations and nearby visual amenity receptors.
- 8.5 In addition, existing field boundary vegetation will be protected and enhanced, to retain and improve the landscape pattern and increase screening for nearby visual amenity receptors. Selected hedgerow and tree in-fill planting to existing boundaries will also improve screening and promote the field pattern and regular landscape structure.
- 8.6 The existing containment and enclosure provided by the immediate and wider well-vegetated landscape will also ensure that the proposed development will only have very minimal effects on both landscape character and visual amenity receptors and their views during construction and de-commissioning.

- 8.7 During the operational period, the proposed development will largely only be perceived from the public rights of way that cross Area 1 (Eastern Site). Glimpsed views will also be possible from the settlement fringes and major road to the north of Area 1 (Eastern Site) and Area 2 (Central Site) and the minor roads that border the southern boundary of Area 1 (Eastern Site). Elevated but distant views of the proposed development (Area 1 - Eastern Site and Area 2 – Central Site) will also be possible from the exposed and open ridgeline to the south-east, covered by open access areas and crossed by a recreational route.
- 8.8 Although selectively perceived, the proposed development will be viewed as a contained built element, within a regular and well-vegetated landscape which will easily become 'lost' within the wider landscape. The majority of effects on landscape character, landscape relevant designations and visual amenity receptors and their views will therefore be neutral largely because of the enclosure provided by the surrounding dense hedgerows, trees, copses and woodlands, subtle variations in the surrounding gently sloping and undulating landform and the screening vegetation focussed around residential properties, settlements and transport corridors in the immediate and wider landscape.
- 8.9 With regard to the landscape character areas, the proposed development will not dramatically change the characteristics of the wider landscape or affect the integrity of landscape relevant designations. The proposed development will be selectively perceived in close proximity and from further afield to the south-east but will be viewed as a contained built element, within the gently sloping large fields, within a well-vegetated landscape. The proposed development will fit within the existing field pattern and will not be out of scale with the surrounding landscape. The maturing and reinforcement of the existing vegetation, with selected 'in-fill' planting, will help to further integrate the proposed development into the landscape pattern.
- 8.10 Exposed views of the proposed development from visual amenity receptors will be extremely limited and will be generally only from those very few receptors in close proximity or from more distant and elevated locations to the south-east as well as where there are 'gaps' in the nearby enclosing vegetation. The proposed additional mitigation measures, as shown in the Illustrative Landscape Masterplan, including in-fill planting of the existing retained boundaries will help to restrict even further any potential views of the proposed development, particularly for those receptors in close proximity, over time. Relatively few visual amenity receptors will have close range views of the proposed development, the majority of views will be obscured by localised screening from vegetation, subtle variations in landform and adjacent development.
- 8.11 In summary, the proposed development will:
- Add a relatively contained built element to the landscape;
 - Avoid and will not have a direct and limited indirect influence on any designated landscapes;
 - Be set within the regular landscape pattern within mainly mature and well-vegetated field boundaries, which will be protected and enhanced through additional planting, including in-fill planting to the existing boundaries, where necessary;
 - Only be partly overlooked from in very close proximity, from gaps in enclosure, its influence dramatically reducing over time and swiftly with distance from the proposed development. Although selectively initially perceived, the proposed development will be a contained built element, set within a well-vegetated landscape, notwithstanding it is temporary and reversible;

- Will be perceived from selected open and elevated locations to the south-east, where it will be viewed in combination with the adjacent Clawdd du operational solar scheme. The addition of the proposed development will not significantly increase the perception of numerous solar schemes on either the landscape or views and therefore there will be limited additional cumulative effects as a result of the proposed development; and
- Overall, will have limited impacts on landscape relevant designations, landscape character and visual amenity receptors and their views.

Appendix A - References

LVIA References

Guidelines for Landscape and Visual Impact Assessment (GLVIA), Third Edition, 2013, The Landscape Institute and the Institute of Environmental Management and Assessment

The Landscape Institute, *Technical Guidance Note 06/19, Visual Representation of Development Proposals, 17th September 2019*

General LVIA Designation References

CADW website for Landscapes of Historic Interest in Wales information (www.cadw.gov.wales)

Historic parks and gardens (www.parksandgardens.org)

Heritage gateway website for information on Registered Parks and Gardens (www.heritagegateway.org.uk)

Local Plan References

Carmarthenshire County Council, Local Development Plan, 2006-2021

Carmarthenshire County Council, Carmarthenshire Solar PV Development, Landscape Sensitivity and Capacity Study

Swansea Council, Adopted Local Development Plan, 2010-2025, Adopted February 2019

Landscape Character References

National Landscape Character Areas for Wales (www.naturalresources.wales)

LANDMAP website (www.naturalresources.wales)

LANDMAP: Guidance Note 1: LANDMAP and Special Landscape Areas, 2017, Natural Resources Wales

LANDMAP Methodology Visual and Sensory 2016, Natural Resources Wales

LANDMAP Methodology Geological Landscape, 2016, Natural Resources Wales

LANDMAP Guidance Note 4: LANDMAP and the Cultural Landscape, 2016, Natural Resources Wales

LANDMAP Guidance Note 5: LANDMAP and the Geological Landscape, 2016, Natural Resources Wales

LANDMAP Methodology Historic Landscape, 2016, Natural Resources Wales

LANDMAP Methodology Landscape Habitats, 2016, Natural Resources Wales

Carmarthenshire County Council, *Carmarthenshire Solar PV Development: Landscape Sensitivity and Capacity Study* (no date)

Visual Amenity References

SUSTRANS website for important cyclepaths (www.sustrans.org.uk)

Long Distance Walkers Association website for information on recreational routes (www.ldwa.org.uk)

Cumulative

Renewable Energy Statistics Database – (<http://restats.decc.gov.uk/app/pub/map/map/>)

National Infrastructure Planning Portal – (<http://infrastructure.planningportal.gov.uk/>)

Carmarthenshire County Council planning portal search

Swansea Council planning portal search

Appendix B – Technical Information

Introduction

The interpretation of the magnitude of impact and the level of effect of the proposed development was determined with the assistance of specialist computer generated information.

In the absence of any bespoke guidance relating to the visual representation of solar developments, the '*Visual Representation of Windfarms: Good Practice Guidance, Scottish Natural Heritage, Version 2.1, December 2014,*' was referenced for the creation and presentation of the landscape and visual technical graphic information, to accompany and inform the landscape and visual impact assessment (LVIA).

The Landscape Institute, *Technical Guidance Note 06/19, Visual Representation of Development Proposals*, 17th September 2019 was referenced for guidance on the use of the camera and photography.

Zone of Theoretical Visibility (ZTV)

The creation of a computer-generated Zone of Theoretical Visibility (ZTV) was the first step in the assessment of effects.

The ZTV is shown on a 1:50,000 map base and plotted at A3 size at 1:50,000 scale (5km radius study area – offset from proposed development boundaries) for graphic interpretation.

The ZTV helps to inform judgements on the effects of the proposed development and provides information on:

- Where visibility is theoretically likely to occur (calculated to the maximum height of the solar panels); and
- Extent and pattern of visibility.

A ZTV represents a theoretical area from which the proposed development or part of the proposed development may be seen. The ZTV therefore represents potential visibility.

The ZTV was based on land form data with any ridgelines, plateaux and valleys reflected in the extent of predicted visibility.

The ZTV however does not take into account subtle variations in landform, local conditions such as built development or vegetation such as hedgerows and woodlands, which can and does significantly reduce the area and extent of actual visibility.

Therefore the extent of potential visibility of the proposed development will be substantially less than that predicted on the ZTV.

The ZTV therefore represents a 'worse-case' scenario with regard to the visibility of the proposed development. It does not convey the magnitude of impact or level of effect. However, it forms an appropriate starting point for undertaking the LVIA.

The ZTV is also a useful basis for selecting potential viewpoints and photomontage locations.

Photographs

Photographs included in the assessment were taken when conducting the site survey.

The photographs were taken with a Nikon D610 camera with a Nikon AF-S Nikkor 50mm f/1.8g fixed lens.

The photographs were taken with the aid of a tripod with the head fixed on a vertical and horizontal axis also incorporating a spirit level to ensure 'level' photographs.

The photographs were taken in landscape format.

The camera was positioned at 1.5m above ground level, unless otherwise specified (such as a hedge, tree or other obstruction in the view).

GPS co-ordinates and height data (AOD), using a hand-held GPS device was taken at every photographic location. A compass bearing was taken to ensure the direction of view was correct. The horizontal field of view was also recorded.

The series of overlapping photographs were taken, with each photographic frame overlapping between 20-30% and stitched together using Adobe Photoshop software to provide panoramic views.

Viewpoints and Photomontages

Viewpoints

A number of viewpoints from which the proposed development may be visible were selected. These were issued to the Local Authority for their comments.

The viewpoint photographs were taken in fine weather with good visibility in December 2019.

Each viewpoint is illustrated as an annotated panoramic photograph.

The viewpoints meet the following criteria:

- A balance of viewpoints from the main directions of view;
- Provide a representative selection of views and receptors towards the proposed development; and
- For receptors most likely to experience the greatest change of view.

Photomontages

A photomontage is where a computer rendered image of the proposed development is superimposed onto the existing photographic view. Photomontages are a valuable tool for presenting an overall realistic impression of the proposed development in the landscape

from selected agreed viewpoints (where the proposed development has the potential to be perceived).

The finished image is a representation of the likely appearance of the proposed development only.

Photomontages were produced to illustrate the view that would be experienced by the viewer at the selected viewpoint when facing towards the proposed development.

They are illustrated at significant time during the life of the proposed development and include:

- Existing view;
- Proposed view (Year 1) – to illustrate the ‘worst-case’ immediately following completion of the construction of the proposed development; and
- Proposed view (Year 5) – to illustrate the growth of mitigation measures over time.

For all photomontages:

- There is an element of judgement. While the base data is factual (DTM/photograph) within established parameters, the finished image is a representation of the likely appearance of the proposed development; and
- Each photograph incorporates the lighting and conditions as seen. The photomontage upon which it is based therefore only represents the appearance of the proposed development as it would have appeared at that time, on that day and at that time of year.