

Annex K

Seascape, Landscape and  
Visual Amenity: *Supporting  
Information*

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## Annex K.1: Glossary

### Cumulative effects and intervisibility

**Cumulative *landscape* effects** – can occur where there would be:

- An incremental change to the fabric of the landscape, as the result of two or more wind farms.
- An incremental change in the character and/or quality of the landscape as the result of the simultaneous and/or sequential visibility of two or more wind farms from various locations.

**Cumulative *visual* effects** – can occur where there would be:

- The simultaneous visibility of two or more existing and/or proposed wind farms at fixed viewpoint locations.
- The simultaneous and/or sequential visibility of two or more existing and/or proposed wind farms at one or more locations along a linear route.

**Intervisible** – two points on the ground or two features are described as “intervisible” when they are visible from each other.

### Landscape

**Landscape** - results from the way that different aspects of our environment (physical, social, aesthetic and perceptual aspects) interact together and are perceived by us.

- **Physical elements** – include geology, landform, soils, flora and fauna.
- **Social elements** – include land use, enclosure patterns, and the patterns, form and scale of settlements and other built development.
- **Aesthetic factors** – include colour, form, visual texture and pattern, sounds, smells and touch.
- **Perceptual factors** – include memories, associations, stimuli and preferences.

**Landscape character** - arises from a distinct, recognisable and consistent pattern of physical and social elements, aesthetic factors and perceptual aspects in the landscape.

**Landscape types** - generic units that display a distinct, consistent and recognisable landscape character.

**Landscape character areas** - single unique areas that are discrete geographical areas of a landscape type.

**Landscape units** - an umbrella term for landscape types and landscape character areas.

**Landscape quality** – a measure of the relative extent to which the distinctive character of a landscape type is expressed in a landscape unit. It is based on an interpretation of the clarity, distinctiveness, intactness, balance, condition, attractors, detractors and the sense of place of the landscape, that is, it is a measure of the clarity with which the particular characteristics of a landscape type are expressed in a landscape unit, the distinctiveness of those characteristics, the intactness (or unity) of the landscape unit, the balance between the manmade and natural elements, the condition of the various elements, the relative quantity of attractors and detractors, and the overall sense of place. The assessment of landscape quality is a professional judgement based on fieldwork observations and subjective interpretation. It is not the same as scenic beauty.

### **Mitigation**

**Mitigation measures** – are measures that will prevent, reduce or compensate for the predicted significant effects of a development on the environmental baseline.

### **Public access**

Land with public access includes:

- a. **Definitive rights of way** – public footpaths, bridleways, cycle routes, byways open to all traffic (BOATS) and highways. Shown on Definitive Rights of Way maps held by the Local Authority. Most routes are also shown on Ordnance Survey maps.
- b. **Permissive paths and bridleways** – routes where there is public access with the permission of the landowner. Such routes are usually closed at least one day a year to prevent the establishment of a definitive right of way.
- c. **Public open space** – areas designated for specified public uses, usually in the ownership of the Local Authority. Includes parks and recreation grounds. Shown on Local Development Plans.
- d. **Beaches** – the public have permitted access to much of the foreshore (intertidal zone - between high and low tide marks) owned by the Crown Estate around the UK, and on land above high water mark owned by the Local Authority. Some beaches above high tide mark are privately owned and some beaches and foreshore have restricted

access for military purposes.

- e. **Access land** - land where public access is currently permitted with the permission of landowners. This includes land shown on the Ordnance Survey Explorer and Outdoor Leisure (1:25,000) sheets by:
- Purple outline – land open to the public by permission of the owners.
  - Purple outline and white oak leaf in a purple box – National Trust, always open.
  - Purple outline and a purple oak leaf in a white box – National Trust limited access.
  - Purple outline and tree symbols in a purple box – Forestry Commission.
  - Purple outline and single leaf in a purple box – Woodland Trust.
  - Purple outline and white “AL” in a purple box – other access land.
- f. **De facto access land** – is land where there is no definitive or permissive right of way but where the public do actually have access with the knowledge and tolerance (but not legal permission) of the landowner. This includes land in the ownership of the Local Authority and private landowners and is generally not shown on Ordnance Survey maps.
- g. **Future open access land** – is land that will be designated under the Countryside and Rights of Way Act 2000. Under Section 2 of this Act, certain areas of mountain, moor, heath, down, common land and coastal foreshore will be designated open access land. The right of access will not apply to developed land, gardens or cultivated land and will not extend to cycling, horse riding or driving a vehicle. The Act allows for a right of appeal for those with a legal interest in the land, and for sensitive ecological or archaeological sites to be excluded. The Countryside Council for Wales (in Wales) and the Countryside Agency (in England) are currently producing maps that will define these open access areas. This mapping process is expected to be completed in 2003-4. Section 2 of the Act requires further Orders to be made before the provisions become law. Therefore, currently, the public do not have open access to these areas. However, the Government expects four million acres of open countryside in England and Wales to be opened up to public access by the end of 2005 ([www.defra.gov.uk/wildlife-countryside](http://www.defra.gov.uk/wildlife-countryside)).

### **Seascape**

**Seascape** – the dictionary definition is “picture of a scene at sea”

(Chambers 1999). However, in accordance with the definition used in the *Guide to Best Practice in Seascape Assessment* (CCW et al, 2001), this definition has been expanded to include the land and sea visible in views:

- from land to sea;
- along the coastline; and
- from sea to land.

**Seascape unit** – an area of sea and land where the different parts are interrelated and/or visible from each other – “intervisible”. As a result, adjacent seascape units can overlap. There are three scales of seascape units whose spatial extents are defined in the guidance (CCW 2001) and can be summarised as follows:

- **National seascape units** – defined by headlands that are major landmarks or waypoints along the coast, eg in Shipping forecasts. Based on Coastal Management Units (UK) and defined by the orientation and topography of the coast, rather than visual criteria. Generally, extend up to 12 UK Nautical Miles (22.2km) offshore (limit of the Crown Estate and British Territorial Waters), to the “view shed” inland and may extend in excess of 100km along the coastline.
- **Regional seascape units** – defined by regional headlands, islands or coastal features. Generally, extend up to 15km offshore, to the “view shed” inland and typically 30km along the coastline.
- **Local seascape units** – defined by local headlands and coastal features. Generally, extend up to 2-3km offshore, 0.5-5km onshore and typically 4km along the coastline.

**Seascape unit component zones** – each seascape unit has three component zones. The spatial extents of these three zones are partially defined in the guidance (CCW 2001, p 17) and, from applying the seascape methodology, it is apparent that precise boundaries between the three zones are helpful although not always easy to define. For clarity and consistency throughout this assessment, the following definitions (based on CCW 2001) have been applied:

- **Marine zone** – the sea from the seaward limit of the seascape unit (22km, 15km or 2-3km respectively) to lowest astronomical tide (Chart datum on Admiralty maps).
- **Coastal zone** – the narrow strip of foreshore and land between lowest astronomical tide and the hinterland, within

which there is a close and direct relationship (visual, physical, social, aesthetic and/or perceptual) with the marine zone.

- **Hinterland** – between the coastal zone and the landward limit of the seascape unit, within which there are views of, but no direct link with, the sea.

As can be seen from the above definitions, the coastal zone includes the foreshore (intertidal zone) and the boundary between the marine zone and the coastal zone is the lowest astronomical tide (LAT). The boundary between the coastal zone and the hinterland, however, is a matter of judgement. Physical features, such as a break in slope, a seawall or a road can provide a clear boundary, in other cases, it is more a matter of assessing the point at which the close and direct relationship with the sea becomes a more indirect link.

**View sheds** – define the limits of Regional and Local seascape units and are the physical limit of views from within each unit (cp with “water sheds” that divide surface water catchment areas). Theoretical view sheds, defined by computer-generated zones of visual influence (ZVIs), should be refined by fieldwork observations. Generally, view sheds are:

- Offshore - the horizon (the distance depending on the elevation of the viewer and the curvature of the earth).
- Along the coast – headlands.
- Inland – high land.

**Seascape quality** – a measure of the relative extent to which the distinctive character of a seascape type is expressed in a seascape unit. It is based on an interpretation of the clarity, distinctiveness, intactness, balance, condition, attractors, detractors and the sense of place of the seascape. (see definition of **Landscape quality** above).

### **Visibility**

**Visibility** – a measure of the distance that can be seen by the human eye at any one time. Visibility varies with weather conditions, light levels and visual acuity. Visibility is measured at official weather stations by reference to landmarks at different distances. For example, landmarks at 100 m, 1000 m, 2 km and 10 km, allow visibility to be described as ‘thick fog’, ‘fog’, ‘poor visibility’ and ‘good visibility’ ([www.bbc.co.uk/weather](http://www.bbc.co.uk/weather)).

In this assessment, the following terms have been used. These are based on the terms used by the Met Office and BBC Weather:

- Thick fog < 100 m
- Fog 100 m - < 1000 m
- Poor 1000 m - < 2 km
- Fair 2 km - <4 km
- Moderate 4 km - < 7 km
- Good 7 km - < 10 km
- Very Good 10 km - < 30 km
- Excellent > 30 km



## Annex K2: Method of Assessment

### Introduction

- K2.1. This Annex describes the assessment process used to determine the effects of the proposed wind energy development on seascape, landscape and visual amenity. It describes the guidance documents on which the methodology has been based, explains the iterative assessment process, and describes the assessment tools used.

### Current assessment guidance

#### Seascape character assessment

- K22. The Countryside Council for Wales (CCW), in conjunction with Brady Shipman Martin and University College Dublin, have recently published the *Guide to Best Practice in Seascape Assessment* (CCW 2001). This is a guide to the characterisation and evaluation of seascape units, which can form part of the “environmental baseline” in a coastal location. The publication does not, however, provide a methodology for assessing the effects of a proposed development on this baseline.

#### Landscape character assessment

- K23. Guidance on the characterisation and evaluation of landscape character units is provided in *Interim Landscape Assessment Guidance* (LUC 1999), produced on behalf of Scottish Natural Heritage and the Countryside Agency. Landscape characterisation and evaluation is also part of the LANDMAP process, described in *The LANDMAP Information System* (CCW 2001). The LUC guidance is available in draft only, and neither document provides a methodology for assessing the effects of a proposed development on landscape character.

#### Assessment of effects

- K24. The current guidelines for the assessment of effects on landscape and visual amenity are provided in *Guidelines for Landscape and Visual Assessment* (LI/IEA 1995). These guidelines have been the primary source of advice on landscape and visual assessment in the UK since publication in 1995. They describe an approach to landscape and visual assessment for development projects generally and are not specific to wind energy projects. They are currently being updated and the next edition should be published in early 2002.
- K25. There is a Technical Report *Wind Energy Development and the Landscape* (CC 1991), which was the Countryside Commission’s guidance on landscape and visual assessment of wind energy developments. The Countryside Commission was the organisation previously responsible for countryside matters in England and Wales (now Countryside Agency and CCW

respectively). However, this document is no longer available, as it does not reflect either CCW's or the Countryside Agency's current approaches to landscape assessment.

### **Assessment of cumulative effects**

- K26. Research on cumulative effects assessment has been carried out, and a report is available from ETSU, entitled *A Guide to Assessing the Cumulative Effects of Wind Energy Development* (LDA 2000). This report recommends an approach to the cumulative assessment of wind energy developments, but does not provide a detailed methodology.

### **Consents and EIA process**

- K27. There are also several publications that provide guidance on the legislative requirements, consents and EIA process for development projects generally, and which also apply to onshore and/or offshore wind energy projects. Although these do not provide specific guidance or methods for assessing effects of offshore wind energy projects on seascape, landscape and visual amenity, the general principles/requirements in these documents are incorporated in this method of assessment.
- K2.8. The Department of Trade and Industry (DTI) has recently published a draft guidance note *Offshore Windfarm Consents Process* (2001). This provides guidance on the proposed consents process for offshore wind energy projects. It includes an overview of the various legislative requirements for consents and EIA, and sets out the DTI's proposed "One Stop" application process.
- K2.9. For applications requiring consents under the Electricity Act 1989, Sections 36 and 37, the *Electricity Works (EIA) (England & Wales) Regulations 2000* (DTI 2000) define the requirements for EIA under the 1989 Act.
- K2.10. For applications that are deemed to be Schedule I or II projects, under the European EIA Directive, the *Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999* (DETR 1999), define the requirements of the EIA process and contents of an Environmental Statement (ES).
- K2.11. Planning Policy Guidance PPG22, Annex *Wind Energy* (1993) applies to onshore developments in England only and is currently under review. Planning Guidance (Wales) *Planning Policy* (1999 revision), and Technical Advice Note 8: *Renewable Energy* (1996), apply to onshore developments in Wales and TAN 8 is currently being revised.

## Assessment process

- K2.12. The following assessment process draws on all the legislation and guidance documents described above. It broadly follows the various assessment processes advocated in the guidelines (eg CCW 2001, LUC 1999, CCW 2001, LI/IEA 1995 and LDA 2000) but with some modifications and additions as described below.
- K2.13. The assessment process has involved information review, consultations, fieldwork observations and photography, computer-based data processing and analysis, and subjective professional judgement. It has been part of an iterative process of design and assessment that has examined various designs and has identified mitigation measures that have been incorporated into the final design of the development. This iterative process has involved eight main stages:
- Stage 1: Baseline environment - characterisation and evaluation of the seascape, landscape and visual context.
  - Stage 2: Potential effects and mitigation - the potential effects that this development could have on the baseline and the mitigation measures that have been incorporated into the design.
  - Stage 3: Visibility analysis – computer-generated zone of visual influence.
  - Stage 4: Viewpoint analysis – analysis of the magnitude of change in the view from a series of viewpoints.
  - Stage 5: Assessment of effects on seascape and landscape character.
  - Stage 6: Assessment of effects on visual amenity.
  - Stage 7: Assessment of cumulative effects.
  - Stage 8: Acceptability of the proposed development

### Stage 1: Baseline environment

- K2.14. A study area has been defined and examined to establish the seascape, landscape and visual context of the study area. This has involved:
- *Step one – definition of study area:* identification of the extent of the study area.

- *Step two - seascape characterisation:* identification of seascape units<sup>1</sup>, in accordance with the methodology described in the guidance (CCW 2001).
- *Step three – landscape characterisation:* identification of landscape units<sup>1</sup> (**landscape types<sup>1</sup>** or **landscape character areas<sup>1</sup>**) in accordance with the methodology described in the draft guidance (LUC 1999).
- *Step four – landscape designations:* review of the landscape designations in the study area.
- *Step five – seascape and landscape evaluation* – evaluation of the quality of each seascape and landscape unit.
- *Step six - visual receptors:* identification of the location and types of visual receptors in the study area.

#### **Step 1: Definition of study area**

K2.15. The study area has been defined (and refined) on the basis of a series of factors, including:

- The limits of National, Regional and Local Seascape Units, in accordance with seascape methodology guidance (CCW 2001) (see Table below).
- The locations of Nationally designated landscapes.
- Zones with potential views of the turbines, taking into account the location and size of the turbines, views from elevated land, earth curvature and visual acuity.
- Predicted limits of significance.

K2.16. The limits of National, Regional and Local Seascape Units recommended in the guidance are shown in Table K2.1 below.

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<sup>1</sup> See Glossary, Appendix 1, for definitions of seascape units, landscape units, landscape types and landscape character areas.

**Table K2.1: Recommended limits of seascape units**

<b>Unit</b>	<b>Distance along the coast</b>	<b>Distance out to sea</b>	<b>Distance inland</b>
<b>National</b>	Between major headlands	22.2km/12 nautical miles to include the territorial waters	To view-shed (max 30km)
<b>Regional</b>	30km	15km	10km or to view-shed if less
<b>Local</b>	4km	2-3km	5km

### **Step two– seascape characterisation**

- K2.17. This has involved the review of Ordnance Survey maps and Admiralty charts, other published information on the marine and coastal component of the study area, fieldwork observations and photography, computer-based data processing and analysis, such as topographical analysis and zones of visual influence (ZVIs) and, ultimately, some subjective professional judgement in order to interpret the information and define the extent of the seascape units.
- K2.18. The particular characteristics of each seascape unit have been recorded on Seascape Character Assessment Forms, included in Annex K3. These forms are based on the Seascape Character Assessment field study forms in Appendix 1 of the seascape guidance (CCW 2001) with some minor amendments.

### **Step three – landscape characterisation**

- K2.19. This has involved the review of Ordnance Survey maps, other published information on the study area landscape, fieldwork observations and photography, a limited amount of computer-based data processing and analysis, such as topographical analysis and, ultimately, some subjective professional judgement in order to interpret the information and define the extent of the landscape units.
- S2.20. Where parts of the study area have already been characterised in a published study, the landscape units defined in the published study have been reviewed and, as long as the fieldwork observations and topographical analysis concur with the characterisation in the published study, then these have been used as the basis of the landscape characterisation. Where landscape studies have been carried out by or on behalf of the Local Planning Authority and have contributed to the formulation of local plan policies, proposals and landscape designations, then these studies are usually used as the basis of the landscape characterisation.

- K2.21. The particular characteristics of each landscape unit have been recorded on Landscape Character Assessment Forms, included in Annex K4. These forms are based on the field study forms provided in the landscape assessment guidance (LI/IEA 1995 and LUC 1999) with some further amendments.

#### **Step four – landscape designations**

- K2.22. Landscape designations are an indication of landscape value, as they are areas that have been recognised for the scenic beauty and recreational potential of the landscape. They are also landscapes within which a measure of development control is in place for the purpose of protecting these qualities.
- K2.23. National landscape designations include National Parks (England and Wales, and proposed in Scotland), Areas of Outstanding Natural Beauty (England and Wales), Heritage Coast (England and Wales) and National Scenic Areas (Scotland only), which are designated by statute and shown on Ordnance Survey maps and Local Development Plans, and also on the websites of the Countryside Agency (for England), CCW (for Wales) and Scottish Natural Heritage (SNH). Local landscape designations include Special Landscape Areas, which are designated by Local Authorities and shown on the proposals maps of Local Development Plans. Some of these designations will occur within the coastal and hinterland components of the seascape units. There are not currently any “Seascape designations”.

#### **Step five – Seascape and landscape evaluation**

- K2.24. Seascape or landscape quality is a measure of the relative extent to which the character of a seascape or landscape is expressed in a seascape/landscape unit. For this assessment, seascape/landscape quality has been based on an interpretation of:

- the **clarity** with which the particular characteristics are expressed in the seascape/landscape unit.
- the **distinctiveness** of those characteristics.
- the **intactness** (or unity) of the seascape/landscape unit.
- the **balance** between the manmade and natural elements.
- the **condition** of the elements in the seascape/landscape.
- the presence or absence of **attractors**.
- the presence or absence of **detractors**.

- the **sense of place** of the seascape.
- the **scenic quality**.

K2.25. These factors have been used as the basis of evaluating landscape quality in previous environmental impact assessments. *Clarity, distinctiveness, intactness, condition* and *detractors* are also five of the eight factors listed in the guidance (CCW 2001) for evaluating the quality of a seascape unit. The other three factors used in the seascape guidance are: *typicality* and *rarity* (which are measures of *value* rather than *quality*) and *fragility* (which is a measure of *capacity to accommodate* change rather than *quality*).

K2.26. Accordingly, the assessment of seascape/landscape quality has been a professional judgement based on fieldwork observations and the subjective interpretation of the nine factors listed above, for each unit, in a national (UK) context. The following definitions have been used:

- *exceptional quality*: for seascapes/landscapes where the landform and elements produce a strong, bold and unified seascape/ landscape character over an extensive area, where the manmade and natural elements are very harmonious and in prime condition, there are many attractors and no detractors, a very strong sense of place and stunning scenic quality.
- *high quality*: for seascapes/landscapes that are more mixed in character, with characteristics that are very clear, distinct and integrated, where the manmade and natural elements are harmonious and in very good condition, there are several attractors and a few detractors, a strong sense of place and beautiful scenic quality.
- *medium quality*: for seascapes/landscapes that are mixed in character, with characteristics that are clear and obvious but interrupted, where the manmade and natural elements are balanced and in good condition, there are some attractors and some detractors, a good sense of place and a pleasant scenic quality.
- *low quality*: for seascapes/landscapes that have a vague and indistinct character, are fragmented, where the manmade and natural elements are discordant and in only fair condition, there are a few attractors and several detractors, a weak sense of place and a poor scenic quality.
- *very low quality*: for seascapes/landscapes that are despoiled, where the characteristics are muddled and/or obscured, where there are only remnants of any natural features, where the manmade and natural elements (if any) are chaotic and in poor condition, there are

virtually no attractors and many detractors, a very weak sense of place and a very poor scenic quality.

- K2.27. Seascape and landscape units may not conform to all aspects of a particular quality definition. For example, a unit may be highly fragmented but have elements in generally good condition. In such cases, it has been necessary to make a reasoned judgement regarding the quality definition that best fits the particular combination of characteristics.
- K2.28. In other cases, quality may vary within a seascape or landscape unit and, again, it has been necessary to make a reasoned judgement regarding the quality definition that best fits or, if appropriate, explain where different quality definitions apply. Where seascape/landscape quality does vary considerably within a unit, then it has been more appropriate to sub-divide the landscape/seascape unit into smaller units of more consistent quality, particularly where such sub-divisions can also be supported by sufficiently distinctive seascape/landscape characteristics.

#### **Step six – visual receptors**

- K2.29. This has involved the review of Ordnance Survey maps and Admiralty Charts, other published information on the study area, fieldwork observations, photography and, ultimately, some subjective professional judgement in order to identify the locations and types of visual receptors in the study area. These findings have informed the process by which the selection of viewpoints were identified for the viewpoint analysis.

#### **Stage 2: Potential effects and mitigation**

- K2.30. The visual characteristics of the proposed wind energy development have been examined to identify the elements with the potential to cause an effect on the seascape, landscape and visual amenity baseline of the study area. Where there are existing or proposed wind farms in the study area, a review of the visual characteristics of these developments has also been made.

#### **Stage 3: Visibility analysis**

- K2.31. The visibility analysis has used computer-generated zones of visual influence (ZVIs) to ascertain the general locations and extent of the study area where topography would permit views of the wind turbines (see **Assessment Tools** at the end of this Annex for details). ZVIs are based on topography alone and do not take account of the screening effects of surface features such as hedgerows, woodlands and buildings, so they can present an over-representation of visibility in the study area.
- K2.32. Landform is a major influence on the visibility of wind energy developments in the landscape. In relatively flat terrain, the majority of



the development would be visible in near views, but intervening surface features (hedgerows and built development) then become very effective at screening the development in many middle and distant views. In contrast, hilly terrain tends to permit open views of the development from the high points in the study area, but effectively screens the development from all the valleys and slopes on the far side of hills. As a result, ZVIs based on topography alone can provide a fair representation of visibility in open or hilly terrain, but are much less representative of actual visibility in flat, well-vegetated or developed locations.

- K2.33. However, ZVIs are a useful tool for establishing the zones of “no visibility”, enabling the zones of “potential visibility” to be examined in more detail in the viewpoint analysis.

#### **Stage 4: Viewpoint analysis**

- K2.34. The viewpoint analysis has used computer-generated wireframes (see the section on **Assessment Tools** at the end of this Annex for details), fieldwork observations and professional judgement to predict the *magnitude of the change* in the view that would arise as the result of the proposed development, from a selection of viewpoints chosen to represent the main seascape, landscape and visual receptors in the zones of visual influence. These viewpoints have been discussed and agreed with consultees during the scoping stage of the project.

#### ***Magnitude of the change***

- K2.35. The magnitude of the change in each view is described using a five-point scale of *very substantial*, *substantial*, *moderate*, *slight* or *negligible*, based on the interpretation of largely quantifiable parameters, including:

- Distance of the viewpoint from the development.
- Extent of the development visible from the viewpoint.
- Field of view occupied by the development.
- Background of the development in the view.
- Form, scale, composition and pattern of the seascape/landscape.
- Extent of other built development visible, particularly vertical elements (eg pylons, chimneys, communication masts, other wind turbines, lighthouses, oil rigs).

- K2.36. For example, a *substantial* change in the view would occur where several wind turbines are visible on the skyline/horizon, in the near distance, occupying the majority of a single view (60°), and where the existing view

contains very little built development or vertical elements. A *negligible* change in the view would occur where only a few or only parts of the wind turbines are visible in the distance, occupying only a small proportion of a single view, and where there are already vertical elements and/or built development in the view.

- K2.37. The highest category of *very substantial* is used when large wind farms are being assessed, or where there is the potential for greater effects to arise as the result of proposals to site several additional wind farms in a study area.
- K2.38. Intermediate categories of *very substantial/substantial*, *substantial/moderate*, *moderate/slight* and *slight/negligible* are used to enable more subtle differences to be quantified, such as when wind turbines at very different distances are introduced into a view, or to distinguish between the effects at two viewpoints that are at only slightly different distances from the wind turbines.
- K2.39. The scale, composition and pattern of the seascape or landscape influence the way a development is seen in views and, therefore, the likely magnitude and spatial distribution of the resultant effects on seascape, landscape and visual amenity. For example, a large-scale and open seascape or landscape may more readily accommodate a large-scale development but the lack of surface features would permit long distance views, thereby allowing the proposed development to be visible over a wide area. As a result, the magnitude of the change would be less intense in the vicinity of the proposed development but would affect a greater part of the study area and this would be reflected in the viewpoint analysis.
- K2.40. Conversely, a small-scale and closed landscape (such as small scale fields with hedgerows, trees and woodlands) would less readily support a large-scale development with the result that the magnitude of change in the landscape character and visual amenity in the vicinity of the proposed development may be very intense. However, the screening effects of surface features may result in a limited number of long distance views, so a much smaller part of the study area would be affected. Again, this would be reflected in the viewpoint analysis.

### **Stage 5: Assessment of effects on seascape and landscape**

- K2.41. The assessment of effects on seascape and landscape has drawn on the description of the development, the seascape and landscape context and the visibility and viewpoint analyses and considers the significance of the effects of the proposed development on the seascape and landscape units and the landscape designations in the study area.

### **Effects on seascape and landscape character**

- K2.42. Our appreciation of seascape and landscape arises from the way our senses respond to the experience of the seascape or landscape. Therefore, for the changes brought about by a development to have an effect on seascape or landscape character, then those changes need to be experienced through one or more of our senses, that is, sight, hearing, touch, taste or smell. Seascape is experienced through a combination of sight, hearing, taste and smell, whereas sight is the dominant sense when experiencing landscape, particularly from a distance. Therefore, the response of all four senses have been taken into account in the seascape character assessment whereas the assessment of effects on landscape character has concentrated on the changes that would be visible.
- K2.43. In addition to character, the cultural, historical and intellectual dimensions of seascape and landscape can influence our broader appreciation of our environment. These include our cultural background, our awareness of historical and contemporary influences, and our personal and professional interests. Cultural, historical and intellectual dimensions are in addition to, and not strictly part of, landscape character assessment (LUC 1999) and, although considered part of seascape character assessment (CCW 2001), these influences on our appreciation of seascape have not been explored in any detail in this assessment.
- K2.44. However, our experience and, therefore, appreciation of seascape/landscape will also vary depending on other factors such as time of day, season, weather conditions, lighting and visibility. These influences will vary from person to person, from day to day and even from hour to hour. The influence of seasons, time of day/night, weather conditions, lighting and visibility are commented upon in the assessment.
- K2.45. Accordingly, the assessments of effects on seascape and landscape character consider the extent of the zones of influence identified in the **Visibility Analysis** and the magnitude of the effects identified in the **Viewpoint Analysis** and draws conclusions on the significance of the effects of the proposed development on each seascape and landscape unit and on each landscape designation.

### ***Significance of effects on seascape and landscape character***

- K2.46. The addition of a wind energy development into a seascape or landscape unit that is not currently characterised by wind turbines will usually have an appreciable effect on the character of at least a localised area within that unit. Essentially, a significant effect on seascape/landscape character will occur where the proposed development will become one of the defining characteristics of that part of the seascape/landscape unit and/or where the proposed development will raise or lower the quality of that part of the unit.

K2.47. However, the spatial extent of that effect and the significance of the effect on the character of the seascape or landscape unit as a whole will depend on the scale of the development, the extent of the zones of visibility and the following aspects of the seascape/landscape unit:

- The key characteristics of the seascape/landscape unit.
- Landscape designations.
- Seascape/landscape quality.
- Extent to which views contribute to seascape/landscape character.

***Receiving landscape/seascape unit***

K2.48. For seascape or landscape units in which a development is proposed, the *key characteristics* of the unit are the main factors that determine whether the predicted effects on seascape/ landscape character will be significant and the extent of the unit affected. For example, a large-scale seascape or landscape unit may more readily accommodate a large-scale development. However, if the unit has very little built development or surface screening features (such as oil platforms, woodlands, buildings, etc), the proposed development will be visible over a wide area and, as a result, there may be a significant effect on seascape/ landscape character over a large part of the unit.

K2.49. Conversely, in a small-scale and closed seascape or landscape (such as an enclosed bay or estuary, or small scale fields with hedgerows, trees and woodlands), there would be a change in seascape/landscape character in the vicinity of the proposed development. However, the screening effects of surface features may result in few long distance views, so a much smaller part of the unit would be affected. In such cases, if the seascape or landscape unit is extensive, and/or the development is on the edge of the unit, then such localised changes may not have a significant effect on the character of the unit as a whole.

***Remote seascape/landscape unit***

K2.50. For seascape and landscape units at a distance from the proposed development, the *extent to which views contribute to seascape/ landscape character* is the main factor that determines whether the predicted effects on seascape or landscape character will be significant. Where views are an essential characteristic of a seascape or landscape unit, then a moderate magnitude of change may result in a significant effect, whereas for a seascape or landscape unit whose character is derived mainly from its component features, a moderate magnitude of change in a view may not have a significant effect on character.

***Designated landscape***

- K2.51. Where a development is proposed within a designated landscape, the assessment has examined whether the proposed development would affect the particular characteristics and qualities that form the basis or purpose of the designation, and the extent to which the development would undermine the integrity of those purposes determines whether there would be significant effects on that designation.
- K2.52. Where a development is proposed outwith a designated landscape, and views into and out of the designated area are an important basis or purpose of the designation, then the assessment has examined the changes to those views. The extent of the changes in those views determines whether the development would have a significant effect on the designation.

**Stage 6: Visual assessment**

- K2.53. The visual assessment has drawn on the description of the development, the seascape, landscape and visual baseline, and the visibility and viewpoint analyses, and considers whether the proposed development would bring about a significant change in the view for on the visual amenity of the main visual receptor groups in the study area.
- K2.54. Receptors fall into three broad categories, fixed viewpoint receptors, linear route receptors and marine-based receptors. Examples of fixed, linear and marine-based viewpoint receptors are given in Table K2.1 below.
- K2.55. Fixed viewpoint receptors are those who are, or can be, stationary at a viewpoint (such as at scenic viewpoints and visitor facilities, or in settlements) and for whom there is a relatively constant view or views. As a consequence, fixed viewpoint receptors are familiar with the scene and can be exposed to a change in a view for an appreciable duration.

**Table K2.1: Visual receptors**

<b>RECEPTOR TYPE</b>	<b>Receptors</b>	<b>Typical locations</b>	<b>Activities</b>
Fixed viewpoint receptors:	Residents	Residential properties, farmsteads, settlements and towns	Enjoying views from within the curtilage of their properties
	Motorists, walkers, cyclists and horseriders	Scenic vantage points beside rights of way and public highways	Stopping a journey to enjoy the view
	People at leisure or on holiday (outdoors) eg golfers, fishermen, campers, bathers	Golf courses, fishing lakes, recreational grounds, picnic sites, camping and caravan sites, holiday villages, beaches	Playing golf, fishing or other outdoor sports, picnicking, camping and caravan holidays, bathing
	People at work (outdoors)	Farms, mineral extraction sites, waste disposal sites, roads	Working but with views of surroundings
	People at leisure (indoors)	Indoor recreational centres, cinemas	Indoor sports with few views of surroundings
	People at work (indoors)	Offices, business parks, industrial estates	Working with few views of surroundings
	Ferry, air and rail travellers	At ferry terminals, railway stations and airports	Waiting to catch their chosen mode of transport
Linear route receptors	Walkers, cyclists and horseriders	On footpaths, cycleways, bridleways and other public rights of way, (and on Access Land)	Travelling at a steady pace with ample opportunity to enjoy the specific qualities of the landscape
	Motorcyclists, motorists and passengers	On motorways, A, B and C class roads, minor roads and tracks	Travelling at various speeds, depending on class of road and driver, with views of the surroundings
	Air and rail travellers	On trains and aeroplanes	Travelling at various speeds and with various views
Marine-based receptors	Recreational sea users	Inshore waters	Swimming, sailing, wind surfing, jet skiing, surfing, etc
	Ferry and cruise ship travellers	On ferries and cruise ships	Travelling at speed with sea views
	Commercial shipping and fishing	On ships and fishing vessels, mainly in shipping lanes	Travelling at speed with sea views

- K2.56. Linear route receptors are those who are travelling along linear routes (such as roads, cycle routes, footpaths, bridleways) and who may be experiencing a relatively constant view (eg from a coastal route), or a series of changing views (eg on an inland route through variable terrain). As a consequence, linear route receptors may be exposed to long-term changes in any one view for an appreciable period in time (measured in minutes or hours, depending on speed of travel), may experience only a momentary view of the development (a few seconds), or may be exposed to a series of views of the development (sequential visibility).
- K2.57. Marine-based receptors are those who are travelling on the sea, who follow routes that may vary from day-to-day, depending on tides and weather conditions (such as commercial fishing boats, ferry routes, yachting routes and shipping lanes). They also include recreational marine users who tend to stay within inshore waters, such as swimmers, day sailors and water sports enthusiasts (wind surfers, jet skiers, water skiers and surfers).

***Significance of effects on visual amenity***

- K2.58. To assess whether there would be a significant change in view at each viewpoint, a judgement has been made as to whether the predicted magnitude of the change is significant for each receptor at that viewpoint. This judgement is based on the characteristics of the visual receptors at the viewpoint and/or on the route, or on the sea, and takes into account:
- Receptor activities.
  - Whether receptors will be stationary or moving at the viewpoint.
  - The orientation of the receptor in relation to the view.
  - Whether receptors are likely to be there for the purposes of enjoying the view.
  - Duration of the view for each receptor (in relative terms).
- K2.59. A moderate magnitude of change would be considered significant for a residential receptor, as the view is from their home and could be experienced everyday. A moderate magnitude of change to a view, as experienced by motorists travelling along a road, may not be significant if the view was from only a short section of the route (where “short” is a combination of both the length of the road and the speed of travel), but may be significant if the view was sustained, or repeated along that route.
- K2.60. A moderate magnitude of change for walkers at a scenic viewpoint may also be significant, particularly if that viewpoint is easily accessible, is

known to be well visited and is one from which receptors can gain impressive views of the surrounding landscape.

- K2.61 However, a significant change in view would not necessarily result in an unacceptably adverse effect on visual amenity, and the acceptability of significant effects is considered in Stage 8.

### **Stage 7: Assessment of cumulative effects**

- K2.61 The assessment of cumulative effects has taken the existing seascape, landscape and visual context as the baseline and has considered the combined effect of the two proposed offshore wind farms. This assessment has followed a similar process to that described above and has included:

- Visibility analysis – using a computer-generated cumulative ZVI.
- Viewpoint analysis – from a selection of the viewpoints analysed in the earlier viewpoint analysis.
- Assessment of effects on seascape and landscape character – for the seascape and landscape units and the landscape designations in the study area, as a result of the two proposed developments, using the approach described for Stage 5 above.
- Assessment of effects on visual amenity – for receptors in the study area, as a result of the two proposed developments, using the approach described for Stage 6 above.

### **Stage 8: Acceptability of the proposed development**

- K2.61. This final stage of the assessment considers the findings of the seascape, landscape, visual and cumulative assessments and discusses the likely short and long-term acceptability of the predicted effects on the seascape, landscape and visual amenity of the study area, in the context of recent research and public attitude surveys.

#### **Acceptability of effects on seascape and landscape character**

- K2.62. In determining the acceptability of the predicted effects on seascape and landscape character, professional judgement is used to determine whether those significant effects will be beneficial to the character of the seascape/landscape or adverse and, if adverse, whether those adverse significant effects would be acceptable. This is in accordance with the wording of the landscape policies in most local development plans, which tend to have a presumption in favour of development that does not result in an “*unacceptably adverse effect*” on landscape character.



### **Acceptability of effects on visual amenity**

K2.63. In determining the acceptability of the predicted effects on visual amenity, the parameters of *valency* and *time* are also considered. Valency is a way of describing whether people are in favour of wind energy developments (positive valency) or are opposed to wind energy developments (negative valency). A person's valency may be determined by one or more factors, such as:

- aesthetic considerations (ie whether they consider wind turbines to be aesthetically pleasing or incongruous industrial structures);
- perceptual factors (eg whether they consider wind turbines to be symbols of clean energy or modern technology out of place);
- financial considerations (eg whether they consider wind turbines to be tourist attractions, or perceive them to have a negative effect on house prices, tourism and tourism dependent businesses);
- technical performance of wind energy installations (eg whether they consider wind energy to have a potentially significant contribution to make to renewable energy targets and climate change, or consider the electricity output and CO<sub>2</sub> emission savings to be insignificant).

K2.64. In determining the acceptability of the predicted effects on visual amenity, the assessment initially assumes a “worse case” scenario, that is, it assumes that all receptors affected by the proposed development will have a negative valency. Then, professional judgement and comparisons with the study areas of other operational wind energy schemes is used to determine whether such “negative effects” on visual amenity will be acceptable.

K2.65. However, not all receptors have negative valency and time is also an important factor, as peoples' opinions or valency can vary over time, particularly as the result of changes to their understanding of the subject or their increasing familiarity with a particular scenario. For example, the findings of public attitude surveys suggest that, in general, people who display a negative valency towards an anticipated and relatively unfamiliar change to their visual amenity often, in the case of wind energy developments, acquire a positive valency once that change has occurred.

### **Method of assessment - comparison with methodology in current guidelines**

K2.66. The main difference between the above assessment process and that recommended in the LI guidelines (LI/IEA 1995) relates to the method of assessing significance. In the guidelines, the magnitude of the predicted changes is combined with the *sensitivity* of the receptors (landscape and visual) in order to predict significance thresholds. The

guidelines show this in the form of a simple graph with three levels of significance (*substantial*, *moderate* and *slight*). However, the graph does not provide significance thresholds for all combinations of sensitivity and magnitude, and the guidelines also do not provide any guidance on whether the predicted effects (as described by the significance thresholds) would be acceptable.

K2.67. Whilst magnitude of change can be based on largely quantifiable parameters (as described above in this Annex), receptor sensitivity is a subjective and complex concept, which cannot be adequately categorised into only 3 levels (described as *high*, *medium* and *low* in the guidelines) and cannot be easily applied to simple broad categories of receptors. Receptor sensitivity needs to take account of a large number of parameters, the influence of which may vary between receptors and locations. Landscape sensitivity (or, more specifically, its antonym, *landscape capacity*) will also depend on the type and scale of the development in relation to the characteristics of the landscape and so cannot be easily predicted in advance of the assessment.

K2.68. The method of assessment described above is both simpler and more flexible, and enables both receptor and location specific factors to be taken into account for each and every assessment location in the study area. In simple terms, the method is:

$$\text{magnitude of change} \times (\text{range of receptor and location specific factors}) = \text{significance}$$

K2.69. Therefore, the assessment considers the significance of the predicted magnitude of change at each individual location and for each receptor type considered in the assessment, but without limiting sensitivity to only 3 levels and without the pre-determined outcome of the graph. As a result, the weighting of the factors can be varied to take account of the specific conditions in each and every location.

K2.70. For example, in some landscape types, it is the scale rather than the quality of the landscape that influences its ability to absorb certain types of development. In other character areas, it may be that quality has more influence than scale. Similarly, for landscape types at a distance from the proposed development, the extent to which a change in the view influences landscape character will vary between landscape types.

K2.71. This flexibility of weighting is also important when assessing the significance of the effects on visual receptors, particularly linear route receptors. For example, a moderate magnitude of change to the view experienced by receptors travelling along a road may not be significant if the view was experienced for only a short section of the route, but may be significant if the view was sustained or regularly repeated along the length of the route. Similarly, a moderate change in the view along a short section of local footpath may not be significant, but may be for walkers on a long distance footpath, through a National Park, where the

walkers have been attracted to the route by the opportunity to experience the landscape.

- K2.72. The aim of environmental impact assessment (EIA) is to identify mitigation measures, to identify residual environmental effects and to determine whether these predicted effects will be acceptable. Wherever possible, effects should be quantified and the analysis should be objective. The nature of seascape, landscape and visual assessment, however, requires both objective analysis and subjective professional judgement. It has been important, therefore, for the assessment process to be based on objective analysis as far as possible and to clearly indicate when subjective professional judgement has been applied. The assessment process uses quantifiable factors, wherever possible, uses published or “industry standard” information and data analysis techniques, and is based on clearly defined terms. As a result, the findings should be robust, consistent and presented with clarity.

### **Assessment tools**

- K2.73. The assessment tools include field survey sheets and photography to record fieldwork observations and computer programmes to generate the ZVIs, wireframes and photomontages.

### **Fieldwork observations**

- K2.74. For seascape character, the fieldwork observations include tidal dynamics and physical features in the marine and intertidal zone, coastal geometry and physical features in the coastal zone and landform, land use and land cover, landscape elements and built development in the hinterland. They also include aesthetic factors and an evaluation of quality, as shown on the Seascape Character Assessment Forms, Annex K3.
- K2.75. For landscape character, the observations include the landform and hydrological features, land use and land cover, landscape elements, landscape patterns, aesthetic and perceptual factors, and an evaluation of quality, as shown on the Landscape Character Assessment Forms, Annex K4.
- K2.76. For visual amenity, the fieldwork observations include the nature of the existing view (including the extent of the panorama, distinctive features, composition, scale, and patterns of the landscape), and the changes to the view that would result from the proposed development. For fixed viewpoints, the position of the wind turbines in the view relative to other features is also noted. For linear routes, observations are made on the way the view changes along the route, and the location of the development in relation to the direction of travel.

### **Photographs**

- K2.77. Photographs from each viewpoint are taken as follows. Several overlapping frames are taken from each viewpoint, using a 135mm SLR camera on a tripod with a 50-70mm lens and set to portrait, with the middle frame centred on the target point (a point in the centre of the site) using a compass bearing. The three frames for each viewpoint are then scanned and spliced together on the computer to provide a photographic image of the existing panorama. The actual overlap of the frames and the horizontal and vertical fields of view are shown on the viewpoint figures.
- K2.78. Various parameters are noted in the field, such as the date and time of day, the precise location of the viewpoint (in relation to features on the OS map, the OS NGR and the NGR using a hand-held GPS), plus compass bearings to distinctive elements in the view, camera settings, and weather conditions. The precise location, date and time then permit accurate information on tide states and weather to be obtained from published sources.

### **Computer-based tools**

- K2.79. In addition to fieldwork observations and photography, computer-based tools are used for the assessment, including:
- Digital terrain model (DTM) - a three dimensional map of the topography and sea levels in the study area, using the Ordnance Survey Landform Panorama digital terrain height data, Admiralty Charts and tide tables. The OS data is supplied at 50m centres, with an easting, a northing and an elevation in metres above Ordnance Datum (mAOD). Each grid intersection is accurate to within approximately 3m, but the DTM extrapolates between data points, so is not able to allow for localised topographical features within the 50m cells. Over the sea, the DTM data points are set at mean sea level. The DTM is then manipulated to take account of the curvature of the earth [and light refraction].
  - Digital model of the wind turbines - the X, Y and Z co-ordinates of each wind turbine are located on the DTM, and a digital model of the proposed wind turbine size and design is located at each turbine location.
  - Zone of visual influence (ZVI) - a visibility map that illustrates the locations in the study area where landform would permit views of the wind turbines. This is generated using a computer-based intervisibility package, the DTM and the model of the wind turbines. ZVIs can be configured to analyse the data in various ways to show, for example, the number of wind turbines that will be visible, the parts of turbines that will be visible, or the angle of view occupied by turbines in any one view. However, the ZVIs are based on

landform and mean sea level data only and do not show the screening effects of surface features such as trees, hedgerows and buildings.

- Wireframes – computer-generated wireframe perspectives of the landform and wind turbines to illustrate the predicted views from each viewpoint. As with the ZVIs, the wireframes are based on the DTM only and do not show the screening effects of surface features such as trees, hedgerows and buildings.
- Photomontages – computer-generated images of the wind turbines accurately located and overlaid onto the scanned photographs of the existing view. These are not used as part of the assessment process but, where included in an assessment, are provided to illustrate a photo-realistic image of the predicted view from a selection of viewpoints.

## Annex K3: Seascape Character Assessment

### *Key Characteristics Red Wharf Bay Seascape Unit Zones*

<b>Zone</b>	<b>Characteristics</b>
<i>Marine zone</i>	<p>Tidal dynamics – none.</p> <p>Installations inside the seascape unit – a few beacon/buoys with lights.</p> <p>Marine installations visible outside the seascape unit – none.</p> <p>Marine activities – shipping and ferry lanes, angling, boat trips, yachting routes, recreational day sailing and water sports.</p>
<i>Coastal zone</i>	<p>Geometry and form – a series of small bays and one large concave bay, separated by steep sea cliffs and small rocky headlands, all with a relatively open north-easterly aspect.</p> <p>Coastal features – Ynys Moelfre at the western end and Puffin Island at the eastern end, with broad areas of mud/sand exposed at low tide in the bays (very broad in Red Wharf Bay) and very narrow areas of shingle and bedrock exposed at low tide along the base of the cliffs, slipways at Porth Moelfre, Traeth Bychan and Red Wharf Bay.</p> <p>Infrastructure and built development onshore – limited access to the beaches and settlements along the coastline via narrow minor roads, most of which end at the coast. Coastal footpath runs between Moelfre and Benllech only, which are the main settlements along the coast, together with the small village of Red Wharf Bay. All are mainly residential with some holiday homes. There is also a scattering of farmsteads along the coast, a hotel, the remains of Castell Mawr, and a few camping and caravan sites.</p> <p>Coastal activities – residential, camping and caravanning, walking, farming, fishing and boating activities.</p> <p>Seaward views – spectacular views from Moelfre and Benllech eastwards across the Bay towards Snowdonia and the Great Orme, plus open views of the sea to the north.</p>

Zone	Characteristics
<i>Hinterland</i>	<p>Extent – a relatively narrow hinterland of 2 – 3km between the 10 – 160m contours to the south of the Bay, and a slightly wider hinterland of 4 – 6km to the west of the Bay. This hinterland is essentially the coastal edge of the inland plateau, from which there are very few views of the sea.</p> <p>Landform – generally undulating with a gradual slope down from the inland plateau towards the coast around the bays and more elevated sections above the cliffs.</p> <p>Land use – mainly agriculture and open land uses (eg camping and caravan sites) between the settlements and scattered farmsteads, with a few small areas of deciduous or mixed woodland and one large coniferous forest on Mynydd Llwydiarth.</p> <p>Infrastructure and built development – only two A roads - the A5025 runs parallel to the coastline and is linked to Benllech by the A5108, and only two B roads – the B5110 and the B5108 which form a loop inland of Benllech.</p> <p>Hinterland is served mainly by minor roads, and a few footpaths and bridleways. Settlements include Benllech, Llanbedrgoch, a few smaller settlements and a scattering of farmsteads. There are several radio masts, some disused quarries, one of which is now a landfill site, and a large number of camping and caravan sites.</p> <p>Seaward views – intermittent views of the open sea to the north.</p>

***Key Characteristics Conwy Bay Seascape Unit Zones***

Zone	Characteristics
<i>Marine zone</i>	<p>Tidal dynamics – the Swellies in the Menai Straits (a rising of the sea caused by the incoming tide entering the Straits from both the northeast and southwest, which can result in strong currents).</p> <p>Installations inside the seascape unit – several beacons/buoys with lights.</p> <p>Marine installations visible outside the seascape unit – none.</p> <p>Marine activities – angling, boat trips, yachting routes, recreational day sailing and water sports.</p>

Zone	Characteristics
<i>Coastal zone</i>	<p>Geometry and form – the juxtaposition of the Isle of Anglesey and mainland Wales, together with the narrow neck of the Menai Straits and Great Ormes Head, form a concave bay or estuary-like coastline with a northeast-southwest alignment and a relatively enclosed seaward entrance with a northwesterly aspect.</p> <p>Coastal features – Puffin Island at the western entrance and Great Ormes Head at the eastern entrance, with very broad areas of mud/sand and narrow areas of shingle exposed at low tide, a harbour at Port Penrhyn, piers at Beaumaris and Garth, several jetties, landing stages and slipways, and several groynes and breakwaters.</p> <p>Infrastructure and built development onshore – most of the coastline has A, B or minor roads close to the coast, the railway line is close to the coast between Bangor and Conwy, and the North Wales Path follows the coast between Deganwy and Great Orme. The main settlements with coastal frontages include: Beaumaris, Menai Bridge, Bangor, Llanfairfechan, Penmaenmawr, Deganwy and Llandudno (west), which are all mainly residential with some hotels and retirement. There are also several smaller settlements on the coast, a few hotels, the remains of an Augustinian Priory at Porth Penmon and castles at Beaumaris (a World Heritage Site) and Penrhyn, which is a Victorian castellated manor house. There is a boating pool at Llanfairfechan, a small campsite east of Penmaenmawr, a caravan site, golf course and disused rifle range at Conwy Morfa, a golf course at Deganwy and a marina at Conwy.</p> <p>Coastal activities – residential, golf, camping and caravanning, walking, farming, harbour activities.</p> <p>Seaward views – spectacular views across Conwy Bay from Anglesey to Snowdonia. Very limited views of the open sea to the north, but some views towards the open sea to the northeast, across the low-lying land between the Great Orme and the Little Orme, from Beaumaris Castle.</p>



Zone	Characteristics
<i>Hinterland</i>	<p>Extent – between the 10 – 100m contours on Anglesey, and between the A551(T) and the high peaks of Snowdonia on the Wales mainland.</p> <p>Landform – generally low and undulating on Anglesey and between Bangor and Llanfairfechan, then high, steep mountainsides from Llanfairfechan round to Great Ormes Head.</p> <p>Land use – mainly agriculture and open land uses (eg golf courses, camping sites) between the settlements, with some small areas of deciduous or mixed woodland.</p> <p>Infrastructure and built development – several A, B or minor roads, the railway line, and parts of the North Wales Path. The majority of the settlements listed above (in the coastal zone). Boatyards, a quarry, a radio mast and a small industrial complex on Anglesey. Extensive quarrying on the mountainsides between Llanfairfechan and Penmaenmawr, and several camping and caravan sites.</p> <p>Seaward views – views of Conwy Bay and the open sea to the northeast from the northeast facing slopes of the elevated land within Snowdonia National Park.</p>

***Key Characteristics Llandudno Bay Seascape Unit Zones***

Zone	Characteristics
<i>Marine zone</i>	<p>Tidal dynamics – tidal rip.</p> <p>Installations inside the seascape unit – a beacon/buoy with light.</p> <p>Marine installations visible outside the seascape unit – Douglas oil platform (when visibility permits).</p> <p>Marine activities – commercial shipping and ferry routes, and yachting routes.</p>

Zone	Characteristics
<i>Coastal Zone</i>	<p>Geometry and form – a curved coastline consisting of two small, open bays, one with a northerly aspect and one with an easterly aspect, and one medium-sized, more enclosed bay with a north-north-easterly aspect.</p> <p>Coastal features – the small bays have very narrow bands of shingle exposed at low tide, backed by the steep cliffs of the Great Ormes headland, and no built elements. The medium-sized bay has a narrow band of sand exposed at low tide, with a pier and landing stage and groynes.</p> <p>Infrastructure and built development onshore – the A545, the B5115 and Marine Drive form a continuous road along and close to the coastline and the North Wales Path follows this route. There is one large settlement with a coastal frontage - Llandudno (east), which is a Victorian seaside spa town and is now a mixture of residential, hotels and retirement. Nearby is the smaller settlement of Craigside, which is mainly residential and retirement. On the front at Llandudno, there is also a theatre and a conference centre, car parking and a promenade. The Old Lighthouse on the headland is now a house offering B &amp; B and there is a lifeboat station located near the Pier at Llandudno.</p> <p>Coastal activities – residential, retirement, hotels and guest houses, car parking, promenading, walking, cycling, concerts, exhibitions, and beach activities.</p> <p>Seaward views – there are views of the sea to the north and northeast from the coastal cliffs (eg the Marine Drive around the Great Orme), from the narrow beaches, and from the low-lying and built up areas along the coastal edge.</p>

Zone	Characteristics
<i>Hinterland</i>	<p>Landform - high, steep hillsides around the Great Ormes Head, Mynydd Pant and Little Ormes Head, with generally low-lying land in between.</p> <p>Land use - mainly settlements with open land uses (eg Great Orme Country Park, recreation grounds, public open space) and some agriculture on both the high and low lying land between the settlements, with some very small patches of deciduous woodland on the steeper slopes.</p> <p>Infrastructure and built development - a network of roads (A, B and urban roads) and the majority of Llandudno and Craigside lie within the low lying, built up areas. The Great Orme has a cable car, tramway and road access between the town and the country park, a ski centre, a mining museum and the tramway stations on the sides of the Orme, and a tourist centre with a car park, shops and a restaurant at the top.</p> <p>Landscape units - Limestone Hills and Coastal Slopes (see Annex K4).</p> <p>Seaward views - spectacular views across Conwy Bay to Snowdonia from the car park at the top of the Great Orme. Also views of the sea to the west through north to the east from the footpath around the top of the Great Orme and from the Little Orme. From the low-lying and built up areas behind the coastal edge, built development obscures most views of the sea. However, where the development has encroached upon the lower slopes of the Great and Little Ormes, there are more elevated views of the sea to the north and northeast.</p>

***Key Characteristics Colwyn Bay Seascape Unit Zones***

Zone	Characteristics
<i>Marine zone</i>	<p>Tidal dynamics - none.</p> <p>Installations inside the seascape unit - several beacons/buoys with lights.</p> <p>Marine installations visible outside the seascape unit - Douglas oil platform and Hamilton gas field (when visibility permits).</p> <p>Marine activities - marine dredging (off Rhyl/Prestatyn), commercial shipping and ferry routes, yachting routes, and some recreational angling, sailing and water sports.</p>

Zone	Characteristics
<i>Coastal zone</i>	<p>Geometry and form – a curved coastline consisting of one small, open bay with a northeasterly aspect (Penrhyn Bay), and one very large open bay with a generally north-northwesterly aspect (Colwyn Bay).</p> <p>Coastal features – Penrhyn Bay has a very narrow band of sand and shingle exposed at low tide, and two breakwaters. In Colwyn Bay, at low tide, there is a narrow band of sand with some patches of shingle exposed along the seafront of the town of Colwyn Bay, and a much wider band of sand, shingle and mud along the seafront at Rhyl and Prestatyn. Colwyn Bay contains lots of coastal structures – breakwaters, a pier (mainly disused) and many groynes in Colwyn Bay, two jetties with gantries associated with the quarries at Llysfaen, groynes and a slipway at Llanddulas, groynes at Towyn, Kinnel Bay and Rhyl, and breakwaters and a slipway at Prestatyn. A major coastal structure in this bay is the seawall, which runs from just west of Abergele to the mouth of the River Clwyd and then from Rhyl to just past Prestatyn.</p> <p>Infrastructure and built development onshore – a minor road follows the coastline around Penrhyn Bay and Rhos-on-Sea, then the A55(T) and the railway line follow the coast between Colwyn Bay and Abergele. The railway line then continues along the coast to Towyn, turns inland and goes through Kinnel Bay, Rhyl and Prestatyn. The A55(T) turns inland at Abergele and continues to St Asaph and over the Clwydian Range. The North Wales Path follows the coastal road around Penrhyn Bay and the promenade along Colwyn Bay seafront, then turns inland through Old Colwyn and loops round the back of the limestone hills before joining the coast again at Llanddulas. The route then follows the coast again past Abergele, Pensarn, Belgrano, Towyn and Kinnel Bay, crosses the mouth of the River Clwyd on the road bridge, loops inland again around Rhyl and ends at the coast beside the Nova Centre at Prestatyn. The Sustrans cycle path follows a very similar route, except that it does not loop inland at Old Colwyn or at Rhyl but continues along the coast to Prestatyn. There are several large settlements with coastal frontages – Penrhyn Bay, Rhos-on-Sea, Rhyl and Prestatyn, which are a mixture of residential, hotels, holiday villages and retirement. In between are the smaller settlements – Towyn and Kinnel Bay (mainly holiday villages with some residential and retirement). Some of the settlements, such as Colwyn Bay and Old Colwyn, Abergele and Llanddulas, may have once had sea frontages, but the A55 (T) and the railway line now separate the residential parts of these towns from the coast. On the front at Rhyl there is the Sky Tower, the Oceanarium and the Sun Centre (indoor recreation), car parking, a promenade and a golf course. On the seafront at Prestatyn there is the Nova Centre (indoor recreation), car parking, a promenade, a holiday village and a golf course. The Old Lighthouse at Point of Ayr is now a hotel and there is a lifeboat station at Rhyl.</p>

Zone	Characteristics
	<p>Coastal activities – shops, holiday villages, camping and caravanning, car parking, promenading, walking, cycling, amusements, indoor recreation (with views of the sea), golf and beach activities. Most of the residential, retirement, hotel and guest house accommodation is not in the coastal zone, but in the hinterland, separated from the seafront by the near continuous line of the A55 (T), the railway line and the seawall.</p> <p>Seaward views – views of the open expanse of sea to the north from the beaches, seawall, promenades, coastal path, roads, railway line and the few properties along the coast.</p>
<i>Hinterland</i>	<p>Landform – relatively gentle coastal slopes around Rhos-on-Sea, Colwyn Bay and Old Colwyn, steep limestone cliffs behind Llanddulas, and then low-lying coastal flats from Abergele to Point of Ayr. These coastal flats extend inland in a roughly triangular shape for at least 6km along the River Clwyd.</p> <p>Land use – a mixture of settlements and open land uses (eg quarries, recreation grounds, public open space), extensive areas of farmland on low lying land between the settlements and some farmland on the tops of the limestone hills, with a few very small patches of deciduous and mixed woodland on the steeper slopes.</p> <p>Infrastructure and built development – the B5115, the A547, and the A548 form a continuous route parallel to the coastline, but with few views of the sea. There is also a network of B, minor and urban roads and the settlements of Colwyn Bay and Old Colwyn (a mixture of mainly residential and retirement), Abergele (mainly residential), Llanddulas (mainly residential) and the majority of Towyn, Kinmel Bay, Rhyl and Prestatyn. Colwyn Bay has a zoo, a theatre and a recreation centre. There are a large number of caravan and/or camping sites, and some business parks/industrial estates.</p> <p>Landscape units – Limestone Escarpment and Hills, Coastal Slopes, Aled Hiraethog Hills, Upland Plateau, Lowland Hills, Limestone Farmlands, Vale Farmlands, and Coastal Flats (see Annex K4).</p> <p>Seaward views – some views of the open expanse of sea to the north from residential areas in Penrhyn Bay, Rhos-on-Sea, Colwyn Bay and Old Colwyn that are situated on the coastal slopes. Also more distant views of the sea from elevated locations inland, such as Bryn Euryn, Mynydd Marian, Moelfre Isaf, Graig Fawr and Prestatyn Hillside. However, few views of the sea from most of the low-lying residential areas in this seascape unit, or from most of the Lowland Hills which are screened from the sea by the Limestone Escarpment.</p>

*Key Characteristics Dee Estuary Seascape Unit Zones*

Zone	Characteristics
<i>Marine zone</i>	<p>Tidal dynamics – none.</p> <p>Installations inside the seascape unit – some beacon/buoys with lights.</p> <p>Marine installations visible outside the seascape unit – none.</p> <p>Marine activities – commercial shipping and ferry routes, yachting routes, recreational day sailing and water sports.</p>
<i>Coastal zone</i>	<p>Geometry and form – a long estuary with a northwest-southeast alignment and a relatively enclosed seaward entrance with a north-westerly aspect.</p> <p>Coastal features – a sand spit at Point of Ayr at the western entrance and a chain of rocky outcrops (Hilbre Island, Little Hilbre Island, Little Eye and Tanskey Rocks) at the eastern entrance, with very broad areas of mud/sand exposed at low tide, extensive areas of salt marsh, a port at Mostyn and a tidal marine boating lake at West Kirby.</p> <p>Infrastructure and built development onshore – the A584 and a railway run parallel with the western bank of the estuary and a disused railway route (now the Wirral Way recreational footpath) runs parallel with the eastern bank. These essentially define the landward edge of the coastal zone, within which (on the western bank) there is a gas terminal (Point of Ayr), several sewage works, a Business Park (Maes-Glas), industrial estates (Bagillt and Flint), a power station (Kelsterton), plus a very large industrial complex and a large rifle range (Connah’s Quay). Then, on the eastern bank, there are several more sewage works, a WT station with three transmission masts, parts of the residential areas of Nessholt, Little Neston, Moorside, Parkgate, Hesswall and West Kirby, the Wirral Country Park and Visitor Centre, a caravan park, the boating lake and a golf course.</p> <p>Coastal activities – mainly industrial and port activities on western bank and mainly residential and recreational on the eastern bank. Access to the shoreline on the western bank is very limited. There is a footpath but virtually no vehicular access. A seawall, a railway line and marshland block access to most of the western shoreline. On the eastern bank, visitors can gain access to the shoreline via several residential roads and car parks, short stretches of footpath, the Country Park and the golf course.</p> <p>Seaward views – views across the estuary from both banks, but low and limited views of the open sea to the northwest as the coastline is low lying and the neck of the estuary quite confined.</p>

Zone	Characteristics
<i>Hinterland</i>	<p>Landform – relatively gentle coastal slopes along both banks.</p> <p>Land use – a series of nucleated settlements with extensive areas of farmland and some woodland in the hinterland of both the western and eastern banks.</p> <p>Infrastructure and built development – the western hinterland is a fairly narrow 3 – 4km strip that forms an extension of the Coastal Slopes landscape type in the Colwyn Bay Seascape Unit. It has short sections of the A5119, the A5026 and the B5121, but is otherwise accessed via a fairly open network of minor roads. It contains the settlements of Ffynnongroyw, Mostyn, Maes-Glas, Holywell, Bagillt, Flint and Connah’s Quay, several small villages, and a dense scattering of farmsteads. There is also a large hotel, a Heritage Park (at Holywell), and several leisure/recreational centres. The eastern hinterland is a very narrow strip of only 1.5 – 2km wide with its landward edge defined by the A540. It has a fairly dense road network, including the B5141, B5134, B5135, B5136, some minor roads and residential streets. It contains Ness Botanic Gardens, and the relatively large residential areas of Ness, Heswall, West Kirby and Hoylake.</p> <p>Seaward views – views across the estuary from both banks, with some views of the open sea to the northwest from elevated locations such as Thurstaston Hill on the Wirral.</p>

***Key Characteristics Liverpool Bay Seascape Unit Zones***

Zone	Characteristics
<i>Marine zone</i>	<p>Tidal dynamics – none.</p> <p>Installations inside the seascape unit – several beacon/buoys with lights.</p> <p>Marine installations visible outside the seascape unit – Douglas Oil Field, Hamilton Gas Field and Lennox Oil/Gas Field.</p> <p>Marine activities – commercial shipping and ferry routes, yachting routes, yacht racing, recreational day sailing and angling.</p>

Zone	Characteristics
Coastal zone	<p>Geometry and form – a short length of virtually straight coastline, low lying and with a very open north-north-westerly aspect.</p> <p>Coastal features – a rocky outcrop (Red Rocks) at the western end, with very broad areas of sand exposed at low tide, several breakwaters and slipways and a tidal marine boating lake at New Brighton.</p> <p>Infrastructure and built development onshore – most of the coastline is protected by a seawall, which separates the coastal edge from the hinterland.</p> <p>Coastal activities – mainly recreational with fairly good access to the shoreline via roads and parking areas, although there are no public footpaths shown on the OS map.</p> <p>Seaward views – views from the seawall and intertidal zone out to the open sea to the northwest, to Liverpool docks and the existing wind turbines at Seaforth Dock, and to the Lancashire coastline to the northeast.</p>
<i>Hinterland</i>	<p>Landform – mainly very flat (0 – 5m AOD), with slightly higher land in and around New Brighton (rising to 25m AOD). There are remnant dunes behind the seawall.</p> <p>Land use – mainly residential with some open land uses (Coastal Park and golf course).</p> <p>Infrastructure and built development – the hinterland is a narrow 1 – 2km strip largely between the railway line and the seawall. It has short sections of the A540, the A553, the A551, and the A554, with some minor roads and residential streets. It contains the settlements of Hoylake, Leasowe and New Brighton, the pumping station and screening works for the North Wirral long sea outfall at Moreton, several extensive areas of allotments/market gardens with glasshouses, and Leasowe Castle Hotel.</p> <p>Seaward views – views of the open sea to the northwest from the residential area near Hilbre Point and from slightly elevated locations, such as on the golf course. Otherwise, views of the sea are restricted by the seawall and intervening development.</p>



## Annex K4: Landscape Character Assessment

### Extract from Clwyd Landscape Assessment

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#### LA7 - Coastal and Estuarine Flats

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##### Overall character and qualities

An open flat almost treeless farmed landscape with a degraded appearance, adjacent to the coast and estuary, with a surviving fringe of sand dunes and saltmarsh.

##### Characteristic features

- Open, sometimes degraded, character
- Improved flat geometric fields, all reclaimed from former marshland
- Pasture and arable farming
- Degraded hedgerows, often replaced with fences; hedgerow trees sparse
- Associated ditches and watercourses
- Occasional small broadleaved woods
- Sand dunes and saltmarsh on seaward side
- Coastal resort town linked by extensive caravan sites
- Semi-continuous urban and industrial development along estuary

##### Management strategy

Conserve and restore semi-natural coastal features. Enhance degraded areas through additional small scale broadleaved planting, whilst generally maintaining the open character; establish Community Woodland on urban fringe.

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#### LA6 - Coastal Slopes

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##### Overall character and qualities

Distinct pastoral slopes between the coastal and estuary strip and the hills and plateau lands to the south. Slopes are often dissected by narrow, incised, mostly wooded valleys.

##### Characteristic features

- Uniform or gently undulating slopes with steady fall to coastal flat lands below
- Abundant predominantly broadleaved woodland, especially in narrow valleys
- Valleys occupied by small fast-flowing streams
- Medium-sized irregular and semi-regular fields defined by well maintained mixed hedgerows, with hedgerow trees common
- Settlement generally limited to scattered farms and wayside cottages
- Some encroachment of coastal industrial and resort towns onto slopes, especially around Deeside and Colwyn Bay

##### Management strategy

Conserve the traditional and wooded character of the landscape, and enhance urban fringe areas by management of existing woods and establishment of new Community Woodland.

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### **LC3 – Limestone Farmlands**

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#### **Overall character and qualities**

An undulating landscape with a strong local limestone character typically well-wooded and with a small to medium-sized field pattern.

#### **Characteristic features**

- Mostly an irregular landform often with rock outcrops
- An essentially rural character with small villages, scattered farms and wayside cottages, often built of local limestone
- Small to medium-sized semi-regular field pattern with thorn hedged and dry stone walls
- Small areas of unimproved limestone grassland and rough grazing
- Trees and woods plentiful with ash a dominant species
- Strong estate wooded character in places
- Minor roads, tracks and footpaths often abundant
- Frequent remains of past mining and quarrying activity

#### **Management strategy**

Conserve and restore the important elements of the landscape; protect the inherent limestone characteristics.

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### **LC4 – Limestone Escarpment and Hills**

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#### **Overall character and qualities**

A series of prominent and often spectacular steep limestone escarpments and hills with a rugged and open character and covered in semi-natural grassland and scrub, usually with associated broadleaved woodland.

#### **Characteristic features**

- Prominent steep hills with limestone outcrops, scarp faces, cliffs, scree slopes and pavement
- Broadleaved and mixed woodland fringe usually at based of scarp slope
- Herb-rich unimproved and semi-improved grazed limestone pasture
- Scrub encroachment into grassland areas, particularly where grazing is absent
- Some remnant stone walls evident
- Stone-built cottages on margins
- Disused quarries and mines, including associated structures present
- Dominant working quarries

#### **Management Strategy**

Conserve the open character of hills and scarp faces and semi-natural limestone grassland and woodland, and protect industrial archaeological features.

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## LA8 – Vale Farmlands

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### Overall character and qualities

Long, broad pastoral vales of major rivers containing major lines of communications with a strong and historic settlement pattern.

### Characteristic features

- Broad, U-shaped valleys with gently sloping sides and flat bottoms with major rivers
- Intensive predominantly pastoral farmland; some wetland locally
- Generally medium to large scale irregular and semi-regular field pattern
- Few woods overall but dominant hedgerow tree cover often creating a superficial wooded character
- Oak is dominant tree in Vale of Clwyd where the nationally rare black poplar is also commonly found
- Estate wooded character and influence in several areas
- Estate halls, old market towns, villages and farms of local stone and red brick, give a strong historic character and interest

### Management strategy

Conserve and restore the key and historic elements of the landscape.

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## LA5 – Lowland Hills

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### Overall character and qualities

Low rolling hills divided by moderate and shallow, often dry valleys, with a largely irregular field pattern and an overall abundance of hedgerow trees.

### Characteristic features

- A series of rolling hills broken by small valleys often dry or containing minor streams
- Mixed and thorn hedgerows dividing medium to large-sized irregular and semi-regular fields
- Hedgerow trees, particularly oak, are common together with small broadleaved copses
- Extensive network of minor and major roads throughout area
- Numerous farms, smallholdings and wayside cottages
- Industrial and urban area around Buckley with degraded urban fringe

### Management strategy

Restore and enhance the traditional and wooded character of the landscape through hedgerow management and new woodland planting.

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## LA4 – Eastern Lowlands

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### Overall character and qualities

Extensive areas of gently undulating pastoral lowland landscape mostly on heavy clay, characterised by an abundance of hedgerow trees particularly oak, and an historic settlement pattern with a locally dominant estate influence.

### Characteristic features

- Uniform low-lying undulating landscape broken by minor watercourses
- An irregular and semi-regular medium-sized field pattern, with well managed hedgerows containing numerous hedgerow trees, principally oak
- Generally intensively farmed land, mainly grassland but with some arable
- Remnant ridge and furrow well preserved
- Pockets of unimproved grassland and wetland mainly in valleys
- Field ponds abundant
- Many small predominantly broadleaved woodlands, often located in valleys
- A localised estate character of mixed woods and open parkland
- An historic settlement pattern of estate halls, small villages, many farms and wayside cottages, all linked by an extensive network of roads, minor lanes, tracks and paths
- Large urban and industrial areas at Wrexham and Mold, where vernacular red brick buildings common
- Abandoned and working sand and gravel pits north and east of Wrexham

### Management strategy

Conserve and restore the rich and historically important features of the landscape. Enhance degraded areas with Community Woodland planting, whilst protecting valued semi-natural features.

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## MU1 – Aled Hiraethog Hills

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### Overall character and qualities

An extensive and intimate landscape of high hills and valleys with a strong rural character, dominated by an ancient field pattern and prominent, occasionally unimproved, open hill tops.

### Characteristic features

- Interlocking hills often high and rounded
- Valleys often with fast-flowing rivers and streams
- Much of the land has been agriculturally improved
- Remnants of heath and bracken survive, most notably on hill tops
- Thorn hedges, often degenerate and overgrown, define an ancient irregular pattern of small to medium-sized fields
- Broadleaved woods common in valleys
- A nucleated settlement pattern of stone-built small villages and scattered farms linked by a network of minor winding roads
- A generally remote area with a strong rural character

### Management strategy

Conserve and restore the key elements of the landscape. Enhance the landscape quality of reclaimed areas through new woodland planting

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## **MU6 – Upland Plateau**

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### **Overall character and qualities**

High, slightly rugged, undulating plateau largely with improved pasture, dry stone walls and few trees, having an overall open and exposed character.

### **Characteristic features**

- Exposed and open landscape character, with rock outcrops
- High but mainly agriculturally improved grazing land with pockets of semi-natural vegetation, particularly wetland
- Large fields bounded by fences and dry stone walls, sometimes by thorn hedges
- Trees sparse or absent
- A few usually minor roads cross these areas
- Settlement largely confined to a few stone-built farms usually on margins

### **Management strategy**

Restore the key elements of the landscape and conserve semi-natural vegetation.

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## **LC1 – Trelawnyd Plateau**

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### **Overall character and qualities**

An extensive open plateau of pastoral farmland with degraded hedgerows, underlain with limestone which manifests itself in small outcrops, stone walls and traditional buildings.

### **Characteristic features**

- A relatively flat area broken by low hills, gentle undulations and shallow often dry valleys with an overall open and exposed character
- Limestone influence in buildings, dry stone walls, local outcrops and unimproved limestone grassland
- A mix of ancient irregular and more recent geometric field patterns
- Thorn hedgerows with some stone wall boundaries
- Tree cover notably sparse apart from isolated predominantly conifer plantations mainly on the low hills and a thin scattering of hedgerow trees elsewhere
- A nucleated settlement pattern of villages and scattered farms
- A high concentration of prehistoric and industrial archaeological remains

### **Management strategy**

Restore the limestone and other traditional features of the landscape; enhance open and exposed areas by creating new small scale woodlands.

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## LH6 - Hill Slopes

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### Overall character and qualities

The agriculturally improved hill slopes below the adjoining moorland, characterised by a traditional irregular field pattern edged by overgrown hedgerows.

### Characteristic features

- Uniform sloping ground occasionally broken by minor watercourses and pockets of semi-natural vegetation
- Agriculturally improved and semi-improved pasture
- Small to medium-sized mostly irregular fields defined by tall often degraded hedgerows with scattered trees of oak, sycamore and ash
- More recent geometric enclosures at upper margins
- Relatively few woodlands, largely confined to small valleys
- Scattered farms linked by a few narrow, often sunken lanes

### Management strategy

Restore the traditional elements of the landscape and establish small broadleaved woods in scale with field pattern.

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## MU9 -Moorland Ridge

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### Overall character and qualities

Mostly continuous and undulating high ridges with a wild and open heather moorland landscape with considerable nature conservation value and archaeological interest, with localised agricultural reclamation and afforestation.

### Characteristic features

- Open and windswept character
- Long high ridges broken by a series of summits and often with long spurs
- Heather and bracken dominant and, together with bilberry and gorse, create a mosaic of colour and texture
- Improved geometric fields bounded by fences conspicuous on flanks of Clwydian Hills
- Pasture occasionally enclosed by remnant thorn hedges on lower margins
- Prehistoric monuments are a feature of the ridgeline
- Ridge interrupted by occasional conifer plantations

### Management strategy

Conserve the open and semi-natural character and protect archaeological features. Enhance the landscape quality of reclaimed and afforested areas.

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## **Annex K5: Schedule of Potential Effects and Mitigation**

**Key - meanings of the terms used in the following schedule of predicted effects**

<b>Cause</b>	Source of effect	The particular aspect/characteristic of the development that will bring about a change to the baseline environment
<b>Predicted effects</b>	Predicted change	The predicted change to the baseline environment as a result of the particular aspect/characteristic of the development
<b>Link</b>	Direct	Principal effects that will result as a direct consequence of the development
	Indirect	Principal effects that will result as an indirect consequence of the development
	Secondary	Subsidiary effects, of lesser importance than the principal effects, may be direct or indirect
<b>Timescale</b>	Long-term	> 5 years
	Medium-term	1 - 5 years
	Short-term	< 1 year
<b>Duration</b>	Permanent	Effects that will endure indefinitely. Therefore, usually long-term and irreversible
	Temporary	Transient effects. Therefore, usually short-term and/or reversible
<b>Reversibility</b>	Irreversible	Effects that can not be reversed, even once the source of the effect has ceased
	Reversible	Effects that will be cancelled once the source of the effect has ceased
<b>Cyclical</b>	Constant	Effects that will remain at a constant level, regardless of seasonal or other cycles in the environment
	Intermittent	Effects that will be intermittent
	Seasonal	Effects that will vary according to a seasonal cycle
	Other	Effects that will vary according to another specified cycle, eg weather cycles, diurnal (daily)
<b>Cumulative</b>	Simultaneous	Concurrent effects, ie effects that will impact on receptors at the same time as other similar structures or activities
	Sequential	A series of effects that will be accumulate over time or distance with or without other similar structures or activities
<b>Likelihood</b>	High	Effects that have a high probability (>60) of occurring
	Medium	Effects that have a medium probability (30 - 60%) of occurring
	Low	Effects that have a low probability (< 30%) of occurring



**Seascape, Landscape and Visual Assessment**

<b>Valency</b>	Negative	Effects that will have an adverse effect on seascape, landscape and/or visual amenity
	Positive	Effects that will have a beneficial effect on seascape, landscape and/or visual amenity
<b>Mitigation</b>	Measures	The measures that have been incorporated into the design to prevent, reduce or compensate for the predicted effects
<b>MSL</b>		Mean sea level

**Schedule of Predicted Effects and Mitigation - Construction Phase**

Cause Sources of effect - characteristics of development	Predicted effects Predicted changes to the baseline	Receptors Resource	Characteristics of predicted effects								Mitigation Measures
			Link Direct Indirect Secondary	Timescale Long-term Medium-term Short-term	Duration Permanent Temporary	Reversibility Irreversible Reversible	Cyclical Constant Intermittent Seasonal, Other	Cumulative Simultaneous Sequential	Likelihood High Medium Low	Valency Negative (-) Positive (+) Uncertain (?)	
Shipping and port activities - delivery of components to staging point and assembly operations	Ship movements, dock side activities	Seascape character	D	very S	T	R	I	Sim and Seq	H	+	Works to be concentrated into a 4 month timescale
		Landscape character	I	very S	T	R	I	Sim and Seq	H	?	
		Visual amenity	D	very S	T	R	I	Sim and Seq	H	?	
Road haulage of components and construction materials	Lorry movements, dock side activities	Seascape character	D	very S	T	R	I	Sim and Seq	H	?	Works to be concentrated into a 4 month timescale
		Landscape character	D	very S	T	R	I	Sim and Seq	H	?	
		Visual amenity	D	very S	T	R	I	Sim and Seq	H	?	
Construction of scour protection and foundations for turbines, substation and meteorological masts	Large jack-up barges and cranes, small boats, activity, etc in the sea	Seascape character	D	very S	T	R	I	Seq	H	-	Works to be concentrated into a 4 month timescale
		Landscape character	I	very S	T	R	I	Seq	H	-	
		Visual amenity	D	very S	T	R	I	Seq	H	-	
Erection of towers	Large jack-up barges and cranes, small boats, activity, etc in the sea	Seascape character	D	very S	T	R	I	Seq	H	-	Works to be concentrated into a 2 month timescale
		Landscape character	I	very S	T	R	I	Seq	H	-	
		Visual amenity	D	very S	T	R	I	Seq	H	-	
Installation of turbines (nacelles, hub and blades)	Large jack-up barges and cranes, small boats, activity, etc in the sea	Seascape character	D	very S	T	R	I	Seq	H	-	Works to be concentrated into a 2 month timescale
		Landscape character	I	very S	T	R	I	Seq	H	-	
		Visual amenity	D	very S	T	R	I	Seq	H	-	

Cause Sources of effect - characteristics of development	Predicted effects Predicted changes to the baseline	Receptors Resource	Characteristics of predicted effects								Valency Negative (-) Positive (+) Uncertain (?)	Mitigation Measures
			Link Direct Indirect Secondary	Timescale Long-term Medium-term Short-term	Duration Permanent Temporary	Reversibility Irreversible Reversible	Cyclical Constant Intermittent Seasonal, Other	Cumulative Simultaneous Sequential	Likelihood High Medium Low			
Construction of substation	Large jack-up barges and cranes, small boats, activity, etc in the sea	Seascape character	D	very S	T	R	I	Seq	M	-	Works to be concentrated into a 1 month timescale	
		Landscape character	I	very S	T	R	I	Seq	M	-		
		Visual amenity	D	very S	T	R	I	Seq	M	-		
Erection of meteorological masts	Small boats and activity, etc in the sea	Seascape character	D	very S	T	R	I	Seq	H	+	Works to be concentrated into a 1 month timescale	
		Landscape character	I	very S	T	R	I	Seq	H	+		
		Visual amenity	D	very S	T	R	I	Seq	H	+		
Cable laying within the wind farm and from wind farm to shore landing point	Small boats, activity, etc in the sea	Seascape character	D	very S	T	R	I	Seq	H	+	Works to be concentrated into a 3 month timescale	
		Landscape character	I	very S	T	R	I	Seq	H	+		
		Visual amenity	D	very S	T	R	I	Seq	H	+		
Media interest and reporting	Helicopter activity	Seascape character	D	very S	T	R	I	Seq	M	+/-	Limited to 10 helicopter movements (5 return journeys to the site)	
		Landscape character	I	very S	T	R	I	Seq	M	+/-		
		Visual amenity	D	very S	T	R	I	Seq	M	+/-		
Commissioning	Small boats, activity, etc in the sea	Seascape character	D	very S	T	R	I	Seq	H	+	Works to be concentrated into a 1 month timescale	
		Landscape character	I	very S	T	R	I	Seq	H	+		
		Visual amenity	D	very S	T	R	I	Seq	H	+		

**Schedule of Predicted Effects and Mitigation - Operational Phase**

Cause Sources of effect - characteristics of development	Predicted effects Predicted changes in to the baseline	Receptor Resource	Characteristics of predicted effects								Valency Negative (-) Positive (+) Uncertain (?)	Mitigation Measures
			Link Direct Indirect Secondary	Timescale Long-term Medium-term Short-term	Duration Permanent Temporary	Reversibility Irreversible Reversible	Cyclical Constant Intermittent Seasonal, Other	Cumulative Simultaneous Sequential	Likelihood High Medium Low			
Wind farm layout - two straight rows of 15 wind turbines, regularly spaced (437m apart and 2040m between the rows), and all of the same design and size (up to 152m above MSL)	Tall vertical structures in a regular pattern in the sea	Seascape character	D	L	T	R	C	Sim and Seq	H	-	Simple, formal, regular arrangement of same design/size turbines will suit the simple, bland, and relatively constant character of the seascape.	
		Landscape character	I	L	T	R	C	Sim and Seq	H	-		
		Visual amenity	D	L	T	R	C	Sim and Seq	H	-		
Turbine design - all turbines of same design - solid tubular steel towers (60 – 100m above MSL and 3 – 6m dia at base), a nacelle and three blades (80 – 104m dia), all with a dull light grey finish	Tall, slender structures, simple in silhouette and with a recessive colour scheme, in the sea	Seascape character	D	L	T	R	C	Sim and Seq	H	-	Slender towers and dull light grey finish will minimise visibility against sea and sky. Solid tubular towers preferred by public (Stevenson & Griffiths 1995)	
		Landscape character	I	L	T	R	C	Sim and Seq	H	-		
		Visual amenity	D	L	T	R	C	Sim and Seq	H	-		
Platforms at 15m above MSL	Platforms will break smooth line of towers above waterline	Seascape character	D	L	T	R	C	Sim and Seq	H	-	Dull grey finish to minimise visibility against both the sea and sky	
		Landscape character	I	L	T	R	C	Sim and Seq	H	-		
		Visual amenity	D	L	T	R	C	Sim and Seq	H	-		
Bright yellow finish to tower between waterline and platform	Yellow will make the turbines more noticeable	Seascape character	D	L	T	R	C	Sim and Seq	H	-	No mitigation possible – required for navigational safety	
		Landscape character	I	L	T	R	C	Sim and Seq	H	-		
		Visual amenity	D	L	T	R	C	Sim and Seq	H	-		

Cause Sources of effect - characteristics of development	Predicted effects Predicted changes to the baseline	Receptor Resource	Characteristics of predicted effects								Valency Negative (-) Positive (+) Uncertain (?)	Mitigation Measures
			Link Direct Indirect Secondary	Timescale Long-term Medium-term Short-term	Duration Permanent Temporary	Reversibility Irreversible Reversible	Cyclical Constant Intermittent Seasonal, Other	Cumulative Simultaneous Sequential	Likelihood High Medium Low			
Moving rotors, up to 104m in diameter and rotating at speeds of between 12 - 18 rpm	Rotating structures in the sea	Seascape character	D	L	T	R	I	Sim and Seq	H	-	Slow rotational speed and dull light grey finish will minimise the distance within which movement will be noticeable	
		Landscape character	I	L	T	R	I	Sim and Seq	H	-		
		Visual amenity	D	L	T	R	I	Sim and Seq	H	-		
Navigational aids - a new lit buoy in the sea, plus red lights on the turbine hubs and yellow flashing lights on 8 turbines (on the platforms of the corner turbines, plus two more on each row)	30 glowing red lights at hub level and 8 flashing yellow lights at platform level (night and day)	Seascape character	D	L	T	R	C/I	Sim and Seq	H	+/-	No mitigation possible - required for navigational safety	
		Landscape character	I	L	T	R	C/I	Sim and Seq	H	+/-		
		Visual amenity	D	L	T	R	C/I	Sim and Seq	H	+/-		
Offshore 132/144kV substation on monopile painted yellow, with transformer, switch gear, helideck, accommodation, boat access and decking. Substation approx 16m x 16m, by 17m high, on a platform 15m above MSL.	A large module on a monopile in the sea	Seascape character	D	L	T	R	C	Sim	M	-	Alongside inner row of turbines, so seen as part of the development/less noticeable from the shore	
		Landscape character	I	L	T	R	C	Sim	M	-		
		Visual amenity	D	L	T	R	C	Sim	M	-		
Submarine cables within wind farm and connecting to shore landing point	None	Seascape character	None	L	T	R	C	None	H	N/A	None necessary	
		Landscape character	None	L	T	R	C					
		Visual amenity	None	L	T	R	C					

Cause Sources of effect - characteristics of development	Predicted effects Predicted changes to the baseline	Receptor Resource	Characteristics of predicted effects								Valency Negative (-) Positive (+) Uncertain (?)	Mitigation Measures
			Link Direct Indirect Secondary	Timescale Long-term Medium-term Short-term	Duration Permanent Temporary	Reversibility Irreversible Reversible	Cyclical Constant Intermittent Seasonal, Other	Cumulative Simultaneous Sequential	Likelihood High Medium Low			
Meteorological masts – 1 mast 56m above MSL, 1 mast 60 - 100m above MSL (turbine hub height), lattice towers on a platform atop a concrete pile painted yellow.	Tall vertical structures in the sea	Seascape character	D	L	T	R	C	Sim	H	-	Alongside the rows of turbines, so will be seen as part of the development. Lattice towers will be less noticeable from the shore, than solid towers	
		Landscape character	I	L	T	R	C	Sim	H	-		
		Visual amenity	D	L	T	R	C	Sim and Seq	H	-		
General planned maintenance – one major service (summer) and one minor service per year	Small boats, activity, etc in the sea	Seascape character	D	L	T	R	I	Seq	H	+	Internal lifting gear (in turbine towers) will avoid need for external lifting equipment, eg barge mounted cranes	
		Landscape character	I	L	T	R	I	Seq	H	+		
		Visual amenity	D	L	T	R	I	Seq	H	+		
Maintenance operations – replacement of components where major failure has occurred	Large jack-up barges and cranes, small boats and activity in the sea	Seascape character	D	L	T	R	I	Seq	L	-	Components selected and designed to minimise likelihood of major component failure and, therefore, need for external lifting equipment, eg barge mounted cranes	
		Landscape character	I	L	T	R	I	Seq	L	-		
		Visual amenity	D	L	T	R	I	Seq	L	-		
Media interest and reporting, VIP visits, etc	Small boat activity and helicopters	Seascape character	D	very S	T	R	I	Seq	M	+	Visits will be organised and infrequent	
		Landscape character	I	very S	T	R	I	Seq	M	+		
		Visual amenity	D	very S	T	R	I	Seq	M	+		

**Schedule of Predicted Effects and Mitigation – Decommissioning Phase**

Cause <small>Sources of effect - characteristics of development</small>	Predicted effects <small>Predicted changes to the baseline</small>	Receptors <small>Resource</small>	Characteristics of predicted effects								Valency <small>Negative (-) Positive (+) Uncertain (?)</small>	Mitigation <small>Measures</small>
			Link <small>Direct Indirect Secondary</small>	Timescale <small>Long-term Medium-term Short-term</small>	Duration <small>Permanent Temporary</small>	Reversibility <small>Irreversible Reversible</small>	Cyclical <small>Constant Intermittent Seasonal, Other</small>	Cumulative <small>Simultaneous Sequential</small>	Likelihood <small>High Medium Low</small>			
Removal of foundations, towers, turbine components, substation and meteorological masts	Large jack-up barges and cranes, small boats, activity, etc in the sea	Seascape character	D	very S	T	R	I	Seq	H	-	Works to be concentrated into a 4 month timescale	
		Landscape character	I	very S	T	R	I	Seq	H	-		
		Visual amenity	D	very S	T	R	I	Seq	H	-		
Cables and scour protection to be left in place	None										To minimise disturbance	
Shipping and Port activities – transport of components to and from staging point and dis-assembly operations	Ship movements, dock side activities	Seascape character	D	very S	T	R	I	Sim and Seq	H	+	Works to be concentrated into a 4 month timescale	
		Landscape character	I	very S	T	R	I	Sim and Seq	H	?		
		Visual amenity	D	very S	T	R	I	Sim and Seq	H	?		
Road haulage of components and waste materials	Lorry movements, dock side activities	Seascape character	D	very S	T	R	I	Sim and Seq	H	?	Works to be concentrated into a 4 month timescale	
		Landscape character	D	very S	T	R	I	Sim and Seq	H	?		
		Visual amenity	D	very S	T	R	I	Sim and Seq	H	?		

## **Annex K6: Preliminary Viewpoints – fieldwork observations**



**Preliminary list of viewpoints**

No	Location	NGR	LPA	Seascape unit	National designations	Landscape type	Visual receptor	Wind farms visible	Cumulative sector	Comments	Requested by	Vpt no
<b>1</b>	<b><i>Elevated viewing points and viewing areas with public access</i></b>											
1.1	Mynydd y Dref (Conwy Mountain)	275975 377860	SNP	Conwy Bay	SNP, NWP	n/a	Walkers	Rhyl Flats North Hoyle	Partial overlap	Just off NWP, at highest point (240mAOD). 360o panoramic views of sea to north, Anglesey to west and Snowdonia to south.	CCW	1
1.2	Great Orme - trig point	276770 383330	CCBC	Llandudno Bay	HC	Limestone escarpment and hills	Walkers Visitors	Rhyl Flats North Hoyle	Overlap	Views of the sea to the north and along the coastline to the east. Development immediately behind obscurs view of Snowdonia.	CCW	2
1.3	Little Orme	281908 382291	CCBC	Llandudno Bay / Colwyn Bay	NWP	Limestone escarpment and hills	Walkers Residents	Rhyl Flats North Hoyle	Overlap	On NWP and near properties. Views of the sea to the north/ east and along the coastline to the east.	CCW	3
1.4	Bryn Euryn	283222 379848	CCBC	Colwyn Bay	none	Limestone escarpment and hills	Walkers Residents	Rhyl Flats North Hoyle	Separate	360o panoramic view over town of Colwyn Bay towards the sea to the north.	CCW	4
1.5a	Mynydd Marian - trig point	288800 377420	CCBC	Colwyn Bay	none	Limestone farmlands	Walkers Residents	Rhyl Flats North Hoyle	Separate	LNR with <i>de facto</i> public access. Panoramic views of sea to north, Snowdonia and inland	CCW	
1.5b	Berth-y-Glyd, on Mynydd Marian	288520 377850	CCBC	Colwyn Bay	none	Limestone farmlands	Residents Motorists	Rhyl Flats North Hoyle	Separate	Properties along a local road with views of the sea to the north.	CCBC	5

**Preliminary list of viewpoints**

No	Location	NGR	LPA	Seascape unit	National designations	Landscape type	Visual receptor	Wind farms visible	Cumulative sector	Comments	Requested by	Vpt no
1.6a	Moelfre Isaf - trig point	295140 373360	CCBC	Colwyn Bay	none	Aled Hiraethog Hills	Walkers	Rhyl Flats North Hoyle	Separate	360o panoramic view of the countryside from trig point. Sea in distance to the north. Overhead grid and pylons noticeable below.	CCW	6
1.6b	Moelfre Isaf - scenic viewpoint	295074 373762	CCBC	Colwyn Bay	none	Aled Hiraethog Hills	Walkers Motorists	Rhyl Flats North Hoyle	Separate	On minor road at scenic viewpoint. Panoramic view of land with sea in distance. Overhead grid and pylons very noticeable.		
1.7a	Graig Fawr	306800 380660	DCC	Colwyn Bay	Clwydian Hills AONB, NWP	Limestone escarpment and hills	Walkers Residents	North Hoyle Rhyl Flats	Separate	On well used section of the NWP, around the side of Graig Fawr, listed in Conduit 1998. Panoramic view across land towards the sea in the north. Close to residential properties.		
1.7b	Graig Fawr viewpoint	305950 380395	DCC	Colwyn Bay	Clwydian Hills AONB, NT Access land	Limestone escarpment and hills	Walkers	North Hoyle Rhyl Flats	Separate	360o panoramic view from trig point on Graig Fawr. Not on NWP, but preferred by CCW.	CCW	7
1.7c	Y Foel	306370 378200	DCC	Colwyn Bay	Clwydian Hills AONB	Limestone escarpment and hills		North Hoyle Rhyl Flats	Separate	At 265m high point near communication masts. No public access. Not visited.	CCW	

**Preliminary list of viewpoints**

No	Location	NGR	LPA	Seascape unit	National designations	Landscape type	Visual receptor	Wind farms visible	Cumulative sector	Comments	Requested by	Vpt no
1.8	Prestatyn hillside viewpoint	307430 381920	FCC	Colwyn Bay	Clwydian Hills AONB	Coastal slopes	Walker/ Motorists	North Hoyle Rhyl Flats	Separate	180o spectacular views from car park - of land and sea to north and east to Snowdonia.	CCW	8
1.9a	Penycloddiau	312720 367940	FCC	None	Clwydian Hills AONB, Offa's Dyke Path	Moorland ridge	Keen walkers!	North Hoyle Rhyl Flats	Separate	Where path crosses the ramparts, on northern side of fort. Panoramic views of Clwydians and lower lying land and sea in the distance.	CCW	9
1.9b	Moel Famau	316170 362650	FCC	None	Clwydian Hills AONB, Offa's Dyke Path	Moorland ridge	Very keen walkers!	North Hoyle Rhyl Flats	Separate	Highest and most visited point in AONB. Panoramic views westwards towards Snowdonia and northwards towards the sea in the far distance.	FCC	
1.10	Thurcaston Hill viewpoint	324487 384665	WMBC	Dee Estuary	National Trust open access land	Coastal slopes	Walkers	North Hoyle Rhyl Flats	Separate	360o panoramic views across the Wirral and across the Dee Estuary. Views of sea partially obscured by nearby wooded hill		10
<b>2</b>	<b>Coastal views from linear routes with public access</b>											

**Preliminary list of viewpoints**

No	Location	NGR	LPA	Seascape unit	National designations	Landscape type	Visual receptor	Wind farms visible	Cumulative sector	Comments	Requested by	Vpt no
2.1	A55 Penmaen Rhos	288069 378759	CCBC	Colwyn Bay	none	Coastal slopes	Motorists Walkers	Rhyl Flats North Hoyle	Separate	On footbridge over A55 nr Colwyn Bay Hotel. 180o view of sea to north, also A55, railway, quarry and Colwyn Bay.	CCW	11
2.2	A55 Abergele	292800 378140	CCBC	Colwyn Bay	NWP	Limestone farmlands	Motorists	Rhyl Flats North Hoyle	Separate	On footbridge over A55 nr Hen Wrych Farm. 180o view of sweep of bay and sea to north, also A55 and railway.	CCW	12
2.3	A55 near Rhualt	306800 374640	DCC	Colwyn Bay	none	Vale farmlands	Motorists	Neither	N/A	In lay by, just after cutting and the White House (Ty Gwyn). No view.	CCW	
2.4	A546, Llandudno seafront		CCBC	Llandudno Bay	NWP	Coastal slopes	Motorists	Rhyl Flats North Hoyle		See 4.2a	CCW	
2.5	A547 Abergele Road		CCBC/ DCC	Colwyn Bay	none	Coastal slopes/ Limestone farmlands/ Coastal and estuarine flats	Motorists			Runs parallel and just inland of A55. Very few views of the sea due to vegetation, roadside walls and built development.	CCW	
2.6	A548 Flint to Prestatyn		DCC/ FCC	Colwyn Bay / Dee Estuary	none	Coastal and estuarine flats/ coastal slopes	Motorists			Follows inland edge of coastal flats, so low lying. Some views of Dee Estuary but few views of sea to north.		

**Preliminary list of viewpoints**

No	Location	NGR	LPA	Seascape unit	National designations	Landscape type	Visual receptor	Wind farms visible	Cumulative sector	Comments	Requested by	Vpt no
2.7	A525 St Asaph to Rhyl		DCC	Colwyn Bay	none	Vale farmlands/ Coastal and estuarine flats	Motorists			Low level views of sea beyond countryside to north as road is slightly above surroundings		
2.8	A5151 Gorsedd to Rhuddlan		FCC/ DCC	Colwyn Bay	none/ Clwydian Hills AONB	Trelawnyd plateau/ Limestone farmlands/ Vale farmlands	Motorists			Occasional views of sea to north as road rises over rolling topography.		
2.9	B5115, Llandudno to Colwyn Bay		CCBC	Llandudno Bay/ Colwyn Bay	NWP	Coastal flats/ coastal slopes	Motorists			Oblique low level view of sea to northeast as road passes behind Penrhyn golf course.		
2.10	B5113 Llanrwst Road		CCBC	Colwyn Bay	none	Upland plateau/ Aled Hiraethog Hills/ Coastal slopes	Motorists			Road over Aled Hiraethog hills - occasional elevated views of sea to north.	CCW	
2.11	B5383, Dolwen to Old Colwyn		CCBC	Colwyn Bay	none	Lowland hills/ Coastal slopes	Motorists			One or two glimpses of the sea	CCW	
2.12	B5119 Dyserth Road		DCC	Colwyn Bay	none	Vale farmlands	Motorists			One or two glimpses of the sea		
2.13	Marine Drive around Great Orme		CCBC	Llandudno Bay	NWP	Limestone escarpment and hills	Motorists			Very narrow and anti-clockwise only. Views of turbines would be to rear only for motorists.	CCW	

**Preliminary list of viewpoints**

No	Location	NGR	LPA	Seascape unit	National designations	Landscape type	Visual receptor	Wind farms visible	Cumulative sector	Comments	Requested by	Vpt no
2.14	Glodaeth Lane, Deganwy to Penrhyn Bay		CCBC	Llandudno Bay	none	Coastal slopes	Motorists			Only one or two glimpses of the sea		
2.15	Penrhyn Bay to Colwyn Bay seafront		CCBC	Colwyn Bay	NWP, Sustrans route		Motorists			Continous, low level, open views of sea to north and sweep of coastline.	CCW	
2.16	Minor road, Gwaenysgor to Prestatyn		FCC/ DCC	Colwyn Bay	Offa's Dyke Path		Motorists			See 1.8		
2.17	Railway - Colwyn Bay - Llandulas - Abergele		CCBC	Colwyn Bay	none	various	Rail travellers	Rhyl Flats North Hoyle		Almost continuous views of sea and coastline along Colwyn Bay	CCW	
2.18	Sustrans National Cycle Route No 5 - Penrhyn Bay to Prestatyn		CCBC/ DCC	Colwyn Bay	NWP, Sustrans route	various	Cyclists	Rhyl Flats North Hoyle		See 2.15, 3.2, 3.4a, 3.4b, 3.5, 4.3, 4.4 and 4.5	CCW	
2.19	North Wales Path		GCC/ SNPA/ CCBC/ DCC	Conwy Estuary/ Llandudno Bay/ Colwyn Bay	HC, NWP	various	Walkers	Rhyl Flats North Hoyle		See 1.1, 1.3, 1.7a, 2.2, 2.4, 2.9, 2.13, 2.15, 2.18, 3.2, 4.2a, 4.2b, 4.3, 4.4 and 4.5.	CCW	
2.20	Offa's Dyke Path		DCC/ FCC	Colwyn Bay	Offa's Dyke Path		Walkers			See 1.9a, 1.9 b and 2.16.	CCW	
<b>3</b>	<b>Tourist &amp; leisure facilities</b>											

**Preliminary list of viewpoints**

No	Location	NGR	LPA	Seascape unit	National designations	Landscape type	Visual receptor	Wind farms visible	Cumulative sector	Comments	Requested by	Vpt no
3.1a	Great Orme (nr cemetery and cafe)	276917 383967	CCBC	Llandudno Bay	HC	Limestone escarpment and hills	Visitors	Rhyl Flats North Hoyle	Overlap	Accessed via Marine Drive or from Great Orme Country Park. Panoramic views of sea to north.		13
3.1b	Llandudno cable car, Great Orme		CCBC	Llandudno Bay	HC	Limestone escarpment and hills	Visitors	Rhyl Flats North Hoyle	Overlap	Slightly elevated views of sea to north (approx 5m above ground)		
3.2	St Trillo's Chapel, Rhos-on-Sea	284140 381080	CCBC	Colwyn Bay	NWP, Sustrans route	Coastal slopes	Visitors	Rhyl Flats North Hoyle	Partial overlap	Low level panoramic view of sea and sweep of coast line to east.		14
3.3	Sky Tower, Rhyl (240ft)	300460 381520	DCC	Colwyn Bay	none	Coastal and estuarine flats	Visitors	Rhyl Flats North Hoyle	Separate	360o panoramic, elevated view of land and sea from viewing pod, 60m above DTM.		15
3.4a	Oceanarium, Rhyl		DCC	Colwyn Bay	Sustrans route	Coastal and estuarine flats	Visitors	Rhyl Flats North Hoyle	Separate	Enclosed building without views of the sea.		
3.4b	Sun Centre, Rhyl	301120 382012	DCC	Colwyn Bay	Sustrans route	Coastal and estuarine flats	Visitors	Rhyl Flats North Hoyle	Separate	Enclosed water park with views of sea through glazing, beside promenade /seafront with open views of sea to north. Densely developed, low level hinterland.		16

**Preliminary list of viewpoints**

No	Location	NGR	LPA	Seascape unit	National designations	Landscape type	Visual receptor	Wind farms visible	Cumulative sector	Comments	Requested by	Vpt no
3.5	Nova Centre Prestatyn	305845 383695	DCC	Colwyn Bay	Sustrans route	Coastal and estuarine flats	Visitors	North Hoyle Rhyl Flats	Separate	Concrete seawall, busy beach, car park behind, Nova Centre (large building to right). Open view of sea to north.		17
3.6	Penrhyn Bay Golf Course		CCBC	Colwyn Bay	none	Coastal and estuarine flats	Golfers	n/a	n/a	Flat, low elevation, back from sea front. Sea screened by seawall and houses, but sky over sea visible.		
3.7	Abergele Golf Course		CCBC	Colwyn Bay	none	Limestone farmlands	Golfers	Rhyl Flats North Hoyle	Separate	Just below Gwrych Castle, elevated and open views of sea to north.		
3.8	Rhyl Golf Course		DCC	Colwyn Bay	none	Coastal and estuarine flats	Golfers	North Hoyle Rhyl Flats	Separate	Between seawall and A548. Sufficiently elevated to provide occasional views of sea to north over seawall.		
3.9	Prestatyn Golf Course		DCC	Colwyn Bay	none	Coastal and estuarine flats	Golfers	North Hoyle Rhyl Flats	Separate	In dunes east of Prestatyn and seawall. Views of sea to north.		
3.10	Caravan parks and holiday centres, camps and villages (Abergele to Prestatyn)		CCBC/ DCC	Colwyn Bay	none	Coastal and estuarine flats	Visitors	n/a	n/a	Most are behind the seawall, or behind dunes, so limited views of the sea		



**Preliminary list of viewpoints**

No	Location	NGR	LPA	Seascape unit	National designations	Landscape type	Visual receptor	Wind farms visible	Cumulative sector	Comments	Requested by	Vpt no
3.11	West Kirby marine boating lake	321065 386664	WMBC	Dee Estuary	none	n/a	Sailors	North Hoyle Rhyl Flats	Separate	From promenade beside the boating lake - view across the Dee Estuary and out to the sea		18
<b>4 Beaches and promenades</b>												
4.1a	Benllech, Ynys Mon (Isle of Anglesey)	252235 382659	IAC	Red Wharf Bay	AONB	n/a		Rhyl Flats	n/a	Views from the coast road and the houses on the slopes above		19
4.1b	Beaumaris Castle (car park)	260840 376300	IAC	Conwy Bay	AONB	n/a	Visitors Motorists	Rhyl Flats	n/a	No view of the sea in Llandudno/Colwyn Bays but turbines would be visible (in very good vis) over lowlying land between the Great and Little Ormes		
4.2a	Promenade opp Theatre, Llandudno	279020 382159	CCBC	Llandudno Bay	NWP	Coastal slopes	Visitors	Rhyl Flats North Hoyle	Overlap	Curved, enclosed bay with headlands that frame view of sea. Densely developed hinterland of tall victorian seafront hotels.	CCW	20
4.2b	Promenade near Llandudno Pier	278312 382947	CCBC	Llandudno Bay	NWP	Coastal slopes	Visitors	Rhyl Flats North Hoyle	Overlap	Similar to 4.2a		

**Preliminary list of viewpoints**

No	Location	NGR	LPA	Seascape unit	National designations	Landscape type	Visual receptor	Wind farms visible	Cumulative sector	Comments	Requested by	Vpt no
4.3	Promenade near Victoria Pier, Colwyn Bay	285263 379094	CCBC	Colwyn Bay	NWP, Sustrans route	Coastal slopes	Visitors	Rhyl Flats North Hoyle	Separate	Wide sweeping bay with open views of sea to north. Town separated from coastline by A55 and railway.	CCW	21
4.4	Car park, Llanddulas seafront	290522 378619	CCBC	Colwyn Bay	NWP, Sustrans route	Coastal slopes	Visitors Motorists	Rhyl Flats North Hoyle	Separate	Very narrow coastline, separated from hinterland by railway embankment. Low elevation, open views of sea to north and along coast to east and west.	CCW	22
4.5	Public car park, Abergele	294367 378688	CCBC	Colwyn Bay	NWP, sustrans route	Coastal and estuarine flats	Visitors Motorists	Rhyl Flats North Hoyle	Separate	Low wall and shingle bank on beach reduce view of sea. Better views from beach on top of shingle bank		
4.6	Point of Ayr lighthouse	312103 385241	FCC	Colwyn Bay/ Dee Estuary	none	Coastal and estuarine flats	Walkers	Rhyl Flats North Hoyle	Separate	Wide open views of sea and sand to the east and west	CCW	23
4.7	Hoylelake seafront	321250 389175	WMBC	Liverpool Bay	none	n/a	Residents	North Hoyle Rhyl Flats	Separate	At western end of promenade. Wide open sea views, and across to Point of Ayr		24
<b>5 Views from the sea</b>												
5.1	North Rhyl buoy	295350 388110	none	Colwyn Bay	none	marine	Sailors fishermen recreational sailors	Rhyl Flats North Hoyle	Separate	East of the site, looking southwest towards Great Orme.	CCW	25

## Annex K7: Viewpoint Analysis

### Seascape Character Assessment

#### *Viewpoint 1: Conwy Mountain*

In views from Snowdonia National Park, the wind farm will be 15km+ from the viewer, will occupy just over 20° of the overall panoramic view of the sea, will be seen over a deep foreground of intervening land and will be almost entirely backgrounded by sea. The turbines and the movement of the rotors will be visible only in very good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and even in good visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall (which clears the air of dust and humidity) and in mid afternoon when the sun is in the southwest and on the turbines. As a result, the magnitude of change in the view will be *moderate/slight*.

#### *Viewpoint 2: Great Orme*

In views from the Great Orme Country Park, such as from the trig point, the site will be 10km+ from the viewer, will occupy just over 23° of the overall panoramic view and will be almost entirely backgrounded by sea. The turbines and the movement of the rotors will be visible only in good to very good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and even in moderate to good visibility will be barely visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in mid to late afternoon when the sun is in the southwest to west and on the turbines. As a result, the magnitude of change in the view will be *moderate*.

#### *Viewpoint 3: Little Orme*

In views from the Little Orme the wind farm will be 8km+ from the viewer, will occupy nearly 35° of the panoramic view and, in this relatively close and elevated view of the wind farm, the turbines will be seen partly against the sky and partly against the sea, in a deep wide sea panorama, with land in the immediate foreground. The turbines and the movement of the rotors will be visible only in good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and even in moderate visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in mid to late afternoon when the sun is in the southwest to west and on the turbines. As a result, the magnitude of change in the view will be *substantial*.

#### *Viewpoint 4: Bryn Euryn*

Views of the wind farm from Bryn Euryn will be similar to those from Little Orme. The wind farm will be 9km+ away, will occupy just over 33° of the panoramic view

and the turbines will be seen partly against the sky and partly against the sea, in a deep wide sea panorama, over a deep foreground of lower lying land and built development. The turbines and the movement of the rotors will be visible only in good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and even in moderate visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in mid to late afternoon when the sun is in the southwest to west and on the turbines. As a result, the magnitude of change in the view will be *substantial*.

***Viewpoint 5: Berth-y-Glyd***

In views from Berth-y-Glyd, the row of houses on the side of Mynydd Marian, the wind farm will be 9km+ from the viewer, will occupy just over 33° of the panoramic view of the sea and, in this relatively elevated view of the wind farm, the turbines will be seen mainly against the sea, in a deep wide sea panorama, with land in the immediate foreground. The turbines and the movement of the rotors will be visible only in good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and even in moderate visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and at midday when the sun is in the south and on the turbines. As a result, the magnitude of change in the view will be *substantial*.

***Viewpoint 6: Moelfre Isaf***

In views from Moelfre Isaf the wind farm will be 13km+ from the viewer, will occupy just over 21° of the overall panoramic view of the sea, will be seen over a deep foreground of intervening land, semi-framed by the high land along the coastline and will be almost entirely backgrounded by sea. The turbines and the movement of the rotors will be visible only in very good visibility and mainly against the sea. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and even in good visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and at midday when the sun is in the south and on the turbines. As a result, the magnitude of change in the view will be *moderate*.

***Viewpoint 7: Graig Fawr***

In views from Graig Fawr the wind farm will be 15km+ from the viewer, will occupy just over 8° of the overall panoramic view of the sea, will be seen over a deep foreground of intervening land, and will be partly against the sea and partly against the sky. The turbines and the movement of the rotors will be visible only in very good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and even in good visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following

heavy rainfall, and in mid morning when the sun is in the southeast and on the turbines. As a result, the magnitude of change in the view will be *moderate/slight*.

***Viewpoint 8: Prestatyn Hillside viewpoint***

In the view from the Prestatyn Hillside viewpoint, the wind farm will be 15km+ from the viewer, will occupy just over 7° of the overall panoramic view of the sea, will be seen over a deep foreground of intervening land, and will be partly against the sea and partly against the sky. The turbines and the movement of the rotors will be visible only in very good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and even in good visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in mid morning when the sun is in the southeast and on the turbines. As a result, the magnitude of change in the view will be *moderate/slight*.

***Viewpoint 9: Penycloddiau***

In the view from the Offa's Dyke path as it crosses the northern ramparts of the fort on Penycloddiau, the wind farm will be 27km+ from the viewer, will occupy just over 7° of the overall panoramic view of the sea, will be seen over a deep foreground of intervening land, and will be mainly against the sea. The movement of the rotors will not be visible and the turbines will be visible only in excellent visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms may be visible (depending on their size and intensity) in conjunction with lights along the coastline. In certain weather conditions (warm haze), the turbines will be difficult to discern and even in very good visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in mid morning when the sun is in the southeast and on the turbines. As a result, the magnitude of change in the view will be *slight/negligible*.

***Viewpoint 10: Thurstaston Hill***

In the view from Thurstaston Hill viewpoint, the wind farm will be 31km+ from the viewer. The navigation buoys, sea level activities and the lower half of the turbine towers will be screened by the curvature of the earth and the wind turbine rotors will be very small and distant. The rotors will occupy just under 6° of the overall panoramic view of sea and land and less than 0.3° of the vertical view. They will be against the sky and will appear to be just off the Point of Ayr. However, at this distance, the rotation of the blades will not be visible and the turbines will be visible only in excellent visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms may be visible (depending on their size and intensity) in conjunction with lights along the coastline. In certain weather conditions (warm haze), the turbines will be difficult to discern and even in very good visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in mid morning when the sun is in the southeast and on the turbines. As a result, the magnitude of change in the view will be *slight/negligible*.

***Viewpoint 11: A55, Penmaen Rhos***

This viewpoint is taken from a footbridge over the A55 and is representative of views from the A55 just east of Colwyn Bay. Motorists on the A55 are currently able to observe the wide sweep of coastline and the deep and wide panorama of sea and sky. As illustrated by this viewpoint, the two rows of turbines will be 8km+ away and parallel to the coastline and direction of travel so will occupy approximately 36° of this view. The turbines will be almost entirely backgrounded by sky and the movement of the rotors will be visible in good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and in moderate visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and at midday when the sun is in the south and on the turbines. In good visibility, the wind farm will bring about a very noticeable change in the view. As a result, the magnitude of change in the view will be *substantial*.

***Viewpoint 12: A55, Abergele***

This viewpoint is taken from a footbridge over the A55 and is representative of views from the A55 and the nearby Colwyn Bay to Towyn coastal railway just west of Abergele. Motorists and passengers on both these routes are currently able to observe the wide sweep of coastline and the deep and wide panorama of sea and sky. As illustrated by this viewpoint, the two rows of turbines will be 8km+ away and parallel to the coastline and direction of travel so will occupy approximately 30° of this view. The turbines will be almost entirely backgrounded by sky and the movement of the rotors will be visible in good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and in moderate visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and at midday when the sun is in the south and on the turbines. In good visibility, the wind farm will bring about a very noticeable change in the view. As a result, the magnitude of change in the view will be *substantial*.

***Viewpoint 13: Great Orme, near Cemetery and Cafe***

In views from the side of the Great Orme, above the Marine Drive but below the Country Park, such as from the Café near the cemetery, the site will be 10km+ from the viewer, will occupy just over 23° of the overall panoramic view and will be almost entirely backgrounded by sky. The turbines and the movement of the rotors will be visible only in good to very good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and even in moderate to good visibility will be barely visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in mid to late afternoon when the sun is in the southwest to west and on the turbines. As a result, the magnitude of change in the view will be *substantial/moderate*.

***Viewpoint 14: Near site of St Trillo's Chapel, Rhos-on-Sea***

This viewpoint is taken from the coast road that is also part of the North Wales Sustrans cycle route. From this location, the two rows of turbines will be 8km+ from the routes and almost parallel to the direction of travel so will occupy 38° of this view. The turbines will be entirely backgrounded by sky and the movement of the rotors will be visible in good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and in moderate visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in mid afternoon when the sun is in the southwest and on the turbines. As a result, the magnitude of change in the view will be *substantial*.

***Viewpoint 15: Sky Tower, Rhyl***

The sky tower is a visitor attraction on the promenade at Rhyl. It is behind a very high wall, so visitors waiting in the queue at ground level do not have a view of the sea. However, the glazed pod rises up the tower to around 60mAOD and rotates twice before descending, providing visitors with elevated 360° views of the sea, the coastline, the Clwydian Range, the hinterland behind Rhyl, the church steeple at St Asaph, Snowdonia and the sweep of Colwyn Bay. It will provide land-based viewers with one of the nearest and most elevated views of the wind farm. From the top of the Sky Tower the turbines will be over 9km away, will occupy approximately 15° of the view and will be seen partly against the sky and partly against the sea, in a deep wide seascape. As a result, the magnitude of change in the view will be *moderate*.

***Viewpoint 16: Promenade near Sun Centre, Rhyl***

In views from the seafront in Rhyl the wind farm will be over 9km away, will be "end-on" and will occupy just over 13° of the view. The turbines will be against the sky, and the movement of the rotors will be seen in good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and, in moderate to poor visibility, will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in early to mid morning when the sun is in the southeast and on the turbines. As a result, the magnitude of change in the view will be *moderate*.

***Viewpoint 17: Nova Centre, Prestatyn***

In views from the seafront at Prestatyn, the wind farm will be over 13km away, will be "end-on", will occupy less than 10° of the view and, although the turbines will be against the sky, the turbines and movement of the rotors will be seen only in very good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and even in good visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in early to mid morning when the sun is in the southeast and on the turbines. As a result, the magnitude of change in the view will be *moderate/slight*.

***Viewpoint 18: West Kirby marine boating lake***

In this sea level view from the West Kirby marine boating lake, the wind farm will be 28km+ from the viewer. The navigation buoys, sea level activities and the lower half of the turbine towers will be screened by the curvature of the earth and the wind turbine rotors will be very small and distant. The rotors will occupy just over 7° of the overall panoramic view of sea and land and less than 0.3° of the vertical view. They will be against the sky and will appear to be just off the Point of Ayr. However, at this distance, the rotation of the blades will not be visible and the turbines will be visible only in very good to excellent visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms may be visible (depending on their size and intensity) in conjunction with lights along the coastline. In certain weather conditions (warm haze), the turbines will be difficult to discern and even in good to very good visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in early morning when the sun is in the east and on the turbines. As a result, the magnitude of change in the view will be *slight/negligible*.

***Viewpoint 19: Benllech, Isle of Anglesey***

The settlement of Benllech on the Isle of Anglesey is at least 34km from the offshore site. Residents and visitors have panoramic views from this settlement northwards over the open sea and eastwards along the coastline towards mainland Wales, such as from this location on the coast road and from more elevated locations on the coastal slopes above. The sea is essentially empty except for a steady stream of ships passing by on the horizon. In this view, navigation buoys, sea level activities and the lower half of the turbine towers will be screened by the curvature of the earth and the wind turbine rotors will be very small and distant. The rotors will occupy less than 7.5° of the view and less than 0.3° of the vertical view. They will be against the sky and alongside the higher land on the mainland but will be visible only in excellent visibility conditions. At this distance, the rotation of the blades will not be visible. At night, the red lights on the turbine hubs may be visible (depending on their size and intensity) in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and towards the end of the day when the sun is in the west and on the turbines. However, the array will occupy a very small proportion of the wide panorama of land, sea and sky visible from along the coastline in this seascape unit and, as a result, the magnitude of change in the view will be *slight/negligible*.

***Viewpoint 20: Llandudno Promenade, near the theatre***

Llandudno is approximately 10km from the wind farm. It occupies the lower land between the Ormes with some properties built on the lower slopes of the Great Orme. The buildings along the seafront are tall (3 or 4 storey) Victorian hotels and houses, which largely obscure views of the sea from the rest of the town behind. Residents and visitors in properties along the seafront and on the lower slopes of the Great Orme currently have views of Llandudno Bay framed by the cliffs of the Great and Little Ormes and an essentially empty sea, except for a steady stream of ferries and ships passing on the horizon. In this view, such as Viewpoint 20, Figure X.6t, the wind turbines will be in the middle distance, will occupy 27° (over a quarter of this view). They will be seen against the sky, but will seem small relative to the height of



the cliffs on the east side of the Bay. At this distance, the rotation of the blades will be visible in good visibility conditions. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and, in moderate to poor visibility, will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in mid afternoon when the sun is in the southwest and on the turbines. As a result, the magnitude of change in the view will be *substantial/moderate*.

***Viewpoint 21: Colwyn Bay Promenade, near Victoria Pier***

From Colwyn Bay promenade the wind farm will be over 9km away and will occupy over 35° of the view. The turbines will be against the sky and both the towers and the movement of the rotors will be seen in good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and, in moderate to poor visibility, will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and at midday when the sun is in the south and on the turbines. As a result, the magnitude of change in the view will be *substantial*.

***Viewpoint 22: Llanddulas seafront car park***

From Llanddulas seafront car park, the wind farm will be just over 8km away and will occupy over 35° of the view. The turbines will be against the sky and both the towers and the movement of the rotors will be seen in good visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and, in moderate to poor visibility, will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and at midday when the sun is in the south and on the turbines. As a result, the magnitude of change in the view will be *substantial*.

***Viewpoint 23: Point of Ayr lighthouse***

In this sea level view from the footpath across the beach to the lighthouse, the wind farm will be 19km+ from the viewer. The navigation buoys, sea level activities and the lower parts of the turbine towers will be screened by the curvature of the earth. The upper parts of the turbines will occupy just under 9° of the overall panoramic view of sea and, although the turbines will be against the sky, the turbines will be seen only in very good visibility, and the movement of the rotors will be hardly visible at all. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be visible in conjunction with lights on the nearby land. In certain weather conditions (warm haze, drizzle, mist, sea squalls and heavy rain), the turbines will be difficult to discern and even in good visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in early morning when the sun is in the east and on the turbines. As a result, the magnitude of change in the view will be *slight*.

***Viewpoint 24: Hoylake seafront***

In this view from the promenade at Hoylake, the wind farm will be 28km+ from the viewer. The navigation buoys, sea level activities and the lower half of the turbine towers will be screened by the curvature of the earth and the wind turbine rotors will be very small and distant. The rotors will occupy just over 7° of the overall panoramic view of sea and land and less than 0.3° of the vertical view. They will be against the sky and will appear to be just off the Point of Ayr. However, at this distance, the rotation of the blades will not be visible and the turbines will be visible only in very good to excellent visibility. At night, the red lights on the turbine hubs and the yellow lights on the platforms may be visible (depending on their size and intensity) in conjunction with lights along the coastline. In certain weather conditions (warm haze), the turbines will be difficult to discern and even in good to very good visibility will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in early morning when the sun is in the east and on the turbines. As a result, the magnitude of change in the view will be *slight/negligible*.

***Viewpoint 25: North Rhyl buoy***

This is a relatively close view from the sea. It is taken from the position of the North Rhyl buoy, in the sea, to the east of the proposed wind farm site. From this location, the nearest wind turbine will be 2.5km away and the furthest 8.8km away. At this close distance, the turbines will occupy 52° of the horizontal view and over 3° of the vertical view. They will be seen mainly against the sky, with five of the turbines in the inshore row against the distant high land of the Great and Little Ormes. At this distance, the details of the wind farm will be visible - the navigation buoys, the bright yellow of the towers below the platforms, the platforms themselves, the substation, the meteorological masts and the movement of the rotors. At night, the red lights on the turbine hubs and the yellow lights on the platforms will be clearly visible in conjunction with lights on the nearby land. In fair visibility, the turbines will be difficult to discern and poor visibility or fog, will not be visible at all. The turbines will be most noticeable on a fine sunny day, immediately following heavy rainfall, and in early morning when the sun is in the east and on the turbines. As a result, the magnitude of change in the view will be *very substantial/substantial*.

View point	No WTGs visible	Direction of view	Nearest WTG		Furthest WTG		Horizontal angle (°)	Vertical angle (°)	Background	Composition	Magnitude of change
			km	WTG no	km	WTG no					
1	30	NE	15.24	16	20.04	15	20.47	0.62	Mainly sea	Shallow wide sea, deep land foreground	Moderate/ slight
2	30	ENE	11.23	16	17.01	15	23.25	0.83	Mainly sea	Deep wide sea, land foreground	Moderate
3	30	NE	8.01	16	12.65	15	34.97	1.07	Mainly sky	Deep wide sea, land foreground	Substantial
4	30	NE	9.57	16	13.01	15	33.01	0.90	½ sea ½ sky	Deep wide sea, land foreground	Substantial
5	30	N	9.44	30	12.91	1	33.30	0.91	Mainly sea	Deep wide sea, land foreground	Substantial
6	30	NNW	13.07	30	18.63	1	21.43	0.76	Mainly sea	Shallow wide sea, deep land foreground	Moderate
7	30	WNW	15.02	30	21.28	1	8.30	0.57	½ sea ½ sky	Shallow wide sea, deep land foreground	Moderate/ slight
8	30	WNW	15.82	30	22.00	1	7.38	0.54	½ sea ½ sky	Shallow wide sea, deep land foreground	Moderate/ slight
9	30	NW	27.65	30	34.10	1	7.49	0.39	Mainly sea	Shallow wide sea, deep land foreground	Slight/ negligible
10	30	WNW	31.69	15	38.13	16	5.94	0.27	Sky	Deep wide sea part framed by land	Slight/ negligible
11	30	N	8.76	28	11.97	1	36.72	0.98	Sky	Deep wide seascape	Substantial
12	30	N	8.40	30	13.70	1	31.41	1.02	Sky	Deep wide seascape	Substantial

View point	No WTGs visible	Direction of view	Nearest WTG		Furthest WTG		Horizontal angle (°)	Vertical angle (°)	Background	Composition	Magnitude of change
			km	WTG no	km	WTG no					
13	30	ENE	10.83	16	16.72	15	23.35	0.79	Mainly sky	Deep wide sea, land foreground	Substantial/moderate
14	30	NE	8.08	17	11.51	15	38.65	1.06	Sky	Deep wide seascape	Substantial
15	30	WNW	9.62	30	16.02	1	15.07	0.89	Mainly sky	Deep wide seascape	Moderate
16	30	WNW	9.96	30	16.29	1	13.22	0.86	Sky	Deep wide seascape	Moderate
17	30	WNW	13.68	15	19.94	16	9.00	0.62	Sky	Deep wide seascape	Moderate/slight
18	30	W	28.09	15	34.53	16	7.03	0.26	Sky	Deep wide sea part framed by land	Slight/negligible
19	30	E	34.80	16	41.10	15	7.39	0.22	Sky	Deep wide sea part framed by land	Slight/negligible
20	30	NE-ENE	10.08	16	15.33	15	27.50	0.85	Sky	Deep narrow sea framed by land	Substantial/moderate
21	30	N-NE	9.50	22	12.12	15	35.54	0.90	Sky	Deep wide seascape	Substantial
22	30	NNW-NNE	8.09	30	12.50	1	35.41	1.06	Sky	Deep wide seascape	Substantial
23	30	W	19.36	15	25.78	16	8.75	0.42	Sky	Deep wide sea part framed by land	Slight
24	30	W	28.47	15	34.89	16	7.81	0.26	Sky	Deep wide sea part framed by land	Slight/negligible
25	30	WSW	2.54	15	8.80	16	52.02	3.38	Sky	Deep wide sea with land background	V substantial/substantial

## **Annex K.8: Viewpoint Analysis – Rhyl Flats Only**

**Cumulative Viewpoint Analysis**

Vpt no	Location	North Hoyle Offshore Wind Farm			Rhyl Flats Offshore Wind Farm			Cumulative analysis		
		Direction of view	Nearest WTG (km)	Horizontal angle (°)	Direction of view	Nearest WTG (km)	Horizontal angle (°)	Sector	Angle between sites (°)	Cumulative magnitude of change
1	Mynydd y Dref (Conwy Mountain)	ENE	31.5	5.0	NE	15.2	20.5	Partial overlap	n/a	Moderate/ slight
2	Great Orme	ENE	28.6	4.0	ENE	11.2	23.2	Complete overlap	n/a	Moderate
3	Little Orme	ENE	24.0	6.0	NE	8.0	35.0	Partial overlap	n/a	Substantial
4	Bryn Euryn	ENE	23.8	6.5	NE	9.6	33.0	Separate	4.0	V substantial /substantial
5	Berth-y-Glyd, on Mynydd Marian	NE	20.7	7.5	N	9.4	33.3	Separate	21.5	V substantial /substantial
6	Moelfre Isaf	NNE	19.9	9.0	NNW	13.1	21.4	Separate	32.0	Substantial/ moderate
7	Graig Fawr viewpoint	N	11.5	15.0	WNW	15.0	8.3	Separate	47.0	Moderate
8	Prestatyn hillside viewpoint	N	10.3	17.0	WNW	15.8	7.4	Separate	44.5	Moderate
9	Penycloddiau	NNW	25.0	7.0	NW	27.6	7.5	Separate	22.5	Slight/ negligible
10	Thurcaston Hill viewpoint	WNW	19.1	7.5	WNW	31.7	5.9	Separate	10.5	Slight
11	A55 Penmaen Rhos	NE	20.5	7.0	N	8.7	36.7	Separate	19.0	V substantial /substantial
12	A55 Abergele	NE	17.5	10.0	N	8.4	31.4	Separate	34.5	V substantial /substantial
13	Great Orme (nr cemetery and cafe)	ENE	28.3	4.5	ENE	10.8	23.4	Complete overlap	n/a	Substantial/ moderate
14	St Trillo's Chapel, Rhos-on-Sea	ENE	22.5	6.5	NE	8.1	38.6	Separate	2.0	V substantial /substantial
15	Sky Tower, Rhyl (240ft)	NNE	10.7	16.0	WNW	9.6	15.1	Separate	62.5	Substantial
		<b>North Hoyle Offshore Wind Farm</b>			<b>Rhyl Flats Offshore Wind Farm</b>			<b>Cumulative analysis</b>		

**Cumulative Viewpoint Analysis**

Vpt no	Location	Direction of view	Nearest WTG (km)	Horizontal angle (°)	Direction of view	Nearest WTG (km)	Horizontal angle (°)	Sector	Angle between sites (°)	Cumulative magnitude of change
16	Sun Centre, Rhyl	NNE	10.0	17.0	WNW	10.0	13.2	Separate	64.5	Substantial
17	Nova Centre Prestatyn	N	8.2	21.0	WNW	13.7	9.0	Separate	53.0	Substantial/ moderate
18	West Kirby marine boating lake	WNW	15.2	9.0	W	28.1	7.0	Separate	8.0	Moderate/ slight
19	Benllech, Ynys Mon (Isle of Anglesey)	<i>not analysed</i>			E	34.8	7.4	<i>not analysed</i>		
20	Promenade opp Theatre, Llandudno	ENE	26.6	5.0	NE-ENE	10.1	27.5	Complete overlap	n/a	Substantial/ moderate
21	Promenade near Victoria Pier, Colwyn Bay	ENE	22.6	7.0	N-NE	9.5	35.5	Separate	7.0	V substantial /substantial
22	Car park, Llandulas seafront	NE	18.6	9.0	NNW-NNE	8.1	35.4	Separate	23.0	V substantial /substantial
23	Point of Ayr	NW	8.7	19.0	W	19.4	8.8	Separate	25.0	Substantial/ moderate
24	Hoylake seafront	WNW	14.8	9.0	W	28.5	7.8	Separate	4.0	Moderate/ slight
25	North Rhyl buoy	ENE	9.2	12.5	WSW	2.5	52.0	Separate	129.0	V substantial