Hafod Road Solar Array

Landscape and Visual Appraisal

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VIENTO ENVIRONMENTAL LIMITED

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CONTENTS

Introduction	1
Method of Assessment	1
Predicted Effects and Mitigation	2
Landscape and Visual Context	4
Visual Analysis	9
Landscape Appraisal	13
Visual Appraisal	17
Conclusions	22
References	24

APPENDICES

Appendix LV1 – Extracts from Landscape Character Assessments

Appendix LV2 – Viewpoint Analysis

Appendix LV3 – Wrexham CBC Consultation Response

FIGURES

LV1 – Zone of Theoretical Visibility – Bare Earth

LV2 – Landscape Character

LV3 – Visitor Attractions and Recreational Routes

LV4 – Mitigation Planting Proposals

Landscape and Visual Appraisal

INTRODUCTION

1. The site is located within two agricultural fields to the east of Rhosllannerchrugog, east of Hafod Road and west of the A483. The proposed development comprises a solar array and associated ancillary infrastructure.
2. This report presents the findings of a landscape and visual appraisal (LVA) that has been undertaken to identify the likely effects of the proposed development on the landscape character and visual amenity of the locality.
3. The assessment has been undertaken by Francesca Iribar, TMLI with over 25 years' experience in the landscape and visual assessment of various development types including residential, commercial, agricultural and renewable energy developments.
4. The appraisal has concentrated on a 2.5km radius study area (from the site centre) which is considered sufficient to identify all likely impacts on landscape and visual amenity (see **Figures LV1 – LV3**).
5. The appraisal is illustrated by **Figures LV1 – LV4 and by Viewpoints 1 - 5** and supporting information is provided in **Appendices LV1 – LV3**. All references are listed at the end of this report.

METHOD OF ASSESSMENT

Assessment Approach

6. The appraisal is a study identifying the key views towards the proposed development and describing how these views could change as a result of the proposal. In addition, the study identifies the landscape character of the site and surroundings and sets out the potential changes to landscape character that could occur as a result of the proposed development.
7. The appraisal has examined the effects of the proposed development in the context of the existing landscape and visual baseline which currently contains no existing solar developments within the 2.5km radius. At the time of this appraisal (1st July 2025) the study area contains no known solar applications in the planning system. The Butterfly Solar Farm Proposal is due to be submitted as a Development of National Significance in the coming months. However, it is understood that the application is at the scoping stage and as such there is not yet enough information in terms of a firm layout. As the Butterfly scheme is currently not a formal application with a detailed layout, it has not been considered further.
8. The methodology used in this study conforms to the Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3) and more recent updates. GLVIA3 recommends that for non-EIA development, an assessment of significance is not required and that the assessment should also be proportionate to the scale of the project and the nature of its likely effects.

Good Practice Guidance and Data

9. The appraisal has drawn on information provided within the local development plans that cover the study area (see list of references), and landscape character assessments which cover the study area (see list of references).
10. As mentioned above, the appraisal has utilised guidance set out within the GLVIA3. In line with Landscape Institute Technical Guidance Note 06/19: Visual Representation of Development Proposals, photographs illustrating views from each viewpoint have been taken using a Canon EOS 6D digital camera using a fixed lens with a 50mm focal length and are provided as Type 3 photomontages. The photomontages are provided for information purposes and should not be considered as a substitute to visiting a viewpoint in the field.

Consultations

11. Consultations with Wrexham County Borough Council (the Council) were undertaken in order to seek to agree the scope of the appraisal, viewpoint locations and photomontages and a copy of the responses are included within **Appendix LV3**.

Appraisal Process

12. The appraisal has involved information review, fieldwork observations and photography, and computer-based data processing and analysis, and has been undertaken in several stages, as presented in the following sections of this report:

    - Predicted effects and mitigation – a review of the visual characteristics of the proposed development to identify the aspects with the potential to give rise to landscape and visual effects and a description of the measures that have been incorporated into the design to mitigate these effects.
    - Landscape and visual context – a review of the landscape and visual baseline of the study area, to identify landscape character, landscape designations and visual receptors in the study area.
    - Visual analysis – visibility analysis using computer-generated zones of theoretical visibility (ZTVs) to identify the locations in the study area from where the proposed development could in theory be visible (based on topography only), and a viewpoint analysis to predict the changes to views as a result of the proposed development from a selection of viewpoints that represent some of the main visual receptors in the study area.
    - Landscape appraisal – an appraisal of the potential effects of the proposed development on landscape fabric, landscape character and landscape designations in the landscape study area.
    - Visual appraisal – an appraisal of the potential effects of the proposed development on the visual amenity of receptors in the visual study area.
    - Conclusions – a summary of the findings of the landscape and visual appraisals.

Prediction Methodologies

13. The prediction methodologies for the viewpoint analysis, landscape appraisal and visual appraisal are provided at the beginning of these sections, with a more detailed methodology provided in **Appendix LV2**.

PREDICTED EFFECTS AND MITIGATION

14. A detailed description of the proposed development and information on the installation of the various components of this proposed development are provided within **the accompanying Environmental Report.**

15. It is the visual appearance of the proposed development and associated activities and any proposed changes to landscape fabric that are the main aspects of the development with the potential to affect landscape and visual amenity and these are summarised below for each of the three distinct phases of the development – the construction, operational and decommissioning phases.

Construction Phase

16. The construction phase would be up to 16 weeks, and the activities and temporary features which would be visible on the site would include:

    - Installation of a farm track to access the solar array.
    - Installation of site fencing with integrated CCTV and two access gates.
    - Installation of the solar array.
    - Installation of DNO and on-site substations.
    - Installation of cables in underground trenches.
    - One temporary compound area.
    - The presence of the HGV deliveries to site and movement of vehicles on-site.

- Reinstatement works around areas disturbed by the works.

17. The visual effects of the various aspects of the construction phase would be temporary, intermittent and short-term with each aspect lasting only part of the 16 week construction programme.

18. As the site is a mixture of pasture and arable land, there would be extremely minimal loss of ground vegetation as a result of the temporary site compound and cable trenching. Ground disturbance would be minimised by good site management with full reinstatement over all temporarily disturbed and excavated areas.

19. The likely effects of the construction phase on the landscape fabric of the site are considered in the Landscape Appraisal below.

Operational Phase

20. The main elements that would be visible over the 35-year operational life of the proposed solar array would be:

- Solar array – comprising approximately 13 rows of panels; the face of each panel would be approximately 4.1m deep and mounted at an angle of 22^0. The solar panels would be fixed into the ground on galvanised frames so that the total height above ground of the highest part of the panels would be no more than 3.0m. The panels would be positioned in regular rows facing south with a spacing of approximately 5.0m between rows.
- Fencing with CCTV – fencing around the perimeter of the solar array. Main fence panels would be in the style of metal mesh fencing and up to 3.0m in height. CCTV would be integrated into the fencing at strategic points and would be a maximum of 3.3m tall. Final styles and colours to be agreed in consultation with the Council although RAL6005 is suggested.
- Gates – two internal sets, within the fencing and made of welded mesh steel in RAL 6005 colour. Gates would be double in design, totalling approximately 4.0m in width and 3.0m in height. Details provided in accompanying plans.
- DNO substation and on-site substation – comprising two substation buildings of a maximum 2.9m in height. Details provided in accompanying plans.
- Internal farm track – extending into the site from existing track to the north, approximately 4.0m wide and 330m in length in total. Of Type 1 quarried stone material design.
- Seeding between solar panels with grasses that will suit a light grazing regime. A comprehensive mitigation scheme is also proposed including new hedgerows, hedgerow trees, hedgerow improvements, additional woodland planting, proposed scrub, a proposed pond and habitat to encourage breeding birds. See **Figure LV4** for details.
- Periodical visits to the site for operational and grounds maintenance purposes (management of grassed areas and mitigation planting), involving a commercial van type vehicle.

21. From a landscape and visual perspective, the number of additional visual elements present over the anticipated 35 year operational phase has been minimised by siting the solar array within an area surrounded by several areas of mature woodland and tree belt planting.

Decommissioning Phase

22. The decommissioning phase would be undertaken over a period of approximately 16 weeks, and the activities and temporary features which would be visible on the site would include:

- The presence of HGV deliveries collecting materials and components from the site and the movement of vehicles on-site.
- Dismantling and removal of the solar panels, substation units, CCTV, fencing and gates. Excavation and removal of associated hardstanding areas/plinths (where applicable).
- Reinstatement works over the other areas disturbed by the works.

23. The effects on landscape and visual amenity during the decommissioning phase would be minimised by the limited duration of the works, by removing all above ground structures and materials, by leaving all below-ground structures in place (transmission cables which would be disconnected) and by restoring the ground disturbed by the works.

24. The likely effects of the decommissioning phase on the landscape fabric of the site are considered in the Landscape Appraisal below.

LANDSCAPE AND VISUAL CONTEXT

25. The proposed development would be located across two agricultural fields to the east of Rhosllannerchrugog and west of the A483. The fields are a mixture of pasture and arable land surrounded by mature woodland and tree belt planting to the east. The two site fields are broadly flat at approximately 100m AOD.

26. The site is located within a largely rural area, although the A483 runs approx. 30m east of the site with a busy junction with the B5426 Bangor Road located to the southeast of the site. These roads are largely screened from the site by mature woodland and tree belts along the eastern and southern boundaries of the site fields. Bangor Road runs south of the site at a distance of approx. 100m from the site boundary at its closest point. Hafod Road runs immediately west of the site boundary, with the B5605 located within the west of the study area through Johnstown and a series of other B roads accessing various parts of Rhosllannerchrugog. These are the main roads within the study area with the majority of the eastern half of the study area accessed by a network of local roads.

27. A pylon line crosses through the southern site field, approx. 20m from the proposed solar panels at its closest point. This pylon line is one of a pair of lines that cross through the northwest of the study area and then follow a route south to the east of Ruabon. Rhosllannerchrugog (including Johnstown) is the closest settlement to the site, with the eastern extents of Johnstown located approx. 600m west of the site boundary at its closest point. The northern extents of Ruabon are located approx. 1.0km south of the site boundary.

28. There are a number of woodlands within the study area including the mature vegetation surrounding the site as well as at Bonc-yr-Hafod Country Park, alongside Black Brook and Glanyrafon Brook and around Tatham. A commemorative woodland has been extensively planted to the north of the public footpath immediately north of the site and immediately east of Hafod Road.

29. The nearest public right of way (PRoW) to the site is Footpath ESC/31 which travels from Hafod Road over the A483, running approx. 5m north of the proposed site at its closest point. Beyond the A483 Footpath ESC/31 becomes Footpath RUA/119 and extends east to meet Wat's Dyke Way which is formed by a number of footpaths including RUA/107, RUA/109, RUA/120 and MAR/41. Footpath ESC/29 extends between Hafod Road and Bangor Road to the west of the site and Footpath ESC/28 runs through the area of factory buildings to the west of Hafod Road. Beyond these closest footpaths to the site, the remaining PRoWs are located at greater distances from the proposal. The Wat's Dyke Way is the only long distance right of way located within the study area.

30. The nearest individual residential properties to the application boundary of the proposed development are Hafod House Rest Home and a few properties along the track/ Footpath ESC/31 to the east of Hafod Road (approx. 85m and 60 m from the proposal, respectively), an unnamed property on Hafod Road (approx. 500m north of the site), an unnamed property by Footpath RUA/119 (approx. 480m northeast of the site) and an unnamed property on the B5426 east of the A483 (approx. 280m southeast of the site). Other residential properties are located within settlements such as Rhosllannerchrugog or scattered throughout the landscape at distances of over 0.5km from the proposal.

31. As discussed above, the landform of the site is broadly flat, at approx. 100m AOD. The landform across the study area as a whole varies with the landform to the west rising to heights of approx. 160m AOD and to the east of the A483 generally gently undulating between heights of approx. 70m and 100m AOD.

32. At the time of the appraisal the study area contains no known solar applications in the planning system. The Butterfly Solar Farm Proposal is due to be submitted as a Development of National Significance in the coming months. However, it is understood that the application is at the scoping stage and as such there is not yet enough information in terms of a firm layout. As the Butterfly scheme is currently not a formal application with a detailed layout, it has not been considered further.

Landscape Fabric

33. The proposed solar development would be located across parts of two agricultural fields. Currently these fields are grassland where the only landscape elements within the application boundary would be the grassland itself and the existing hedgerow along the west edge of the southern site field.

Landscape Character

34. At a national level, Natural Resources Wales (NRW) has divided Wales into 48 National Landscape Character Areas (NLCAs). The proposed site and all of the study area are located within the Deeside and Wrexham National Landscape Character Area 13. The full NLCA description for this area is included within **Appendix LV1**, with the key characteristics set out below.

NLCA13 – Deeside and Wrexham

- **Lowland, foothills and levels** - sloping down to the lower Dee and Dee Estuary. Carboniferous Coal Measures interspersed with outcrops of Millstone Grit, Holywell shales and Cefn-y-Fedw sandstones. Glacial till, fluvio-glacial and river terrace drift overlay in parts of the valley floor, giving rise to localised gentle land form variation.
- **A single large river, the Dee, traverses the area.** The Dee opens out into a broad estuary with tidal sand and mud flats. A number of minor rivers dissect the landscape, for example, the Alyn and Eitha, and associated streams.
- **A broad flat flood plain adjacent to the Dee Estuary** – with wide open views to Wirral.
- **Narrow, incised, wooded tributary valleys** – many running down from the west.
- **Mixed pasture and some arable** - and farm woodland cover.
- **Archaeology** - variety of historic sites indicate the former strategic importance of the coastal route and the turbulent history of the Marchlands, including Offa's Dyke and Wat's Dyke. Late Medieval parklands and ecclesiastical / funerary sites.
- **Urban settlements** - a strongly settled character is apparent in the central and southern parts of the area, with the relatively large, almost linked settlements of Holywell-Connah's Quay-Mold-Wrexham-Ruabon.
- **An industrial character** - evident in the line of coalesced settlements at Connah's Quay and Holywell, associated both with the Chester to Holyhead railway line, mining and large scale power generation and industrial plants. Include landmark scale structures such as Broughton aircraft factory, Shotton Steel works and Connah's Quay power station. Industry tends to dwarf historic settlement and features e.g. Flint and it's castle.
- **Small settlements** – outside urban areas, compact villages associated with landed estates and isolated farmsteads, or coalesced ribbon developments and encroachment upon commons, which are the legacy of the former coal and lead mining industries.

- **Culturally many connections to Chester and Merseyside**.

35. Wrexham County Borough is also divided into various LANDMAP Character Areas (LCAs). These are based on LANDMAP information and are shown on **Figure LV2.** This shows that the proposal would be located within LCA7C –. One further Wrexham LCA covers the remainder of the study area; LCA13A – Welsh Maelor. It should be noted that all five Aspect Layers from LANDMAP were considered within the study area through the course of this appraisal. The key characteristics of LCA7C and 13A within Wrexham County Borough are outlined below and the full LCA descriptions for the LCAs are included within **Appendix LV1**:

LCA7C – Rhosllannerchrugog – Rhostyllen – Ruabon – Penycae

LCA Summary:

- *Rural and urban areas affected by history of mining and quarrying.*
- *Villages (Rhos, Penycae, Rhostyllen, Ruabon) characterised by high density and use of Ruabon red brick.*
- *Prehistoric military border area - Gardden hill fort and Offa's Dyke.*
- *Much accessible natural greenspace forming ecological network, including woodland and grassland habitats of high value.*
- *The A483 and railway follow the lower edge of area.*

Key Characteristics:

Visual Character:

- Lower slopes of Ruabon Mountain consisting of undulating farmland, with residential and industrial development.
- Bersham colliery and tip, and the former Hafod tip, now restored, are landmarks.

Geological Character:

- Gentle Carboniferous Coal Measure slopes (sandstone) mostly overlain by glacial till, although Rhosllannerchrugog centre is built on an outcrop.
- A sandstone ridge, highest at Gardden Hill and followed to the north by Offa's Dyke (part now under Johnstown) runs through the centre of the character area.
- To the east of Johnstown, Etruria Marl has been quarried to make the characteristic red bricks and tiles.

Ecological Character:

- Most farmland is improved grassland of low biodiversity value.
- Some former industrial sites are now of high wildlife value, including Stryt Las (great crested newts), the former Hafod tip (a young broadleaved woodland), and birch woodland north of Rhos.
- Fragmented areas of semi-natural vegetation include broadleaved scrub, neutral grassland, upland oak woodland along the Afon Eitha valley, beech woodland on Gardden Hill, neutral grassland at Legacy substation, lowland pasture, and oak/ ash/sycamore woodlands around the Crematorium and Llwyneinion.

Historical Character:

- Settlements are mainly of 19th -20th century origin but Penycae and Ruabon have older centres.
- Coal mining remains are frequent but Bersham Colliery, with its coal spoil tip and remaining headgear is of particularly high value. Industrial sites are linked by a network of disused industrial railways.

- Border area - prehistoric military hillfort at Gardden and Offa's Dyke, marking a former political and military boundary.

Cultural Character:

- Rhostyllen, with modern industrial and commercial areas next to the A483, is now closely linked to Wrexham town.
- Johnstown, once linked with the brickworks and Hafod colliery, is a mainly English-speaking community.
- Rhosllannercrugog is a culturally rich community with strong Welsh culture and language.
- Surrounding farming is under pressure, with part time holdings and increase in 'horsiculture'.
- Hafod y Bonc Country Park is a former tip now important for environmental education and recreation.

LCA13A – Welsh Maelor

LCA Summary:

- *Undulating, mainly pastoral lowland farmland.*
- *Well-managed hedges with hedgerow trees and small woodlands.*
- *Historic designed estates influence a large proportion of this area.*
- *Field ponds abundant on areas with clay soils.*
- *Historic settlement pattern with remnants of medieval ridge and furrow.*
- *Erddig estate important for tourism, recreation, nature conservation and heritage.*
- *Wat's Dyke runs north-south through area.*
- *Patches of valuable seminatural habitats, especially in Clywedog valley.*
- *Affected by urban pressures and economic changes to farming.*

Key Characteristics:

Visual Character:

- Good views to the hills and over the Dee Valley from higher ground.
- Undulating estate farmland with mosaic of farmland and trees (N. and S. areas) and undulating open farmland in the central area.
- Designed parks and gardens.
- Generally an abundance of well managed hedgerows and hedgerow trees.
- Traditional red brick farmsteadings but many barns now converted to residential uses.
- Tranquillity and landscape quality affected by A483 and pylons to west.

Geological Character:

- Deep deposits of glacial drift overlie bedrock of Carboniferous and Triassic age.
- Glacial till (boulder clay) covers a large part of the character area, with glacial sands and gravels found mainly in the area immediately to the south of Wrexham town, and in the river terrace on which Eyton Grange is situated.
- The area drains to the Clywedog in the north and to the River Dee in the east and south.

Ecological Character:

- The River Clywedog valley south of Wrexham town has a diverse range of valuable semi-natural habitats including wet woodlands, lowland meadows and nationally important wetlands (especially for invertebrates) with areas of fen sedge, herb-rich swamp and rush pasture.
- Farm orchards are now rare, but a valuable old orchard survives at Erddig.
- Semi-natural upland mixed ash woodlands, other broadleaved woodlands and plantations are characteristic of the northern and southern areas, forming a mosaic of woodland and farmland. Mixed plantations are also found in the south.
- Although most grassland is improved, remnants of high value neutral grassland survive in the central and northern areas.
- The Welsh Maelor has valuable remnants of estate parkland or wood pasture with mature and veteran trees - a Biodiversity Priority Habitat.
- Field ponds are frequent, and valuable for wildlife.

Historical Character:

- Medieval military feature - Wat's Dyke earthern bank and ditch cuts across farmland.
- Widespread evidence of medieval open fields - ridge and furrow remnants of the Wrexham Lowlands.
- Important designed parklands on Cadw Register at Erddig, Wynnstay and Brynkinalt, as well as Penylan, Erbistock and Rosehill.
- Non-planned settlement with medieval origins at Gyfelia and Crabtree Green.
- 19th/20th century ribbon development at Marchwiel.
- Disused Ellesmere railway.
- Remnants of former ordnance depot at Parkey area south of Wrexham Industrial Estate.

Cultural Character:

- Still predominantly agricultural, with dispersed farms.
- Farmsteads and villages affected by commuter pressure, with residential conversions and new housing.
- Sense of place - Erddig and Wynnstay in particular.
- Wynnstay Estate once culturally dominated the southern part of the Welsh Maelor but the buildings of the core area are being converted to residential accommodation, enabling restoration of the Grade 1 Capability Brown pleasure gardens.
- High level of recreational use in Erddig and Clywedog Valley, and extensive network of small lanes and rights of way in all parts except Wynnstay.

Landscape Designations

36. There are no national landscape designations in the study area.
37. As of May 2025 Wrexham County Borough Council has reverted back to the Unitary Development Plan 1996-2011 adopted in 2005. Within this development plan there are two local landscape designations; Policy EC1 Green Barrier and Policy EC5 Special Landscape Areas (SLAs).

Green Barrier

38. The Green Barrier designation is shown on **Figure LV2**. Policy EC1 of the UDP seeks to limit development proposals within the designation to development that would maintain the openness of the designation (such as agricultural, forestry and cemeteries etc). As this designation relates to potential development within the area and not outwith it, and as the Hafod proposal is not located within this designation, Green Barriers are not discussed further within this appraisal.

Special Landscape Area

39. The Special Landscape Area designation (SLA) is shown on Figure LV2. Policy EC5 of the UDP seeks to prioritise the conservation and enhancement of the landscape within SLAs and seeks to limit development within SLAs to predominantly agriculture, small-scale farm based and other rural enterprises as well as essential utility service developments. As this designation relates to potential development within the area and not outwith it, and as the Hafod proposal is not located within this designation, SLAs are not discussed further within this appraisal.

Visual Receptors

40. The visual receptor locations within the study area are illustrated on **Figure LV3** and include:

- Settlements – the villages and hamlets of Rhosllannerchrugog, Penycae, Ruabon, Rhostyllen and Pentre Bychan.
- Individual residential properties – scattered houses, cottages and farmsteads.
- Local public rights of way – footpaths, bridleways and byways open to all traffic (BOATs).
- Long distance recreational routes – Wat's Dyke.
- Visitor attractions – Bonc-yr-Hafod Country Park, Aberderfyn Nature Reserve, and Erddig National Trust Property.
- Rail passengers – on the rail line between Ruabon and Wrexham.
- Public highways – including the A483, B5426 Bangor Road, B5605, B5097 and a network of minor local roads.

41. The Countryside and Rights of Way (CRoW) Access Land Maps on the Wales Environmental Information Portal website [1] have been checked and there is one area of Access Land within the study area at Hafod Wood by Black Brook, approx. 0.9km northeast of the proposal. This area is indicated on **Figure LV3**.

VISUAL ANALYSIS

Theoretical Visibility Analysis

42. The Hafod Zone of Theoretical Visibility (ZTV) has been generated using a computer-based intervisibility package, the Ordnance Survey Digital Terrain Model (DTM) with height data at 5m intervals and a model of the proposed Hafod development. **Figure LV1** illustrates the potential visibility of the proposed solar array, using a point within the centre of the proposal as the target positioned at the height of the highest parts of the solar panels above ground level. Indicative solar panel heights for the site suggest a 2.22m highest point for the panels although a precautionary 3.0m maximum height has been used within the ZTV to allow some flexibility and illustrate a worst case scenario.

43. The ZTV in **Figure LV1** suggests the proposed development would potentially be visible across only very limited parts of the study area; these being mainly central and some eastern and western areas of the study area. The ZTV indicates that across large parts of the study area the proposal would be entirely screened from view by topography.

[1] https://smnr-nrw.hub.arcgis.com/

44. However, the ZTV is based on bare terrain topographical data only. It does not take into account the screening effects of any minor topographic features, vegetation such as woodland, tree belts and hedgerows or other built structures and therefore tends to over-emphasise the extent of visibility in this type of well vegetated landscape, providing a worst case scenario. In reality, these surface features would fragment and reduce the extent of most of these zones of theoretical visibility, and, in a well vegetated landscape such as this, would also reduce the amount/proportion of the proposed development visible from any given location.

45. The ZTV does not illustrate the decrease in the scale of the proposed development with increased distance from the site which is better illustrated by viewpoints. As a result, fieldwork and the viewpoint analysis are essential as a way of verifying the ZTV and undertaking a thorough appraisal.

Viewpoint Analysis

Viewpoint Locations

46. The viewpoints were selected to represent some of the most open and/ or sensitive views of the proposed solar array from a range of distances, directions and viewpoint receptor locations. These viewpoints were discussed with the Council along with the broad scope of the appraisal. The viewpoints are listed in **Table LV1** below and the locations of these viewpoints are shown on the figures (**Figures LV1 – LV3**). A detailed description of the viewpoints and the potential changes that would occur to each through the introduction of the proposed development are contained in **Appendix LV2**.

47. These findings are summarised below in **Table LV2**. The findings in **Table LV2** take into account the screening effects of intervening topography, existing vegetation and built form and assume excellent visibility conditions.

Table LV1: Viewpoint Locations

Vp No	Location	Easting	Northing	Elevation (approx)	Distance to solar array (km)	Bearing (approx) to site	Landmap Character Area	Landscape Designations	Recreational and Transport Routes	Visual receptors
1	Hafod Road near junction with B5426	331205	345765	101m AOD	0.08	N	LCA7C	None	Local Road	Motorists
2	Footpath northeast of site near A483	331395	346105	100m AOD	0.1	S	LCA7C	None	Public Right of Way	Walkers
3	Wat's Dyke Way near Pentre-clawdd	331520	344645	107m AOD	1.2	N	LCA13A	None	Public Right of Way	Walkers
4	Cemetery in Rhosllanerchrugog	329315	345935	167m AOD	1.9	E	LCA7C	None	Local open space	Nearby residents, Cemetery visitors
5	Erddig National Trust property	332755	348090	90m AOD	2.5	SW	LCA13A	None	Public Right of Way	Tourists, Walkers

Table LV2: Summary of Viewpoint Analysis – Effects on Landscape Character and Visual Amenity

Viewpoint Information				**Landscape Appraisal**			**Visual Appraisal**		
No	**Location**	**NGR**	**Distance/ direction to site**	**LCA (sensitivity)**	**Magnitude of change**	**Effects on Landscape Character**	**Receptors (sensitivity)**	**Magnitude of change**	**Effects on Visual Amenity**
1	Hafod Road near junction with B5426	331205 345765	0.08km/ N	LCA7C (Medium)	Moderate	Moderate/ minor adverse	Motorists (Medium)	Moderate	Moderate/ minor

2	Footpath northeast of site near A483	331395 346105	0.1km/ S	LCA7C (Medium)	Slight	Minor adverse	Walkers (High/ medium	Slight	Moderate/ minor
VP2: Year 10 post construction:				LCA7C (Medium)	Negligible	Minor/ negligible adverse	Walkers (High/ medium	Negligible	Minor
3	Wat's Dyke Way near Pentre-clawdd	331520 344645	1.2km/ N	LCA13A (Medium)	None	No effect	Walkers (High/ medium	None	No effect
4	Cemetery in Rhosllanerchrugog	329315 345935	1.9km/ E	LCA7C (Medium)	None	No effect	Nearby residents (High)	None	No effect
							Cemetery visitors (Medium)		No effect
5	Erddig National Trust property	332755 348090	2.5km/ SW	LCA13A (Medium)	None	No effect	Tourists (High)	None	No effect
							Walkers (High/ medium)		No effect

Findings of Visual Analysis

48. The well vegetated nature of the landscape immediately surrounding the site as well as the low elevation and limited extent of the solar panels within the array would limit the potential visibility of the proposal greatly. The visual analysis also indicates that the good levels of vegetation across the local landscape would limit any potential views of the proposal to locations very proximate to the proposal. Indeed, particularly with the mature woodland flanking the eastern side of the site alongside the A483, as well as the mature vegetation on several boundaries of the site, the proposal would only be intermittently discernible from locations proximate to the site, with the viewpoints illustrating some of the most open proximate views found during fieldwork.

49. A more detailed discussion of the likely effects on the visual amenity of receptors in settlements and residential properties, on recreational routes, rail passengers, visitors to local attractions and on public highways is provided in the Visual Appraisal below.

LANDSCAPE APPRAISAL

50. This appraisal draws on the review of the predicted effects of the development, the landscape fabric of the site, the key characteristics of the LCAs, the purposes/objectives of the landscape designations, the visibility analysis, the viewpoint analysis and fieldwork observations, and discusses the predicted effects on:

- Landscape fabric of the site.
- Landscape character.
- Purposes of the landscape designations.

Effects on Landscape Fabric

Prediction Methodology

51. Landscape fabric is composed of the physical components of the landscape (eg landform, land cover and landscape elements and features). Developments can bring about both direct and indirect effects on landscape fabric. Direct effects occur where changes to the fabric of the landscape arise as the result of physical disturbance, for example, the loss of landscape elements such as hedgerows, walls and trees. Indirect effects are consequential changes that are separated from the source of the change in a temporal or spatial manner, for example changes in vegetation downstream as the result of modifications to surface water patterns upstream in a catchment area.

52. This appraisal of effects on landscape fabric considers the existing landscape fabric of the site and the predicted effects of the development, and makes a judgement as to whether there are likely to be any beneficial or adverse changes to landscape fabric based on the following two definitions:

- Beneficial effects on landscape fabric - could occur where important/mature/diverse/distinctive components, which had previously been lost or degraded as the result of agricultural operations or other development, would be added, reinstated or improved.
- Adverse effects on landscape fabric - could occur where existing important/ mature/ diverse/ distinctive components would be permanently lost (or long term temporarily lost) and the effects cannot be adequately mitigated.

Construction Phase

53. There would be no adverse effects on landscape fabric during the construction phase as there would be no loss of important, mature, diverse or distinctive landscape components. The site entrance from the track to the north of the site would utilise an existing field entrance, thus accommodating access to the proposal without any loss of existing vegetation. The temporary construction compound would be located within the northern site field where only a limited area of grassland would be lost, with no loss of important, mature, diverse or distinctive landscape components.

54. As the site fields are currently grassland, there would be no loss of mature or important ground vegetation as a result of the farm style access track, solar panels, fencing with CCTV, DNO and on-site substations and cable trenches. Beneath the solar array the field would remain pasture. Therefore, there would not be any adverse or beneficial effects on landscape fabric as a result of the construction phase.

Operational Phase

55. Once the construction phase has been completed, the proposed mitigation measures would be implemented. These measures are illustrated on **Figure LV4** and include native hedgerow planting with hedgerow trees as well as hedgerow enhancement to gap up some limited sections of existing hedgerow. In addition, some native woodland planting is proposed to extend an area of existing woodland between the north and south site fields and native scrub planting is proposed within the northern site field as an ecological enhancement in combination with other ecological proposals to encourage breeding birds.

56. There would be a beneficial effect on landscape fabric as a result of these measures which would strengthen the existing landscape fabric of the site. These measures would last throughout the operational phase of the proposed development and would be maintained and replaced where necessary through an operational planting management plan.

Decommissioning Phase

57. There would be minimal disturbance of landscape features during this phase as below ground structures (eg cables) would be left *in situ* and there would be reinstatement of the ground over all ground disturbed by the works. All the new tree, scrub and hedgerow planting measures as part of the application would remain in place. Therefore, there would be no effect on landscape fabric during the decommissioning phase.

Effects on Landscape Character

Prediction Methodology

58. Landscape character is composed of physical, biological and social components, combined with aesthetic and perceptual factors. This appraisal of effects on landscape character considers the existing landscape character of the site and study area by using the information collected during fieldwork and within the local landscape character assessment for the area. It considers the predicted effects of the development, and assesses the area within which there is likely to be a change to landscape character.

59. Changes to landscape character depend on the sensitivity (susceptibility and value) of the landscape resource and the scale or magnitude of landscape effects, as indicated by fieldwork and, to a degree, the viewpoint analysis. Therefore, fieldwork observations are examined together with the findings of the viewpoint analysis so as to determine the degree and extent of likely effects of the proposed development on landscape character within the various landscape character units in the study area.

60. Landscape units are often relatively large geographical areas and the screening effects of topography and vegetation will vary across each unit, so that the predicted extent of effects on landscape character will almost always be intermittent. However, with increasing distance from the proposed site, the proposed development will generally have a decreasing effect on landscape character.

Effects on Character of the Site Landscape

61. There would be some short-term effects on the character of the site as a result of the construction phase. Overall, the construction phase would be short-term, with the various activities lasting for only small parts of the overall timescale. The presence of construction machinery and activities would be transient (temporary, short-term and reversible) and ground and vegetation disturbance would be extremely limited.

62. The main effects on the landscape character of the site would occur during the operational phase as a result of the presence of the solar panels and associated infrastructure. All these parts of the proposed development would be located within LCA7C – Rhosllannerchrugog – Rhostyllen – Ruabon – Penycae,

composed of A483 & Environs – Rhostyllen to Ruabon AA (Visual & Sensory and Cultural Services Aspect Layers), Pen-y-lan - Bryn-newydd AA (Geological Aspect Layer), Eyton AA (Historic Landscape Aspect Layer) and Talwrn Grassland (Landscape Habitats Aspect Layer).

63. The elements of the proposal most likely to be visible across the site during the operational phase would be the solar panels forming the solar array, farm track, DNO and on-site substations, fencing and CCTV, all of which would become key characteristics of the site landscape and, although no existing key characteristics would be lost or changed, they would contrast with the existing character such that these elements of the proposal would result in an adverse effect on the character of the site landscape.

64. The existing mature woodland planting surrounding the site would limit the influence of the proposed development during the operational phase within the surrounding area to such a degree that adverse effects on landscape character would be extremely limited, even in winter months.

65. The decommissioning phase would be very short-term, ground disturbance would be very limited in extent and there would be the removal of the built form and the reinstatement of the ground on completion of the works, which should return the site to its current character. Therefore, the decommissioning phase would result in a beneficial effect on the landscape character of the site relative to the operational phase. Nevertheless, the change in character upon decommissioning relative to the current landscape character of the site would be neutral.

66. The aspects of the development that are likely to give rise to effects on landscape character (and visual amenity) during the operational phase are the solar panels, farm track, DNO and on-site substations, fencing and CCTV, and the effects of the presence of these features on the character of the wider landscape are considered below.

Effects on Character of Wider Landscape

67. There are two LCAs located within the 2.5km radius study area. Nevertheless, it is worth noting that all five of the Aspect Layers from LANDMAP have been considered in relation to potential effects on landscape character.

LCA7C – Rhosllannerchrugog – Rhostyllen – Ruabon – Penycae

68. The key characteristics of this LCA include rural and urban areas affected by history of mining and quarrying, villages characterised by high density, large amounts of accessible natural greenspace forming an ecological network, the A483 and railway through the area, Bersham colliery and tip as well as former Hafod tip are landmarks, gentle carboniferous coal measure slopes, a sandstone ridge with Offa's Dyke, most farmland is improved grassland, some former industrial sites are now of high wildlife value, fragmented areas of semi-natural vegetation, settlements are mainly of 19th and 20th century origin, coal mining remains are frequent, a historical border area with prehistoric military hillfort and Offa's Dyke, Hafod y Bonc Country Park is a former tip and now an important environmental education resource, both English and Welsh speaking communities are located within the area.

69. A more detailed description of this LCA is provided in the extract in **Appendix LV1**. The area is described within the LCA description (extract) '*closely built former mining communities with a rich cultural heritage, located on the lower slopes of Ruabon Mountain, and distinguished by the widespread use of local Ruabon red brick. Rhosllannerchrugog – Rhostyllen is one of four character areas in Wrexham which have a mixed rural and urban landscape.'*

70. This is a landscape that derives its character mainly from its key characteristics. It is also characterised to a limited degree by the very occasional views out of the landscape to the urban area of Wrexham to the northeast. The overall evaluation of the sensitivity of this LCA to the proposed development has been identified as **medium**. The LCA within the study area is considered to be of local value and to have a moderate susceptibility to the location and type of development proposed. The description of the sensitivity of the LCA within the published character assessment states '*The distinctive Welsh identity of the*

area is vulnerable to development pressure, particularly infill housing of standardised design and materials. The A483 corridor is visually threatened by nearby landfill, masts, building development and power lines. Surrounding farmland is also very vulnerable to urban pressures.' It is considered that the careful siting of this small scale development (and low elevation development) surrounded by mature woodland and tree planting and adjacent to the A483 dual carriageway, would result in a moderate susceptibility to the location, scale and type of development proposed.

71. Within the Viewpoint Analysis Viewpoints 1, 2 and 4 are all located within this LCA at distances ranging between 0.08km and 1.9km from the proposal. The ZTV in **Figure LV2** indicates that this LCA covers central and western parts of the study area as the largest LCA within the study area and suggests some potential visibility of the proposed solar array from some central and western areas, with no potential visibility due to screening from topography indicated in northern and southwestern parts of the LCA.

72. However, this ZTV is based on bare earth topographical data and fieldwork has indicated that the wealth of vegetation within the LCA (which is also noted within the key characteristics) and particularly the mature vegetation surrounding the site, would greatly contain the influence of the proposal across the study area as a whole. The A483 in the vicinity of the site is an example of this; whilst tall vertical elements such as pylon lines are regularly discernible development features across large parts of the LCA, and adding to the overall developed character of the LCA, in contrast the A483 is bordered by mature vegetation and integrates into the LCA whilst only becoming a key characteristic along a very localised corridor around the route. Given the limited extent of the proposal and the low elevation of the solar panels, the proposal is easily screened from all but the immediate locality of the site, with the area of influence that the proposal exerts on landscape character being extremely limited.

73. The viewpoints give an example of this, with VPs 1 and 2 illustrating proximate views of the site from the site boundaries where initially post construction a moderate and a slight magnitude of change are expected, respectively, resulting in moderate/ minor and minor adverse effects on landscape character, respectively. Obviously the proposal would become a key characteristic of the site landscape and some parts of the landscape very local to the site, as illustrated by the viewpoints. These effects would be adverse and long term, but reversible upon decommissioning. VP2 illustrates that mitigation planting proposals would help to integrate the proposal into the local landscape context and indicates that by Year 10 post construction some further parts of the proposal would be screened by further hedgerow and woodland planting, resulting in a negligible magnitude of change and a minor/ negligible adverse effect on landscape character.

74. Due to the broadly level nature of the landform local to the site and the wealth of mature vegetation around the site including tree belts alongside the A483 and mature vegetation within the nature reserve to the west, as well as the commemorative woodland immediately north of the site which will grow year on year to add further vegetation to this area of the LCA, any influence of the proposal on landscape character will remain extremely local to the site. Even within this local area the influence of the proposal will be limited to a degree by existing established vegetation around the site itself, even in winter months. Fieldwork has indicated that the rail line to the west provides a natural enclosing boundary with mature vegetation in the same way that the A483 corridor does to the east, with no influence on landscape character occurring across the LCA as a whole beyond the site itself and its immediate surroundings.

75. As a result, the key characteristics of the LCA set out above would remain unaffected by the proposal and no effects on the landscape character of the LCA would be expected beyond the immediate surroundings of the site.

LCA 13A – Welsh Maelor

76. The key characteristics of this LCA include good views to the hills, undulating estate farmland with mosaic of farmland and trees, designed parks and gardens, generally an abundance of well managed hedgerows and trees, traditional red brick farmsteadings, tranquillity and landscapes affected by the A483 and pylons to the west, deep deposits of glacial drift overlie bedrock of Carboniserous and Triassic age, glacial till covers a large part of the LCA, the River Clywedog valley south of Wrexham town has a diverse range of valuable

semi-natural habitats, field ponds are frequent, Wat's Dyke earthen bank and ditch cuts across farmland as a Medieval military feature, widespread evidence of medieval open fields, important designed parklands such as Erddig, disused Ellesmere railway, farmsteads and villages are affected by commuter pressure with residential conversions and new housing, sense of place gained from places such as Erddig and a high level of recreational use occurs in Erddig and Clywedog Valley.

77. A more detailed description of this LCA is provided in the extract in **Appendix LV1**. The area is described within the LCA description (extract) '*attractive undulating lowland farmland to the south of Wrexham town and west of the River Dee, containing a number of large estates*'.

78. This is a landscape that derives its character mainly from its key characteristics and internal features. It is also characterised to a limited degree by the views out of the landscape to surrounding hills. The overall evaluation of the sensitivity of this LCA to the proposed development has been identified as **medium**. The LCA within the study area is considered to be of local value and to be moderately susceptible to the location and type of development proposed.

79. At its closest point this LCA is located approx. 75m east of the proposal site, although **Figure LV2** indicates that the proposal would be entirely screened by intervening topography from several parts of the LCA. However, the key characteristics of this LCA note the wealth of vegetation within it and fieldwork has indicated that this mature vegetation including along roadsides, woodland blocks and on field boundaries would entirely screen the proposal from view, even in winter months. This vegetation combined with the mature woodland surrounding the site and alongside the A483 on both sides would act as year round screening of the proposal. As a result, the influence of the proposal on landscape character would not extend beyond the neighbouring LCA into this LCA.

80. Viewpoints 3 and 5 are both located within this LCA at distances of 1.2km and 2.5km from the proposal, respectively and give a further indication of not only the wealth of vegetation within this LCA, but also the limited views out of the LCA across to LCA7C. Both viewpoints indicate that in winter months the proposed development would be entirely screened from view due to the layering of intervening vegetation across views towards the site. In essence, the influence of the proposal would be entirely contained within LCA7C by the mature vegetation along the eastern site boundary due to the limited height and extent of the proposal.

81. Whilst the ZTV suggests very limited potential visibility of the proposal from this LCA, this is based on bare earth topography and in reality the very well vegetated nature of the LCA means that the influence of the proposal on the landscape character of parts of the LCA would not occur and none of the key characteristics of the LCA would be affected by the proposal.

VISUAL APPRAISAL

Prediction Methodology

82. Visual amenity arises from a visual receptor's experience of the visual world around them and the value they place on a particular view or views. This appraisal draws on the predicted effects of the development, the viewpoint analysis and fieldwork observations, and discusses the predicted effects on the visual amenity of receptors at a range of visual receptor locations within the study area. Within this study area these include settlements, individual residential properties, the local public rights of way network, visitor attractions and public highways.

83. Effects on visual amenity as a result of a proposed development can be perceived as beneficial, adverse or neutral and this depends largely on the perceptions and opinions of the individual receptors and, to a certain extent, on the type of development proposed. The polarisation of public opinion on renewable energy is such that it is difficult to define changes in a view as having a definitely beneficial or definitely adverse effect on visual amenity for all members of the public who may experience that view. Whilst it is expected that

visual effects would be considered in the worst case to be adverse, it is important that the broad range of public opinions on such effects is also taken into account in the decision making process.

84. The main effects on visual amenity will occur during the operational phase of the proposal and these are discussed in detail below.

Construction Phase

85. There would be some short-term effects on the visual amenity of some visual receptors as a result of the construction phase. However, as indicated by the Visual Analysis, the site is only really visible from a very limited local area and so visibility of construction activities would be from within a contained area local to the site. Overall, the construction phase would be short-term, with the various activities visible for only small parts of the overall timescale. The presence of construction machinery and activities would be transient (temporary, short-term and reversible). Therefore, the effects of the construction phase would result in some very limited adverse visual effects overall.

Decommissioning Phase

86. The decommissioning phase would be very short-term, visual disturbance would be very limited with the removal of the built form and the reinstatement of the ground on completion of the works, which should return much of the site to its current character, albeit with some additional hedgerow and tree planting within the site. The visual effects of the decommissioning phase itself would be adverse, but limited in duration. Overall, the decommissioning phase would result in a beneficial visual effect for those receptors looking towards the site relative to the operational phase. Nevertheless, the change occurring in comparison to the existing site landscape would be neutral as the decommissioned site would look very similar to current views of and across the site.

Settlements

87. The ZTV in **Figure LV1** suggests that the proposed development would potentially be visible from parts of Rhosllannerchrugog, Ruabon and Pentre Bychan within the study area. The ZTV indicates that the proposal would be entirely screened by intervening topography from the settlements of Penycae and Rhostyllen.

88. Rhosllannerchrugog encompasses the Johnstown, Ponciau and Pant sections of the settlement, all located on land gently rising to the west. The landform of the settlement ranges from approx. 110m AOD near the rail line in Johnstown to approx. 175m AOD on the western edge of the settlement. The ZTV suggests some large areas of potential visibility of the proposal. Within the Johnstown area fieldwork indicated that the gentle slope of the landform combined with foreground built form and mature vegetation alongside the rail line on the east edge of the settlement would entirely screen the proposal from view. At its closest point the Johnstown section of the settlement is located approx. 600m west of the proposal. In addition, it is worthwhile noting that Aberderfyn Nature Reserve is located in the landscape between Johnstown and the site and includes a wealth of mature vegetation which would add further screening to views of the proposal from this part of the settlement, even in winter months.

89. Viewpoint 4 illustrates the view from a much more elevated section of Rhosllannerchrugog at 167m AOD and 1.9km from the proposal. The viewpoint is located in the cemetery as an area of open public space afforded some of the most open views from the settlement. However, the viewpoint indicates that residential properties just beyond the cemetery would interrupt views out to the east. The viewpoint also illustrates the wealth of mature vegetation within the middle to far distance landscape, with other features of the view in this area broadly screened. For instance, only intermittent pylons are evident in the middle distance, with no detail discernible at ground level. In essence the proposed development would be entirely screened by the layering of mature vegetation within this section of the view in the same way that built form and the A483 dual carriageway are also screened from view. This viewpoint indicates that the proposal is not expected to be visible from Rhosllannerchrugog, resulting in no effects on the visual amenity of residents within the settlement.

90. Ruabon is located within the southwest of the study area at a distance of approx. 1.0km from the proposal at its closest point. The ZTV in **Figure LV1** suggests that a very small area of potential visibility of the proposal may be possible from a section of Albert Grove at a distance of approx. 1.5km from the proposal. However, this is a built up section of the settlement where views are enclosed by built form. Given the distance of 1.5km from the settlement and the screening provided by foreground and intervening elements, no effects on the visual amenity of these residents is expected.

91. Pentre Bychan is a settlement located mainly on the B5605 Wrexham Road approx. 1.4km northwest of the proposal at its closest point. The ZTV suggests some potential visibility of the proposal may be possible from parts of the settlement to the south of Smithy Lane although this would be across the intervening landscape which contains the rail line and its associated mature vegetation, Aberderfyn Nature Reserve and the commercial development buildings on Hafod Road (including Eco-Readymix Concrete). Fieldwork has indicated that even in winter months this wealth of vegetation combined with built form would entirely screen the proposal from view, with no effects on the visual amenity of these residents.

Individual Residential Properties

92. There are a limited number of residents within farmsteads and individual properties local to the proposed development. The nearest individual residential properties to the application boundary of the proposed development are Hafod House Rest Home and a few properties along the track/ Footpath ESC/31 to the east of Hafod Road (approx.85m and 60 m from the proposal, respectively), an unnamed property on Hafod Road (approx. 500m north of the site), an unnamed property by Footpath RUA/119 (approx. 480m northeast of the site) and an unnamed property on the B5426 east of the A483 (approx. 280m southeast of the site).

93. Hafod House Rest Home is a two and three storey property set within mature landscaped grounds, with a substantial mature tree belt along the southern boundary of the curtilage. Fieldwork has indicated that even in winter months this vegetation would entirely screen the proposal from view for residents within this property, which is located approx. 90m from the proposed solar panels.

94. A few properties are located along the track immediately north of the site, approx. 100m north of the proposed solar panels. Fieldwork has indicated that intervening built form in the grounds of the rest home and agricultural buildings along with mature vegetation will entirely screen the proposed solar array from view. Nevertheless, some limited parts of the ecological enhancements within the northern site field may be partially visible obliquely to the east, although these are expected to have a neutral effect on visual amenity.

95. An unnamed property is located on Hafod Road approx. 500m north of the site, on the east side of Hafod Road. This is a two storey property with one large window on the south facing façade of the property. Whilst the northern part of the site is located approx. 500m south of the property, the proposed solar panels and associated infrastructure would be approx. 615m to the south, with the vegetation and built form of Hafod House Rest Home positioned intervening immediately north of the proposed solar panels. As a result, the proposal is expected to be entirely screened from view for residents within this property, even in winter months.

96. An unnamed property by Footpath RUA/119 is located approx. 480m northeast of the site and approx. 625m northeast of the proposed solar panels. However, the ZTV in **Figure LV1** indicates that the proposed development would be entirely screened from this location. Fieldwork has also indicated that the area is extremely well vegetated with mature vegetation and that this vegetation in combination with the mature tree belts alongside the A483 would add significant screening to views to the southwest. As a result, no effects on the visual amenity of these residents would occur.

97. An unnamed property located on the B5426 east of the A483 is situated approx. 280m southeast of the site. However, the ZTV in **Figure LV1** indicates that the proposed development would be entirely screened from this location. Fieldwork has also indicated that the area is extremely well vegetated with mature vegetation

and that this vegetation in combination with the mature tree belts alongside the A483 would add significant screening to views to the west. As a result, no effects on the visual amenity of these residents would occur.

98. Fieldwork has indicated that most individual properties in the study area are expected to have no view of the proposal at all due to the screening effects of topography combined with mature vegetation, mentioned above. In most cases, residential properties will be surrounded or located in close proximity to other associated buildings such as farm buildings, barns, garages and outbuildings which add further screening elements to views.

Local Public Rights of Way (PRoWs)

99. There is a network of public byways, footpaths and bridleways in the study area, the closest of which is Footpath ESC/31 which travels from Hafod Road over the A483, running approx. 5m north of the proposed site at its closest point. Whilst the ZTV suggests some potential visibility of the proposal may be available from the entirety of this route, in reality, there is only a very short section of the route (approx. 50m in length) from which the proposal would be partially visible. Viewpoint 2 illustrates this view, from the site entrance point which is currently a field gate entrance. Initially post construction some northern parts of the solar array and the farm track accessing the array would be visible, resulting in a slight magnitude of change and a moderate/ minor effect on the visual amenity of walkers on this section of the footpath. By Year 10 post construction, mitigation planting proposals would have established and grown, including a native hedgerow with hedgerow trees along the farm track within the northern site field. By Year 10 this hedgerow will screen large parts of the proposal from view so that a negligible magnitude of change and a minor effect on the visual amenity of walkers on this short stretch of the footpath would occur. These effects would be adverse, long term and reversible upon decommissioning. Once the footpath crosses over the A483 dual carriageway it becomes Footpath RUA/119 and is consistently bordered by mature and tall hedgerows on both sides, so that fieldwork found the proposal would consistently be screened from view, even in winter months.

100. Footpath ESC/29 is a short footpath between Hafod Road and Bangor Road, approx. 60m northwest of the proposal and extending approx. 300m in length through part of the Aberderfyn Nature Reserve. This route is not signposted at either end and does not look to be accessible from Bangor Road. Whilst the ZTV suggests potential visibility of the proposal could be possible from this footpath, in reality fieldwork has found that the mature woodland immediately northwest of the proposal, as well as the mature vegetation within Aberderfyn Nature Reserve itself are expected to screen the proposal from view so that no effects on the visual amenity of walkers on this route would be affected as a result of the proposal.

101. Footpath ESC/28 extends west from Hafod Road through an area of commercial and factory buildings to link with Footpaths ESC/24 and RUA/117 across Aberderfyn Nature Reserve. Again, whilst the ZTV suggests some potential visibility of the proposal may be possible from some parts of these routes, fieldwork has indicated that even in winter months the wealth of localised and intervening vegetation as well as the built form along Hafod Road would entirely screen the proposal from view, with no effects on the visual amenity of walkers.

102. Beyond these nearest PRoWs, other footpaths and bridleways are generally located at greater distances from the site of over 500m and fieldwork has indicated that local vegetation in the intervening landscape and mature woodland around the site would regularly screen the proposal from these routes. Viewpoints 3 and 5 are both located on footpaths and both viewpoints illustrate that the proposal would be entirely screened from view, even in winter months. Fieldwork around other PRoWs in the study area has indicated similar levels of screening due to the mature woodland surrounding the site, with no routes found where any open and clear views of the proposal would be possible. Therefore, it is expected that no effect on the visual amenity of PRoW users would occur as a result of the proposal.

Long Distance Recreational Routes

103. The Wat's Dyke Way is the only long distance recreational route within the study area. This footpath is located within the east of the study area at a distance of approx. 0.8km from the proposal at its closest point. The ZTV in **Figure LV3** suggests that the proposal may be visible from a few separate sections of the route ranging between 0.8km and 2.5km from the proposed array. However, due to the position of the site close to the A483 and its wealth of mature vegetation alongside the dual carriageway, fieldwork found that the proposal would consistently be entirely screened from view, even in winter months. Viewpoint 3 illustrates this point, showing the high levels of mature vegetation within the winter view, where the proposal would be entirely screened. As a result, no effects on the visual amenity of walkers on this route within the study area would occur.

Visitor Attractions

104. **Figure LV3** illustrates the main visitor attractions in the study area which include Erddig, Bonc-yr-Hafod Country Park and Aberderfyn Nature Reserve.

105. Aberderfyn Nature Reserve is the closest of these attractions to the site, located on the west side of Hafod Road, approx. 10m from the proposal at its closest point. The ZTV suggests some potential visibility of the proposal could be possible from parts of the nature reserve closest to Hafod Road and this is likely to be the case, especially in winter months when roadside and intervening vegetation would not be as effective at screening the proposal as in summer months. However, this visibility would only be expected from the eastern fringe of the nature reserve and beyond approx. 100-150m from the proposal intervening vegetation is expected to limit views of the proposal almost completely. Nevertheless, in these parts of the nature reserve proximate to the proposal, some partial visibility of the solar array may be possible, although this visibility would generally be less open than illustrated by Viewpoint 1. A slight magnitude of change is likely to occur, which would result in a moderate/ minor effect on the visual amenity of these high/ medium sensitivity receptors. These effects would be adverse, long term and reversible upon decommissioning. However, it is worthwhile noting the wealth of mature vegetation within this nature reserve, which would regularly screen the proposal entirely, even within some of the most proximate parts of the area to the proposal. Overall only a very limited number of glimpsed views of the proposal would be possible from a small eastern fringe section of the nature reserve with limited effects on the visual amenity of visitors.

106. Erddig is a National Trust property including extensive parkland within a location on the northeastern edge of the study area, approx. 1.6km from the proposal at its closest point. The ZTV suggests extremely limited potential visibility of the proposal from this attraction, including from the parkland. Viewpoint 5 is located within the parkland at a distance of 2.5km from the proposal and illustrates that even in winter months the foreground and middle distance vegetation would entirely screen the proposal from view. It is also worthwhile considering that from this orientation the bank of woodland alongside the A483 by the site would also provide further screening adjacent to the site. As a result, no effects on the visual amenity of visitors to Erddig are expected.

107. Bonc-yr-Hafod Country Park is located approx. 350m north of the proposal on the west side of Hafod Road. The ZTV suggests some potential visibility of the proposal may be possible from the park, especially the south facing slopes. However, the entire area is very well treed with mature vegetation. In addition, the area immediately north of the proposed solar array is also covered with some mature tree cover around Hafod House Rest Home, as well as the built form itself, which would entirely screen the proposal from view from this country park. It is also worthwhile noting that a commemorative woodland has been planted to the north of Hafod House Rest Home which will grow over time to add even further tree cover to views towards the site. Therefore, no effects on the visual amenity of visitors to this country park are expected.

Rail Passengers

108. A rail line runs through the centre of the study area between Ruabon and Wrexham. At its closest point the rail line is approx. 0.6km west of the proposal, to the immediate west of Aberderfyn Nature Reserve. The

ZTV indicates that the only area of potential visibility of the proposal would be from this closest section of the rail line to the proposal. However, in reality the wealth of vegetation within Aberderfyn Nature Reserve would entirely screen the proposal from view, with no effects on the visual amenity of rail passengers on this section of the route.

Public Highways

109. The A483, B5426 Bangor Road, B5605, B5097 and a number of minor local roads service the study area and the ZTV indicates that the proposed development would be entirely screened from many of these routes. However, the ZTV does not take into account the screening effects of vegetation, including roadside hedgerows, which often occur in this area and so would potentially reduce any visibility of the proposal even further for motorists.

110. The ZTV illustrates that topography would entirely screen the proposal from the B5097. It suggests potential visibility of the proposal from limited parts of the A483, B5426 Bangor Road and B5605 although fieldwork has indicated that the proposal would be entirely screened from the A483 and B5605 by both roadside vegetation alongside these three main roads but also mature vegetation around the site.

111. The proposal is expected to be partially visible for an approx. 100m stretch of the B5426 Bangor Road immediately adjacent to the site, with views similar to those illustrated by Viewpoint 1. The proposal would be seen to the side of the direction of travel where a moderate magnitude of change and a moderate/ minor effect on the visual amenity of motorists and their passengers would occur for this short section of the road. Beyond this, roadside and intervening vegetation would screen the proposal from view, even in winter months. These limited effects along part of Bangor Road would be adverse, long term and reversible upon decommissioning.

112. A number of local minor roads can be found within the landscape local to the site, and these are typically bordered by mature hedgerows and tree belts. However, the ZTV suggests that potential visibility of the proposal from these routes would generally be limited to Hafod Road and part of New Hall Road, both of which are characteristically bordered at least in some areas by tree groupings and/or mature hedgerows. However, it is acknowledged that along the site's boundary with Hafod Road low, well kept hedgerows with occasional trees line the east side of the road, allowing some visibility in to the site, as illustrated by VP1. This visibility would be for an approx. 160m stretch of the road where a moderate magnitude of change and a moderate/ minor effect on the visual amenity of motorists and their passengers would occur as a result of the visibility of the proposal. However, from the remainder of Hafod Road, which extends past the country park and over towards Erddig, the proposal would be entirely screened by intervening vegetation including north of the site. Nevertheless, the effects on visual amenity in the immediate vicinity of the site would be adverse, long term and reversible upon decommissioning.

113. New Hall Road is located to the south of Bangor Road, with the ZTV suggesting a stretch of potential visibility south from the B5426 for approx. 600m. However, fieldwork has confirmed that the only visibility of the proposal that would be available from this route would be at its junction with Bangor Road, where the visibility would be similar to that indicated by VP1, where a moderate magnitude of change and a moderate/ minor effect on the visual amenity of motorists and their passengers would occur as a result of the visibility of the proposal. These limited effects on visual amenity in the immediate vicinity of the site would be adverse, long term and reversible upon decommissioning.

CONCLUSIONS

114. This appraisal has examined the likely effects of the proposed solar array on the landscape and visual amenity of the site and surrounding area.

115. The effects of this proposed development would be limited to:

- The character of the landscape of the site and immediately surrounding area. This includes only limited parts of LCA7C Rhosllannerchrugog-Rhostyllen-Ruabon-Penycae. This limited visibility would not alter any of the key characteristics of this LCA and would result in very limited adverse changes to landscape character (long term and reversible).
- A 50m stretch of public footpath ESC/31 immediately north of the site where initially walkers would experience a moderate/ minor effect on their visual amenity, reducing down to minor effects by Year 10 post construction due to the screening effects of mitigation planting proposals.
- Visitors to the eastern fringe of Aberderfyn Nature Reserve within approx. 100-150m of the proposal where a moderate/ minor effect to visual amenity may occur.
- Motorists and their passengers on a 100m stretch of the B5426 Bangor Road adjacent to the site where a moderate/ minor effect to visual amenity may occur.
- Motorists and their passengers on a short section of Hafod Road and New Hall Road adjacent to the site where a moderate/ minor effect to visual amenity may occur.

116. There would not be any effects on landscape fabric, landscape designations, or the visual amenity of any residents or walkers on long distance recreational routes. Walkers, equestrians, cyclists and motorists on the vast majority of local routes, and visitors to the majority of tourist attractions within the study area would remain unaffected by the proposals.

117. The proposed development would be entirely screened from the vast majority of the 2.5km radius study area. Visibility of the proposal would be contained to a very confined area by the mature vegetation surrounding the site. As a result, any landscape and visual effects would be extremely limited.

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