

Proposed Wind Turbine at Kenfig Industrial Estate

Landscape and Visual Appraisal (LVA) with Addendum

Prepared by Amalgam Landscape Limited
On behalf of Infinite Renewables Group Limited

June 2021
Addendum January 2022

www.amalgamlandscape.co.uk

Document Control Sheet

Project Name: Proposed Wind Turbine at Kenfig Industrial Estate

Project Reference: P0524

Report title: Landscape and Visual Appraisal (LVA)

Date: June 2021; Addendum January 2022

	Name	Position	Date
Baseline prepared by:	P. Shephard	Senior Consultant	May/June 2021
Graphics prepared by:	P. Shephard	Senior Consultant	May/June 2021
Report prepared by:	A.J Watts	Director	June 2021
Reviewed by:	A.E Watts	Director	June 2021
For and on behalf of Amalgam Landscape Ltd			

Revision	Date	Description	Prepared	Reviewed
V1	30/6/21	For project team comment	A.J Watts	J.Clayton; G. Jones (Infinite Renewables Ltd)
Final	4/7/21	Timing of construction period changed and issued as final	A.J Watts	-
Addendum	10/1/22	Addendum added	A.J Watts	J.Clayton; G. Jones (Infinite Renewables Ltd)
Final with Addendum	12/1/22	Final with Addendum	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 2022

Contents

Addendum

Addendum Figures

A – Addendum Viewpoint Location Plan

A1 – A-C: From entrance to Kenfig Industrial Estate along access road

A2 – A-C: From access road to Kenfig industrial Estate, adjacent to Tyn y Cellar

A3 – A-C: From Eglwys Nunydd, in Margam Mountain Landscape of Historic Interest

A4 - A-C: From Llwyn Arian, adjacent to play area in Coed Hirwaun

Landscape and Visual Appraisal

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 Cumulative Impacts and Effects
7. Conclusion

Appendices

A – References

B - Technical Information

Figure List

1 – Location Plan

2 – Site View

3 – Cumulative Wind Energy Schemes

4 – Landscape Relevant Designations

5A – LANDMAP – Visual and Sensory

5B – LANDMAP – Historic Landscape

5C – LANDMAP – Cultural Landscape

5D – LANDMAP – Geological Landscape

5E – LANDMAP – Landscape Habitat

6 – Principal Visual Amenity Receptors

7A – Zone of Theoretical Visibility (ZTV) to Hub Height

7B - Zone of Theoretical Visibility (ZTV) to Blade Tip

8A-8C – Viewpoint 1: From junction of Wales Coast Path recreational route and public right of way, adjacent to M4, in open access area in Kenfig Burrows Special Landscape Area and Merthyr Mawr, Kenfig and Margam Burrows Landscape of Historic Interest

9A-9C – Viewpoint 2: From junction of Water Street and St Davids Park on fringes of Eglwys Nunydd, in Margam Mountain Landscape of Historic Interest

10A-10C – Viewpoint 3: From Wales Coast Path recreational route and open access area, in Kenfig Burrows Special Landscape Area and Merthyr Mawr, Kenfig and Margam Burrows Landscape of Historic Interest

11A-11C – Viewpoint 4: From Wales Coast Path recreational route and open access area, in Kenfig Burrows Special Landscape Area and Merthyr Mawr, Kenfig and Margam Burrows Landscape of Historic Interest

12A-12C – Viewpoint 5: From Kenfig Pool and Dunes National Nature Reserve open access area, in Kenfig Burrows Special Landscape Area and Merthyr Mawr, Kenfig and Margam Burrows Landscape of Historic Interest

13A-13C – Viewpoint 6: From Margam Park Registered Park and Garden, adjacent to children's play area, in Margam Special Landscape Area and Margam Mountain Landscape of Historic Interest

14A-14C – Viewpoint 7: From public right of way on fringes of Kenfig Hill

15A-15C – Viewpoint 8: From Ogwr Ridgeway Walk recreational route on Mynydd Baedan, in Western Uplands Special Landscape Area

Addendum

Purpose of the Addendum

This addendum to the landscape and visual impact assessment (LVIA) has been produced in January 2022 in response to comments and request for additional information from the Neath Port Talbot County Borough Council (NPTCBC), following submission of the Landscape and Visual Appraisal (LVA).

The LVA was produced in June 2021.

The comments from NPTCBC outlined that additional viewpoints were required from the following locations:

- The entrance to Kenfig Industrial Estate;
- The nearest residential dwelling, Tyn y Cellar;
- The village of Eglwys Nunydd; and
- The village of Coed Hirwaun.

Site Visit

The additional photographic viewpoints were taken in by a Chartered Landscape Architect on a fine and clear day at the beginning of January 2022.

The location of the additional viewpoints is illustrated in **Figure A**.

All of the additional viewpoints are within the blade tip ZTV and have the potential to perceive the proposed development.

These additional viewpoints are assessed in more detail below:

Additional Viewpoints

Viewpoint A1: From entrance to Kenfig Industrial Estate along access road (Figures A1 A-C)

From access road within Kenfig Industrial Estate, the views are dominated by diverse warehouses and large-scale buildings associated with the industrial estate. Any views are defined by the functional landscape, divided by straight roads and traffic. Lines of pylons are also prominent.

As illustrated in **Viewpoint A1 (Figures A1 A-C)**, given the close proximity, the proposed development will be a prominent vertical moving element within the view.

However, the proposed development will be perceived within a working industrial landscape, with few aesthetic qualities. Although prominent, the proposed development

will not adversely influence the landscape or views and will be perceived as part of and help to define a dynamic working landscape.

The magnitude of impact from this **low** sensitivity receptor will be **high**, the level of effect will be **moderate-minor**.

Viewpoint A2 – From access road to Kenfig industrial Estate, adjacent to Tyn y Cellar (Figures A2 A-C)

From the hedgerow lined access road to Kenfig Industrial Estate, adjacent to the complex of residential buildings, including holiday lets, views are possible towards the proposed development.

The vegetation lined embankment of the adjacent motorway, including the nearby prominent lines of pylons, dominates the view.

As illustrated in **Viewpoint A2 (Figures A2 A-C)**, the proposed development will be perceived as a moving vertical element, above the adjacent vegetation lined motorway embankment, within the context of the nearby lines of pylons.

From this location, above and amidst the intervening mature vegetative enclosure, the proposed development will be perceived and will form a noticeable moving part of the view.

Although visible, the proposed development will however not be the determining factor, set within a landscape and views dominated and influenced by the adjacent motorway and close proximity lines of pylons.

The magnitude of impact from this **high** sensitivity residential property will be **medium**, the level of effect will be **moderate**.

Viewpoint A3 – From Eglwys Nunydd, in Margam Mountain Landscape of Historic Interest (Figures A3 A-C)

A more 'exposed' view from the fringes of Eglwys Nunydd has already been considered and included as part of the LVA. This is Viewpoint 2: From junction of Water Street and St Davids Park on fringes of Eglwys Nunydd, in Margam Mountain Landscape of Historic Interest (Figures 9A-9C).

However, as illustrated in **Viewpoint A3 (Figures A3 A-C)**, an additional viewpoint was also taken from within Eglwys Nunydd, adjacent to the area of open space within the settlement itself.

Even from this relatively open location within the settlement, the majority of views of the proposed development will be restricted by intervening development enclosing the settlement fringes. At worst, the blade tip will be perceived and will be a barely noticeable moving element in the view, perceived above the intervening houses.

The magnitude of impact from this **high** sensitivity settlement will be **low**, the level of effect will be **minor**.

It is however acknowledged, and as illustrated in **Viewpoint 2 (Figures 9A-9C)**, the proposed development will have the potential to be perceived from selected open locations from the settlement fringes. As described in paragraphs 6.57-6.58 of the LVA:

“The closest settlement to the proposed development is Eglwys Nunydd, approximately 1.1km to the north-east at its closest point.

*Separated from the proposed development site by the enclosed and vegetation lined M4, as illustrated in **Viewpoint 2 (Figures 9A-9C)**, from the fringes of the settlement, views of the proposed development will be possible across the gently sloping landscape. The proposed development will add another vertical element to the view, already crossed and influenced by numerous lines of pylons. Set within a view already influenced by development, the proposed development although perceived will not dominate the view. The magnitude of impact will be **medium**, the level of effect will be **moderate**.”*

Viewpoint A4 – From Llwyn Arian, adjacent to play area in Coed Hirwaun (Figures A4 A-C)

The settlement of Coed Hirwaun appears to be very enclosed by a combination of mature vegetation and development which very effectively restricts the majority of wider views, including towards the proposed development.

As illustrated in **Viewpoint A4 (Figures A4 A-C)**, even from a relatively open location on rising ground, adjacent to a play area within the settlement, any views of the proposed development will be restricted by intervening development as well as mature woodland vegetation enclosing the settlement fringes.

The magnitude of impact from this **high** sensitivity settlement will be **no change**, the level of effect will be **neutral**.

Glimpsed views of the operational turbine at Newlands Farm are however possible from gaps between the houses, although this does not dominate the view or create a view or landscape dominated by wind energy schemes.

1. Introduction

Purpose of this Report

- 1.1. Amalgam Landscape, a Registered Practice of the Landscape Institute, has produced this Landscape and Visual Appraisal (LVA) on behalf of Infinite Renewables Group Limited for a proposed wind turbine (*the proposed development*) at Kenfig Industrial Estate, near Bridgend.
- 1.2. The proposed development is situated within Neath Port Talbot County Borough Council (NPTCBC).
- 1.3. This LVA is produced as supplementary information to inform the planning application.
- 1.4. The purpose of the LVA is to identify and outline the existing landscape character and visual amenity receptors within the identified study area, including their sensitivity to change 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.
- 1.5. The LVA also considers the cumulative effects of the proposed development when perceived with other wind energy schemes that are operational, under construction, consented and 'in planning'¹ within the study area.
- 1.6. The LVA will therefore 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

- 1.7. The location of the proposed development is illustrated on **Figure 1**.
- 1.8. The proposed development will consist of:
 - A single three bladed wind turbine with a 70m tower and 60m diameter blades. The proposed wind turbine will be maximum 100m in height to blade tip;
 - The proposed wind turbine will be a semi-matt mid grey colour in order to blend in with the colour of the sky which represents the background to the proposed wind turbine in most views;
 - Temporary crane hard-standing area for erecting cranes at the proposed wind turbine location;

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

- Entrance off the existing access roads and entrances within the Kenfig Industrial Estate;
- An on-site cabinet control house. This is a single storey unit of simple design containing the equipment housing; and
- An on-site network of underground cables linking the proposed wind turbine to the on-site cabinet control house.

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

- Construction phase – approximately 3 months;
- Operation phase – 30 years; and
- De-commissioning phase – approximately 3 months.

Scope of the LVA

1.10. The LVA:

- Identifies the methodology, including defining the extent of the study area and the detailed technical approach.
- Describes the existing landscape character and visual amenity receptors and their views;
- Identifies operational, under construction, consented and 'in planning' wind energy schemes within cumulative search area. Operational (and under construction) wind energy 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 were critical in reducing the potential landscape and visual effects of the proposed development;
- Describes the magnitude of impact and the level of effect on the existing landscape character and visual amenity receptors and their views as a result of the proposed development. Computer generated zones of theoretical visibility (ZTVs), calculated to the maximum potential hub height and blade tip height, help to identify the locations in the study area where the proposed development could be visible, based on landform only. Photographs, wireframe views and photomontages are also used to illustrate the potential impacts and effects from publicly accessible locations;
- Assesses the additional cumulative effects of the proposed development in combination with other operational, under construction, consented and in planning wind energy schemes; and
- Provide conclusions on the overall landscape and visual effects of the proposed development.

2. Methodology

- 2.1 The LVA 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 and the assessment of wind energy scheme related developments.
- 2.2 These guidelines are identified in **Appendix A**.
- 2.3 In addition, the scope of the LVA follows the recommendations within the *Planning Guidance for Smaller Scale Wind Turbine Development: Landscape and Visual Impact Assessment Requirements*² for a wind turbine classified as 'large' between 80m to 109m in height to blade tip.

The Study Areas

- 2.4 The extent of the study areas follows the recommendations within the *Planning Guidance for Smaller Scale Wind Turbine Development: Landscape and Visual Impact Assessment Requirements* for a wind turbine classified as 'large' between 80m to 109m in height to blade tip.
- 2.5 The 'main' study area is 11km radius measured from the location of the proposed development.
- 2.6 The 'cumulative' search area is 17km radius measured from the location of the proposed development.
- 2.7 In addition, different study areas for the five aspect areas of LANDMAP are also considered as follows:
- Visual and Sensory – 11km radius measured from the location of the proposed development;
 - Historic Landscape – 11km radius measured from the location of the proposed development;
 - Cultural Landscape – 2km radius measured from the location of the proposed development;
 - Geological Landscape – 2km radius measured from the location of the proposed development; and
 - Landscape Habitats – 2km radius measured from the location of the proposed development.

² *Planning Guidance for Smaller Scale Wind Turbine Development: Landscape and Visual Impact Assessment Requirements*, April 2015 for The Heads of the Valleys Landscape Officers and Planners, with support from The South Wales Landscape Liaison Group

Existing Conditions Methodology

2.8 The description of the existing conditions includes:

- **Landscape character** - which is the description of the physical characteristics of the landscape and their sensitivity to change. Reference is made to previously published landscape character assessments, including LANDMAP. Landscape relevant designations, which include areas recognised for their landscape value, at a national, regional and local scale, are also identified to help determine sensitivity;
- **Visual amenity receptors** – which is the identification of people and a description of their views. Views from settlements (towns, villages and hamlets), individual residential properties and farms, country parks and places of interest, national cycle routes, recreational routes, local public rights of way, bridleways and cycleways, open access areas, major and minor roads and railway lines are assessed. The sensitivity of the visual amenity receptors is also described; and
- **Cumulative information** – which includes information on wind energy schemes that are consented and in planning. Operational (and under construction) wind energy schemes form part of the existing conditions assessment.

2.9 Existing information is collected through a combination of desk studies and site surveys.

Desk Study

2.10 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**.

2.11 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 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, open access areas and places of interest/visitor attractions; and
- Internet data to find information on operational, under construction, consented and in planning wind energy schemes. The information is constantly changing and was last updated at the end of May 2021.

Site Survey

2.12 A site survey, including a photographic survey, was undertaken in fine weather in June 2021.

2.13 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.

- 2.14 The site survey helped to gain an understanding of the proposed development site and its context as well as the wider landscape character and visual amenity receptors and their views within the study area. The site survey also helped to determine the potential impacts and effects as a result of the proposed development as well as developing the design and mitigation measures. This supplemented the available information collected during the desk study.

Landscape Character and Visual Amenity Receptor Sensitivity Methodology

- 2.15 Landscape character and visual amenity receptors are assessed according to their sensitivity to change by combining the considerations of susceptibility and value.
- 2.16 The landscape character areas are assessed for their sensitivity based on a review and analysis of the elements, designations and previously published descriptions. The sensitivity of the visual amenity receptors is dependent on the location, context and importance of the viewer.
- 2.17 The sensitivity of both landscape character and visual amenity receptors are evaluated according to a five-point scale, with reference to LANDMAP for landscape character. 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	Distinctive landscape elements and/or character, susceptible to change. Includes areas with a very strong positive character with valued features that combine to give an experience of unity, richness and harmony. These are landscapes that may be considered to be of particular importance to conserve and which may be particularly sensitive to change. No detractors present. Designations are likely to be present. It is a landscape of importance, or rarity on a regional or national scale. Broadly comparable to the LANDMAP defined 'outstanding' category.	Residents of residential properties and settlements. Users of public rights of way/open access land in nationally designated areas of landscape value (National Parks and AONB's). Users of national trails.
Medium-high	Medium to highly valued landscape elements and/or character with low tolerance to change. May be designated with few/no detractors present. Broadly comparable to the LANDMAP defined 'high' category.	Users of public rights of way/open access land in regionally/locally designated areas (SLAs). Users of outdoor recreational facilities with high interest in surrounding environment. Users of national cycle routes and recreational routes.
Medium	Moderately valued landscape elements and/or landscape character, reasonably tolerant to change. Includes areas that exhibit positive character but which may have evidence of alteration, degradation and erosion of features resulting in areas of	Users of public rights of way/open access land. Recreational users travelling at low speeds on bridleways/cycle paths. Outdoor sporting facilities and users of recreational facilities with low interest in

Sensitivity	Landscape character description	Visual amenity receptor description
	more mixed character. Some detractors likely to be present. Broadly comparable to the LANDMAP defined 'moderate' category.	surrounding environment.
Medium-low	Weak landscape structure, partly degraded with frequent detractors and potentially tolerant of significant changes. Non-designated landscape but with some locally valued elements and/or character. Broadly comparable to the LANDMAP defined 'low' category.	Users of 'B' or unclassified roads, travelling at speed. Static office workers.
Low	Generally developed landscape, tolerant of substantial change. Includes elements and/or areas that are generally negative in character with few, if any, valued features. There is a weak landscape structure and the land use dominates. The landscape is tolerant of substantial change. The area could consist of industrial, derelict and randomly arranged developments with no aesthetic value or evidence of effective mitigation. No landscape designations apply.	Users of 'A' roads travelling at speed. Workers in industrial facilities/indoor non-static environments.

Assessment of Impacts and Effects Methodology

- 2.18 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

- 2.19 An 'impact' is defined as a change likely to occur as a result of the construction, operation and de-commissioning of the proposed development.
- 2.20 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.
- 2.21 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, given that the operational period will be 30 years. However short-term impacts may be identified for example, during construction or de-commissioning.
- 2.22 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; localised; intermediate or wide.
- 2.23 The magnitude of impact on both landscape character and visual amenity receptors are evaluated according to a seven-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	High levels of change to landscape elements/ landscape character. The proposed wind turbine will be very prominent in the landscape and will be perceived as a determining factor of the landscape character. The proposed wind turbine will lead to a major alteration to the landscape character. The proposed wind turbine, when perceived with other wind energy schemes, will be immediately apparent and contribute to a 'landscape with wind farms.'	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. The proposed wind turbine will dominate the field of view and be impossible not to notice. The proposed wind turbine, when perceived with other wind energy schemes, would be immediately apparent and contribute to a view dominated by wind farms.
Medium-high	Prominent level of change to landscape elements/landscape character. The proposed wind turbine will be obvious in the landscape and will generally be perceived as a determining factor in local landscape character. The proposed wind turbine, when perceived with other wind energy schemes, would be obvious and contribute to a 'landscape with wind farms.'	Receptors would experience an apparent change to their views. The proposed wind turbine would be prominent in views or would be perceived as the determining factor within the field of view and be difficult not to notice. The proposed wind turbine, when perceived with other wind energy schemes, would be obvious and contribute to a view influenced by wind farms.
Medium	Partial levels of change to landscape elements/landscape character. The proposed wind turbine will be noticeable but not necessarily a determining factor of the landscape character. The proposed wind turbine would lead to a change to the landscape character. The proposed wind turbine, when perceived with other wind energy schemes, would be apparent and contribute to a 'landscape with wind farms.'	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. The proposed wind turbine, when perceived with other wind energy schemes, would be apparent and contribute to a view influenced by wind farms.
Medium-low	Minor levels of change to landscape elements/landscape character. The proposed wind turbine will be perceived but will not be a determining factor of the landscape character. The proposed wind turbine, when perceived with other wind energy schemes, would be noticeable and may contribute to a 'landscape with wind farms.'	Receptors would experience an apparent but minor change in their view, arising from an alteration to the view. The proposed wind turbine will be present in views but will form only a minor element. The proposed wind turbine, when perceived with other wind energy schemes, would be noticeable and may contribute to a view influenced by wind farms.
Low	Low levels of change to landscape elements/landscape character. The proposed wind turbine will be present and will be perceived as a background feature of the wider landscape character.	Receptors would experience a low level of change to views. The proposed wind turbine will be present in the wider landscape but will be perceived as a background component of views and easily go unnoticed.

Magnitude of impact	Landscape character description	Visual amenity receptor description
	The proposed wind turbine would lead to a minor change to the landscape character. The proposed wind turbine, when perceived with other wind energy schemes, will not be immediately noticeable, although it may contribute to a 'landscape with wind farms.'	The proposed wind turbine would lead to a minor change to the view. The proposed wind turbine, when perceived with other wind energy schemes, will not be immediately noticeable, although it may contribute to a view with wind farms.
Negligible	Very minor levels of change to landscape elements/landscape character. The proposed wind turbine will be largely unnoticed in the landscape. It will be difficult to perceive changes to landscape elements/landscape character. The proposed wind turbine, when perceived with other wind energy schemes, will be largely unnoticed in the landscape.	Receptors would experience a very low level of change to views. The proposed wind turbine will be barely perceived in the wider landscape and easily go unnoticed. It would be difficult to perceive change in view. The proposed wind turbine, when perceived with other wind energy schemes, will be largely unnoticed in the view.
No change	Indiscernible level of change. Equivalent to no change.	Indiscernible level of change. Equivalent to no change.

Level of Effect Methodology

- 2.24 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.
- 2.25 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.
- 2.26 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 the **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 the 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 Major-moderate	Major-moderate or Moderate	Moderate or Moderate-minor	Moderate-minor or Minor
	Medium-high	Major or Major-moderate	Major-moderate or Moderate	Moderate	Moderate-minor or Minor	Minor or Minor-negligible
	Medium	Major-moderate or Moderate	Moderate	Moderate	Minor or Minor-negligible	Minor-negligible or Negligible
	Medium-low	Moderate or Moderate-minor	Moderate-minor	Moderate-minor or Minor	Minor-negligible or Negligible	Negligible
	Low	Moderate-minor or Minor	Minor or Minor-negligible	Minor-negligible or Negligible	Negligible	Negligible
	Negligible	Minor or Minor-negligible	Minor-negligible or Negligible	Negligible	Negligible	Negligible
	No change	Neutral	Neutral	Neutral	Neutral	Neutral

2.27 The level of effect on both landscape character and visual amenity receptors are evaluated according to an eight-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 wind turbine would be noticeably out of scale with the character or noticeably alter a recognised landscape or landscape feature.	Where the proposed wind turbine would be uncharacteristic or would substantially alter a valued/ very important view or view of high quality.
Major-moderate	Where the proposed wind turbine would be out of scale with the character or noticeably alter a landscape feature.	Where the proposed wind turbine would be out of scale or at odds with the existing view and would noticeably alter a local view.
Moderate	Where the proposed wind turbine would be at variance with the character and/or landscape elements.	Where the proposed wind turbine would be readily apparent and at variance with existing view.
Moderate-minor	Where the proposed wind turbine would be at slight variance with the character and/or landscape elements.	Where the proposed wind turbine would be noticeable but only at slight variance with the existing view.
Minor	Where the proposed wind turbine would be perceived but be at very slight variance with the character and/or landscape elements.	Where the proposed wind turbine would be at very slight variance with the existing view.
Minor-negligible	Where the proposed wind turbine would have a slightly discernible effect on the landscape character and/or landscape	Where the proposed wind turbine would provide a small change to the existing view.

Level of effect	Landscape character description	Visual amenity receptor description
	elements.	
Negligible	Where the proposed wind turbine would have a barely discernible effect on the landscape character and/or landscape elements.	Where the proposed wind turbine would provide a very small change to the existing view.
Neutral	No change	No change

2.28 It is important to note that effects can be adverse (negative) or beneficial (positive).

Cumulative Assessment Methodology

2.29 Cumulative assessment is concerned with the 'additional' effects of the proposed development when perceived with other consented or in planning wind energy schemes. Operational (and under construction) wind energy schemes form part of the existing conditions assessment.

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

2.31 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 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 LVA. The existing conditions include descriptions of the proposed development site, landscape relevant designations, landscape character and visual amenity receptors and their views within the study area as well as information on operational (and under construction) wind energy schemes.

The Proposed Development Site

3.2 The proposed development site is situated within a flat, parking/hard landscape area associated with the surrounding factories and warehousing, as illustrated in **Figure 2**.

3.3 The proposed development site is situated within the wider commercial/industrial landscape associated with Kenfig Industrial Estate and is accessed via a series of straight wide roads. Lines of pylons and scattered operational wind energy schemes are perceived, against a backdrop of rising hills to the north and east.

Cumulative Information

- 3.4 Operational, under construction, consented and in planning wind energy schemes, are also identified within the study area, using the following search criteria:
- All wind turbines, above 15m in height to blade tip, within 2km;
 - All wind turbines, above 25m in height between 2km-8km;
 - All wind turbines, above 50m in height between 8km-12km; and
 - All wind turbines over 80m in height between 12-17km.
- 3.5 The presence of operational (and under construction) wind energy schemes is also included within the descriptions of existing conditions.
- 3.6 The location of the cumulative wind energy schemes within the study area is illustrated on **Figure 3**.
- 3.7 In summary:
- There are 16 wind energy schemes within the 17km cumulative search area, the closest the 77m to blade tip turbine at Land at Newlands Farm, approximately 1.8km to the north-east of the proposed development site;
 - 13 wind energy schemes are operational, 2 wind energy schemes are consented and 2 wind energy schemes in planning, including the Pant y Wal wind energy scheme which includes a mixture of operational and consented wind energy schemes;
 - The majority of wind energy schemes within close proximity to the proposed development site are single wind turbines. The larger clusters of wind turbines are associated with the high ground to the north and north-east;
 - The wind energy schemes vary in size from 25m in height to blade tip to 145m in height to blade tip; and
 - The wind energy schemes are scattered throughout the study area.

Landscape Character

Landscape Relevant Designations

- 3.8 The proposed development site is **not** recognised for its importance or value through any landscape relevant designations.
- 3.9 There are however landscape relevant designations within the study area. These are shown in **Figure 4** and described in more detail below³:
- The Merthyr Mawr, Kenfig and Margam Burrows Landscape of Historic Interest occurs to the west, south and south-east of the proposed development site, extending southwards including the coastal fringes, approximately 500m to the south-west of the proposed development site at its closest point. There is also a separate area to the south-east, adjacent to Porthcawl.

³ The LVIA considers historic landscape designations in terms of their role in defining landscape character, such as Conservation Areas and Registered Parks and Gardens where the potential impacts and effects on their setting are considered.

The Merthyr Mawr, Kenfig and Margam Burrows Landscape of Historic Interest⁴ is recognised for its accumulations of windblown sand which have formed considerable areas of littoral dunes along the South Wales coast, with their distribution primarily controlled by coastal topography and by the prevailing westerly winds.

To the north of the proposed development site, extending to the north and north-east is the Margam Mountain Landscape of Historic Interest, approximately 825m to the north of the proposed development site at its closest point.

Margam Mountain is a distinctive block of the South Wales uplands which overlook and visually dominate the narrow coastal plain near the modern port and industrial town of Port Talbot. From the coastal plain just above sea level, the flanks of the mountain rise steeply to a series of more gentle slopes and plateaux, the highest of which is Margam Mountain itself, in the centre of the area. The whole mountain is dissected and indented by several ravines and small wooded valleys or cwmoedd, each with a small stream rising in peat bogs near the crest.

Neath Port Talbot County Borough Council (NPTCBC) recognises within the Local Development Plan (LDP)⁵ in Policy SP21/4[a] that Landscapes of Historic Interest should be protected and where appropriate conserved and enhanced.

Bridgend County Borough Council (BCBC) also recognises Landscapes of Historic Interest in the LDP⁶ in Policy SP5 where *“development should conserve, preserve, or enhance the built and historic environment [including Historic Landscapes] of the County Borough and its setting.”* In particular *“development proposals will only be permitted where it can be demonstrated that they will not have a significant adverse impact...”*

- There are scattered Special Landscape Areas (SLAs) within the study area. SLAs have been designated at a local level to protect areas of high landscape quality.

Margam SLA (EN2/4) extends to the east, north-east and north of the proposed development site, approximately 2km to the north-east at its closest point.

The features and characteristics⁷ of the Margam SLA include:

- Mynydd Margam is a broad, low lying plateau of north-east dipping Productive Coal Formation mudstones and coals between South Wales Pennant Formation escarpment and east-west Millstone Grit ridge to the south, dissected by shallow, alluvium filled valleys of tributaries and the main Cynfig valley. It includes mine workings and the proposed deep mine;
- Cultural features in the landscape include evidence of prehistoric and later agricultural practices, rural settlements and contemporary forestry activities;
- It is an evolved landscape containing multi-period cultural expressions untrammelled by industrial exploitation - extensive archaeological evidence of land husbandry, now given over to forestry interspersed with some small farms and thus is a comparatively rare example of a surviving relict landscape;
- The SLA, which contains Margam Park, with its exceptional examples of architecture; its history as a major Cistercian Abbey and the wider monastic landholdings, provides a combination of high grade historic visitor attraction and a variety of multi-

⁴ Descriptions taken from Register of Landscapes of Outstanding Historic Interest in Wales www.ggat.org.uk

⁵ Neath Port Talbot County Borough Council, Local Development Plan (2011-2026), Adopted January 2016

⁶ Bridgend County Borough Council, Local Development Plan, 2006-2021, Adopted, September 2013

⁷ Neath Port Talbot County Borough Council, Local Development Plan (2011-2026), Landscape and Seascape, Supplementary Planning Guidance, May 2018

period pleasure grounds. It contains cultural elements dating from pre-history through every period up to the 21st century;

- Whilst the SLA contains areas of forested upland these are important to the overall historical context of the area and could be managed to enhance the landscape quality of the wider area; and
- The scenic quality of the area is enhanced by the historic buildings of the Park and the backdrop of scarp creating a sheltered setting which link visually and provide the integrity of the whole. The sense of place for the park is initially prompted with boundary walls and entrance gates. The historic core and deer park make this area unique within the County.

NPTCBC recognises within Policy EN2 that *“development within the designated Special Landscape Areas will only be permitted where it is demonstrated that there will be no significant adverse impacts on the features and characteristics for which the Special Landscape Area has been designated.”*

Policy EN2 also states that *“in the case of renewable energy developments, it will need to be demonstrated that component elements have been designed and sited to minimise visual intrusion and adverse effects on the landscape.”*

The Western Uplands SLA (SLA3)⁸ extends further to the east of the Margam SLA. The Western Uplands SLA is a fairly extensive upland area abutting Neath Port Talbot in the west. It comprises a series of north-eastern facing slopes of typically rough grazing. It has a number of plantations and small woodlands that contribute to the overall character and quality of the area. The geography of the landscape is typical of much of the area, showing evidence of glaciation – classic u-shaped valley with truncated side valleys. Despite the presence of coal measures and other stone quarrying the area retains a largely rural, agricultural character.

Immediately to the south of the proposed development site is the Kenfig Burrows SLA (SLA6). It is one of a group of windblown littoral sand deposits found along the South Wales coast. Culturally it represents an important besanded landscape that derived from adverse weather conditions and tidal phenomena in the Middle Ages, which had considerable impact upon local societies. Kenfig forms an extensive dune system that overlies the Upper Carboniferous Limestone. It includes the intertidal zone between mean low and high water lines, and in places strips of storm gravels are found on the wave cut platform. Within the dune system are a number of ponds and water bodies, the most significant being Kenfig Pool which lies close to the visitor centre and car park. Its land form is a distinctive landscape unit, providing a unique foreground setting to the industrial and transport communication corridors (M4 motorway and Swansea-London railway line). Inland its significance is reflected in a range of designations including Kenfig Pool and Dunes National and Local Nature Reserve, Kenfig Site of Special Scientific Interest and Kenfig Burrows Special Area of Conservation. It is also included in the Register of Landscapes of Outstanding Historic Interest in Wales.

To the south-east is the Laleston SLA (SLA7). It is a distinctive plateau area to the west of Bridgend. It is an area of mixed farmland with fields enclosed by hedgerow boundaries. The area is dissected by the M4 motorway, A48(T) road and the Swansea-Paddington railway line which create local corridors of visual and sensory detraction. The underlying geology is of national value and is reflected in the designation of a SSSI, where non-conforming deposits are visible through quarrying. Its western boundary abuts the former Newton Down airfield which is used for karting and has a number of industrial units dispersed across the area. These provide further

⁸ Bridgend County Borough Council, Designation of Special Landscape Areas, March 2010

local zones of visual and sensory detracting. The southern boundary abuts the village of Tythegston and includes the house and parkland of Tythegston Court, together with the wider landscape that forms its essential setting. The house is listed (Grade II), and the whole feature stretches back to the medieval period, with the current house and park showing primarily 18th century features with additions to the parkland gardens to the Edwardian period.

To the south is the Porthcawl Coast SLA (SLA8). Extending from Sker Point to Newton Point, the area is formed primarily by the intertidal zone that fronts Porthcawl and its hinterland. It is a mixture of exposed rock and sandy beaches including Rest Bay, Sandy Bay and Trecco Bay. The exposed rocky outcrops form an important area of limestone pavement. In the west it abuts the Royal Porthcawl Golf Club as well as the landscape setting of Sker House. At Porthcawl it includes Lock's, but excludes the remainder of the urban area. It forms an important and much appreciated seascape setting to the important visitor destination that Porthcawl remains.

BCBC also protects SLAs in Policy ENV3 where *"the settings of SLAs will be protected with consideration of the views from those areas to the settlements of the County Borough."*

- There are numerous Registered Parks and Gardens in the study area, the closest Margam Park approximately 2km to the north-east of the proposed development site at its closest point.

NPTCBC recognises within Policy SP21/4[b] that Historic Parks and Gardens should be protected and where appropriate conserved and enhanced.

BCBC also recognises in Policy SP5 that development should conserve, preserve or enhance Registered Parks and Gardens, including their setting.

- There are scattered Conservation Areas present within the study area, generally situated on the developed coastal fringes or the developed valley bottoms. The closest Conservation Area to the proposed development site includes Margam Park, approximately 2.6km to the north.

There are also Conservation Areas scattered within Porthcawl to the south and south-east, the closest, Nottage, on the northern fringes of the settlement, approximately 5.5km to the south of the proposed development site at its closest point.

NPTCBC recognises within Policy SP21/4[c] that Conservation Areas should be protected and where appropriate conserved and enhanced.

BCBC also recognises in Policy SP5 that development should conserve, preserve or enhance Conservation Areas, including their setting.

- Ancient Woodlands are scattered throughout the study area, generally focussed within the sloping landform and hill tops rising up from the coastal fringes.

The closest Ancient Woodland is to the west of the railway line, approximately 310m to the west.

Ancient Woodlands are protected by NPTCBC in Policy EN6 and EN7.

Local Landscape Character - LANDMAP Aspect Areas

3.10 The LANDMAP landscape character information is referred to for an understanding of landscape character within the study area.

3.11 The five LANDMAP aspect areas are considered below:

Visual and Sensory

- 3.12 The location of the visual and sensory areas within the study area, including their sensitivity, is illustrated in **Figure 5A**.
- 3.13 There are a diverse range of sensitivities within the study area, varying from 'low' (**medium-low**) to 'outstanding' (**high**).
- 3.14 The main influence will be on the aspect area in which the proposed development site is situated.
- 3.15 The proposed development site is situated within the 'low' (**medium-low**) sensitivity *Margam Works aspect area*.
- 3.16 The *Margam Works aspect area* is characterised by large scale heavy industry and disused docks on the coastal plain. The skyline to the area is dominated by the steel works which acts as a significant landmark in the flat landscape. Smaller industrial units lie around the docks and next to the town centre. A network of railways, both passenger and industrial, cross the area including the main London to Swansea line. The disused docks and a large reservoir are present within the area, although large in scale are fairly well hidden.
- 3.17 This area has a low scenic quality as a major detractor although its character of a threatening, overpowering and uninviting landscape is very strong. The works have a strong integrity but overall comprise a degraded landscape. The character is evident to some degree from a distance and is intense at close quarters. Works of this scale are however a rarity.
- 3.18 The recommendations for the *Margam Works aspect area* are to:
- Better integrate small-scale units into landscape; and
 - Create landscape infrastructure to absorb smaller units and complement large scale industry.
- 3.19 Further afield, the assessment is focussed on those areas identified as having an 'outstanding' (**high**) and 'high' (**medium-high**) sensitivity.
- 3.20 To the south of the proposed development site is the 'outstanding' (**high**) sensitivity *Kenfig Burrows aspect area*.
- 3.21 This is an expanse of marram dunes, centred around Kenfig Pool. Although views to industry at Port Talbot and noise from the nearby M4 are possible, this windy, large sky landscape with views out to sea has a strong sense of place due to distinctive landform/cover augmented by coastal setting and the views to steel works. Gradual scrub encroachment is however reducing the amount of bare sand.
- 3.22 There are attractive views both in and out of the area especially out to sea although there are views of detractors to the north-east, including the steelworks and M4. The area is however unspoilt in itself and covers a large area with consistent character although there is classic dune progression and visual detractors. It has a very strong sense of place with large scale dunes covering a wide area and giving a sense of isolation in places. Dunes of this extent are very rare.

- 3.23 To the west and extending southwards along the coast towards Porthcawl is the 'outstanding' (**high**) sensitivity *Kenfig Sands aspect area*. This is a sandy beach with views out to sea and inland to dunes, with a strong coastal sense of place, heightened by the partial views to the north over Margam Moors that encompass the industrial works.
- 3.24 To the west and extending to the north-west towards Port Talbot is the 'high' (**medium-high**) sensitivity *Margam Sands/Aberavon Sands aspect area*.
- 3.25 This is an intertidal sandy beach, forming part of the sweep of Swansea Bay. It has a simple scenic quality with an exciting exposed character.
- 3.26 To the north is the 'high' (**medium-high**) sensitivity *Margam Country Park aspect area*.
- 3.27 It is a low lying area of designed parkland, mosaic grazed land (deer grazed) and mixed woodland, the latter providing a sense of enclosure. The area is focussed on Margam Castle and Margam Abbey which dominate the landscape. The area sits below the scarp which provides an additional sense of protection. The country park is a significant tourist attraction. Dwellings are mainly located to the west of the area with buildings in the centre acting as visitor facilities. A number of minor roads enter the estate and the A48 bounds the western edge. Buildings (predominantly stone) within and boundary walls and gates provide a strong sense of place. Parkland trees are over-mature but new planting has been carried out. Many ancillary elements within the central historic core do not sit entirely comfortably in the historic landscape (visitor centres, new enclosures, etc.) and there are signs of wear around the castle although some features such as the visitor car park are well designed. Water bodies provide interest and variation as do the grazing deer. Some areas have an austere and imposing feel (gateways and dominant buildings). There is encroachment of gorse and bracken on the periphery of the park - especially at the base of scarp slope.
- 3.28 The scenic quality of the area is enhanced by the historic buildings of the park and the backdrop of scarp creates a suitable sheltered setting. The central historic core and deer park link visually and provide the integrity of the whole. The sense of place for the park is initially prompted with boundary walls and entrance gates. The historic core and deer park make this area unique within the county. The park is a significant visitor attraction which helps to confirm the 'high' (**medium-high**) sensitivity classification.
- 3.29 To the east and north-east is the 'high' (**medium-high**) sensitivity *Mynydd Baedan aspect area*.
- 3.30 It consists of north-eastern facing slopes, of rough grazing with woodland blocks/forestry providing both structure and dominant mosaic pattern. It has a strong upland character reinforced by north-easterly views of Brecon Beacons. Views down to urban area and within to scattered farmsteads take edge off what is essentially a wild/upland feel with some views over ridge south to sea adding to sense of place and experience of altitude/elevation.
- 3.31 Further afield, the northern part of the study area is scattered with 'high' (**medium-high**) sensitivity landscapes, reflecting the upland hills and forested landscape, scattered with wind energy schemes.
- 3.32 The southern part of the study area is scattered with 'outstanding' (**high**) and 'high' (**medium-high**) sensitivity landscapes, focussed adjacent to the developed coastline.

Historic Landscape

- 3.33 The location of the historic landscape areas within the study area, including their sensitivity, is illustrated in **Figure 5B**.
- 3.34 There are a diverse range of sensitivities within the study area, varying from 'low' (**medium-low**) to 'outstanding' (**high**).
- 3.35 The main influence will be on the aspect area in which the proposed development site is situated.
- 3.36 The proposed development site is within the 'moderate' (**medium**) sensitivity *Port Talbot Industrial aspect area*. This extends to the north and north-west.
- 3.37 The *Port Talbot Industrial aspect area* is an entirely industrial aspect area situated on the coastal margin of the Margam Moors, which includes the site of Port Talbot Steelworks. This flat expanse of moor extends from the Kenfig Burrows in the south to Aberavon Sands to the north. The modern docks built in 1898 divide the Margam Sands and Aberavon Sands neatly in two. The effect is a heavily industrialised aspect area bounded by many differing environments.
- 3.38 The 'moderate' (**medium**) sensitivity assigned to this area reflects the significant impact of late 19th and 20th century industrialisation (represented by the Port Talbot Docks and Steelworks) and the later industrial estate on the survival of the archaeological resource; the archaeological record clearly shows that this was once a rich, multi-period landscape, with evidence of human activity dating back to early prehistory.
- 3.39 Further afield, the assessment is focussed on those areas identified as having an 'outstanding' (**high**) and 'high' (**medium-high**) sensitivity.
- 3.40 To the west and north-west, extending along the coastal fringes is the 'high' (**medium-high**) sensitivity *Margam Sands aspect area*. This is a lengthy area of intertidal coast with the significant, multi-period find scatters with the considerable potential for preserved buried landscapes and early settlement evidence, contained within stratified peat deposits subject to exposure by coastal erosion.
- 3.41 To the north-west is the 'high' (**medium-high**) sensitivity *Margam Moors West aspect area* which comprises an area of low-lying reclaimed wetland, largely untouched by surrounding industrial development.
- 3.42 To the south is the 'outstanding' (**high**) sensitivity *Kenfig Burrows and Golf Course aspect area*. This is an exceptionally well-preserved, multi-period landscape with evidence of human activity potentially dating back to the Neolithic. Medieval occupation is particularly well represented by the extensive remains of the castle and abandoned medieval town of Kenfig, a site of national importance in historical terms. The overall sensitivity for this area, given as 'outstanding' (**high**), is based not only on the extensive nature of the recorded archaeological remains but the significant potential for further discoveries.
- 3.43 To the east, extending to the east is the 'outstanding' (**high**) sensitivity *Margam Rural aspect area*. This aspect area represents a rich, multi-period landscape with evidence of prehistoric, Roman, medieval and post-medieval activity. Of particular note are some extremely important medieval ecclesiastical sites, including the early medieval monastic site of Eglwys Nunydd and three later medieval granges belonging to Margam Abbey at Cwrt-y-defaid, Llanmihangel and Hafodheulog.

- 3.44 To the north and north-east is the 'outstanding' (**high**) sensitivity *Margam Park aspect area*. The overall 'outstanding' (**high**) sensitivity assigned to this area reflects its exceptional importance as a rich, multi-period landscape with evidence of a remarkable continuity of occupation from the Iron Age to the present day, with outstanding features/sites of national importance, including the hillfort of Mynydd y Castell, the collection of early Christian monuments (held in the Margam Museum), the remains of Margam Abbey, the extensive post-medieval landscape park and gardens (Grade I Listed) and the substantial early 19th century mansion of Margam Castle.
- 3.45 Further to the east and north-east is the 'outstanding' (**high**) sensitivity *Llangynwyd aspect area*. This is a rich, multi-period landscape of national importance, containing remains of settlement and enclosure dating from the prehistoric, early medieval, medieval and post-medieval periods.

Cultural Landscape

- 3.46 The location of the cultural landscape areas within the study area, including their sensitivity, is illustrated in **Figure 5C**.
- 3.47 The main influence will be on the aspect area in which the proposed development site is situated. The proposed development site is within the 'low' (**medium-low**) sensitivity *Margam Works aspect area*.
- 3.48 This is described as an area with a low scenic quality and is a major detractor although its character of a threatening, overpowering and uninviting landscape is very strong. The works have a strong integrity but overall comprise a degraded landscape.

Geological Landscape

- 3.49 The location of the geological landscape areas within the study area, including their sensitivity, is illustrated in **Figure 5D**.
- 3.50 The main influence will be on the aspect area in which the proposed development site is situated. The proposed development site is situated on the boundary of the 'low' (**medium-low**) sensitivity *Margam aspect area*, broadly to the west and the 'moderate' (**medium**) sensitivity *Kenfig aspect area* broadly to the east.
- 3.51 The *Margam aspect area* is described as containing a coastal strip of marine alluvium (sand) fringing the coast. The aspect area should be conserved as existing.
- 3.52 The *Kenfig aspect area* consists of a broad low lying plain of glacial sand and gravel, with boulder clay covered lower ground around Llanfihangel Wood. Mines and tips are present. The aspect area should be conserved as existing.

Landscape Habitats

- 3.53 The location of the landscape habitat areas within the study area, including their sensitivity, is illustrated in **Figure 5E**.
- 3.54 The main influence will be on the aspect area in which the proposed development site is situated. The proposed development site is within the 'moderate' (**medium**) sensitivity *Industrial aspect area*.

- 3.55 This is described as an area of industrial development on former dunes and coastal grassland habitats, with some remnants remaining. There is the potential for restoration to dune habitats and integration with remaining habitats.

Visual Amenity Receptors and their Views

- 3.56 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 6**.

Settlements – Towns and Villages

- 3.57 There are substantial **high** sensitivity settlements present within the study area, including Bridgend to the south-east, Porthcawl to the south and Port Talbot to the north-west.
- 3.58 The closest settlement to the proposed development site is Eglwys Nunydd, approximately 1.1km to the north-east of the proposed development site at its closest point.
- 3.59 Separated from the proposed development site by the well-vegetated and largely enclosed M4, as illustrated in **Viewpoint 2 (Figure 9A)**, from the fringes of the settlement, views are possible across the gently sloping landscape, crossed by numerous lines of pylons, towards the proposed development site. The adjacent industrial estate and the M4 corridor are however largely enclosed by intervening vegetation.
- 3.60 Mawdlam, a small settlement centred around a church, also occurs on elevated ground, approximately 1.7km to the south-east. Adjacent to the M4, views are also possible across the sloping dunes leading towards the industrial estate associated with the proposed development site and wider coastal landscape, dominated by numerous lines of pylons. Port Talbot and its distinctive industrial works are also perceived in the distance.
- 3.61 Further along the coastal fringes and as the landform begins to rise inland, wider views are often restricted from the settlements by a combination of intervening development, landform and mature vegetation. However, as illustrated in **Viewpoint 7 (Figure 14A)**, from a selected open and elevated location of the fringes of Kenfig Hill, expansive views are possible over the adjacent settlement on lower ground and towards the coastal fringes, including the Port Talbot industrial works in the distance. The operational wind turbine at Newlands Farm is also perceived amidst the lower levels and agricultural landscape, with scattered wind energy schemes punctuating the higher ridges and hills in the distance.

Individual Residential Properties and Farms

- 3.62 Individual **high** sensitivity residential properties and farms are widely scattered on the ridges and slopes above the more developed valleys within the study area, becoming sparser on the higher, elevated ridges and hills and along the coastal fringes.
- 3.63 There are a number of residential properties within close proximity of the proposed development site, scattered along Water Street, including Pont Bwriac, New Mill Farm, Newland and Kenfig House Farm. They are generally situated along the enclosed minor road network to the north-east and east, often nestled amidst mature hedgerow, tree and

small woodland vegetation and separated from the proposed development site by the well-vegetated and enclosed M4 corridor.

- 3.64 Further afield, the scattered residential properties and farms are situated on the slopes, where open views are possible into the surrounding landscape, often from one ridge to another and across the expansive coastal fringes. Views are however occasionally restricted by a combination of vegetation enclosing many properties, screening provided by adjacent development as well as subtle variations in landform and vegetation in the wider landscape, particularly on the lower slopes.

Country Parks

- 3.65 There are scattered **high** sensitivity Country Parks within the study area, including Margam Park, approximately 2km to the north-east of the proposed development site at its closest point.
- 3.66 Consisting of landscaped grounds set around an impressive house and associated buildings, the park rises up to the north, allowing expansive views from gaps in the surrounding mature vegetation over the lower coastal fringes, including Port Talbot and associated industrial works, as illustrated in **Viewpoint 6 (Figure 13A)**. Glimpses of the operational single wind turbine at Newlands Farm are also possible.

Recreational Routes

- 3.67 Numerous **medium-high** sensitivity recreational routes pass through the study area, including the closest, the Wales Coastal Path, which crosses the study area from the south-east to the north-west, including approximately 900m to the west and 1km to the south-east of the proposed development site at its closest points.
- 3.68 As illustrated in **Viewpoint 1 (Figure 8A)**, views from the Wales Coast Path over the adjacent coastal dunes, immediately to the south-east of the proposed development site are possible, including towards the M4 overbridge, main railway line and the adjacent industrial estate and pylons. Views of the coastal dunes, as well as the surrounding industrial landscape, set against a background of rising hills, scattered with wind energy schemes, dominate the Wales Coast Path in close proximity, as illustrated in **Viewpoint 3 (Figure 10A)** and **Viewpoint 4 (Figure 11A)**.
- 3.69 Further afield, the recreational routes, including the St Illtyd's Walk and the Ogwr Ridgeway Walk, follow the rising slopes and upland, forested landscape. As illustrated in **Viewpoint 8 (Figure 15A)**, from an open and elevated location along the Ogwr Ridgeway Walk, open and expansive views are possible across the lower slopes and towards the coastal fringes, including glimpses of the operational single wind turbine associated with Newlands Farm.

National Cycle Routes

- 3.70 Numerous **medium-high** sensitivity national cycle route (NCRs) cross the study area, generally following minor roads and lanes along the valley bottoms and lower valley sides. Views are largely restricted to the sloping valley sides within the immediate vicinity although when crossing the more exposed uplands and ridges more expansive views are possible.
- 3.71 The closest NCR to the proposed development site is NCR 4, Celtic Trail, approximately 2km to the north-east of the proposed development site, following the A48, at its closest

point. Intermittent and variable views are possible into the surrounding landscape, often limited by development, sloping landform and mature vegetation. However, occasional expansive views are possible into the wider landscape from selected open or elevated locations, including towards the scattered wind energy schemes situated on the upper slopes and ridges.

Local Public Rights of Way, Bridleways and Cycleways

- 3.72 **Medium** sensitivity (**medium-high** in the SLAs) public rights of way, bridleways and cycleways cross the study area including over the coastal fringes and the undulating landscape of ridges, hills and valleys.
- 3.73 As illustrated in **Viewpoint 1 (Figure 8A)**, from the network of public rights of way that cross the adjacent Kenfig Burrows, views are dominated by the surrounding dunes, including the adjacent industrial estate and lines of pylons, set against a background of rising hills scattered with operational wind energy schemes.
- 3.74 In land, the public rights of way often follow field boundaries and are largely enclosed by a combination of hedgerow and woodland vegetation as well as intervening development which restricts many views.
- 3.75 It is only from selected high points, from gaps in the enclosing vegetation, such as at field gates or when the routes cross the open uplands and ridges that exposed views across the surrounding landscape are possible, including towards the coastal fringes and the scattered wind energy schemes that are situated on the upper slopes and ridges.
- 3.76 As illustrated in **Viewpoint 7 (Figure 14A)**, from an open and elevated public right of way on the fringes of Kenfig Hill, expansive views are possible over the adjacent settlement and towards the coastal fringes, including Port Talbot works in the distance and the single operational wind turbine associated with Newlands Farm.

Open Access Areas

- 3.77 The expansive **medium** sensitivity (**medium-high** in the SLAs) open access areas in the study area are largely situated on elevated open land, dominated and enclosed by forestry plantations, particularly focussed to the north, on the elevated ridges between the more developed valleys and above the coastal fringes. Exposed views are possible into the surrounding undulating landscape from the elevated and occasionally open upland landscapes, often including the scattered wind energy schemes that are focussed on the expansive ridges.
- 3.78 Scattered and smaller open access areas are also present within the undulating agricultural landscape broadly to the east of the study area. Often in areas of common or woodland with wider views largely restricted by immediate enclosure by vegetation, undulating landform and intervening development.
- 3.79 The closest open access area is however Kenfig Burrows, to the west, south and south-east of the proposed development site, extending southwards along the coastal fringes.
- 3.80 As illustrated in **Viewpoints 1, 3-5 (Figures 8A, 10A-12A)**, from selected open locations within the dune, lake and grassland dominated landscape, views are possible towards the industrial estate associated with the proposed development site, including the numerous pylons that cross the wider landscape. Glimpses of the nearby operational turbine at

Newlands Farm and the more distant wind energy schemes on the ridges are also possible.

Motorways and Major 'A' Roads

- 3.81 The **low** sensitivity M4 crosses the study area from the east to the north-west, connecting Bridgend with Port Talbot, approximately 400m to the east of the proposed development site at its closest point.
- 3.82 Crossing the undulating and coastal fringe landscape, the motorway is often enclosed by mature vegetation and development. Expansive views are also possible over the adjacent coastal fringes dominated by the large scale industry and lakes associated with Port Talbot. Views from the M4 overbridge over the adjacent coastal dunes and the industrial estate associated with the proposed development site, as illustrated in **Viewpoint 1 (Figure 8A)** are also possible. Distant and expansive views are also possible from the M4 to the rising hills to the east and north, including towards the scattered wind energy schemes on the elevated ridges. Views of the single operational wind turbine at Newlands Farm are also possible, set amidst an agricultural landscape crossed by numerous pylons, against a backdrop of rising hills.
- 3.83 Numerous **low** sensitivity major 'A' roads also pass through the study area generally following the coastal fringes or valley bottoms and lower valley sides, with views largely restricted by surrounding development and sloping landform within the immediate vicinity. Passing through a diverse and developed landscape, often punctuated with wind energy schemes, views from the major road network into the wider landscape are varied.
- 3.84 The closest major road to the proposed development site is the A48, which passes through the study area from the south-east to the north-west, approximately 2km to the north-east at its closest point.
- 3.85 Largely enclosed by development including housing and large-scale commercial and industrial buildings as well as mature vegetation, glimpsed views are however possible into the surrounding undulating landscape, including towards the upper slopes and ridges punctuated with scattered wind energy schemes.
- 3.86 However, for the majority of vehicle travellers along the A roads, the immediate enclosure by a combination of development and landform ensure that views into the surrounding wider landscape are largely restricted. It is only from gaps in the enclosure or from selected elevated and exposed locations that views out into the surrounding undulating landscape are possible.
- 3.87 Passing in often close proximity to the scattered wind energy schemes in the study area, glimpsed and intermittent views of the wind energy schemes are selectively possible on the upper slopes and ridges from the major roads. The screening surrounding the major roads, however ensures that such views are, at worst, only glimpsed and very quickly vanish due to a combination of enclosure by vegetation and development and the undulating landform.

Minor 'B' Roads and Unclassified Roads

- 3.88 Numerous **medium-low** sensitivity minor roads cross the study area and are largely enclosed by a combination of sloping landform, mature vegetation as well as development. It is only from high points, or from gaps in the enclosure, that views into the

surrounding undulating and coastal fringe landscape from the network of minor roads are possible.

- 3.89 As illustrated in **Viewpoint 2 (Figure 9A)**, a network of minor roads connect the nearby settlements and scattered houses in close proximity to the proposed development site. Often enclosed by hedgerow and tree vegetation, development, infrastructure or subtle variations in the landform, views are however possible across the surrounding gently sloping agricultural landscape, including towards the industrial estate associated with the proposed development site as well as the numerous lines of pylons and single operational wind turbine at Newlands Farm.
- 3.90 Minor roads also cross the upland and ridge landscape broadly to the north and east, between the more developed and enclosed valleys, with occasional expansive views over the adjacent ridge and coastal landscapes. Passing in often close proximity to the scattered wind energy schemes in the study area, views of the wind energy schemes are selectively possible from the minor roads.

Railway Lines

- 3.91 The main Cardiff to Swansea **low** sensitivity railway line crosses the study area from the south-east to the north-west, connecting with a 'valley' line leading towards Maesteg and Bridgend.
- 3.92 Crossing the coastal fringes in close proximity to the proposed development site, as illustrated in **Viewpoint 1 (Figure 8A)**, from a public right of way adjacent to the railway line, glimpsed and fleeting views of the motorway, coastal fringes and large industrial works, including the industrial estate associated with the proposed development site, are possible from the railway line. Views of the scattered wind energy schemes, including the single operational wind turbine at Newlands Farm and the wind energy schemes on the upper slopes and hills are also possible. These views however very quickly become restricted by intervening development, vegetation and subtle variations in landform.
- 3.93 The branch railway lines generally follow the lower valley sides with views restricted to the sloping valley sides within the immediate vicinity. Variable views are also often restricted by a combination of development, sloping landform and mature vegetation in the immediate surrounds as well as in the wider landscape. Intermittent but glimpsed and fleeting views of the various wind energy schemes, largely situated on the upper slopes and hill tops in the wider landscape, are also possible.

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 design process (designed in mitigation) and planning for construction, operation and de-commissioning.

Design

- 4.2 A balance between technical and environmental constraints, energy generation, effectiveness and landscape and visual impacts were the key factors in determining the selection and siting of the proposed wind turbine for the site.

Mitigation through selection of the proposed wind turbine

- 4.3 The size of the proposed wind turbine was selected to provide a substantial amount of electricity generation and available grid capacity.

Mitigation through siting of the proposed wind turbine

- 4.4 The proposed wind turbine was positioned away from high sensitivity receptors, such as residential properties and large settlements within a commercial/industrial dominated landscape.
- 4.5 The proposed wind turbine will also utilise existing roads and access points within the commercial/industrial dominated landscape and will not affect landscape pattern.
- 4.6 The proposed wind turbine will have no effects on any landscape elements or landscape pattern. As a result, during construction, there will be no removal of vegetation, with associated **neutral** effects on landscape elements.

Construction

- 4.7 Mitigation measures, relevant to the LVA during the construction period, include:
- The construction compound will be located alongside the wind turbine site minimising direct and indirect effects on landscape character and visual amenity receptors and their views; and
 - All temporarily disturbed and excavated areas will be reinstated following completion of construction activities.

Operation

- 4.8 Given the scale of the proposed wind turbine, there are few realistic mitigation measures that could be introduced, which would help limit the visibility of the proposed development within the wider landscape during the operational period. A new tall structure with moving vertical elements will be introduced which, due to its size and scale, will be perceived over a relatively wide area.
- 4.9 However, it should be acknowledged that the operational effects of the proposed development will be temporary, given the 30-year operation period.

De-commissioning

- 4.10 The proposed development will be operational for 30 years, at the end of which it will be dismantled and removed and the site reinstated to previous conditions.
- 4.11 Mitigation measures, relevant to the LVA 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.

5. Construction and De-commissioning Impacts and Effects

- 5.1 Construction activities which have the potential to affect the landscape character and views from visual amenity receptors include:
- Deliveries to site and vehicle movements on and off site;
 - Presence of crane to erect the proposed wind turbine;
 - Erection of proposed wind turbine tower, installation of turbine nacelle and blades; 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:
- Presence of crane to dismantle and remove the proposed wind turbine;
 - Dismantling and removal of on-site small cabinet control house; and
 - Removal of underground cables and proposed wind turbine foundation.
- 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 Other short-term impacts and effects will be associated with crane movements, only present on site for a short period of time.
- 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 **negligible**.

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

Overview

- 6.1 Zones of Theoretical Visibility (ZTVs) have been generated calculated to hub height of 70m and blade tip of 100m covering the 11km radius study area (**Figures 7A and 7B**).
- 6.2 The ZTVs are calculated using specialist software. Further details on the production of the ZTVs are found in **Appendix B**.
- 6.3 The ZTVs illustrate the areas of potential visibility of the proposed development, based on landform data only across the study area. The ZTVs do not take into account the screening effects from local features such as subtle variations in landform, vegetation cover or development. Therefore, the ZTVs represent the 'worst-case' scenario but are a starting point for assessing the operational impacts and effects of the proposed development on landscape character and visual amenity receptors and their views.
- 6.4 Within the study area, the main extent of visibility is immediately surrounding the proposed development focussed along the flat coastal fringes and as the landform rises up to the north-east, east and south-east. This is reflected in the selection of the viewpoints, which are focussed in close proximity to the proposed development, with more distant viewpoints focussed to the east and north-east.
- 6.5 The extent of visibility reduces substantially towards the fringes of the study area, particularly to the north, east and south-east where the dramatically undulating landform of ridges and valleys combined with the valleys cutting across the study area helping to restrict the wider potential visibility of the proposed development, as illustrated on the ZTVs.

Viewpoint Analysis

- 6.6 Eight viewpoints, their location illustrated on **Figures 7A and 7B**, have been selected to help illustrate the potential impacts and effects of the proposed development.
- 6.7 These represent the most 'exposed' publicly accessible views of the proposed development, from the most 'sensitive' receptors, broadly surrounding the proposed development from all directions of view.
- 6.8 To illustrate the predicted views of the proposed development, photographic views, wireframes and photomontages have been produced for all viewpoints. The other wind energy schemes within the study area are also shown on the wireframe views.
- 6.9 Details of the preparation of the viewpoint graphics are included in **Appendix B**.

Operational Impacts and Effects on Landscape Character

Landscape Elements

- 6.10 There will be **no** removal of vegetation to allow for the construction of the proposed development.

- 6.11 There will be no direct impacts on any landscape elements, such as trees, shrubs or hedgerows.
- 6.12 The magnitude of impact will be **no change**, the level of effect will be **neutral**.

Landscape Relevant Designations

- 6.13 The proposed development is **not** recognised for its importance or value through any landscape relevant designations.
- 6.14 There are however landscape relevant designations within the study area which have the potential to be indirectly influenced by the proposed development as follows:

- The Merthyr Mawr, Kenfig and Margam Burrows Landscape of Historic Interest occurs to the west, south and south-east of the proposed development, extending southwards including the coastal fringes, approximately 500m to the south-west of the proposed development at its closest point.

Recognised for its sandy dunes, as illustrated in **Viewpoints 1, 3 to 5 (Figures 8A-8C, 10A-10C to 12A-12C)**, the proposed development will be perceived as a prominent moving vertical element in close proximity, its influence reducing with distance.

Set within an industrial landscape, already influenced by lines of pylons, the adjacent motorway and main railway line and scattered wind energy schemes, the operation of the proposed development will add an additional vertical element to the landscape, but will not seem 'out of place.' As a result, the magnitude of impact will be **medium-low**, the level of effect will be **moderate-minor**.

The Margam Mountain Landscape of Historic Interest also occurs to the north of the proposed development, extending to the north and north-east, approximately 825m to the north of the proposed development at its closest point. The operational wind farm at Mynydd Brombil Farm also occurs within the northern upland fringes.

Only within the ZTVs in close proximity, as illustrated in **Viewpoint 2 (Figures 9A-9C)**, the proposed development will be perceived as a prominent moving vertical element, set behind the M4 corridor in a landscape crossed by numerous lines of pylons. The proposed development, although perceived will not seem 'out of place.' As a result, the magnitude of impact will be **medium-low**, the level of effect will be **moderate-minor**.

The influence of the proposed development on the Margam Mountain Landscape of Historic Interest will however dramatically decrease with distance and due to the screening by the numerous large plantations that dominate the upper slopes.

Even from within Margam Country Park, a combination of subtle variations in landform and screening by mature vegetation within the park itself, on the boundaries and within the intervening landscape will restrict the majority of the indirect influence of the proposed development on the Margam Mountain Landscape of Historic Interest. It will only be from a few open and elevated locations, as illustrated in **Viewpoint 6 (Figure 13A-13C)**, that the proposed development will have the potential to be distantly perceived within a landscape already influenced by development.

- The Kenfig Burrows SLA (SLA6) occurs to the south of the proposed development and extends southwards along the coastal fringes. Recognised for its sandy dunes, as illustrated in **Viewpoints 1, 3 to 5 (Figures 8A-8C, 10A-10C to 12A-12C)**, the proposed development will be perceived as a prominent moving vertical element in close proximity, its influence reducing with distance.

Set within an industrial landscape, already influenced by lines of pylons, the adjacent motorway and main railway line and scattered wind energy schemes, the operation of the proposed development will add an additional vertical element to the landscape, but will not seem 'out of place.' As a result, the magnitude of impact will be **medium-low**, the level of effect will be **moderate-minor**.

Margam SLA (EN2/4) extends to the east, north-east and north of the proposed development, approximately 2km to the north-east at its closest point.

Only within the ZTVs in close proximity, the influence of the proposed development on the SLA will however dramatically decrease with distance and due to the screening by the numerous large plantations that dominate the upper slopes.

In close proximity however, the proposed development will be perceived as a moving vertical element, set behind the M4 corridor in a landscape crossed by numerous lines of pylons, often adjacent and in combination with the nearby operational wind turbine associated with Newlands Farm. The proposed development, although perceived will not seem 'out of place.' As a result, the magnitude of impact will be **low**, the level of effect will be **minor**.

Even from within Margam Country Park, a combination of subtle variations in landform and screening by mature vegetation within the park itself, on the boundaries and within the intervening landscape will restrict the majority of the indirect influence of the proposed development on the SLA. It will only be from a few open and elevated locations, as illustrated in **Viewpoint 6 (Figure 13A-13C)**, that the proposed development will have the potential to be distantly perceived within a landscape already influenced by development, including the adjacent operational wind turbine associated with Newlands Farm.

The extent of potential visibility, as defined by the ZTVs will also dramatically reduce with distance, with only limited areas within the Western Uplands SLA to the north-east with the potential to perceive the proposed development.

As illustrated in **Viewpoint 8 (Figures 15A-15C)**, even from an open and elevated location within the Western Uplands SLA, the proposed development will be barely perceived, in combination with the adjacent operational wind turbine. The proposed development will easily go unnoticed in the view, with minimal indirect influence on the extensive upland area. At worst, the magnitude of impact will be **negligible**, the level of effect will be **negligible**.

Further afield, the Laleston SLA to the south-east and the Porthcawl SLA to the south are only intermittently within the ZTVs. A combination of distance and screening provided by intervening development, vegetation and subtle variations in landform will ensure that any indirect influence on the more distant SLAs will be very difficult to perceive. The magnitude of impact will be **no change**, the level of effect will be **neutral**.

- The majority of the Registered Parks and Gardens within the study area are excluded from the ZTVs with no potential to be indirectly influenced by the proposed development. There would be no indirect influence on the setting of the majority of the Registered Parks and Gardens as a result of the proposed development. The magnitude of impact will be **no change**, the level of effect will be **neutral**.

It will only be from the closest Registered Parks and Gardens including Margam Park, approximately 2km to the north-east and Port Talbot Memorial Park, approximately 6km to the north-west that are within the ZTVs and have the potential to be indirectly influenced by the proposed development.

A combination of distance and screening by intervening development and infrastructure will ensure that there will be no indirect influence on the setting of the Port Talbot Memorial Park. The magnitude of impact will be **no change**, the level of effect will be **neutral**.

In addition, there will be very limited indirect influence on the setting of Margam Park as a result of the proposed development. A combination of subtle variations in landform and screening by mature vegetation within the park itself, on the boundaries and within the wider landscape will ensure that the influence on the setting of Margam Park as a result of the proposed development will be extremely restricted.

It will only be from a few open and elevated locations, as illustrated in **Viewpoint 6 (Figures 13A-13C)**, from adjacent to the adventure play area within Margam Park, that the proposed development will have the potential to be perceived and influence the setting.

Set within an expansive view, already influenced by large scale industry and lines of pylons as well as scattered wind energy schemes, the additional influence of the proposed development on the setting of the park will be minimal. However, there will be an increase in moving vertical and built elements which at worst, will have **low impacts** and **minor effects** on the setting of the Registered Park and Garden. For the majority of the Registered Park and Garden, including in the vicinity of the house and gardens, the proposed development will not be perceived and will not influence the setting.

- The majority of Conservation Areas within the study area are excluded from the ZTVs with no potential to be indirectly influenced by the proposed development. There would be no indirect influence on the setting of these Conservation Areas as a result of the proposed development. The magnitude of impact will be **no change**, the level of effect will be **neutral**.

It will only be from the closest Conservation Areas including Margam Park, approximately 2.6km to the north and Nottage, approximately 5.5km to the south that are within the ZTVs and have the potential to be indirectly influenced by the proposed development.

The screening provided by intervening development and infrastructure, as well as the vegetation enclosing the settlements and in the intervening landscape, will restrict the indirect influence the proposed development may have on the setting of the Conservation Areas. Even if distantly perceived, the proposed development will be viewed as a single additional vertical element set within an industrial landscape of other numerous vertical elements which will not influence the setting of the generally enclosed Conservation Areas. 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 to the west of the railway line, approximately 310m to the west.

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

Landscape Character Areas

- 6.15 The operation of the proposed wind turbine will introduce a new single and additional vertical element within the landscape. With reference to the ZTVs (**Figures 7A and 7B**) the proposed development will be perceived within close proximity, with the extent of visibility reducing substantially towards the fringes of the study area.

6.16 In addition, the dramatically undulating landscape of hills, ridges and valleys that is prevalent inland, along with the woodland, forestry and hedgerow vegetative screening, will reduce even further the potential influence of the operation of the proposed development will have on the landscape within the study area.

6.17 The main impacts and effects of the proposed wind turbine will be on the landscape in close proximity to the proposed development.

Visual and Sensory

6.18 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 'outstanding' (**high**).

6.19 The ZTV has been overlaid over the visual and sensory areas within the study area, to determine any potential indirect influence on the setting, particularly on the 'outstanding' (**high**) and 'high' (**medium-high**) sensitivity aspect areas.

6.20 The main impacts and effects of the proposed development will be on the aspect areas in close proximity to the proposed development.

6.21 The proposed development will be situated within the 'low' (**medium-low**) sensitivity *Margam Works aspect area*, characterised by large scale heavy industry and disused docks on the coastal plain.

6.22 The proposed wind turbine will have limited direct impacts on this area and will not influence the guidelines, as defined by LANDMAP.

6.23 The proposed wind turbine will however introduce a single vertical element to the 'low' (**medium-low**) sensitivity *Margam Works aspect area*. Described as dominated by the steel works which acts as a significant landmark in the flat landscape, the addition of the proposed development, although perceived will not seem 'out of place.'

6.24 The magnitude of impact on this degraded aspect area of low scenic quality, heavily influenced by the steel works and industrial character, will be **medium-high** and the level of effect will be **minor**, although the influence of the proposed development will very quickly diminish with distance.

6.25 Further afield, the assessment is focussed on those areas identified as having an 'outstanding' (**high**) and 'high' (**medium-high**) sensitivity.

6.26 To the south of the proposed development is the 'outstanding' (**high**) sensitivity *Kenfig Burrows aspect area*.

6.27 The proposed development will be perceived from selected locations within the expanse of dunes, centred on Kenfig Pool, as illustrated in **Viewpoints 1, 3 to 5 (Figures 8A-8C, 10A-10C to 12A-12C)**. It will be viewed as a single vertical moving element, occasionally in combination with the adjacent operational single turbine at Newlands Farm, but always set within and against a backdrop of industrial development. The magnitude of impact will be **medium** and the level of effect will be **moderate**, although the influence of the proposed development will very quickly diminish with distance and will not seem 'out of place' within an area already influenced and characterised by the existing presence of the steelworks and adjacent industrial development and infrastructure.

- 6.28 To the west and extending southwards along the coast towards Porthcawl is the 'outstanding' (**high**) sensitivity *Kenfig Sands aspect area*. This sandy beach with views out to sea will have the potential to perceive and be indirectly influenced by the proposed development. Separated from the sandy beach aspect area by the undulating dunes, the influence of the proposed development will not dominate, set amidst an industrial landscape and against a backdrop of rising hills, scattered with wind energy schemes. The proposed development will however introduce an additional single moving vertical element with at worst, **low impacts** and **minor effects**.
- 6.29 To the west and extending to the north-west towards Port Talbot is the 'high' (**medium-high**) sensitivity *Margam Sands/Aberavon Sands aspect area*. The proposed development will have the potential to be perceived from this intertidal sandy beach area. Separated from and already influenced by the adjacent steel works and industry, the addition of the proposed development will not dominate the landscape. The proposed development will however introduce an additional single moving vertical element, with at worst, **low impacts** and **minor effects**.
- 6.30 To the north is the 'high' (**medium-high**) sensitivity *Margam Country Park aspect area*. Only intermittently within the ZTV, this designed parkland landscape is largely enclosed by mature vegetation within and on the boundaries which will restrict the indirect influence of the proposed development. However, as illustrated in **Viewpoint 6 (Figures 13A-13C)**, from selected open and elevated locations, the proposed development will have the potential to be perceived and indirectly influence the aspect area. Even when perceived the proposed development will be viewed as an additional single vertical element within an expansive coastal landscape, already influenced by large scale industry and scattered wind energy schemes and lines of pylons. The proposed development will not dominate and at worst, the magnitude of impact will be **low**, the level of effect will be **minor**.
- 6.31 To the east and north-east is the 'high' (**medium-high**) sensitivity *Mynydd Baedan aspect area*, recognised for its strong upland character. Only intermittently within the ZTVs, it will only be from a few open and elevated locations, as illustrated in **Viewpoint 8 (Figures 15A-15C)**, that the proposed development will have the potential to be perceived and indirectly influence the landscape. Even when perceived the proposed development will be viewed as an additional single vertical element within an expansive coastal landscape, already influenced by large scale industry and scattered wind energy schemes and lines of pylons. The proposed development will not dominate and at worst, the magnitude of impact will be **negligible**, the level of effect will be **minor-negligible**.
- 6.32 Further afield, the northern part of the study area is scattered with 'high' (**medium-high**) sensitivity landscapes, reflecting the upland hills and forested landscape, scattered with wind energy schemes.
- 6.33 The southern part of the study area is scattered with 'outstanding' (**high**) and 'high' (**medium-high**) sensitivity landscapes, focussed adjacent to the developed coastline.
- 6.34 Largely excluded from the ZTVs, the addition of the proposed development on these distant 'outstanding' (**high**) and 'high' (**medium-high**) sensitivity aspect areas will be difficult to ascertain, particularly in combination with numerous other wind energy schemes, and will easily go unnoticed. The magnitude of impact will be **no change**, the level of effect will be **neutral**.

Historic Landscape

- 6.35 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**).
- 6.36. The ZTV has been overlaid over the historic landscape areas within the study area to determine any potential indirect influence on the setting, particularly on the 'outstanding' (**high**) and 'high' (**medium-high**) sensitivity aspect areas.
- 6.37 With reference to the LANDMAP guidance, it is important to note that although the proposed development may be perceived at distance, this may not compromise the historic interest. It is likely that the most significant effects will be close to or adjacent to the site, with the main influence on the historic landscape aspect area in which the proposed development will be situated.
- 6.38 The proposed development is within the 'moderate' (**medium**) sensitivity *Port Talbot Industrial aspect area* which extends to the north and north-west. The proposed wind turbine will introduce a single vertical element to the entirely industrial aspect area, situated on the coastal margins of the Margam Moors. The addition of the proposed development, although perceived will not seem 'out of place.'
- 6.39 The magnitude of impact will be **medium-high** and the level of effect will be **moderate**, although the influence of the proposed development will very quickly diminish with distance.
- 6.40 To the west and north-west, extending along the coastal fringes is the 'high' (**medium-high**) sensitivity *Margam Sands aspect area*. The proposed development will be perceived from selected locations within the intertidal coast, as illustrated in **Viewpoints 1, 3 to 5 (Figures 8A-8C, 10A-10C to 12A-12C)**. It will be viewed as a single vertical moving element, occasionally in combination with the adjacent operational single turbine at Newlands Farm, but always set within and against a backdrop of industrial development. The magnitude of impact will be **medium** and the level of effect will be **moderate**, although the influence of the proposed development will very quickly diminish with distance and will not seem 'out of place' within an area already influenced and characterised by the existing presence of the steelworks and adjacent industrial development and infrastructure.
- 6.41 Further afield, the assessment is focussed on those areas identified as having an 'outstanding' (**high**) and 'high' (**medium-high**) sensitivity.
- 6.42 The northern part of the study area is scattered with 'outstanding' (**high**) and 'high' (**medium-high**) sensitivity landscapes. These form a diverse mixture of sweeping upland and exposed rough grassland and moorland landscapes, contrasting with more intimate and wooded valleys and coastal fringes. Intermittently within the ZTVs, any indirect influence the addition of the proposed development will have on these areas will be limited. A combination of distance and screening within and surrounding the fringes of the aspect areas will ensure that the proposed development will be difficult to perceive and will barely, if at all, influence their setting. There will be an indiscernible degree of change and in reality the proposed development will be difficult to perceive, particularly in combination with other wind energy schemes, and will easily go unnoticed.
- 6.43 The southern part of the study area is scattered with 'high' (**medium-high**) and 'outstanding' (**high**) sensitivity landscapes, focussed within the more varied undulating,

coastal and urban landscapes. Only intermittently within the ZTVs, any indirect influence the addition of the proposed development will have on these areas will be limited. A combination of distance and screening within and surrounding the fringes of the aspect areas will ensure that the proposed development will be difficult to perceive and will barely, if at all, influence their setting. There will be an indiscernible degree of change and in reality the proposed development will be difficult to perceive, particularly in combination with other wind energy schemes, and will easily go unnoticed.

Cultural Landscape

- 6.44 The main influence on cultural landscape will be on the aspect area in which the proposed development will be situated as this will be where the proposed development has the potential to influence the *“cultural essence of the landscape.”*
- 6.45 The proposed development will be within the ‘low’ (**medium-low**) sensitivity *Margam Works aspect area*. This is described as an area with a low scenic quality and is a major detractor although its character of a threatening, overpowering and uninviting landscape is very strong. The works have a strong integrity but overall comprise a degraded landscape.
- 6.46 The proposed development will influence the *Margam Works aspect area* by introducing an additional single vertical element within the industrial influenced cultural landscape.
- 6.47 Although prominent in close proximity, the influence of the proposed wind turbine although noticeable and will immediately influence the cultural landscape, will not dominate the industrial influenced landscape. At worst, the magnitude of impact will be **low**, the level of effect will be **negligible**.

Geological Landscape

- 6.48 The main influence on geological landscape will be on the aspect area in which the proposed development is situated.
- 6.49 The proposed development will be situated on the boundary of the ‘low’ (**medium-low**) sensitivity *Margam aspect area*, described as containing a coastal strip of marine alluvium (sand) fringing the coast, broadly to the west and the ‘moderate’ (**medium**) sensitivity *Kenfig aspect area*, described as broad low lying plain of glacial sand and gravel, broadly to the east.
- 6.50 Other than the ‘footprint’ of the proposed development, there will be limited impacts on the geological aspect areas. The natural geological systems will be maintained and no other features of particular geological or geomorphological significance in the area will be lost or damaged due to development. The magnitude of impact will be **no change**, the level of effect will be **neutral**.

Landscape Habitats

- 6.51 With reference to the LANDMAP guidance:

“Likely significant effects are likely to be higher where the wind farm directly impacts detrimentally upon these landscape characteristics, it is therefore most likely to be within and close to the site boundary where these effects will be greatest. However, any effects on the connectivity of the landscape habitat corridor or patch should also be broadly considered...”

- 6.52 The main influence of the proposed development will be on the area in which the proposed wind turbine is situated. The proposed development will be within the 'moderate' (**medium**) sensitivity *Industrial aspect area*. This is described as an area of industrial development on former dunes and coastal grassland habitats, with some remnants remaining.
- 6.53 Other than the 'footprint' of the proposed development within a hard landscaped area within an existing industrial estate, there will be no impacts on the *Industrial aspect area*, including on any remnant dunes or coastal grassland habitat. The magnitude of impact will be **no change**, the level of effect will be **neutral**.

Operational Impacts and Effects on Visual Amenity Receptors and their Views

Settlements – Towns and Villages

- 6.54 There are substantial **high** sensitivity settlements present within the study area, including Bridgend to the south-east, Porthcawl to the south and Port Talbot to the north-west.
- 6.55 Bridgend is excluded from the ZTVs and will experience no potential views towards the proposed development. Although Porthcawl and Port Talbot are intermittently within the ZTVs, a combination of distance and screening by intervening development (including the steel works adjacent to Port Talbot) and mature vegetation on the settlement fringes and in the wider landscape will ensure that any potential views of the proposed development will largely not be noticeable. The magnitude of impact will be **no change**, the level of effect will be **neutral**.
- 6.56 It will largely only be the settlements in close proximity or as the landform gently rises to the east that will experience views towards the proposed development.
- 6.57 The closest settlement to the proposed development is Eglwys Nunydd, approximately 1.1km to the north-east at its closest point.
- 6.58 Separated from the proposed development site by the enclosed and vegetation lined M4, as illustrated in **Viewpoint 2 (Figures 9A-9C)**, from the fringes of the settlement, views of the proposed development will be possible across the gently sloping landscape. The proposed development will add another vertical element to the view, already crossed and influenced by numerous lines of pylons. Set within a view already influenced by development, the proposed development although perceived will not dominate the view. The magnitude of impact will be **medium**, the level of effect will be **moderate**.
- 6.59 Mawdlam, a small settlement centred around a church, also occurs on elevated ground, approximately 1.7km to the south-east. Adjacent to the M4, views of the proposed development, set within the industrial landscape, will be possible across the sloping dunes and wider coastal landscape, dominated by numerous lines of pylons. Although at least partially enclosed by the mature vegetation lining the adjacent road, at worst, the magnitude of impact will be **medium**, the level of effect will be **moderate**.
- 6.60 Further along the coastal fringes and as the landform begins to rise inland, wider views towards the proposed development will often be restricted from the settlements by a combination of intervening development, subtle variations in landform and mature vegetation, even when within the ZTVs.

- 6.61 However, as illustrated in **Viewpoint 7 (Figures 14A-14C)**, from a selected open and elevated location on the fringes of Kenfig Hill, views of the proposed development will be possible. Set within an expansive landscape, with views over the adjacent settlement on lower ground and towards the coastal fringes, including the Port Talbot works in the distance, the proposed development will add an additional vertical moving element to the view, perceived adjacent and in combination with the Newlands Farm operational wind turbine. The magnitude of impact will be **low**, the level of effect will be **minor**.

Individual Residential Properties and Farms

- 6.62 Individual **high** sensitivity residential properties and farms are widely scattered on the ridges and slopes above the more developed valleys within the study area, becoming sparser on the higher, elevated ridges and hills and along the coastal fringes.
- 6.63 Open views are possible into the surrounding landscape, often from one ridge to another from scattered residential properties, although occasionally restricted by a combination of vegetation enclosing many properties, screening provided by adjacent development as well as subtle variations in landform and vegetation in the wider landscape, particularly on the lower slopes. 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**.
- 6.64 It is largely only in close proximity to the proposed development that occasional exposed views towards the proposed development may be possible from the few **high** sensitivity residential properties and farms immediately surrounding the proposed development.
- 6.65 There are a number of residential properties within close proximity of the proposed development, scattered along Water Street, including Pont Bwriac, New Mill Farm, Newland and Kenfig House Farm. They are generally situated along the enclosed minor road network to the north-east and east, often nestled amidst mature hedgerow, tree and small woodland vegetation and separated from the proposed development by the enclosed M4 corridor.
- 6.66 However, selected views will be possible from the scattered residential properties, including towards the proposed development, where gaps in enclosure allow. Any views however will not dominate or be overbearing.
- 6.67 The nearby residential properties are, at least partially enclosed by surrounding buildings, sloping landform and mature vegetation and will experience variable and often very limited views towards the proposed development.
- 6.68 At worst, the magnitude of impact on these **high** sensitivity properties will be **medium-low**, the level of effect will be **moderate-minor**.

Country Parks

- 6.69 There are scattered **high** sensitivity Country Parks within the study area, the majority of which are excluded from the ZTVs and would experience no potential views towards the proposed development. The magnitude of impact will be **no change**, the level of effect will be **neutral**.
- 6.70 A combination of subtle variations in landform and screening by mature vegetation within the park itself, on the boundaries and within the wider landscape will ensure that views of the proposed development from Margam Park will be extremely restricted.

- 6.71 It will only be from a few selected open and elevated locations within Margam Park, as illustrated in **Viewpoint 6 (Figures 13A-13C)**, from adjacent to the adventure play area, that the proposed development will have the potential to be perceived.
- 6.72 Set within an expansive view, already influenced by large scale industry and lines of pylons as well as scattered wind energy schemes, the additional influence of the proposed development will be minimal. However, there will be an increase in moving vertical and built elements which at worst will have **low impacts** and **minor effects** on the Country Park. For the majority of the Country Park, including in the vicinity of the house and gardens, the proposed development will not be perceived.

Recreational Routes

- 6.73 Numerous **medium-high** sensitivity recreational routes pass through the study area, including the closest, the Wales Coastal Path which crosses the study area from the south-east to the north-west, including approximately 900m to the west and 1km to the south-east of the proposed development at its closest points.
- 6.74 As illustrated in **Viewpoint 1 (Figures 8A-8C)** and **Viewpoint 3 (Figures 10A-10C)** close proximity views of the proposed development from the Wales Coast Path will be possible. The proposed development will be perceived as a prominent single vertical element, but set within an industrial landscape, against a backdrop of industry and rising hills within a landscape already influenced by the presence of the adjacent motorway, pylons and scattered wind energy schemes, will not seem 'out of place.' The magnitude of impact will be **medium-high**, the level of effect will be **moderate**.
- 6.75 Further afield, along the coastal fringes, the proposed development will be perceived as a single vertical moving element within an expansive landscape dominated by coastal dunes. As illustrated in **Viewpoint 4 (Figures 11A-11C)**, the proposed development will be viewed set against a background of rising hills, scattered with wind energy schemes and although perceived will not dominate the view. The magnitude of impact will be **medium**, the level of effect will be **moderate**.
- 6.76 Further afield, the Bridgend Circular Walk is excluded from the ZTVs and would experience no potential views towards the proposed development. The magnitude of impact will be **no change**, the level of effect will be **neutral**.
- 6.77 Only very small sections of the St Illtyd's Walk and the Ogwr Ridgeway Walk, crossing the rising slopes and upland, forested landscape broadly to the east are within the ZTVs and have the potential to perceive the proposed development. As illustrated in **Viewpoint 8 (Figures 15A-15C)**, from an open and elevated location along the Ogwr Ridgeway Walk, expansive views are possible across the lower slopes and towards the coastal fringes, including towards the proposed development. Distantly perceived in combination and adjacent to the single operational wind turbine at Newlands Farm, the proposed development will be viewed as an additional single vertical element within an expansive coastal landscape, already influenced by large scale industry and scattered wind energy schemes and lines of pylons. The proposed development will not dominate and at worst, the magnitude of impact will be **negligible**, the level of effect will be **minor-negligible**.

National Cycle Routes

- 6.78 Numerous **medium-high** sensitivity national cycle route (NCRs) cross the study area, generally following minor roads and lanes along the valley bottoms and lower valley sides and are largely excluded from the ZTVs.

- 6.79 Even when within the ZTVs, largely only in close proximity, views towards the proposed development will be mainly restricted. The closest NCR to the proposed development is NCR 4, Celtic Trail, approximately 2km to the north-east of the proposed development, at its closest point, following the A48. Although intermittent and variable views are possible into the surrounding landscape, often limited by development, sloping landform and mature vegetation, any potential views towards the proposed development will be at worst only glimpsed, with at worst, **medium-low impacts** and **moderate-minor effects**. However, occasional expansive views are possible into the wider landscape from selected open or elevated locations, including towards the scattered wind energy schemes situated on the upper slopes and ridges.

Local Public Rights of Way, Bridleways and Cycleways

- 6.80 **Medium** sensitivity (**medium-high** in the SLAs) public rights of way, bridleways and cycleways cross the study area including over the coastal fringes and the undulating landscape of ridges, hills and valleys. Often following field boundaries, they are largely enclosed by a combination of hedgerow and woodland vegetation which will restrict many views, including towards the proposed development. For the majority of **medium** and **medium-high** sensitivity public rights of way, bridleways and cycleways in the study area the proposed development will not be perceived and the magnitude of impact will be **no change**, the level of effect will be **neutral**.
- 6.81 The close proximity public rights of way however will experience a change in view as a result of the proposed development. As illustrated in **Viewpoint 1 (Figures 8A-8C)**, from the network of public rights of way that cross the adjacent Kenfig Burrows, views towards the proposed development, set within the industrial estate will be possible in close proximity. Set within an industrial landscape, although perceived, the proposed development will not seem 'out of place.' At worst, the magnitude of impact will be **medium-high**, the level of effect will be **moderate**, although any influence will very quickly reduce with distance.
- 6.82 In land, the public rights of way often follow field boundaries and are largely enclosed by a combination of hedgerow and woodland vegetation as well as intervening development which will restrict many views towards the proposed development.
- 6.83 It will only be from selected high points, from gaps in the enclosing vegetation, such as at field gates or when the routes cross the open uplands and ridges that exposed views across the surrounding landscape, including the proposed development, will be possible, including towards the coastal fringes and the scattered wind energy schemes that are situated on the upper slopes and ridges.
- 6.84 As illustrated in **Viewpoint 7 (Figures 14A-14C)**, from an open and elevated public right of way on the fringes of Kenfig Hill, views of the proposed development will be possible. Set within an expansive landscape, with views over the adjacent settlement on lower ground and towards the coastal fringes, including the Port Talbot works in the distance, the proposed development will add an additional vertical moving element to the view, perceived adjacent and in combination with the Newlands Farm operational wind turbine. The magnitude of impact will be **low**, the level of effect will be **minor-negligible**.

Open Access Areas

- 6.85 The expansive **medium** sensitivity (**medium-high** in the SLAs) open access areas in the study area are largely situated on elevated open land, dominated and enclosed by forestry plantations, particularly focussed to the north, on the elevated ridges between the

more developed valleys. They are excluded or largely excluded from the ZTVs and will experience no or very limited views towards the distant proposed development. The magnitude of impact will be **no change**, the level of effect will be **neutral**.

- 6.86 Scattered and smaller open access areas are also present within the undulating agricultural landscape broadly to the east of the study area. Excluded or largely excluded from the ZTVs and often in areas of common or woodland with wider views largely limited by the immediate enclosure by vegetation, undulating landform and intervening development, views towards the proposed development will be extremely restricted. The magnitude of impact will be **no change**, the level of effect will be **neutral**.
- 6.87 It will only largely be from the closest open access area, Kenfig Burrows, to the west, south and south-east, extending southwards along the coastal fringes that will experience exposed views towards the proposed development. As illustrated in **Viewpoints 1, 3 to 5 (Figures 8A-8C, 10A-10C to 12A-12C)**, the proposed development will be perceived as a prominent moving vertical element in close proximity, its influence reducing with distance from the adjacent open access area. Set amidst and against a backdrop of industrial development, often in combination and adjacent to the single operational turbine at Newlands Farm, although perceived the proposed development will not dominate the view or appear to be 'out of place.' At worst, the magnitude of impact will be **medium-high**, the level of effect will be **moderate**, although the influence of the proposed development will reduce with distance.

Motorways and Major 'A' Roads

- 6.88 The **low** sensitivity M4 crosses the study area from the east to the north-west, connecting Bridgend with Port Talbot, approximately 400m to the east of the proposed development at its closest point.
- 6.89 Crossing the undulating and coastal fringe landscape, the motorway is often enclosed by mature vegetation and development although expansive views are also possible over the adjacent coastal fringes dominated by the large scale industry and lakes associated with Port Talbot as well as the adjacent hills and ridges scattered with wind energy schemes.
- 6.90 Fleeting views from the nearby M4 overbridge, as illustrated in **Viewpoint 1 (Figures 8A-8C)** towards the proposed development set within the industrial estate will however be possible in close proximity. Set within an industrial landscape, although perceived, the proposed development will not seem 'out of place.' At worst, the magnitude of impact will be **medium-high**, the level of effect will be **minor**, although any influence will very quickly reduce with distance along the motorway corridor.
- 6.91 Numerous **low** sensitivity major 'A' roads also pass through the study area generally following the coastal fringes or valley bottoms and lower valley sides. Only intermittently within the ZTVs, views towards the proposed development will be largely restricted by surrounding development and sloping landform within the immediate vicinity.
- 6.92 The closest major road to the proposed development is the A48, which passes through the study area from the south-east to the north-west, approximately 2km to the north-east at its closest point. Although intermittent and variable views are possible into the surrounding landscape, often limited by development, sloping landform and mature vegetation, any potential views towards the proposed development will be at worst only glimpsed, with **medium-low impacts** and **negligible effects**. However, occasional expansive views are possible into the wider landscape from selected open or elevated

locations, including towards the scattered wind energy schemes situated on the upper slopes and ridges.

Minor 'B' Roads and Unclassified Roads

- 6.93 Numerous **medium-low** sensitivity minor roads cross the study area and are largely enclosed by a combination of sloping landform, mature vegetation as well as development. Even when within the ZTVs, the minor roads within the valleys and the undulating landscape are largely enclosed by a combination of sloping landform, mature vegetation as well as development which will restrict views towards the proposed development.
- 6.94 It will generally only be from those minor roads in close proximity that will experience views of the proposed development.
- 6.95 A network of minor roads connects the nearby settlements and scattered houses in close proximity to the proposed development. Often enclosed by hedgerow and tree vegetation, development, infrastructure or subtle variations in the landform, views towards the proposed development will however be selectively possible. As illustrated in **Viewpoint 2 (Figures 9A-9C)**, the proposed development will have the potential to be perceived as an additional single vertical element within the surrounding gently sloping agricultural landscape, behind the enclosed and well-vegetated M4 corridor, in a view already influenced by the numerous lines of pylons and single operational wind turbine at Newlands Farm.
- 6.96 The proposed development will add another vertical element to the view and although perceived will not dominate the view. The magnitude of impact will be **medium**, the level of effect will be **minor**.
- 6.97 Further afield, it will only be from high points, or from gaps in the enclosure, that views into the surrounding undulating and coastal fringe landscape from the network of minor roads, including towards the proposed development, will be possible. At worst, glimpsed views may be possible with **low impacts** and **negligible effects**.

Railway Lines

- 6.98 The main Cardiff to Swansea **low** sensitivity railway line crosses the study area from the south-east to the north-west, connecting with a 'valley' line leading towards Maesteg and Bridgend.
- 6.99 Crossing the coastal fringes in close proximity to the proposed development, as illustrated in **Viewpoint 1 (Figures 8A-8C)**, from a public right of way adjacent to the railway line, glimpsed and fleeting views of the proposed development will be possible in close proximity. Set amidst views of the motorway, coastal fringes and large industrial works, including the industrial estate associated with the proposed development, the addition of the proposed development will not dominate or seem 'out of place.' At worst, the magnitude of impact will be **medium-high**, the level of effect will be **minor**. Views of the proposed development however will very quickly become restricted by intervening development, vegetation and subtle variations in landform.
- 6.100 The branch railway lines generally follow the lower valley sides and are excluded from the ZTVs. The magnitude of impact will be **no change**, the level of effect will be **neutral**.

Summary of Cumulative Impacts and Effects

- 6.101 The proposed wind turbine is considered 'in addition' to:
- Operational wind energy schemes in the study area, where the wind turbines already exist. Operational wind energy schemes are discussed within the 'main' impacts section of the LVIA;
 - Consented wind energy schemes where they are highly likely to exist; and
 - 'In planning' wind energy schemes within the study area, where there is only the potential that they will exist.

Landscape Character

- 6.102 As illustrated in **Viewpoints 1-8 (Figures 8-15)** the proposed development will largely be perceived as a single vertical moving element within a surrounding landscape heavily influenced by industry and infrastructure, including the nearby motorway and main railway line as well as numerous lines of pylons.
- 6.103 There will be the potential that the proposed development will be perceived in combination with the closest operational wind energy scheme, the single turbine at Land at Newlands Farm, although separated by the motorway.
- 6.104 Other operational and consented wind energy schemes are situated further afield within the undulating landscape to the south-east and within the higher ridge and hill landscape to the north, north-east and east. Although perceived, largely on the expansive ridges and hills, they do not dominate the landscape. In planning wind energy schemes are situated further afield to the north and north-east within the upland landscape.
- 6.105 Set within an industrial influenced landscape, the addition of the proposed wind turbine, in combination with the more distant consented, in planning (and operational) wind turbines, will not dramatically change the wider characteristics of the landscape character areas or create a landscape dominated by wind turbines. The introduction of another vertical element, in combination with the other wind energy schemes, however, will very slightly increase the perception of wind energy on the landscape and on the setting of landscape relevant designations.
- 6.106 Wind energy schemes although perceived, even with the addition of the proposed wind turbine, will not dominate the landscape. The industrial influenced landscape appears to have the capacity to absorb the proposed wind turbine, even in combination with other wind energy schemes, without creating a 'wind farm' landscape.
- 6.107 The addition of proposed wind turbine will have minimal additional cumulative effects to the setting of any landscape relevant designations and on landscape character, when perceived with other operational, consented and in planning wind energy schemes.

Visual Amenity Receptors and their Views

Combined Views

- 6.108 As illustrated in **Viewpoints 1-8 (Figures 8-15)**, the proposed wind turbine will be largely viewed as a single vertical moving element, occasionally in combination with the closest operational wind turbine at Newlands Farm, although separated by the motorway corridor.

- 6.109 The proposed wind turbine will very slightly add to the perception of wind energy schemes, although set within an industrial influenced landscape, the addition of the proposed wind turbine, even when perceived in combination with other wind energy schemes, will not dominate the view.

Sequential Views

- 6.110 Passing in often close proximity to the operational, consented and in planning wind energy schemes in the study area as well as the proposed development, sequential views of wind energy schemes will be possible from the transport corridors including the adjacent motorway, major and minor roads as well as recreational routes, national cycle routes and public rights of way.
- 6.111 The screening surrounding many of the transport corridors, however will ensure that many views of wind energy schemes will be glimpsed and quickly vanish due to a combination of enclosure by mature vegetation and the undulating landform.
- 6.112 In sequential views from the transport corridors, the proposed wind turbine will add an additional vertical element, largely viewed as separate from the closest operational wind turbine at Newlands Farm. The proposed wind turbine has the potential to be selectively sequentially glimpsed with other wind energy schemes but in reality will barely contribute to a journey already influenced by scattered wind energy schemes. The addition of this single moving element will not create a 'wind farm' dominated journey.

7. Conclusion

- 7.1 The landscape around the proposed development is dominated by industrial development, including extending towards Port Talbot to the north and north-west. The distinctive and recognised dune and coastal landscape is prevalent to the south. Visual amenity receptors consist of scattered residential properties and farms and towns and villages connected by a network of transport corridors including major and minor roads and public rights of way. Selected views are only possible from limited scattered receptors, generally only in close proximity, or when elevated open land allows occasional expansive and more distant views.
- 7.2 The proposed development site is not recognised for its value through any landscape relevant designations, although there are scattered landscape relevant designations within the study area. The Merthyr Mawr, Kenfig and Margam Burrows Landscape of Historic Interest, also locally recognised as Kenfig Burrows Special Landscape Area, occurs to the south. Margam Mountain Landscape of Historic Interest, containing Margam Park Registered Park and Garden and also locally recognised as Margam Special Landscape Area, occurs to the north. Some of the centres of the scattered towns and villages are recognised as Conservation Areas. There are also a few widely scattered Ancient Woodlands present.
- 7.3 Mitigation measures during the site selection and design stages have ensured that the proposed development will have no direct effects on landscape elements and no landscape vegetation will be lost. The design and location of the proposed development within an industrial landscape also minimises the impacts on landscape character, landscape relevant designations and nearby visual amenity receptors. However, the proposed development, due to its scale, will affect both landscape character and visual amenity receptors and their views during construction, operation, and decommissioning.

- 7.4 The containment and enclosure provided by the immediate industrial buildings will also ensure that the proposed development will only have only minimal effects on both landscape character and visual amenity receptors and their views during construction and decommissioning. Crane activity will be perceived and will draw attention to the proposed development within the landscape and be visible for selected close proximity visual amenity receptors (such as nearby road users) but their presence will not be out of place within this industrial landscape. The cranes will also be present for a very short period of time and will be temporary.
- 7.5 During the operation period, the proposed wind turbine, due to its scale, will be visible and potentially perceived over a relatively wide area. However, the majority of effects on landscape character and visual amenity receptors and their views will be neutral, largely because of the enclosure provided by the surrounding landform as well as mature vegetation and development in the wider landscape. Exposed views of the proposed turbine will be limited and will generally be only from those receptors in close proximity. However, although potentially and selectively perceived, the proposed development will be viewed as a single built moving element, within an expansive landscape already influenced by extensive development.
- 7.6 Further afield, the proposed development will have the potential to be perceived, particularly from selected open and/or elevated locations. It will be viewed as an additional single vertical element within a landscape and views already scattered with wind energy schemes. The proposed development will add another single vertical moving element. With distance, however, the proposed development will easily become 'lost' within the wider landscape, set within a landscape and views already influenced by scattered wind energy development.
- 7.7 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 landform, development and vegetation.
- 7.8 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 setting of the proposed wind turbine within an industrial landscape, which is tolerant to change, will ensure that there will be very limited indirect effects on landscape character areas and the setting of landscape relevant designations. The proposed development will be selectively visible but will largely be perceived as a single built element, within a landscape already extensively influenced by development. The proposed development will fit within the existing landscape pattern and will not be out of scale with the surrounding landscape.
- 7.9 Exposed views of the proposed development from visual amenity receptors will be limited and will be generally only from those receptors in close proximity, from selected more distant high points or where there is limited vegetation cover or 'gaps' in the enclosing vegetation and development. These receptors already experience views of the working, industrial landscape, including scattered wind energy schemes. However, it is important to note that views of the proposed wind turbine will not be 'overbearing' or dominate the view. The influence of the proposed development will also very rapidly decrease with distance where the majority of views will be obscured by localised screening from intervening development and mature vegetation.
- 7.10 In summary, the proposed development will:
- Add a single built vertical moving element to the landscape;

- Avoid and does not have a direct impact on any designated landscapes;
- Be set within a landscape heavily influenced by industry, with a very good to substantial ability to accommodate change without detriment to its landscape character;
- Be perceived in close proximity as a prominent vertical element, occasionally in combination with an existing operational wind turbine;
- Very quickly become 'lost' within the wider expansive undulating landscape; and
- Overall, have limited impacts on landscape relevant designations, landscape character and visual amenity receptors and their views.

Appendix A – References

LVA References

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

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

Using LANDMAP in Landscape and Visual Impact Assessment (GN46)

Planning Guidance for Smaller Scale Wind Turbine Development, Landscape and Visual Impact Assessment Requirements, for The Heads of the Valleys Landscape Officers and Planners, with support from The South Wales Landscape Liaison Group, April 2015

General LVA Designation References

Landscapes of Historic Interest in Wales information www.ggat.org.uk

Local Plan References

Neath Port Talbot County Borough Council, Local Development Plan (2011-2026), Adopted January 2016

Neath Port Talbot County Borough Council, Local Development Plan (2011-2026), Landscape and Seascape, Supplementary Planning Guidance, May 2018

Bridgend County Borough Council, Local Development Plan, 2006-2021, Adopted September 2013

Bridgend County Borough Council, Designation of Special Landscape Areas, March 2010

Landscape Character References

LANDMAP (Natural Resources Wales) website

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

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

LANDMAP Methodology: Visual and Sensory, 2016, Natural Resources Wales

LANDMAP Methodology: Historic Landscape, 2016, Natural Resources Wales

LANDMAP Methodology: Landscape Habitats, 2016, Natural Resources Wales

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 LVA References

Cumulative GIS cloud for South-East Wales

Appendix B – Technical Information

Introduction

The Landscape Institute '*Technical Guidance Note 06/19, Visual Representation of Development Proposals, 17th September 2019*' was referenced for the creation and presentation of the landscape and visual technical graphic information, to accompany and inform the LVA. It was also referenced for guidance on the use of the camera and photography.

Zone of Theoretical Visibility (ZTV)

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

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

- Where visibility is theoretically likely to occur;
- How much of the proposed development is likely to be visible (calculated to hub height and blade tip); and
- Extent and pattern of visibility.

The ZTV was calculated using Resoft WindFarm (Version 4.2.5.1) computer software on a Digital Terrain Model (DTM) derived from OS Terrain 50 grid data, based on a on a 50m grid.

A ZTV, to blade tip and hub height, covering the 11km radius study area was overlaid on an OS base map of 1:50,000 scale and plotted at A3 size at 1:80,000 scale for graphic interpretation.

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

The proposed development was plotted based on the hub height to 70m and a maximum of 100m to blade tip above ordnance datum (AOD) assuming a viewer height above ground level of 2m. The ZTV was calculated considering earth curvature.

The ZTV was based on land form data only 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 (which the OS Terrain 50 data does not always reflect), local conditions such as built development or vegetation such as woodland, which can and does significantly reduce the area and extent of actual visibility.

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 LVA.

The ZTV is also a useful basis for selecting potential viewpoints, wireframes 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 in landscape format.

The panoramic 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 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. These are 'cylindrical' projections. The photographs were then converted to 'planar' projection using a re-projection tool in Resoft Windfarm.

Viewpoints

A number of viewpoints from which the proposed development will be visible were selected.

A selection of existing photographic views, wireframe drawings and photomontages were generated for these viewpoints.

The viewpoint photographs were taken in fine weather with good visibility in June 2021.

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.

Wireframes

Wireframes are computer generated line drawings, based on a DTM, which indicate an objective three-dimensional shape of the landform and proposed development.

The wireline drawings were produced using Resoft WindFarm (Version 4.2.5.1) computer software to generate a perspective view of the proposed development. The software used a

3D DTM model of the existing landscape within the study area derived from OS Terrain 50 DTM data based on a 50m grid.

A 3D model of the proposed development was generated based on the turbine grid coordinates and specified turbine geometry, with the proposed wind turbine shown with one blade positioned upwards, orientated towards the viewer.

Using GPS grid co-ordinates and a specified direction and field of view, wireframe views of the proposed development within the existing landform were then generated within the Resoft WindFarm software by superimposing the models.

In addition, other wind energy schemes within the study area are shown on the wireframe views.

Photomontages

A photomontage is where a computer rendered image of the proposed development is superimposed onto the existing photographic view.

The geometry of the overlain rendered image of the wind turbine matches as accurately as possible with the base photography.

The viewpoint location, height and direction of the view is identical, as is the horizontal field of view with the base photography.

Photomontages are a valuable tool for presenting an overall realistic impression of the proposed development in the landscape from selected agreed viewpoints.

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

The proposed development is orientated to appear consistent with adjacent operational wind turbines (when perceived in the view) to give a more realistic interpretation of what the proposed development would look like when perceived in combination with adjacent wind turbines.

The photomontages show the proposed development only and did not show the ancillary development including access tracks, control building etc.

The proposed wind turbine is usually centred within the view, except when other features, such as cumulative wind energy schemes can be illustrated in the view.

Resoft WindFarm (Version 4.2.5.1) software was used to create the photomontages.

Panoramic images were imported into the software and geographic features matched with the corresponding coordinate of that feature on a base map. The two features were then aligned within the image. A wireline was also superimposed over the image to ensure accuracy of the field of view and direction. Specific turbine models created from the manufacturer's designs were used to render the proposed development. Lighting conditions were created from the software lighting system to create realistic conditions based on location and time/position of the sun. A perspective match was achieved between the computer generated panorama and the photographs by iterative adjustments until all major features were aligned satisfactorily. Their interpretation of view assumes good visibility.

The final photomontages were composited using Adobe InDesign and exported as high resolution full colour digital images.

The PDFs were saved so that the file size was suitable to be uploaded onto the planning portal.

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.

Presentation

All viewpoints are presented as:

- 90° baseline panorama photographic view - showing the extent of the 53.5° planar panorama and the extent of the central 50mm frame used to construct the panorama;
- 90° wireline view – illustrating the proposed development and any other cumulative wind energy schemes in the view;
- 53.5° wireline view – illustrating the proposed development and any other cumulative wind energy schemes in the view; and
- 53.5° photomontage, illustrating the proposed development.

For all viewpoint representations, the following information is included:

- Figure number;
- Viewpoint number and description of viewpoint location;
- OS grid reference of viewpoint location;
- Viewpoint altitude;
- Direction of view;
- Distance to proposed development;
- Horizontal field of view;
- Paper size;
- Weather and lighting conditions (for photographic images only);
- Viewing recommendations;
- Camera and lens details including camera height (for photographic images only);
- Date/time of photograph (for photographic images only); and
- Distance to cumulative wind energy schemes (53.5° wireline view only).