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Study into the Potential Economic Impact of Wind Farms and Associated Grid Infrastructure on the Welsh Tourism Sector

A Report by Regeneris Consulting and The Tourism Company

Welsh Government

Study into the Potential Economic Impact of Wind Farms and Associated Grid Infrastructure on the Welsh Tourism Sector

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Executive Summary

Purpose of the Report

i. Regeneris Consulting and The Tourism Company were appointed by the Welsh Government to carry out a study of the potential impacts of onshore wind farms and associated grid infrastructure on the visitor economy within Wales. This is a controversial and hotly debated topic. The issue has been brought into sharp focus by the potential for a fourfold increase in installed capacity by 2025, although in practice it may be much less than this.

ii. The study has not sought to quantify the total economic impact on tourism, in terms of jobs and GVA, given the technical challenges of doing this in a rigorous way (but also given the available timescale for the study). The study has taken a bottom-up approach, which draws upon the existing evidence of tourism impacts of wind farms and identifies those areas which are likely to be most sensitive to wind farm development and those areas where the potential for positive effects is greatest.

iii. The key tasks included:

- A **review of the literature** exploring the relationship between wind farm development and the visitor economy. This was used to develop a framework for assessing the sensitivity of tourism economies to wind farm development.
- An **analysis of the visitor economies** in nine local impact areas affected by wind farm development. This identified the scale and nature of development, the key tourism assets and the characteristics of visitors. This analysis formed the basis for the assessment of sensitivity.
- Three **case studies** in areas which are already affected by wind farm development. The purpose of these case studies was to gather evidence of existing impact and to test the framework for assessing sensitivity to wind farm development. The case studies drew upon local research where it was available, and a set of structured consultations with local tourism trade associations and local authority tourism officers. Whilst these consultees provided views for their particular communities and stakeholders, these views were also tested through consultations with businesses in close proximity to existing wind farms or catering for visitors most likely to be affected.

Key Findings

Negligible impact on the national tourism sector

iv. The current scale of wind farm development in Wales is modest, especially when compared with other European countries, including Scotland. National studies of tourism impacts of wind farms have shown that, where negative effects do occur, these are often in the form of displaced tourism. This is likely to be the case in Wales, where substantial areas of the country will remain unaffected by wind farm development.

Limited evidence of local tourism impacts to date.

v. There are a number of areas in Wales where wind farms have been an established presence on

the local landscape for a relatively long time. These include Powys, Anglesey and the South Wales Valleys which were all the subject of case studies. The case studies have not revealed any evidence of significant impacts on tourism to date. The few local studies which are available have shown the majority of visitors are positive or indifferent about wind farm development. Although there was some anecdotal evidence of visitors staying away due to wind farms, the vast majority of consultees believed there had been no impact on total visitor numbers and hence on the visitor economies as a whole.

Wind farms are remote from Wales's key visitor assets and tourism locations

vi. The study has shown that the areas most affected by wind farms (currently and in the next decade) account for a very small proportion of Wales's total visitor economy. This is likely to be an indirect consequence of planning policy focusing development away from Wales's key natural assets and visitor attractions, including areas of outstanding natural beauty and national parks.

Reactions to wind farms are complex and may change over time

vii. The evidence base shows a clear majority of people do not react negatively to wind farm developments or change their visiting behaviour as a result. However it also shows that visitor responses and reactions to wind farms are highly subjective and depend on the individual's own judgements and perceptions of the relative merits of onshore wind as a means of energy production.

viii. While current levels of support for onshore wind are strong, there are a diverse range of factors which could influence public perceptions over the next ten years which could then change visitor behaviour. The greatest risk is that the increased rate of development in some parts of Wales could change the value judgements made by some visitors, especially if they feel a tipping-point is reached. However, the study has not found any evidence to suggest this could occur in practice.

ix. This risk also needs to be weighed against the fact that wind farms will become a more common sight in the UK and across Europe. This increased familiarity with turbines is likely to mean that many visitors become more tolerant of turbines as a feature of rural landscapes, and their visiting behaviour may change little as a result.

Higher sensitivity to wind farms for certain visitor markets

x. There are examples of certain locations which are more sensitive to wind farm development on account of their landscapes, types of visitor, limited product diversity and proximity to wind farms. This is particularly the case where the key visitor markets are older people visiting for the tranquillity, remoteness and natural scenery offered in some parts of Wales. Remoter parts of Powys are the most notable examples of where this may be the case. In these locations, the study has concluded that the potential negative effect on visitor numbers may still be low overall, but in some circumstances could be moderate. But these findings are still subject to various aspects of uncertainty and need to be explored on a case by case basis for schemes going through the planning system.

xi. Although these areas account for a small proportion of tourism employment in Wales as a whole, the narrow economic base in these areas means the sector is an important source of local employment and income

Some potential for positive impacts, often requiring further investment

xii. Although a number of studies point to the potential to attract visitors to areas containing turbines, there is little evidence that these positive effects occur in practice. There may, however, be some instances where wind farm development could enhance existing visitor attractions or be an attraction in their own right through investment in related visitor facilities. There may be particular opportunities for areas which attract a large number of day visitors and have large catchment populations in close proximity such as the South Wales Valleys or North Wales. The case studies showed there was enthusiasm for these types of projects among local stakeholders and an opportunity to make better use of community benefit funds to achieve economic development goals.

No evidence that wind farms on visitor routes deter tourists

xiii. There are a number of visitor routes which will be in close proximity to large concentrations of turbines. The general survey evidence presented in this study offers the only proxy for how visitors would react to these wind farms. This shows that small minorities of visitors would be encouraged, whilst others would be discouraged. Overall, however, there is no evidence to suggest that there would be any significant change in visitor numbers using these routes to reach destination elsewhere.

Negative impacts during construction

xiv. The study has not shown there to be any evidence of a fall in visitor numbers as a result of disruption during construction. However, this was identified as a concern for many businesses in the case studies, particularly in relation to noise and traffic, and the closure and diversion of public footpaths or other popular routes. Given that some areas in the study could be affected by construction of wind farms for a number of years, it is vital that these disruptions are minimised and mitigated wherever possible through the planning process. There are also several examples of rights of way or trails which were enhanced during construction, and these improvements should be communicated to locals and visitors.

Associated infrastructure

xv. The evidence base for tourism impacts of associated infrastructure is far less developed than that for wind farms. The few studies which have addressed the subject have focused on visitors' opinions of pylons, which consistently find that reactions are far more negative than toward wind turbines. This strong feeling toward grid infrastructure presents an increased risk for those areas where new pylons are proposed alongside considerable wind farm development, particularly North Powys. However, there is no evidence that the existing National Grid infrastructure which is concentrated in North and South Wales, often in popular scenic areas, discourages visitors.

xvi. Nevertheless, the lack of robust evidence means the assessment of the potential impact of the proposed supporting grid infrastructure is particularly challenging. The proposals by National Grid will now see a significant proportion of the connection to the grid buried undergrown, including the section which crosses the Glyndwr's Way. This would reduce the visual impact upon one of North Powys's key visitor asset and mitigate potential impacts.

Recommendations

Land Use Planning Considerations:

- Planning Policy Wales requires Local Planning Authorities (LPAs) to quantify and take on board the economic impacts of proposed developments and is clear that LPAs should consider employment in all sectors (including tourism) and factor this in to the decision making process. However, assessing effects on tourism can be challenging and subject to uncertainty. This points to the need for improved guidance which should be considered by Welsh Government. The assessment framework which has been used in this study may provide a helpful tool in developing this guidance.

- Although most local tourism economies will face minimal or no threat from wind farm development, the nature of visitor economies in some areas does mean they are at greater risk of negative impacts. In these instances, there is a need for developers to undertake thorough research and consultation to understand the nature and extent of the threat, the potential opportunities (if relevant) and any actions which need to be taken. The emphasis should be upon reaching agreement on these issues with the local tourism partners, where this is possible, prior to submission of the planning application.

- The study has concluded that there is the potential for future wind farm development to have minor or even moderate negative impacts on the visitor economies of some localities. However, this conclusion is nevertheless subject to a degree of uncertainty and for this reason it will be helpful to monitor the actual impact of new development upon the scale and character of tourism in those areas where there are significant concerns. Given the shortcomings in visitor data at this localised level and the wide range of factors which influence the visitor economy, it will be important to agree a suitable approach to do this.

- Whilst the potential impact of onshore wind farms on the visitor economy was not a criteria in the selection of the strategic search areas within the TAN 8 policy (although the impact on landscape was), there is merit in it having a more explicit role in informing locational choices for any successor policy. The reason for this is that as the additional generation capacity associated with TAN 8 is implemented, the potential consequences of any further development in these areas on the local visitor economy would need to be carefully considered.

Maximising Opportunities and Minimising Dis-benefits

- The development of renewable energy in general and wind farms more specifically provides some opportunities for linked tourism development. The more significant opportunities for generating additional economic benefit impact are linked to new visitor attractions and likely to be few in number. They are more appropriate in locations with large day visitor catchments, good accessibility and a significant degree of complementarity with the local tourism strategies.

- In other instances, there will often be small scale opportunities to improve the visitor offer in close proximity to and linked to a wind farm development, including all weather access, signage and way marking, and information boards. Where landscape and habitats are being improved as part of a wind farm development, this may provide some opportunity to share information with visitors as a point of interest and to raise awareness.

- In other instances, it is important to minimise the potential for disbenefits during construction periods. This includes rerouting public access, clear signage and effective communication of disruption.

- In all of these instances, the scope to link public sector resources (Rural Development Programme and ERDF, for example) with community benefit payments from wind farm developers in creative ways should be explored. This provides potentially important way of providing additional resources to support local, often rural economies

Tourism and Economic Development

- Where a clear link can be established between a specific wind farm development and the likelihood of significant negative impacts upon the tourism economy, this would need to be mitigated through the planning approval.

- Although in other instances wind farm developments are far less likely to result in significant negative impacts, they are nevertheless seen by the tourism sector and other stakeholders as significant threats and may actually discourage some private sector investment as a consequence of the associated uncertainty. There is a role in these areas to use community benefit funds, where they are available and matched by public sector resources, in a much more strategic way to support the tourism sector.

1. Introduction

Background

1.1 Regeneris Consulting and The Tourism Company were appointed by the Welsh Government to carry out a study of the potential impacts of onshore wind farms and associated grid infrastructure on the visitor economy within Wales.

1.2 A diverse range of factors influence the tourist industry, mostly unrelated to wind farm development. These include global economic conditions, fuel prices, the weather and national and international marketing campaigns. Previous research carried out into the impact of wind farms on tourism in Wales has indicated that for the majority of visitors, the existence of wind farms in the countryside does not significantly impact upon their decision to visit or return to Wales on holiday, while a common finding of many other surveys is the public's desire to find out more about wind farms and renewable energy.

1.3 As the number of wind farm developments at the planning, construction and operational stages in Wales has grown, the potential role that associated socio-economic benefits could play in supporting economic development and in particular rural economic diversification has become more widely recognised. At the same time, and linked to the tendency for wind farms to be located in rural areas with important visitor economies, concerns about potential dis-benefits have come to the fore. The importance of tourism related employment in many rural areas has led to a growing desire to understand more about the potential effects that developments could have on tourism activity, particularly in areas where the sensitivity of tourism activity to development is perceived as high but also reflecting wider concerns about the overall vulnerability of the tourism sector in these areas.

1.4 The issue of the relationship between wind farms and tourism has become highly controversial and the debate is increasingly polarised. Groups opposed to wind farm developments point towards the potential for wind farm developments to discourage visitors, and the resultant damage that a loss of visitor spend would do in already fragile rural economies. Those on the other side of the debate point towards a lack of evidence of a negative impact upon tourism (and even point to examples of a positive impact) and the positive role that the sector can play in rural diversification.

1.5 Against this backcloth, the Minister for Environment and Sustainability undertook to carry out the study examining the relationship between wind farm development and the visitor economy, following a recommendation from the Environment and Sustainability Committee.

Purpose of the Study

1.6 With these considerations in mind, the study has sought to provide a thorough, evidence based assessment, drawing on and carefully interpreting the wide ranging and complex evidence concerning the impact of onshore wind farms on tourism. As such, it is intended to inform the debate on the relationship between wind farm development and the visitor economy in Wales. It will also inform Welsh Government in various aspects of its policy making, ranging from informing the future development of its planning policy for wind energy, tourism and destination development, wider aspects of rural economic development, and various aspects of its

investment planning.

1.7 The specific objectives of the research study were to:

1) Estimate the size of the tourism industry in areas of current and proposed wind farm development – in terms of jobs supported and money spent in the local economy by tourists.

2) Determine the benefits and dis-benefits to the tourism sector from onshore wind farm developments and their associated infrastructure.

3) Determine how wind farms may enable tourism activity.

4) Produce qualitative case studies specific to Wales.

5) Assist in the development of policy, particularly in those areas where tourism is an important part of the local economy.

1.8 A number of parameters for the assessment were agreed with Welsh Government (these are set out in more detail in Section 2), including:

- Consideration of onshore wind farm development, as well as any major supporting grid infrastructure (but excluding any other energy generating technologies);
- A focus on wind farm development which had occurred to date, as well as the potential future development up to 2025 (to be consistent with Welsh Government's aspirations for installed capacity by this date);
- Developments in excess of 0.5MW only, below which the developments are considered to be micro-generation and much more widespread across Wales and less intrusive in the landscape.
- A spatial focus on Wales as a whole, but with a particular focus on the areas in which current and planned wind farms are concentrated.

Structure of the Report

1.9 The remainder of this report is structured as follows

- Section 2 provides an overview of the assessment approach and research tools.
- Section 3 provides an overview of the development of onshore wind farms in Wales.
- Section 4 provides an overview of the tourism sector in Wales, the key policy drivers and challenges for the future.
- Section 5 reviews the literature assessing the relationship between wind farm development and the visitor economy.
- Section 6 presents tourism profiles for the local impact areas in which wind farm development is currently or likely to be concentrated in.

- Section 7 presents three more detailed area case studies.
- Section 8 presents the overall impact assessment.
- Section 9 presents the overall conclusion and recommendations.

2. Overview of the Assessment Approach

Introduction

2.1 This section describes the proposed approach for assessing the impact of onshore wind farms development on the visitor economy across Wales.

2.2 The study was shaped by a number of parameters which were agreed with Welsh Government:

- **Time Period**. A focus on both existing wind farm development and potential future development up to 2025. The future period is broadly consistent with the Welsh Government aspiration for 2GW of installed capacity, which was also examined in the Renewables UK Cymru economic benefits study[1]. There is too much uncertainty about the nature of development beyond this period for a longer timescale to be used.

- **Scale and Locations of Installed Capacity**. Assumptions about the future scale and spatial pattern of future development were informed by all onshore wind farm schemes over 0.5MW which are either consented or currently in the planning system. Combined with the current operational capacity, these account for around 2.1GMW of installed capacity, which is in excess of the Welsh Government's aspiration for 2GW of installed capacity. In practice it is highly likely that a proportion of these will not be delivered within this timescale or not in the specific locations in which current proposals are located – in this regard this should be seen as a maximum development scenario for this period.

- **Spatial Focus of Assessment.** The spatial focus of the assessment is Wales as a whole, but with a particular focus on the local areas in which existing and/or future development is located. As outlined below, ten local impacts areas have been defined and are the focus of this localised analysis of the visitor economy and the assessment of potential impacts.

- **Estimation of Impacts on the Visitor Economy**. The study does not seek to quantify the total economic impact on tourism, in terms of jobs and GVA, in the local study areas. The approach has been to analyse the characteristics of the wind farm development, nature of the visitor offer and positioning, and the characteristics of the visitor. This has informed an assessment of the sensitivity of the visitor economies in local areas to wind farm development and conclusions on the likely impacts on this basis. It does not, however, seek to quantify the impacts in terms of tourism value or volume, or overall economic output, as the evidence is not sufficiently robust to allow this type of economic modelling.

Initial Reviews

2.3 The detailed development of the assessment method was informed by initial desk research including:

- Review of literature: exploring the relationship between wind farm development and the visitor economy, based on a review of the existing evidence from the UK and also other countries where appropriate. This also included a review of changing attitudes to

[1] Economic Opportunities for Wales from Future Onshore Wind Development, Renewables UK Cymru, January 2013.

renewable energy and wind farms amongst the general public. The findings of this task are set out in Section Five.

- Mapping wind farm operation and future development across Wales: this task involved the detailed mapping of all operational, consented and planned wind farms and associated grid infrastructure, in order to establish the current and future spatial pattern of wind farm development. This included examining land use policies and the influence this exerts on spatial distribution of wind farm development.

- Local analysis of tourism areas: analysis of key datasets, local surveys and consultations with local authorities have been used to draw up profiles of local tourism economies. These included volume and value indicators but also capture the reasons for visiting different parts of Wales and the characteristics of visitors.

2.4 The findings from each of these tasks have been brought together to understand how the existing evidence base on the tourism impact of wind farms can be credibly applied, to consider the potential impact on the tourism sector in Wales as a whole, but also in those locations most affected by the presence of wind farms and associated infrastructure.

2.5 Following the review of findings from the initial tasks, the detailed approach to the assessment was developed and refined in consultation with Welsh Government. At the heart of this assessment was **a bottom-up approach** which focused on local area assessments for the areas in which wind farm development had been located to date or was proposed in the future. The advantage of this approach reflects the clustering of most wind farms into around ten local areas across Wales and provides the opportunity to closely examine:

- The nature of the wind farm development which had occurred locally to date and/or proposed in the future, including their setting into the landscape.

- The characteristics of the tourism offer and visitor market of the local areas and the way in which these are changing over time (possibly through specific investment plans or marketing strategies).

- The manner in which this development had to date impacted on visitor behaviour and the local visitor economy or potential to impact in the future, given the **main risk factors** in terms of nature of development, the visitor offer and characteristics of visitors. The approach would also allow for consideration of other local factors which have influenced the visitor economy, including major new investments or closure of particular visitor attractions.

2.6 The approach is based on a more qualitative approach, but draws on quantitative evidence where this is available. However, there are a number of limitations in terms of:

- **The availability of tourism data at a local level.** Whilst we draw on data on the volume and value of tourism activity, there are some limitations in the comprehensiveness and robustness of this data (GBTS, IPS and Day Visitor Survey) at a local authority level. However, the local impact areas are typically smaller than and don't align to local authority areas and these surveys are not available below the level of local authority. We have nevertheless drawn on these surveys and other sources to gain an indication of the importance of the visitor economy in these local areas.

- **Gaps and inconsistencies in the evidence base.** The literature review is not conclusive in relation to the circumstances under which wind farm development impact on visitor behaviour and changes in the local visitor economy. While the evidence provides some valuable insight, it needs to be carefully interpreted and is not sufficiently well developed to enable local impacts to be quantified. Furthermore, there are a number of gaps in the evidence base that prevent a comprehensive assessment of impact being undertaken. In particular, displacement, pricing and substitution effects are not fully explored in the evidence base.

2.7 Other studies have adopted a **top down approach** to assessing the impact of wind farm development on the visitor economy, in some instances quantifying these impacts. These studies tend to be of two types, neither of which were considered appropriate in this instance (in part due to the relatively short time period available to this study):

- Studies using large scale surveys of visitors and tourism businesses. It was not felt that this approach, which is time consuming to implement, would add a great deal to the large number of survey based studies which have already been undertaken in Wales and other parts of the UK (especially Scotland).

- Econometric studies which seek to model the relationship between wind farms, visitor behaviour and the visitor economy as a whole. We concluded that the evidence base concerning the relationship between wind farms and the visitor economy is not sufficiently robust to enable this type of approach.

2.8 However, we have also drawn on a number of the studies which have assessed the impact of wind farm development at a national level (eg the Glasgow Caledonian University study for Scotland) in examining the implications of their findings for Wales.

2.9 Our overall assessment of the impact of current and future wind farm development (and the related infrastructure) upon the visitor economies of Wales and specific localities therefore draws on a comprehensive analysis of the existing evidence, as well the bottom up assessment for particular local impact areas.

Local Impact Assessment Approach

2.10 The local impact assessment consisted of the following steps.

Step 1: Define Local Impact Areas

2.11 The study needed to define local impact areas based on the visibility of turbines and the potential to affect tourism. Large wind turbines can be visible for up to 35km in clear weather conditions and when located in upland areas, however at this range they have only a negligible presence on the landscape and there is no evidence that visitor behaviour is in any way affected when viewed from this distance.

2.12 A number of studies have shown that proximity to wind farm development is an important factor in determining visitor reactions to wind farms. A 2003 study of tourism in Wales (NFO, 2003) found that reactions to turbines became less negative as distance from developments increased while Westeburg et al (2012) found that wind farm dis-amenity cost on tourism revenues were minimal for distances over 8km, although this was related to offshore developments where

visibility is likely to be greater than onshore turbines.

2.13 This study has used a 7km distance for the purpose of defining an outer boundary for the local impact zones. This distance is taken from guidance published by the European Wind Energy Association (EWEA 2009) which states that, although turbines are visible beyond this distance, the apparent size is small and the impact on the landscape not significant. Alternative guidance published by the Scottish Government in PAN45 (Scottish Government, 2002) stated that, for distances between 5km and 15km, turbines could be prominent in clear visibility but only as a part of the wider landscape (i.e. they would not be visually dominant). It is possible that some visitors would still be deterred from visiting areas over 7km from wind turbines, however, based on the evidence above, it is considered that these would be a very small minority.

2.14 Since some of the current and planned wind farms are within proximity of each other (i.e. within 7km), a number of these local area zones overlap each other. Whilst this indicates that multiple wind farms may be in proximity of each other, it does not necessarily mean that multiple wind farms will be visible from any single viewpoints within these zones (although of course that could and will be the case in instances). However, where multiple wind farms can be seen they could have a cumulative impact in terms of the effect on visitor perceptions and behaviour.

2.15 Allowing for this overlapping of zones locally, the zones have been grouped together into nine separate local impact areas. The 7km zones have been grouped based on shared characteristics including:

- Landscape
- Population density
- Urban/rural classifications
- Tourism market character and interdependencies.

Although there is some variation in these factors within study areas, the grouping approach is intended to strike a sensible balance in terms of selecting areas with meaningful visitor economies in terms of their size and offer, as well as proximity to wind farms in terms of the potential for impacts on these visitor economies.

Figure 2-1: Map of Nine Study Areas

Step 2: The Local Impact Framework.

2.16 The purpose of the local impact framework is to establish a consistent method for assessing the sensitivity of local impact areas' visitor economies to wind farm development, based on the key findings from the literature. The evidence review points towards three groups of factors as being important in influencing the sensitivity of visitors to these developments and hence ultimately to potential impacts on the visitor economies as a whole:

- Scale and characteristics of existing and proposed wind farm developments in the area
- Characteristics of the local visitor economy and its offer
- Characteristics of visitors.

2.17 As concluded by the evidence review, there are some local area level indicators which could point towards there being greater potential for negative effects. These are outlined in Table 2.1 below

Table 2.1: Factors Associated with a Greater Sensitivity of Visitor Economies to Wind Farm Development

Type of Factor	Indicator	Explanation
Characteristics of Development	Scale of development (especially larger scale wind farms with more than 10 turbines)	The scale of development is strongly linked to the potential for physical presence and visibility within the landscape (although the nature of the topography will also be a factor)
	Clustering of multiple wind farms in close proximity to main visitor hubs or facilities (and in instances, proximity to major routes for visitors)	As above
	Extent to which wind farms feature on or in close to high quality landscapes	The quality of landscapes are affected by various factors including land based uses and existing or previous development. The impact of wind farms will vary depending upon their siting within the landscape and visibility.
Characteristics of Tourism Area	Extent to which high quality (and previously undeveloped) landscapes are a key feature of the visitor offer	High quality landscapes which are a key aspect of the visitor appeal, may be more sensitive to development.
	Diversity of the tourism offer	The greater the diversity of the visitor offer the wider the range of visitors and less the potential sensitivity of the tourism sector to wind farm related impacts
	Popularity of the tourism area, in particular the capacity at which it operates	Areas which are popular or growing in visitor terms, may be able to adapt more readily if wind farm development were to be a threat to the local visitor economy
Characteristics of Tourists	The diversity of the visitors, in particular the representation of groups which might be more (eg olders visitors) or less sensitive to wind farms (eg overseas visitors or visiting for adventure activities)	Linked to the diversity of the visitor offer. This recognises that different types of visitors may be more or less sensitive to wind farm development (although some will be largely indifferent).
	Loyalty of visitors, in terms of their commitment to an area and repeat visiting behaviour	Regular visitors to an area may be more sensitive to changes in the natural environment if they feel ownership of the area. Again, a large number would be indifferent.

2.18 Whilst each indicator is assessed in its own right, a number are closely related. For example, the diversity of the tourism offer is closely related to the diversity of the visitors in most instances. Consequently, the assessment of each indicator takes account of the interrelationships with other indicators.

Step 3: Local Area Profiles

2.19 Area profiles were prepared for each local impact area, based on the research and consultations undertaken in the initial stages of the study. The profiles, which helped to populate the assessment framework, focused on the following:

- The extent of current and planned wind farm development in the impact area, including the size of wind farms and number of different wind farms which may be visible.
- An analysis of the volume and value of tourism activity in the area, to better understand the scale of the visitor economy. As the areas do not correspond to local authority boundaries, an indicative estimate of the volume and value of the visitor economy was made (e.g. using GBTS the Day Visitor Survey, apportioned on the basis of areas using proxies such as bedstock and employment data[2]).
- The landscape quality of the study area (using LANDMAP), as well as proximity to other special protected areas such as national parks, forests and woodland, heritage coast etc.
- The key visitor attractions and activities in the impact area. This helps to establish the diversity of the visitor offer in these areas and the main reasons why people visit. They also consider the manner in which the area is marketed to e.g. open, unspoiled landscapes or activity based holidays.
- The main visitor routes which pass through the study area, where people may encounter wind farms.
- The characteristics of visitors, focusing on factors such as the age of visitors, socio-economic groups, and the degree to which it relies on repeat visitors (subject to the availability of information).

2.20 This assessment enabled a categorisation of the local impact areas across all of the different elements in the framework and begin to assess the degree of sensitivity of different areas to wind farm development. It should be noted that the indicators only provide an indication of the potential sensitivity of the visitor economy in a local impact area to the scale and nature of the current and proposed wind farm development. Whilst the overall assessment of the expected impact of wind farm development in each local impact area takes account of these indicators, it also requires careful interpretation of the indicators themselves and the wider context in these areas.

Step 4: Local Case Studies

2.21 Case studies were carried out in North Powys, North Anglesey and Neath Port Talbot and Rhondda Cynon Taf. These areas were selected as they are already home to a number of established wind

[2] Chapter Six provides a more detailed description of how tourism volume and value were apportioned to local areas

farm developments.

2.22 The purpose of the detailed case studies was to gather actual evidence of the impact of operational wind farms upon the visitor economy in a number of the local impact areas. The purpose was to fill a specific gap in the literature, namely ex-post assessments of the impact of actual large scale wind farm developments on local visitor economies rather than relying on ex-ante survey evidence of visitor intentions.

2.23 The case studies drew upon local research where it was available and a set of structured consultations with local tourism associations and local authority tourism officers. Whilst these consultees provided views for their particular communities and stakeholders, these views were also tested through consultations with businesses in close proximity to existing wind farms or catering for visitors most likely to be affected.

2.24 The approach taken to the case studies allowed an in depth exploration of recent trends and characteristics of the local tourism economy, and the relative importance of wind farms in explaining changes compared to other factors, such as investment in the local tourism sector.

Step 5: Application of Impact Framework

2.25 The framework for assessing impact was applied to each of the local impact areas based on the review of local area profiles and case studies. Each indicator was rated on a scale of one to five, where one equals very low sensitivity and five equals very high sensitivity. The findings were used to reach a view on overall sensitivity to wind farm development and the implications of this for the potential change in visitor numbers.

3. Onshore Wind Farm Development in Wales

Introduction

3.1 This section provides an overview of onshore wind farm development in Wales, including:

- The policy context that has shaped the development of onshore wind in Wales
- The scale and geographical distribution of current and planned wind farm development
- A comparison with the scale and density of development in other parts of the UK.

Policy Context

3.2 The Welsh onshore wind industry is subject to, and driven by, a wide array of policies at the EU, UK and Wales level. Here we focus on the evolution of Welsh policy to date, although it should be noted that projects with a capacity greater than 50MW are determined by the UK Planning Inspectorate (formerly this was the responsibility of the Infrastructure Planning Commission, which was abolished in April 2012).

3.3 Against the backdrop of numerous regulatory and statutory drivers, at the UK level, the key policy mechanism supporting the development of onshore wind is the Renewables Obligation (RO), which is intended to accelerate the deployment of renewable energy technologies in order to enhance energy security and contribute towards the delivery of wider carbon emissions targets and obligations. RO are being replaced in March 2017 as part of the reform of the electricity market.

3.4 Moving to low carbon energy production and maximising the economic opportunities from the low carbon transition have for several years been stated priorities for the devolved Welsh Government. Given Wales' natural advantages in wind energy, development of onshore wind forms an important part of this response. The stated ambition within the current Programme for Government (2011-16) is *to 'create a sustainable, low carbon economy for Wales*' (WAG, 2012).

3.5 As set out below, Welsh policy towards renewable energy in general, and to onshore wind in particular, has evolved in recent years.

2005 Planning Policy

3.6 Back in 2005 the then Welsh Assembly Government issued a Ministerial Interim Planning Policy Statement (WAG, 2005) that set a target for generating electricity from all renewable technologies to 4TWh by 2010, with an aspiration that this would then increase to 7TWh by 2020. Within this overall target, a technology specific target was set for an additional 800 MW of onshore wind capacity by 2010 (i.e. additional to the 233 MW that was already operational at that time). It was recognised that Wales had natural advantages in onshore wind:

"This is based on Wales' abundant onshore wind resource and the fact that onshore wind power is the most viable commercial technology available that will provide a high degree of certainty of meeting the 2010 target."

Technical Advice Note (TAN) 8

3.7 Subsequently, WAG published planning guidance known as TAN 8 (WAG, 2005b). This set out a strategic approach to enable the 800MW target to be met. A key element within this was the establishment of seven Strategic Search Areas (SSAs) where large-scale wind farms were to be located. Each SSA was given an indicative target that totalled to 1,120 MW amongst the seven areas; the excess was to allow flexibility in reaching the 800 MW target. A footnote also explains that capacity in these areas could be increased to give an overall SSA maximum capacity of around 1700 MW.

The Renewable Energy Route Map

3.8 Welsh Government, along with the UK Government and other devolved administrations, published its Renewable Energy Road Map[3] (WAG, 2008) in 2008 as a consultation document. This suggested that the target for 7TWh by 2020 be increased significantly to 33 TWh by 2025. The implication for onshore wind is that the capacity potential would be up to 2500 MW, or up to 6.5 TWh of electrical energy generated.

3.9 DECC, in conjunction with each of the devolved administrations has also published a Renewable Energy Roadmap (DECC, 2011). It mapped a number of possible deployment scenarios for onshore wind. In its central scenario, it identified potential for onshore wind to contribute around 13GW by 2020 which would equate to an annual growth rate of 13%. The 2013 update to the roadmap (DECC, 2013) showed that deployment of onshore wind was increasing strongly. Total onshore wind generation had increased by 25% on the previous 12 months. It warned however that a plateauing in the development of new onshore wind projects may be starting to occur, due to a limit on the number of sites available, growth of competing technologies and cumulative planning impacts.

Energy Wales: A Low Carbon Transition (2012) and July 2011 Ministerial Letter

3.10 A Low Carbon Transition (WAG 2012) moved the focus away from specific targets for energy production, towards how the energy sector can be supported and how the benefits for Wales can be maximised. It confirmed the Welsh Government's commitment to streamlining the planning process for energy developments and working to put in place an improved energy infrastructure to attract investment. It also outlined a number of measures to ensuring the economic and community benefits from energy investments are kept in Wales, including support for Welsh businesses to enable them to compete for energy contracts and workforce development initiatives to ensure that Welsh people have the skills they need to secure employment opportunities. The policy paper identified some of the key energy projects but did not specify a target for energy production through onshore wind.

Community Benefit Funds

3.11 In addition to the targets for onshore wind, the Welsh Government has also committed to ensuring that communities affected by energy developments see the benefits of those developments through community benefit funds (CBFs). Following a report by RenewableUK, which estimates CBFs to be worth more than £600,000 a year to local communities in Wales, the

[3] Welsh Assembly Government, *Renewable Energy Route Map for Wales, Consultation on way forward to a leaner, greener and cleaner Wales*, February 2008.

Welsh Government and RenewableUK Cymru developed a declaration which has been signed by all the largest wind farm developers, committing them to help secure long term benefits for the communities that host wind farms. The declaration is described as "*a commitment from the developers to ensure a consistent and best practice approach to the way they engage with communities and to ensure that economic and community benefits are maximised*."

3.12 Community benefit funds offer opportunities for the development of a range of community assets which can provide benefits for communities. Examples include community-owned affordable housing projects, community land trusts and community power and energy schemes. CBFs are also being used to invest in community-led projects and initiatives which seek to address a wide range of local challenges, including health and education improvement schemes, community safety, improving transport connections etc. There are also examples of CBFs being used to invest in and improve tourism assets which is explored in this report.

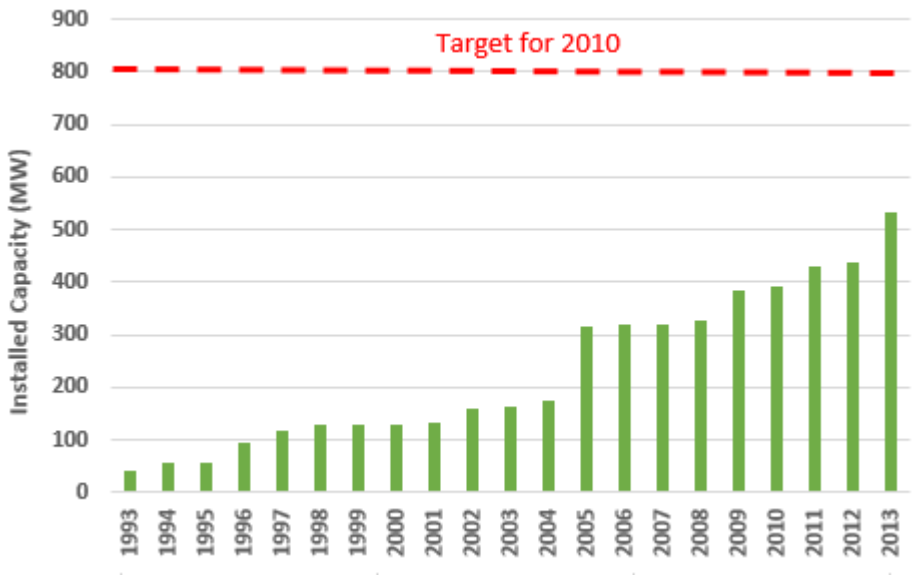
Development of Onshore Wind

Experience to Date

3.13 Figure 3-1 sets out the trend in the level of installed operational capacity (MW) over the past 20 years. It shows that development was fairly modest until around 2005 when a number of large wind farms were developed. These included Tir Mostyn in Denbighshire, Cefn Croes in Ceredigion and Ffynnon Oer in Neath Port Talbot.

3.14 Following this period of development, there was very little additional capacity installed between 2005 and 2008. By 2010, total installed capacity had reached 390 MW, less than half the aspiration identified by the Welsh Government.

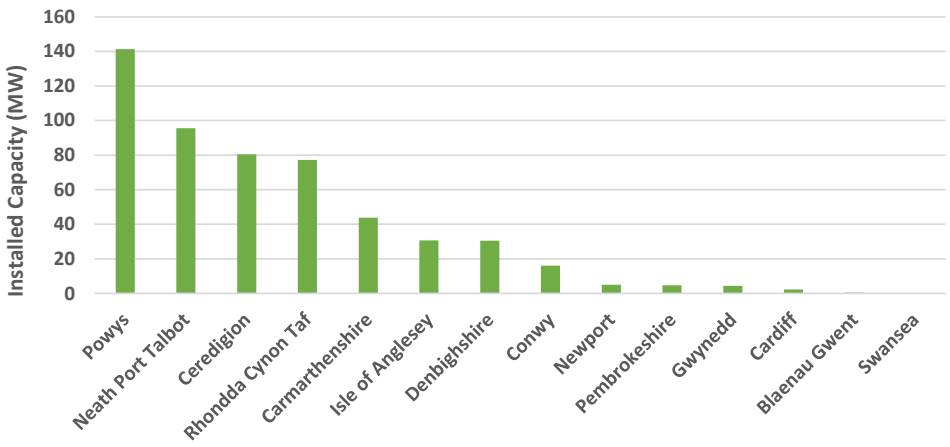
Figure 3-1: Cumulative Installed Operational Capacity in Wales, 1993-2013



Source: Department for Energy and Climate Change
Note: Data only includes wind farms with over 0.1MW in installed capacity

3.15 The wind farm development to date has been concentrated in a number of local authority districts, which largely reflect the locations of the SSAs identified in TAN8. Powys has the highest installed capacity (140MW), followed by Neath Port Talbot, Ceredigion and Rhondda Cynon Taf (between around 80 and 100 MW each). The data should be interpreted with caution - a number of wind farm schemes cross a local authority boundaries but have only been allocated to one local authority[4].

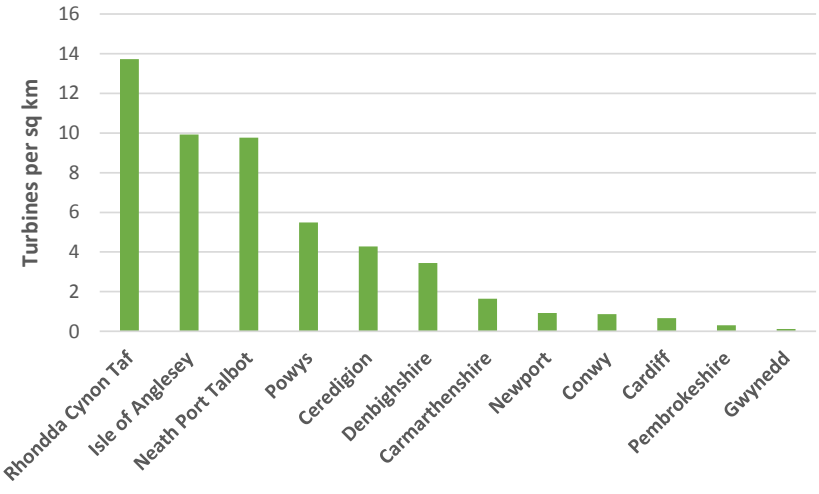
Figure 3-2: Installed Capacity by District, 2013



Source: DECC

3.16 The highest density of wind turbines by district (in terms of turbines per sq km) is in Rhondda Cynon Taff, Anglesey and Neath Port Talbot. Again, caution should be applied when interpreting this data as some of the turbines categorised as within Rhondda Cynon Taff are actually sited just within in the Bridgend County Borough boundary.

Figure 3-3: Number of Turbines per 100 sq km, 2013



Source: Desk based research of the number of turbines in wind farm developments in Wales,

[4] This occurs on the border of Rhondda Cynon Taff and Bridgend, the border of Neath Port Talbot and Carmarthenshire and the border of Powys and Ceredigion.

drawing upon various sources including thewindpower.net, renewables-map.co.uk, and individual developer websites
Note: this data only includes wind farms with over 0.5MW of installed capacity.

Comparison with Other UK Regions

3.17 Table 3.1 compares the installed capacity of Wales with other UK countries in 2013, based on DECC's onshore wind database. The data shows that Wales is still some way behind Scotland in terms of installed capacity relative to its size. Scotland accounts for over 60% of installed capacity in the United Kingdom. It also has the densest concentration of installed capacity, with 5.3MW per 1,000 sq km and the largest average wind farm size (21.3MW).

3.18 Wales ranks third for density, with 3.9MW installed for every 1,000 sq km. The average capacity per wind farm is half the size of Scotland, but larger than England and Northern Ireland.

Table 3.1: Comparison of Installed Capacity for UK Countries (Ranked by MW per 1,000 sq km)

	Installed Capacity (MW)	MW per 1,000 sq km	Number of wind farms	Average MW per wind farm
Scotland	4,179	53.3	196	21.3
Northern Ireland	504	36.4	60	8.4
Wales	534	25.7	51	10.5
England	1,522	11.7	234	6.5
Grand Total	6,739	27.7	541	12.5

Source: DECC
Note: The DECC database does not include the number of turbines so it has not been possible to compare on this basis.
The number of wind farms is based on the number of records in DECC's database, however a number of these will include extensions to existing wind farms.

Future Prospects

3.19 DECC's database also contains information on proposed wind farms, as well as those which are operational. These include consented wind farms which are under or awaiting construction, and those wind farms which are still in the planning system. While there is a high degree of certainty that the consented wind farms will be developed in the next ten years, there is less certainty about those which are still in the planning system.

3.20 DECC's database for Wales show there have been 38 planning applications refused since 2000, which is slightly more than the number which have been approved (36). A large proportion of these have been refused on the grounds of unacceptable changes to the landscape character of an area, particularly where wind farms have been located close to a National Park or an area of outstanding natural beauty. Proximity to heritage sites and ancient monuments is also cited in a number of cases. Effects on tourism are occasionally referenced as one reason why the application was rejected, however this is usually identified as a potential consequence of the intrusion on the landscape[5].

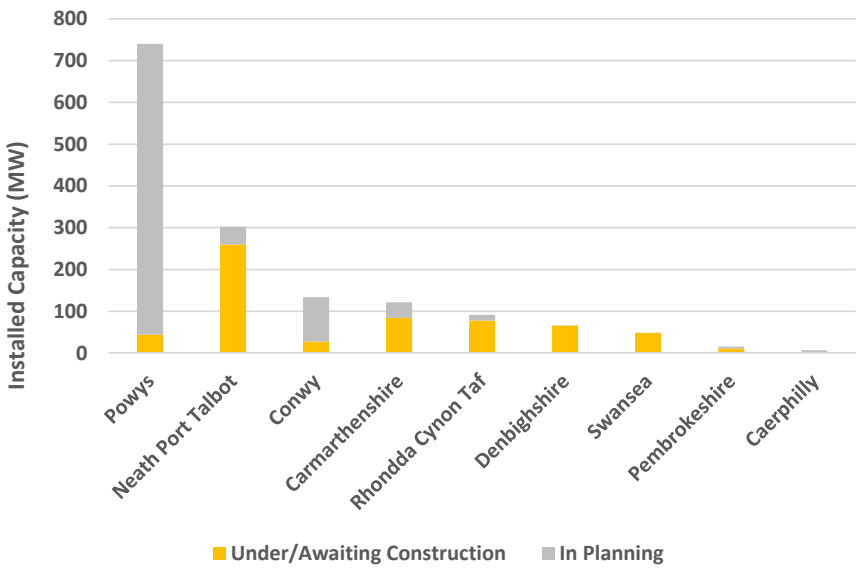
3.21 Given the large number of applications which are refused, there is clearly a great deal of uncertainty about the scale and location of future wind farms. For the purpose of this study, the

[5] We will be able to provide a more detailed analysis of the reasons for planning refusal in the final report.

assessment is based on all wind farms which have received consent or are currently in the planning system.

3.22 In total there is an additional 590 MW of installed capacity with planning consent and 920MW in the planning system. Figure 3.4 shows that the major focus for future wind farm development in Wales is in Powys, with 44 MW consented and yet to be constructed, and a further 700 MW lodged in the planning system for determination. Many of the schemes currently seeking planning permission are the subject of a conjoined public inquiry, which will consider a range of evidence before making recommendations on future development. The other areas which could see a large increase in wind farm development are Neath Port Talbot[6], Conwy and Carmarthenshire.

Figure 3-4: Wind Farms with Consent or in Planning System



Source: DECC
Note: Future wind farms have been allocated to a single authority. However many will cross local authority boundaries. The most notable example is the Pen Y Cymoedd development, which will straddle the NPT and RCT border. This will be the largest onshore wind development in Wales but appears in the data as being located in NPT.

Local Context of Wind Farms

3.23 The operational and planned wind farms are located in very different environmental and landscape contexts. Factors such as the local topography, degree of forestation and proximity to developed areas will influence the visibility of the turbines and also visitor's reactions to their presence. Table 3-2 shows that a large proportion of the wind farms are located in upland grazing and moorland areas. Wind farms in these contexts are likely to be visible over a wider area than lowland wind farms or those in densely forested areas.

3.24 The wind farms also vary in their proximity to developed areas. Although a large proportion of the wind farms in the South Wales valleys are in upland moorland areas, many are in close proximity to roads, significant settlements and other urban development which will influence

[6] A large proportion of this is from Peny Cymmoedd

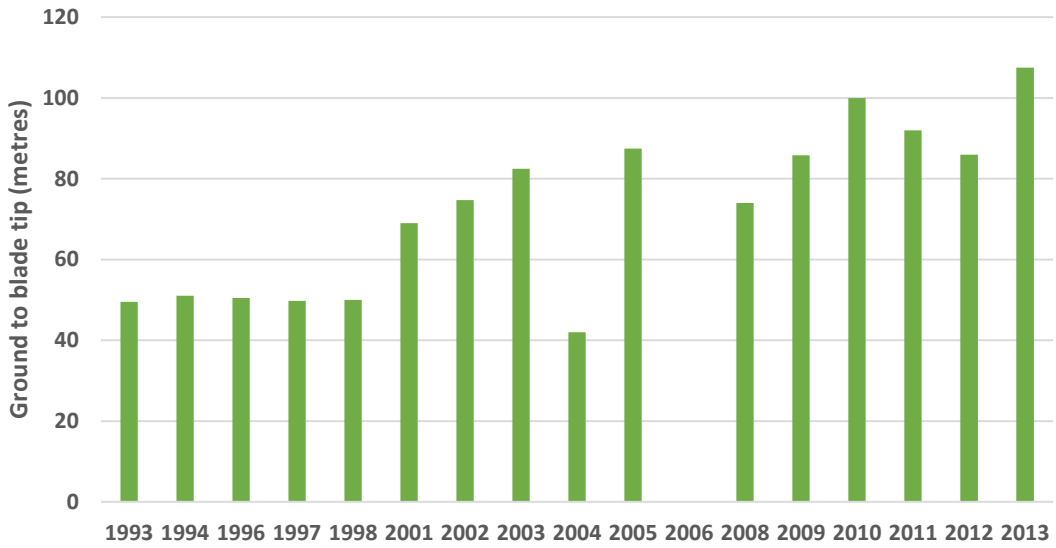
visitors' perception of the local context and their reaction to turbines.

Table 3.2: LANDMAP descriptions of Local Context of Wind Farms	
	Number of Operational and Planned Wind Farms
Upland Grazing	22
Upland Moorland	18
Open Rolling Lowland	14
Hill & Lower Plateau Grazing	8
Hillside & Scarp Slopes Mosaic	8
Hillside & Scarp Slopes Grazing	7
Mosaic Rolling Lowland	7
Urban	7
Wooded Upland & Plateaux	6
Flat Open Lowland Farmland	5
Other	11
Total	113
Source: LANDMAP. Note: Many wind farms cross a number of LANDMAP zones of classification. In each case, the grid reference provided by DECC was used to allocate wind farms to zones.	

Size of Turbines

3.25 Figure 3-5 shows there has been a general trend towards turbines becoming larger in height. The average ground to blade tip increased from around 50m in the nineties to between 80 and 110 metres in the late 2000s. This clearly increases the distance over which turbines are visible and the degree to which they may be considered intrusive on the local landscape. In turn there is potential for this to influence visitor reactions to wind farms.

Figure 3-5: Average Size of Turbines in Year they became Operational, UK



Source: various sources including thewindpower.net, renewables-map.co.uk, and individual developer websites. Note: no new turbines were constructed in 2006.

Associated Infrastructure

3.26 New sources of energy, including wind farms, need to be connected to the National Grid to ensure that electricity generated anywhere in England, Scotland and Wales can be used to satisfy demand elsewhere. The infrastructure required to connect power stations to the Grid includes substations, underground cables and overhead power lines on pylons. Pylons and overhead lines are arguably the key source of concern for this study as they have a much higher visual impact than other types of infrastructure

3.27 Figure 3-6 shows the existing locations of the overhead lines in Wales, as provided by the National Grid. It shows that the existing pylons are in South and North Wales, with no existing infrastructure in Mid Wales. There are still pylons in these areas, but these belong to electricity distributors rather than the National Grid. It has not been possible to map these distributors' networks. As these networks are for the purposes of distribution rather than connections to energy generation, they are not considered to be "associated infrastructure" for the purposes of this study. There are, however, large numbers of distribution pylons throughout Wales, particularly around significant settlements, meaning that they are a familiar and common site.

Figure 3-6 National Grid Overhead Lines

Source: National Grid

4. Tourism in Wales

4.1 This section provides an overview of the size, characteristics and recent performance of the tourism sector in Wales. It also summarises the Welsh Government's aspirations for the sector and key policies and strategies which have been put in place to improve performance.

Measuring the Volume and Value of Tourism Activity in Wales

4.2 The range of sources which can be used to quantify the volume and value of tourism activity include the following:

- **National surveys of tourism activity**. Nationally conducted surveys can be used to estimate the number of trips and associated expenditure. As these surveys are based on a sample of visitors they are subject to margins of error and often cannot be disaggregated below regional level. There is no single survey which covers all types of visits so the following sources need to be used to build up a picture of tourism activity:

  1) International Passenger Survey (IPS). This dataset provides an estimate for the number of visits made to Wales by overseas tourists. It also provides information on expenditure, accommodation type, length of stay and visitor origin.

  2) Great Britain Tourism Survey (GBTS). This dataset focuses on the number of overnight stays in Wales by domestic tourists only. Like IPS, it also provides wider contextual information about accommodation type, expenditure, length of stay and various visitor characteristics.

  3) Great Britain Day Visits Survey (GBDVS). This survey is used to estimate for the number of day visits to tourism locations within Wales and the associated expenditure. The dataset has only been available since 2011 so trend based data cannot yet be accessed.

- **Tourism Economic Impact Models.** There are a number of commercially available models which draw on locally produced data (such as estimates of bed stock, occupancy rates, visitor surveys, etc) to provide local authority based estimates for the number of day and overnight visitors to an area, the spend in the local economy and associated employment in tourism sectors (as well as various other characteristics of the visitor economy). The most widely used models are the Scarborough Tourism Economic Activity Monitor (STEAM) and Cambridge models, which both draw on locally collected intelligence to provide estimates for the overall volume and value of tourism activity in local authority areas. These models cover both direct and indirect expenditure and employment. Data from these models is not available on a consistent basis across Wales so has not been used as part of this analysis.

- **Locally collected data.** Alongside these tourism models, there is a range of locally collected data which provides a finer grained and detailed picture of the nature of tourism activities, the characteristics of visitors and the nature of the local offer. This includes visitor surveys; however the robustness of these datasets can vary significantly. Those carried out by Visit Wales tend to have larger sample sizes and can be disaggregated to a regional level.

- **Published economic datasets.** Nationally produced datasets such as the Business Register and Employment Survey (BRES) can be used to estimate the total level of direct employment in businesses trading in tourism related sectors. The estimate of employment in the visitor economy derived from BRES data overstates the level of direct tourism employment as it is based on a sector definition of employment and includes activity which is supported by both tourists and residents (e.g. restaurants and bars). It is not possible to measure indirect employment using this dataset.

The Importance of Tourism to the Welsh Economy

4.3 None of these sources offer a perfect or complete measure of the volume and value of tourism activity in Wales or the employment supported in the sector. It is necessary to draw together data from a range of sources to provide a full picture of the importance of the sector.

4.4 Estimates of visitor numbers and spend drawn from IPS, GBTS and GBDVS in the table below indicate that there were 111 million tourism visits to Wales in 2012, resulting in total visitor spend in the region of £5.7 billion. Day visitors make up the largest proportion of the visitor base in Wales and their expenditure accounts for 66% of the total.

Table 4.1: Overview of Tourism Activity in Wales, 2012

		Trips (million)	Nights (million)	Spend (£million)
Day trips	Domestic only	101	-	£3,834
Overnight Stays	Domestic	9	33	£ 1,550
	Overseas	0.8	7.1	£346
Total		111	40	£5,730

Source: Day Trips, GBDVS, 2012. Domestic overnight stays from GBTS, 2012 and visits from overseas from IPS, 2012

4.5 An assessment of the volume and value of tourism activity in Wales has been undertaken in the production of Tourism Satellite Accounts for Wales. This suggests that the direct expenditure of visitors to Wales in the local economy was £4.5 billion in 2011[7]. This spend contributed around 4% to national GVA in 2011.

4.6 The importance of tourism activity to Wales' economy is also evident in nationally collected employment datasets. The Business Register Employment Survey (BRES) indicates that there are in the region of 78,000 FTEs employed in tourism related activities[8] across Wales. Tourism therefore accounts for approximately 8% of total FTE employment across Wales.

4.7 While the estimates provided by various datasets are inconsistent, all highlight tourism as a very important sector which supports a large proportion of the Welsh employment base and contributes significantly to national GVA.

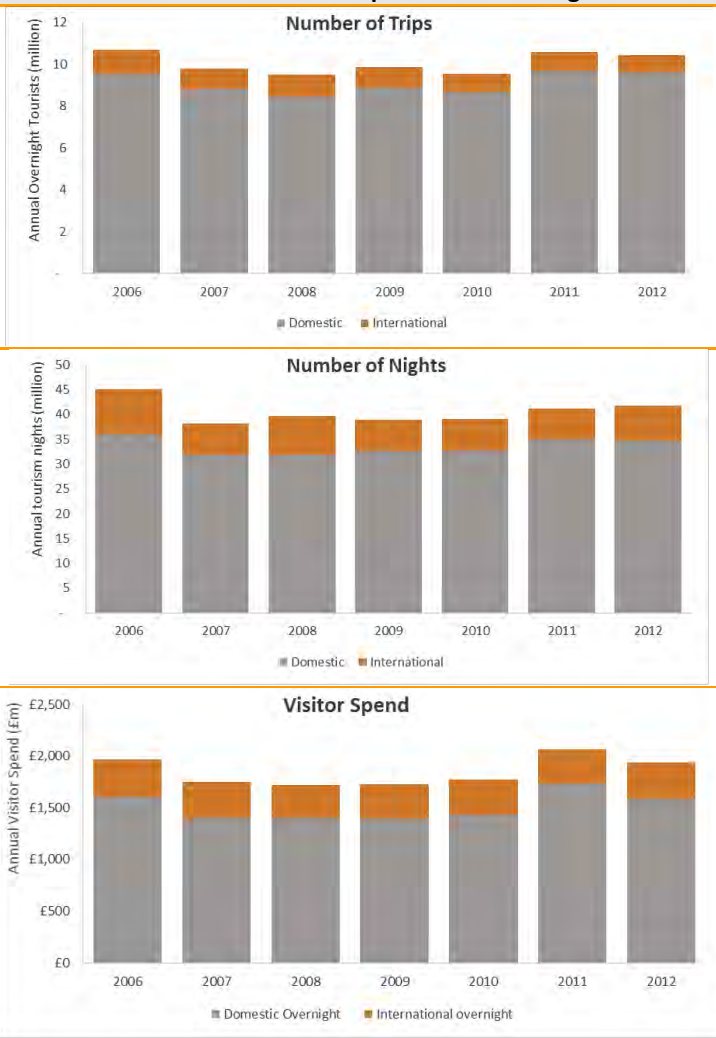
[7] Wales Tourism Satellite Accounts (2011)

[8] It should be noted that the sectoral definition of tourism employment used in the BRES analysis can overestimate the total volume of tourism employment as it also captures general service sector activities and employment which may not be supported by tourists (such as restaurant and bar employment).

Recent Performance

4.8 Trend data from IPS and GBTS is available for 2006 to 2012 and is presented below. These is no comparable trend data available for day visits so this trend analysis reflects only activities associated with staying visitors. The picture of recent performance that this provides is therefore only partial given the importance of day visitors to Wales' visitor economy

Figure 4-1: Recent Trends in Visitor Numbers and Expenditure: Overnight Tourists



Source: GBTS and IPS, 2012

4.9 In terms of visitor numbers (i.e. the annual number of trips to wales made by overnight tourists) the picture since 2006 has been reasonably static. There have been some annual fluctuations in overall numbers and the number of trips made in 2011 and 2012 appears slightly elevated, although this may not necessarily point towards an increasing trend.

4.10 The total number of tourism nights broadly reflects the trend in visitor numbers although the slight increase in 2011 and 2012 is less pronounced, which suggests that although the number of trips has increased, average duration may have dipped.

4.11 Both visitor numbers and expenditure took a notable dip between 2006 and 2007, after which the volume and value of tourism activity remained largely stable until 2011. As Figure 4-1 shows, visitor numbers and spend have increases slightly since 2010 although the extent to which this is

indicative of a longer term trend is unknown.

4.12 The charts below highlight consistency in the average duration of overnight visits and associated expenditure since 2006. This consistency masks an increasing trend in the length of stay for international visitors and the average spend associated with each visit. As international visitors as such a small proportion of the total, this increasing trend is not reflected in the overall average.

Figure 4-2: Trends in Expenditure and Trip Length for Overnight Visitors

Source: GBTS and IPS

4.13 Tourism expenditure figures reported by IPS and GBTS are not adjusted for inflation. Taking the effects of inflation into account, the steady spend per visit should be interpreted as a real reduction in the average spend per visitor.

Tourism Areas

4.14 Each of Wales' four regions has a sizeable visitor economy and hosts a substantial number of day and overnight visitors each year. South East Wales (which has a concentration of tourism assets and attractions in Cardiff and the surrounding areas) is the destination for a large portion of annual day trips to Wales (43%) whilst North Wales takes the largest share of overnight visitors.

Figure 4-3: Proportion of Day and Overnight Visitors to Wales by Region

Source: GBTS and GBDTS, 2012
Note: Excludes international visitors.

4.15 Trend based data at the regional level is limited. For day visitors, there is no trend data available and it is not possible to disaggregate the IPS below a Wales level. However, the information available for domestic overnight visitors (from the GBTS) does allow some analysis of the recent performance of Wales' regional tourism economies.

4.16 The visitor number trends for the four regions shown in **Figure 4-4** indicates that there has been some fluctuation in visitor numbers to the four regions over recent years. Whilst the overall trend for North Wales and South West Wales has been towards a slight increase, the overall trend in South East Wales has been largely flat, whilst there is some indication that the number of overnight visitors to mid-wales has been decreasing over recent years.

4.17 These trends are not particularly pronounced however and may simply reflect the volatility of annual visitors numbers.

4.18 It should also be noted that as this analysis relates only to overnight visitors, there is a large portion of the visitor base missing (i.e. day visitors).

Figure 4-4: Visitor Number Trends for Wales Regions

Source: GBTS

4.19 The visitor expenditure trends in the figure overleaf largely mirror the trends in visitor numbers. In North Wales and South West Wales, annual visitor expenditure shows a positive trend. Whilst the trends relating to tourism expenditure in South East Wales and Mid Wales point towards a slight decline in expenditure. This decline would be more pronounced if the effect of inflation was factored in to the analysis.

Figure 4-5: Tourism Expenditure Trends for Wales Regions

Source: GBTS

Challenges and Opportunities

4.20 The Welsh Government's recent tourism strategy (WAG 2013) recognises the persistence of a number of challenges which the sector faces since it predecessor strategy was developed. Many of the challenges facing the sector reflect global trends such as continued economic uncertainty, price sensitivity within the market, changes in consumer behaviour, fuel prices and increased competition in the sector.

4.21 Locally specific challenges that have been identified by the Welsh government as affecting the sector include:

- **Branding and Brand Recognition**. The need to continually reinforce a coherent brand identify for Wales and foster brand recognition amongst potential visitors is recognised as a critical challenge for the sector. In particular the need to raise awareness of the nature of Wales' offer and overcomes out-dated perceptions about the tourism offer in Wales is recognised.

- **Quality of Accommodation**. The accommodation offer in Wales remains weighted towards the lower quality end of the spectrum. The challenge to encourage a higher

quality accommodation offer to reinforce aspirations to promote Wales as a high quality tourism destination remain.

- **Range of Attractions**. Although it is recognised that Wales has a diverse range of visitor attractions the relative lack of iconic, flagship, all-weather attractions is recognised as a challenge for the sector.

- **Skill Levels and Professionalism**. Developing and retaining the skills and professionalism required amongst the tourism workforce to ensure a quality experience for visitors is recognised as a key challenge for the sector. Developing skills within the existing workforce and business base, alongside boosting the status of careers in tourism amongst potential workers are highlighted as the key challenges.

- **Accessibility**. Air, rail and road connectivity remain as challenges which could inhibit the growth of the sector. In particular, the imposition of tolls on the Severn Bridges is viewed as having potentially disadvantageous effects on the sector.

4.22 The opportunities for tourism growth identified in the new strategy include the following:

- **Growth in International Tourism to UK.** The forecast growth in international visitors to the UK is expected to benefit Wales. An opportunity to maximise the share of this forecast growth that Wales can access has been identified. In addition branding and marketing efforts targeted on key overseas markets (Ireland, Germany, USA and Canada). Limited connectivity and air capacity are expected to act as barriers to realising these opportunities.

- **Build on Sporting Success**. Wales has already been successful attracting a number of major sporting events such as the Ryder Cup and the Ashes. This, in conjunction with the success national and local sports teams (e.g. the national rugby team, premier league football clubs) is presented as providing opportunities to reinforce the image of Wales as a destination for major sporting events.

- **Attract Major Events and Festivals.** Building on the existing success in attracting major events to Wales opportunities to selectively support new events to enhance the reputation of Wales have been identified.

- **Build on Recent Investment in Accommodation Offer.** Although the accommodation offer remains too focused on the lower quality end of the market, there is evidence of increased levels of investment in the self-catering and caravanning sector in particular that may provide opportunities to promote higher quality facility provision.

- **Continue to Grow the Heritage and Cultural Tourism Sector.** The wealth of culture and heritage assets and attractions are expected to continue to support growth in the tourism sector. Specific opportunities identified by the Welsh Government include enhancing visitor experience at existing attractions, growing the creative industries sector to further support the development of the cultural tourism offer and exploiting the appeal of internationally known stories such as the Arthurian legend a means of promoting Wales' offer more widely.

- **Grow the Business Tourism Sector.** Wales currently underperforms in this regard and

does not capture its full share of this relatively high spending and non-seasonal market. An opportunity to develop an international conference and events facility in Capital Region has been identified within the tourism strategy as offering potential to stimulate demand in this wider market.

Prospects and Strategic Aspirations

4.23 The tourism sector has been identified by the Welsh Government as a critical sector for the economy. The Welsh Government has recently launched a tourism strategy *Partnership for Growth: The Welsh Government Strategy for Tourism 2013-2020.* The strategy sets out the vision for the industry and Welsh Government to work in partnership to increase visitor spend to Wales. The strategy is designed to support the delivery of the priorities for tourism that are defined in the Welsh Government's Programme for Government:

- Develop tourism activity and specialist markets and secure maximum benefit from major events in our high profile venues.
- Promote Wales as a destination by making a high quality tourism offer.
- Work to extend the tourism season and associated benefits.
- Identify funding opportunities to improve the visitor infrastructure and product in Wales.
- Support investment in staff training and management to support a high quality tourism industry.

4.24 To support these aims, the strategy identifies a product led approach to developing and marketing tourism in Wales. In practice, this means working with iconic, high quality, reputation-changing products and events. There will be a focus on more luxury and branded hotels; more well-being facilities such as spas; more heritage hotels that utilise historic and distinctive buildings; more all year round attractions, activities and cultural experiences; more innovative, unusual and distinctive product.

Aspirations for Growth

4.25 The strategy sets out ambitious aspirations for the growth of the sector and highlights a headline ambition to **grow real tourism earnings by 10% or more by 2020**. This is a challenging target when considered in light of an increasingly competitive marketplace, challenging economic conditions and increasingly price sensitive visitors.

4.26 The strategic aim is to increase both the number and value of visitors by seeking to attract higher yield segments, in particular from international visitors (Germany, USA, Canada and Ireland are target markets)

4.27 The vision, aims and objectives of the strategy are set out in Table 4.2.

Table 4.2: Aspirations for Tourism Set out in The Welsh Government Strategy For Tourism 2013-20	
Vision	Wales will provide the warmest of welcomes, outstanding quality, excellent value for money and memorable, authentic experiences to every visitor.
Goal	Tourism to grow in a sustainable way and to make an increasing contribution to the economic, social and environmental well-being of Wales.
Ambition	Grow real tourism earnings in Wales by 10% or more by 2020 (this is estimated to equate to an unadjusted growth in earnings of 28%)

4.28 The strategy sets out the key areas where Wales is thought to have competitive advantage and upon which efforts should be focused and identified a number of areas of focus for investment in and development of Wales' tourism offer. These are:

- Heritage and culture
- Activity and wellbeing
- Food and drink
- Major events and festivals
- Business travel.

4.29 In addition to setting out the overall direction in which the Welsh Government wish to take the tourism industry, the strategy has been designed to unite the efforts of partners across Wales who are working in the tourism sector. Visit Wales and the four regional tourism partnerships are all aligning their activities to the broad aims set out in the strategy.

4.30 The strategy includes a commitment to regular delivery action planning whereby the Welsh Government, Visit Wales, local authorities, destination management partnerships and various other tourism organisations and stakeholders will take on responsibility for delivering actions. The commitment to a single unifying strategy underlines the importance attached to the tourism industry and the overall importance of achieving these goals.

4.31 The expectation is that as regional destination management strategies reach the end of their terms, the regional DMPs will operate within the aspirations set out in this strategy.

4.32 In addition to this new cross cutting strategy around which activities of partners are expected to align, the Welsh Government have two further strategies in place to guide the development of the country's tourism sector. Although now dated, these strategies highlight some longer standing aspirations for the sector.

4.33 The GB domestic market is the main market for Wales and will continue to be the main focus. Marketing activity will be increased in London and South East Midlands and Yorkshire, as well as within Wales itself for the first time. Overseas, the three key markets identified by the panel are Ireland, Germany and USA.

Table 4-3 Overview of Visit Wales Tourism Strategies	
Coastal Tourism Strategy, 2008	Sets out a range of aims and outcomes for coastal tourism in Wales to support the overall vision of *"An integrated year round coastal tourism industry, based on an outstanding natural environment and a quality tourism product that exceeds visitor expectations, whilst bringing economic, social, cultural and environmental benefits to coastal communities."* Specific aims include but are not limited to the following - Halt and reverse the decline in coastal tourism - Attract more higher spending visitors - Support more full time employment on the coast through tourism - Extend the coastal tourism season - Diversify accommodation base - Maintain environment and cultural heritage
Sustainable Tourism: A Framework for Wales, 2007	The vision for sustainable tourism in Wales is stated as : *"Wales is recognised internationally as a leading sustainable tourism destination that promotes local economic prosperity, supports community well being and engagement, enhances its natural environment and culture and delivers a high quality experience to visitors.'* To support the delivery of the vision, the strategy highlights four objectives and a range of aims, which are summarised below. 1. Promoting Local Prosperity: Specific aims under this objective include maximising the local economic effects of tourism (through local purchasing initiatives), strengthen the number and quality of tourism jobs. 2. Supporting Community Well Being and Involvement: Aims focus on securing impacts on local quality of life, community involvement and equitable distribution of benefits. 3. Minimising tourism's environmental impact. Aims are focused on use of renewable resources, minimising pollution caused by tourism visitors and enterprises. 4. Protecting and giving value to natural heritage and culture. Aims here focus on maintaining and enhancing the quality of natural landscapes and avoiding their physical degradation, minimise damage to natural areas, habitats and wildlife and support the wider conservation of natural areas.

Summary

4.34 The visitor economy makes a substantial economic contribution to Wales and supports a significant proportion of the country's employment base.

4.35 Day visitors make the most significant contribution to Wales' visitor economy in terms of expenditure, although there is insufficient data to fully explore trends in this important market. Domestic overnight visitors are the next most important segments of the visitor base and the volume and value of activity in this sector has been largely stable over recent years. In real terms, the value of expenditure associated with these visits is declining, which could reflect the increasing price sensitivity of visitors.

4.36 Overall stability in visitor numbers across Wales masks regional differences in performance;

trends in North and South West Wales suggest the visitor economy is growing in these areas. Conversely the trend is towards a slight decline in visitor numbers and expenditure in mid and south east wales.

4.37 The new tourism strategy for Wales sets out the overall direction in which the Welsh Government wish to take the tourism industry, the strategy has been designed to unite the efforts of partners across Wales. Heritage and culture, activity and wellbeing, food and drink, major events and festivals and business travel are expected to be the focal points for investment and growth.

5. Evidence Review for Tourism Impacts of Onshore Wind Farms

5.1 A review of the evidence relating to the potential impact of wind farm developments and associated grid infrastructure on tourism activity was conducted as part of the development of the assessment methodology underpinning this study. The review has explored both academic and non-academic research, with the objective of assessing the strength of evidence in relation to the following:

- The extent to which visitors might be encouraged or discouraged from visiting areas where onshore wind farms and associated infrastructure are present or can be viewed;
- The factors which might be most important in driving the positive or negative impact of wind farms on tourism activities;
- The extent to which the type of visitors, the types of tourism activities or the nature of the locality within an area affects the scale and type of impact; and
- Whether there are other factors which influence the nature and scale of the potential impact of wind farm development on tourism activity.

5.2 Whilst our primary interest is in the relationship between onshore wind farms and associated grid infrastructure and tourism, we have considered studies which relate to offshore developments and other structures. Studies have been included on the basis of the reliability of the methodologies employed[9].

5.3 This section summarises the main findings of the literature review and highlights the implications of the evidence for the assessment methodology. A full bibliography and summaries of the findings of studies which have been reviewed as part of the evidence review are included within Appendix A.

The Nature of the Evidence Base

5.4 The literature which explores the potential impact that wind farms could have on tourism activity is not extensive. The primary research base can be divided into three broad groups; ex-post, ex-ante and wider research.

Ex-post Research

5.5 This part of the research base is limited in its coverage. Ex-post studies explore and provide evidence of the actual effects of specific wind farm developments. Relevant studies in this group are focused on assessing the observed changes in visitor behaviour after a wind farm has been built and is operational. These studies explore observed effects as reported by visitors, sector

[9] There are some frequently cited studies which have been excluded on this basis. For example survey research undertaken by North Devon Marketing Bureau in relation to the Fullabrook Wind Farm has been excluded due to the potential for self-selection bias resulting from the self-completion method employed and the low response rate (13%) achieved. Similar conclusions about this research were drawn in the public inquiry into the Fullabrook Wind Farm (The Planning Inspectorate, 2007).

bodies, tourism and other businesses.

5.6 The most helpful UK based studies of offshore wind developments are those carried out in relation to the North Hoyle and Gwynt y Mor wind farms off the coast of North Wales. These were amongst the first offshore wind farms developed in the UK (although construction of the Gwynt y Mor scheme has only recently got underway). Although there are now other offshore wind farms around the UK which have been operational for a number of years (for example, Kentish Flats, Barrow, Burbo Bank and Rhyl Flats), these have not been the subject of any ex-post study in relation to tourism impacts.

Ex-ante Research

5.7 The ex-ante research covers a group of studies which have been carried out to ascertain or explore potential reactions to wind farm developments. This group makes up the majority of the research base and includes both scheme specific studies, which tend to focus on impacts on a highly localised area and larger area assessments, which consider the cumulative effect that wind farm developments across a larger impact area could have on tourism activity.

5.8 The majority of scheme specific ex-ante studies rely predominantly on perceptions based survey research to draw conclusions about the potential for wind farm developments to affect visiting behaviour in the future. Although there is a lot of variation in the survey methods, study areas, sampling techniques and questioning types employed by these studies (which makes it difficult to compare the studies on a like for like basis) these assessments typically explore two types of effect:

- The extent to which the presence of a wind farm has an effect on the visitor experience; and
- Visitors' views on whether the development of a wind farm might affect their future visiting behaviour.

5.9 A smaller number use perceptions based research, along with other methods to assess whether there would be impacts on overall volume and value of tourism activity and the tourism economy more broadly.

5.10 The larger area assessments, often draw on similar methods to the scheme specific studies to explore the potential tourism impact of actual and proposed wind farm developments more generally across a larger regional area.

5.11 The majority of ex-ante studies focus on visitors themselves, although there are also a number of studies which explore the views of tourism related businesses, sector bodies and other stakeholders.

Wider Research

5.12 Alongside the thematic groups outlined above, there is a wider body of literature which encompasses

- **Studies which provide secondary analysis of the evidence base**. While some of these so-called meta-evaluations are helpful, there are many which draw selectively on the

available evidence and as a result may not provide a full assessment of the evidence.

- **Studies from overseas**. A slightly greater evidence base of studies has emerged from countries where the offshore wind sector has been established for longer. This includes both ex-ante and ex-post research.

- General perceptions based studies which explore **attitudes towards wind farms and associated infrastructure in genera**l (i.e. not in connection to a specific development proposal or area).

- General **tourism surveys** which explore what tourists value about a particular tourism destination and factors which enhance or detract from their experiences.

5.13 It should be noted that across all strands of the research base, there is limited coverage in peer reviewed academic literature. The lack of peer reviewed academic research in this area does not invalidate the evidence that exists although it does highlight the extent to which the evidence base is not yet well established. It is therefore necessary, when reviewing the evidence that exists, to consider the reliability of the methodologies used in available studies, particularly where survey research and impact assessment methods are used.

The Nature of Potential Impacts on Tourism

5.14 Studies in this field encompass a range of potential impacts that wind farms and other man-made structures might have on tourism activity. Most often, research is underpinned by the expectation that visual impacts will be the main drivers of tourism impact and assessments tend to focus on how visual impacts might alter the nature of an area's tourism resource or affect the visitor experience in an area. Other drivers of potential impact (such as noise, impacts on wildlife or perceived health risks) receive much less attention.

5.15 For a large proportion of studies, the assessment is presented in terms of the impact of developments on **visitor numbers.** Ex-ante research and some ex-post studies draw on perceptions based surveys to quantify effects on visitor numbers. Some studies go on to use changes in visitor numbers to estimate the associated change in visitor expenditure and employment. Assessment of potential impacts on visitor numbers is complicated by the fact that as well as affecting visitors' propensity to visit or not, the presence of wind farms could have an effect on the **frequency and duration of visits.** Far fewer studies seek to capture these more nuanced effects on visitor numbers.

5.16 Irrespective of the level of detail in the assessment, studies which focus on visitor numbers are seeking to capture the impact of a development or group of developments on the demand for tourism in a particular location. Impacts are most frequently presented in terms of visitor numbers, spend and employment. There are far fewer studies which explore the extent to which disruption in demand affects the **price or value of an area's tourism asset**.

5.17 Any perceived reduction in the attractiveness of the landscape or wider effect on the tourism experience could reduce visitor demand to such an extent that it results in reduced prices. This was the approach taken in the GCU (2008) study of the potential impact of wind farm developments in Scotland. This was explored further in Riddington et al (2010) who undertook an online survey of potential tourists to explore their willingness to pay to upgrade to a hotel room without a view of wind turbines and other man-made structures. It is important to note

that price effects can operate independently of impacts on visitor numbers and as a result, research that focuses solely on visitor numbers reflects only part of the picture of potential impact. For example, it is feasible that the number of visitors to an area could remain the same yet the value that they attach to a particular location and willingness to pay for certain activities, views etc may change and as a result tourism expenditure and associated employment in the area.

5.18 Although some studies touch on this important source of impact, there has been little research which explores potential pricing effects in detail.

Common Messages

5.19 The relative youth of this as a field of study together with the range of research questions explored by relevant studies, variety of methodologies used and breadth of study contexts mean that it is difficult to highlight consistent messages. Across the research base, there are a number of common themes and conclusions, which are outlined below:

1 – Responses to wind farms are subjective and as a result there is a great deal of variability in tourists reactions to wind farm developments

5.20 Across the ex-ante and ex-post evidence base, the central and fundamentally important theme which emerges is the variability in individual tourists' reactions to wind farm developments. While the precise findings of studies vary, they all point towards subjectivity in individual's interpretation of the structures and variation in the extent to which individual tourists would be likely to alter their behaviour in response to the presence of wind turbines or other structures.

5.21 As well as reflecting the level of subjectivity in the assessment, this variability reflects the breadth of motivations and complexity of the decision making processes in relation to tourism visits.

5.22 Given the breadth of motivations for visiting particular tourist areas, the relative importance of scenery and landscape to a decision to visit an area will differ from one tourist to the next, according to the values of the tourist, the reason for their tourism visit and the activities they wish to engage in. In addition to this, the subjectivity of visitors' judgements in relation to whether wind turbines are a positive or negative addition adds a further layer of complexity to understanding and predicting impacts on tourism activity.

5.23 Similarly, the relative importance of wind farms compared to other factors that could detract from the visiting experience is an important consideration here. Wind farm specific studies as well as more general tourism research have found that wind farms tend to be ranked fairly low amongst the factors that could detract from tourism experience. However, electricity pylons tend to be ranked more highly than wind farms as having a negative effect on landscape value.

2 – The majority of tourists are neutral about wind farms and do not expect their future visiting behaviour to be affected by their presence.

5.24 This is a common finding across all of the studies reviewed (both in the UK and overseas). There is some variation in the actual percentage of visitors who report neutral reactions across the studies but this is likely to reflect a number of factors. Firstly, for scheme specific studies, the variety of contexts (in terms of the nature of the development and the nature of the tourism areas being assessed) is likely to have an influence on findings.

5.25 Secondly, the study methodologies and question types used also varies. Although this does not have an effect on the overall findings, it could contribute to the variation in precise percentages highlighted by the reports. For example, the intercept survey element of the GCU study highlights 98% of visitors to Scotland who had seen a wind farm on their visit reporting no effects on their decision to visit Scotland again while the internet survey element of the same study found a smaller percentage of visitors (62%) would report no influence on their future behaviour if the number of wind farms in Scotland was to increase (although the remainder were split equally between those who would be positively or negatively influenced as a result). The researchers concluded that the internet survey approach and question phrasing meant that the achieved sample was more likely to discourage respondents from reporting neutral views and less representative of the tourist base in Scotland than the tourist intercept survey.

5.26 While there is a degree of variation in the results, the fact that almost all of the studies conclude that the visiting behaviour of the majority of visitors would not be influenced by the presence of a wind farm is an important finding, although this should be interpreted in light of the scale and type of development assessed.

3 - The proportions reporting that they were more or less likely to visit as a consequence of a wind farm development are typically small and often evenly balanced.

5.27 So while some view wind farms as having a negative effect on their enjoyment of the landscape or tourism experience, others see them as an enhancement. This is an important point as it illustrates the subjectivity of people's perceptions about wind farm developments and the range of potential reactions.

5.28 Consideration of the overall net effect (i.e. subtracting the proportion who view wind farms as having a negative influence on the tourism experience from those who view them as having a positive influence) provides a useful means of comparing the overall strength and direction of feeling suggested by each study. Here, the findings range from a net positive balance (with on balance of 35% believing that wind farms have a positive effect on Argyll and Bute as a place to visit) from MORI's research in Argyll and Bute to a net balance of 13% of respondents to the Atlantic Array Tourism Survey indicating that the development might have a negative effect on the tourism experience.

5.29 It is important to note that detailed findings of studies vary considerably in this regard – while some point minimal potential for positive effects (i.e. an overall negative balance), an equal number point towards potential for neutral or overall positive effects. This variation will reflect both differences in research methodology and the context for individual studies. The relative size of the positive, negative and neutral groups will be influenced by a range of factors including the nature of the tourism area, reasons for visits and the specific characteristics and interests of tourists.

4 – Even where visitors feel that wind turbines affect their tourism experience this does not always translate into changes in visiting behaviour.

5.30 This is important given the range in net effects on the tourism experience that the studies report. However, across all of the studies reviewed, the proportion of visitors who report a negative impact on their propensity to visit in future is much lower than the proportion indicating that

wind farms detract from their tourism experience. The difference ranges from three percentage points in the NFO Scotland study to 24 percentage points in the GCU intercept survey.

5 - Large area assessments highlight evidence of localised displacement of tourism activity

5.31 Some of the larger area assessments have concluded that amongst the minority of tourists who would change their visiting behaviour as a result of a wind farm development, a sizeable proportion would still visit the region / wider area. As a result, these visits are not lost – merely displaced to elsewhere within the study impact area.

5.32 For example, the GCU study finds that the tourists whose visiting behaviour is more likely to be affected by the presence of a wind farm would not be lost to Scotland, rather they would switch to other destinations within Scotland and often within a relatively local area. The existence of a substitution effect is echoed in the research carried out in Cape Cod in the USA by Lilley *et al.* (2010) which finds a substitution effect where some people will move from one beach to another within a similar local area if a wind farm is built so the loss associated with the small proportion of visitors who do change their behaviour is lessened.

5.33 The tendency for larger area studies to factor in these substitution effects to their assessments means that the overall net effects on tourism that these studies calculate tend to be lower than more locally focused assessments. The most robust and up to date large area study is the 2008 study carried out by GCU. This found that, on balance, there will be little impact on the overall volume and value of tourism activity across Scotland as a result of wind farm development.

5.34 While very useful at the large area level, these studies would underestimate impacts at a more local level and therefore cannot be used to inform a bottom up assessment.

6 – The ex-post evidence base does not provide any evidence of negative impacts on visitor numbers

5.35 There has not yet been any detailed or comprehensive research into the overall effect of constructing onshore wind farms on tourism activity, or the relationship between wind farm construction and the health of the tourism sector. Most of the ex-post evidence that exists is based on surveys with residents or businesses in areas where wind farms have been constructed. While there are obviously limitations to this, it echoes the point about the subjectivity of the assessment and variability in tourist responses but overall provides no evidence of impacts on visitor numbers.

5.36 An important point here is that much of the ex-post research is now quite dated and relates to developments which were a novelty at the time they were developed. This may have influenced the findings about tourism numbers increasing following development. It is also very important to note that the lack of ex-post evidence of tourism impact may not necessarily reflect a lack of potential impact – it could point towards the planning system working well to ensure that wind farm developments are not sited in sensitive locations. So the lack of evidence of negative effects should not simply be interpreted as indicating that there will never be any impacts on tourism activity.

5.37 The ex-post evidence base overseas is slightly more developed that that of the UK and there is a small number of ex-post academic studies which have been carried out. The evidence from

Denmark points very clearly towards there being **no demonstrable impact** on tourism activities. Again, caution is required in interpreting and applying findings from overseas particularly given that the tourism contexts for these areas can be very different.

5.38 There have not yet been any comprehensive studies carried out in the UK which have sought to monitor actual visitor numbers and levels of spend over time in areas where wind farms have been developed. There is some evidence that general tourism volumes have not been affected in areas that have seen significant wind farm development. For example, research undertaken by Nicholas Pearson Associates (1996) reported that there had been no decrease in the overall number of tourists visiting attractions within 10km of the Delabole Wind Farm between 1991 and 1996. Their data showed that there had been a small increase in the number of visitors to some attractions. A study by the Cornwall Tourist Board (2000) found that the proportion of tourists returning for repeat visits between 1996 and 2000 (a period of expansion in the number of wind farms in the area) did not alter.

7 – Grid infrastructure is less well researched, but the available evidence suggests that impacts materialise in a similar way

5.39 There is only a handful of studies which have explored the effect of grid infrastructure on tourism activity. These studies indicate that the effects materialise in a similar way to wind turbines (i.e. visual impacts are the primary concern) but noise impacts are also a consideration.

5.40 The evidence that exists suggests that pylons tend to be viewed more negatively than wind turbines as having detrimental effects on landscape quality. For example, in both the Scotland and Wales NFO studies, a greater proportion of tourists highlighted pylons than wind turbines when promoted with a list of factors which could detract from their tourism experience. In Scotland, 51% of survey participants highlighted pylons (compared to 29% highlighting wind turbines) and in Wales the proportions were similar – 48% highlighted pylons and 23% turbines. However, it is important to note that in both of these studies, earlier questions which asked visitors to spontaneously identify aspects of the countryside which enhance or detract from their experience, only a very small proportion of the sample mentioned pylons or wind turbines. This suggests that although pylons are ranked as more visually intrusive than wind turbines, they do not feature as a high profile concern amongst tourists overall.

5.41 While the evidence base is limited in relation to grid infrastructure, recognition of the concerns that exist around potential tourism impacts has led the National Grid to consider undergrounding parts of the proposed grid extension which pass through the most sensitive landscapes.

Factors Influencing Observed and Predicted Impacts

5.42 The overarching findings outlined above are useful in highlighting the key principles that should underpin any assessment of the impact of wind farms and associated infrastructure on tourism activity. Given the consistency of general conclusions across most studies, we can be reasonably confident in the overall conclusion that in most circumstances:

- The majority of tourists would not alter their visiting behaviour in response to a wind farm development; and
- A small proportion could be either more or less likely to visit as a result of a wind farm development.

5.43 We know that studies vary in their findings about the proportion of visitors that would respond to wind farm development in a positive, negative or neutral way. Most often the positive and negative ends of the spectrum balance each other out but some studies highlight potential for a net positive or net negative effect. The variation in findings could be related to methodological differences across the studies (as concluded for example by GCU study 2008) but might also point to other factors having an influence on the reactions of tourists to wind farm developments and affecting the balance between neutral, positive and negative responses.

5.44 This indicates that there might be some circumstances under which the general conclusion outlined above would not hold. There has not yet been a comprehensive meta-evaluation which explores the factors which influence tourists' reactions to wind farm developments and the associated grid infrastructure. The UK evidence base is limited in this regard, but the overseas evidence provides a more rich resource as the sector is more mature and much better researched. However, findings from both the UK and overseas evidence should be applied carefully. In most cases, the studies have not been designed specifically to explore which factors influence tourists' reactions to wind farm developments and the conclusions drawn are often based on observed trends in the data and in many cases not rigorously tested for their statistical significance.

5.45 While there are limitations, the evidence does suggest that there are factors related to both the characteristics of wind farm developments and characteristics of tourism areas that might influence tourist reactions. This evidence could be helpful in predicting more localised impacts and highlighting the circumstances under which the balance between positive, negative and neutral reactions to wind farm developments could lean towards a net positive or negative effect. These factors are outlined below.

Size of Development

5.46 Evidence relating to the relationship between wind farm size and tourism impact is mixed but, on balance, suggests that **smaller wind farms generate a less negative response from tourists**.

5.47 The impact of the size of a development on tourism activity has been explored in terms of both the size and number of turbines in a small number of studies.

5.48 Face to face interviews with visitors using photo montages showing wind farms of different sizes were undertaken as part of the GCU (2008) study. These indicated that visitors became more negative about a wind farm when its size in the photo montage was extended. This finding contradicted conclusions from a different strand of the GCU research (a web based survey) which indicated that the influence of size on tourist reactions was relatively small.

5.49 Researchers at GCU warn that the size of the effect noted in the face to face interviews could have been exaggerated by the difference between stated intentions based on a hypothetical situation and actual actions that might occur in reality. That is, visitors could have used the interviews to register a general opposition to larger wind farms that might not have translated into changes in behaviour if the developments were constructed. Although not explicitly recognised in many ex-ante studies, this point applies equally to much of the ex-ante research base.

5.50 While GCU do not attach a great deal of weight to this finding it should be noted that the preference for smaller developments accords with findings of studies carried out elsewhere in the UK and overseas. Research by SEI (2003), Devine-Wright (2005) and Frankal and Kunc (2011)

all point towards a preference for small wind farms amongst the general public and tourists.

5.51 The evidence base in relation to the size of developments is not sufficiently detailed to allow us to identify thresholds / tipping points after which impacts start to materialise. The GCU study did conclude that the relationship between size and potential tourism impact is not a straight line one. Their web based research suggested that there is a diminishing marginal loss associated with wind farm developments. That is once there has been an intrusion into the scenery the effect of expanding the size of a development is small. The conclusion of the GCU study in this regard does not accord with the findings of other studies which have explored the impact of development size on the potential for tourism impact. For example, the NFO studies in Wales and Scotland showed marked differences in people's reactions to developments according to size, turbine layout and context.

Relationship with Other Developments

5.52 Findings which indicate a preference for a large number of small wind farms should be treated cautiously in the context of this assessment. There is **insufficient evidence to draw any conclusions about the cumulative effects of multiple wind farm developments**.

5.53 A number of studies (for example SEI, 2003 and Devine-Wright, 2005) have explored further the tendency for tourists and the population more widely to prefer smaller wind farms and reached the conclusion that there is a general preference for a large number of small wind farms. It should be noted that these studies were focused on general population views (rather than specifically in the context of tourism) and based on hypothetical developments. Research carried out in the Czech Republic by Frankal and Kunc (2011) relating specifically to tourism also concluded that tourists prefer a larger number of smaller wind farms. It should be noted that these studies were designed to explore the preferred configurations or wind farms and participants were not provided with a "no wind-farm" option.

5.54 The authors of this study argue that it is the degree to which a development changes the character of the landscape rather than its absolute size that is the driving factor. While there is clearly a relationship between turbine size and number of turbines and the impact on landscape character these findings suggest that landscape context is as important as the characteristics of the development itself in determining impact. That is, a large wind farm in a landscape with lots of other man-made structures could have less of an impact than a single turbine in an area of particularly high landscape value.

5.55 This suggests that the **context for the development** is a critical factor in determining potential tourism impacts. The findings of relevant studies suggest that the context for the development influences three inter-related factors: the nature of the landscape, the importance of landscape in an area's tourism offer and the characteristics and interests of visitors to a particular tourism area.

The Nature and Quality of the Landscape

5.56 The evidence base here points towards potential for greater impacts to occur where wind farms or other infrastructure are sited in areas of high landscape value.

5.57 The findings of Frankal and Kunc (2011) suggest that the context for a development affects the extent to which turbines or grid infrastructure would result in a change in the character of a

landscape. This may, in turn, influence how tourists interpret the structures. Similarly, Wolsink (2007) concludes that the type of landscape in which turbines are situated is one of the dominant factors in how visitors assess and interpret them. Devine Wright's research relating to the proposed grid extension in mid-Wales (2012) presented impacts as being driven by the contrast between the perceived naturalness of some landscapes and the addition of industrial features (in this case power lines).

5.58 As we might expect, there is particular sensitivity around areas of high landscape value. For example Park et al (2008) in relation to mobile phone masts indicated that there was particular opposition towards mobile phone masts located in national parks. Tourists were not prepared to accept negative impacts on landscape character in these areas, even though they accept and recognise the socio-economic benefits associated with their enabling technology use. This is an important point – some research suggests that tourists and the general public more widely are prepared to make a trade-off when interpreting and responding to new developments. In some contexts, the benefits associated with wind farm development may be enough to tip the balance in favour of the turbines, but there may be some contexts where development would never be accepted, irrespective of its wider benefits. This may not be the case for power lines as these do not tend to be viewed as having any notable wider benefits.

5.59 Research in this area suggests that decisions about destinations are driven by a complex set of factors. Amongst these, appreciation and enjoyment of landscapes and scenery are ranked highly, particularly in rural areas where most studies place scenery and landscape as the most important factor in destination choice. Studies tend to conclude that the majority of visitors to rural areas cite landscape and scenery as an important influence on their decision to visit a particular area, however it should be noted that while clearly important, landscape and environment is part of a wider set of factors that tourists weigh up when making a decision to visit particular areas. Other important factors identified in the research include attending specific events, visiting friends and relatives, history and cultural attractions, beaches and recreational resources (e.g. walking / rambling trails, restaurants).

5.60 Although the research base does not explore this explicitly, it makes logical sense that areas which have particularly high landscape value are likely to attract visitors who value landscape particularly highly amongst the factors which affect their visiting decisions. Although, even in these circumstances, we would expect that landscape value would be weighed up amongst other factors which determine visiting decisions.

5.61 Under these circumstances any changes to the landscape that are interpreted as having a negative impact could be more likely to go on to influence final decisions about visiting behaviour.

Importance of Landscape in an Area's Wider Tourism Offer

5.62 Overall, the evidence suggests that in areas where landscape is a dominant aspect of an area's tourism offer, the potential for wind farms to have a negative effect on tourism activity is greater.

5.63 However, it is important to note that none of the studies reviewed have explored whether the importance of landscape within an area's tourism offer is a factor which determines impact. Quality of landscape is one of many attributes of a tourism destination that visitors weigh up when making a decision to visit a particular place. The amount of influence that the landscape quality will have on tourism decisions (as well as views on what would constitute a high quality

landscape) differs from one tourist to the next, depending on what their particular motivations to visit are.

5.64 If an area's tourism offer is broad and contains a mix of assets and attractions over and above the landscape itself then the scope for impacts could be lessened as the visitors for whom landscape quality is a major factor in visiting behaviour would make up a smaller proportion of the total visitor base. While this effect has not been explored explicitly it is alluded to in a number of studies. For example, Frankal and Kunc (2011) suggest that couples and family visitors tend to be more tolerant of wind farm developments as they are focused more on other attributes of a destination such as specific tourism assets and attractions.

5.65 There is however little research which has explored this although the findings of Westeberg et al point towards this. This research, conducted in France (and in the context of offshore wind development) found that older and retired tourists were primarily motivated by landscape and nature and were less likely to accept an offshore wind farm and may alter their visiting behaviour in response.

5.66 There is a reasonable base of evidence to suggest that the importance of landscape within the broader mix of tourism assets and attractions could be important in determining impact. That is, in locations where the tourism base is broad, groups who would be more likely to alter their visiting behaviour in response to a wind farm developments represent a smaller proportion of the overall tourism base and any net loss of visitors in this group could be made up by gains in other groups.

Activities that Tourists Engage In

5.67 Related to the importance of landscape within the mix of factors that attract visitors to a particular area is the type of activities that tourists engage in. This has been explored by a number of studies although **the findings are not sufficiently conclusive to allow activities to be used as a predictor of tourism impact**.

5.68 The NFO studies (in Scotland and Wales) make a distinction between active visitors (those taking long walks or participating in other outdoor activities) and passive visitors (those sightseeing by coach or taking short walks or using a beach). Both studies find that the active visitors are more likely to highlight scenery and environment amongst key factors in their decision to visit the area than the passive group. The findings of these studies are not conclusive in relation to how this then plays out in terms of visitors' reactions. The Scottish Study (NFO, 2002) indicated that there was no difference in the proportions of active and passive visitors who indicated that they would be more or less likely to visit the area if a wind farm was built. Conversely, the Welsh study (NFO, 2003) did highlight a slight difference between the proportion of active respondents who indicated that they would stay away from an area if a wind farm was constructed (14%) and the passive visitors (9%).

5.69 The GCU study indicates that tourists whose main activity was walking / hill walking (where landscape change is a major part of the experience) tend to be more positive on the whole in relation to wind farms; 19% of hill walkers indicated that they held negative views about wind farms compared to 25% overall. The study did not draw any conclusions about the relationship between tourism activity and impact.

5.70 A survey of visitors to North Devon and South Wales in relation to the proposed Atlantic Array

Offshore Wind Farm (ICM, 2012) indicated that there may be a relationship between the nature of activities that tourists are planning during their visits and their reactions to the proposals. It is difficult to identify definitive trends as many survey respondents identified more than one type of activity that they planned for their visit. However, there are some trends in the net balance of visitors who would be more or less likely to return. The most notable point is that the net balance for visitors engaging in activities where active appreciation of the landscape or seascape is involved (i.e. beach activities, walking and rambling) is greater than those whose activities are less dependent on enjoyment of the landscape (for example general sightseeing, surfing, visiting theme parks etc).

Frequency of Visits

5.71 **Regular visitors to an area may be more likely to oppose developments.** Frankal and Kunc (2011) found that regular visitors to a particular tourism area may be more likely to oppose wind farm developments (although no conclusions were drawn about the extent to which this might be reflected in their visiting behaviour).

5.72 This reflects the findings of wider research into reactions to wind farms amongst residents where a theme of people's attachment to a particular place is an important factor which influences their responses to developments see for example Devine-Wright, 2012).

Demographic Characteristics of Visitors

5.73 **Younger people tend to react more positively to wind farm developments.** For example, the web survey element of the GCU (2008) study found that respondents aged 16 to 25 tended to react more positively to wind farm developments. In addition, overseas research undertaken by Bishton and Miller (2007), Ek (2005), Firestone and Kempton (2007) Frankal and Kunc (2011), Lilley et al (2009) and Ladenburg (2010) and Ladenburg and Dubgard (2007) points towards younger people being less likely to alter their visiting behaviour as a result of wind farm developments or perceiving their visual impacts as being less intrusive.

5.74 This trend appears to hold for other types of development. For example based on a study in Finland, Soini et al (2011) found that younger respondents tend to react more positively to power lines than older people. The authors point to an important limitation of this finding however – it is not clear to what extent these views can be expected to change as this cohort gets older.

5.75 This pattern is reflected in the wider research relating to attitudes towards climate change and renewable energy more broadly. Most research points towards younger people tending to have move favourable attitudes (see, for example, IPSOS MORI, 2004 which indicated that 59% of 16-34 year olds strongly support the use of renewable energy sources compared to 38% of those aged over 60. Similarly, the research by Populus (2005) found that 80% of those aged 18 to 34 stated that arguments for wind power outweighed those against, compared to 73% of those aged 35-44 and 70% of those aged 45 and above).

Visitor Origin

5.76 **Visitors from overseas tend to be more positive about wind farm developments.** Case study research and web survey for GCU indicated that overseas visitors were more positive about developments. This finding is echoed in the NFO study in Scotland.

Socio-economic Status of Visitors

5.77 **Visitors from higher status socio-economic groups tend to be more positive about wind farm developments**. The evidence base is not conclusive about whether it is income, educational achievement or other socio-economic factors that drive the relationship.

5.78 For example, Firestone and Kempton (2007), Lilley etc al (2009) and Ladenburg (2010) all found that perceptions were related to income with those earning higher salaries being (on the whole) more positive about wind turbines than those on lower incomes. However, this is not a universal finding. Ladenberg and Dubgard (2007) found that income had no influence on tourists stated preferences for the distance to turbines (but where there was a negative response, did affect the amount that they were willing to pay for them to be located further away).

5.79 Interestingly, level of education (although a closely related factor) has been proven in a number of studies (e.g. Francal and Kunc, 2011, Ladenberg and Dubgard, 2007) to have no relationship between perceptions and attitudes. However, Ladenberg's work in Denmark contradicts this finding and indicates that attitudes towards offshore wind farms are associated with respondents' income and educational level (along with gender and the frequency of their visits to a particular area). The study indicated that people with higher levels of educational attainment tend to be more positive about wind farm developments. (Ladenburg, 2010). This corresponds to findings of Firestone and Kempton (2007) whose study in the US found that supporters of a proposed wind energy development near Cape Cod tended to be younger, better educated and more likely to own their own home (Firestone & Kempton, 2007).

5.80 A review of evidence undertaken by Devine-Wright (2007) pointed towards a positive correlation between support for renewable energy and income, citing studies which suggest that individuals earning in excess of £30,000 per annum, and classified within social class AB were, in comparison to DE, more supportive of renewable energy generally and wind energy specifically (MORI Social Research for REgenSW; 2004, cited in Devine-Wright, 2007). Similarly, the Populous survey which explored the extent to which people are convinced by arguments for and against wind power found that those in the DE social grouping were slightly more likely to indicate that they are persuaded by arguments against wind power (32% compared to 27% overall).

5.81 Research relating to support for renewable energy more broadly echoes this point about the importance of socio-economic status. 92% of those belonging to socio-group A/B1 and 89% of those in social group C1 indicated that they supported the use of renewable energy whereas support amongst those in C2 and D/E was 83% and 78% respectively (GFK NOP Social Research, 2009). This is echoed in the findings of the ONS public attitudes survey, where graduates are more likely to indicate that they are fairly concerned about climate change (82% of graduates compared to 60% of non-graduates).

Wider Views on Renewable Energy

5.82 **Wider views on renewable energy and wind power are important but are difficult to use a predictor of potential impact.** One factor which does appear to have a strong relationship with visitors' views on and reactions to wind farm developments is their existing attitudes towards climate change and renewable energy. For example, a study carried out in Ireland (Campey *et al.*, 2007) found that positive reactions to wind turbines are directly related to personal attitudes to renewable energy.

5.83 The Atlantic Array tourism survey (ICM, 2011) asked respondents to provide a rating for the extent to which they support the use of renewable energy. There were some interesting variations in visitors' responses to questions about whether the construction of Atlantic Array would encourage or discourage them from visiting the area in future.

5.84 Soini et al (2011) points towards negative responses to landscape features (in this case power lines) being driven by subjective beliefs rather than objective knowledge. Wolsink (2005) illustrates using regression analysis of survey data that there is hardly any relationship between attitudes to wind power and developments and understanding of the technology.

5.85 Symbolic associations are important in the subjective judgements that individuals make about objects in the landscape. This is illustrated by Francal and Kunc.

5.86 While the evidence base is not conclusive, the available research suggests that wider perceptions held by tourists in relation to climate change and renewable energy play a role in how tourists weigh up the positive and negative effects of wind farm developments and may influence their reactions. This means that, even in cases where a wind farm development may have an effect on characteristics of a tourism area that visitors value, the way that this effect is assessed by visitors (and reflected in future behaviour) is influenced by wider views and perceptions.

5.87 This appears intuitively correct in light of research relating to the factors that drive perceptions about wind farms which suggests that the perceived benefits and costs associated with them are key factors influencing people's responses (Warren *et al.*, 2005). If this is the case then this trade off will happen independently of an individual's views about the effect of wind farms on scenery i.e. some may perceive wind farms as a cost, others as a benefit but it seems feasible that the trade-off could be influenced by wider views about renewable energy and climate change, even where the visual impacts are viewed negatively.

Gaps in the Evidence Base

5.88 The evidence base provides some useful headline conclusions about the nature and scale of potential impacts and the factors which might help us to predict where they are likely to occur. However, there are a number of important gaps in the evidence base which need to be recognised in developing the methodology underpinning this study.

5.89 The most important gap in the evidence base relates to the scope of the majority of the impact assessments (both ex-ante and ex-post) that have been conducted to date. Much of the research deals thoroughly with the potential effects on overall visitor numbers but the evidence base in relation to the factors which might affect the overall value of activity is less well developed. The literature points towards three factors being important here:

- **Replacement Effects.** In cases where a proportion of tourists indicate that they would not visit as a result of the wind farm, the capacity within the local tourism economy that this frees up (e.g. hotel rooms, restaurants etc) may be taken by those who are either not affected or positively influenced. The size and influence of the replacement effect will depend on the size of the catchment area, the overall level of demand in each tourism area and the extent to which the replacement effect alters the balance between supply and demand. The extent to which there is potential for capacity left to be taken up by tourists who are less sensitive to the development of wind farms would depend on the level of capacity that exists in a tourism area. This is an important gap in the evidence

base which was highlighted in the inspectors report for the Fullabrook Down wind farm. That is, the proportion of visitors who indicate that they would be put off from visiting an area in surveys does not neatly translate into a reduction in the number of tourists, spend and ultimately employment.

- **Pricing Adjustments.** Although some studies touch on this important source of impact, there has been little research which explores potential pricing effects in detail. We might expect a reduction in demand (i.e. a loss of visitors) to result in reduced prices however the extent to which this actually occurs in reality is related to the existing balance between supply and demand in a tourism area. For example, if replacement demand is insufficient to maintain the current supply and demand relationship, tourist businesses might need to compensate using a price mechanism (e.g. lowering prices if supply outstripped demand). This effect would mean that, even where the volume of tourism visits stayed the same, the expenditure associated with them could decrease. This effect is not dealt with in any detail in any of the UK based studies. These studies tend to focus on asking visitors to a particular area at a particular time what the effects on their future behaviour might be. Although there are studies which present analysis of the likely changes in visiting behaviour that different types of visitors (e.g. day visitors vs tourist visitors) report (e.g. ICM, 2011), none include a full assessment of the balance between overall demand and supply or explore the potential for price effects.

- **Differences in Frequency and Duration of Visits.** Many studies are conducted on the basis of impacts materialising as a result of visitors staying away altogether. However, the reality is that wind farms could cause a change in the duration and frequency of visits as well as simply resulting in people staying away.

5.90 The key point here is that the **existing balance between supply and demand in a tourism area may be an important predictor of the potential impact,** although this is not prominent in the evidence that currently exists. We might expect that areas where demand for tourism services (e.g. accommodation and leisure facilities etc) outstrips supply would be less sensitive to wind farm developments. That is, pricing effects would be unlikely to kick in as replacement demand would take up capacity left by any visitors who were discouraged as a result of wind farm development. The opposite would be true in areas where supply outstrips demand – i.e. they would be more sensitive to changes in demand, even small ones, as this would further alter the balance between demand and supply. Seasonality of tourism in Wales is therefore an important consideration here - balance between supply and demand fluctuates throughout the year and, anecdotally, many tourism businesses could rely on their ability to attract out of season visitors as a key factor in their viability.

5.91 Other important gaps in the evidence base include:

- **Displacement of Tourism Activity**. Although some of the large area studies indicate that displacement can occur at a relatively local level (i.e. tourists put off by wind farm developments may still visit Wales but choose to visit areas and attractions that are not affected by wind farm developments). This is not particularly well evidenced or explored and there are no metrics from the evidence that can be applied to quantify or model this effect.

- **Persistence of Impacts**. A further area that is not particularly well researched is the time over which any positive or negative effects on tourism activity might persist. There is

some research which indicates that any negative effects might be temporary as:

- Visitors' perceptions might change over time – research conducted into residents' perceptions about wind farms suggests that views become more positive as time goes on and that residents accept the new structures in the landscape. The same effect may be present within tourism groups, although there is no evidence which has explored this.

- The tourism offer in affected areas may adjust - The evidence base points towards some groups and types of tourism area being more sensitive to the effect of wind farm developments than others. If demand from certain groups reduces, it is possible that over time the tourism offer may adjust and adapt to attract the type of visitors where demand remains strong (i.e. those who are not affected). These effects have been alluded to in some studies, but not explored in detail. It should noted that the scope for this effect could be limited in some areas by the nature of the natural tourism resource that exists.

- **Wider Effects on Destination Reputation and Image**. The majority of ex-ante primary research focuses on the views and likely changes in behaviour reported by current visitors to an area. This is largely due to the practicalities of devising a research methodology to explore an area's tourism market. For ex-ante survey research, the population of interest is all potential visitors to an area, not just those currently visiting. There are concerns that a perceived proliferation of wind farm developments, whether actual or not, could affect the image of an area and lead to a perception that a region or location has a strong visible wind farm presence. A wider market research approach to understanding the effect of wind farm developments on the wider reputation of a tourism location has not been conducted to date although the GCU study attempted this using a web based survey.

- This is linked to the lack of conclusive evidence in relation to the cumulative effect of wind farm developments. As outlined earlier, some of the research that has explored the effect of wind farm size and layout on visitor and wider population perceptions suggests that there may be a preference for a larger number of smaller wind farms. However, this should not be interpreted as indicating that cumulative effects are of no concern. Firstly these conclusions are frequently drawn based on survey research asking about hypothetical wind farm developments (so the siting, context and extent was unknown by respondents). Secondly, these conclusions are not drawn in the context of wider effects on the image of a tourism location so cannot be applied in this context.

- **The importance of tourism routes**. The effect of wind farm developments visible from tourism routes has not been widely explored.

- **Cumulative effects of multiple wind farms**. Although some studies suggest that visitors may prefer multiple wind farms to a single large wind farm, this finding may be misleading in the context of an overall assessment of potential effects in Wales.

Conclusions and Implications for the Assessment

5.92 Although there are challenges in interpreting the evidence base, we can draw some general conclusions about the scale and nature of the potential impact of wind farm developments and associated grid infrastructure on tourism activity. While the purpose, focus and context for

relevant studies varies substantially, the review has highlighted a number of consistent messages. The most important of these, in terms of the development of the impact assessment methodology, are outlined below:

1) Interpretation of wind farms is subjective and as a result there is a great deal of variability in tourists' reactions to wind farm developments.

2) The majority of tourists are neutral about wind farms and do not expect their future visiting behaviour to be affected by their presence.

3) The proportions reporting that they were more or less likely to visit as a consequence of a wind farm development are typically small and often evenly balanced.

4) Even where visitors feel that wind turbines affect their tourism experience this does not always translate into changes in visiting behaviour.

5.93 The weight of the evidence, together with findings of the large and comprehensive study undertaken by GCU, suggest that we can be quite confident that, at the Wales level, effects will be modest given the scale of development proposed in most locations. The GCU study suggests that even where negative effects arise, these often occur in the form of displaced tourism. That is, the small proportion of tourists who adjust their visiting behaviour in response to the presence of wind farms are very likely to choose to visit other locations nearby, which are not affected by wind farms. The overall net impacts across larger areas are therefore modest.

5.94 This effect does however point to the existence of localised effects, which need to be factored in to the assessment. Even at a very local level the assessment needs to be conducted in light of the key conclusion that **the majority of tourists would not be influenced by the presence of a wind farm.** However, it also needs to draw out some of the more detailed insights that the literature provides and reflect the possibility that there may be circumstances where, although this conclusion would hold in a general sense, the balance between neutral, positive and negative reactions to wind farm developments could result in a net negative effect on tourism activity.

5.95 The findings of the literature review suggest that the context for development influences three inter-related factors: the characteristics of the development, characteristics of the tourism area and characteristics of tourists. This points to a number of indicators which could be used to highlight local areas where there is a risk of a net negative effect on tourism activity. The factors and indicators are outlined in Table 5.1 below.

5.96 These findings can help us identify circumstances where there is a greater risk of wind farm developments having negative impacts on tourism activity. There are however a number of important points to bear in mind when applying this evidence:

- The indicators outlined in the table above have been observed or intimated from the findings of the primary evidence base. There has not been any assessment of the causality of these relationships so there remains the possibility that the observed relationships could have occurred by chance or could have arisen as a result of other related factors which influence impacts on tourism activity.

- In many cases, these conclusions have been reached based on a small number of studies. As illustrated elsewhere in the assessment, study context is a very important variable so findings should be applied cautiously.

- There has not yet been a comprehensive assessment of the relative importance of these factors in determining or explaining how impacts on tourism activity might arise. It might therefore be difficult attach a relative weight to these factors. This could complicate the assessment in areas where there are conflicting influences.

Table 5.1: Factors Associated with a Greater Sensitivity of Visitor Economies to Wind Farm Development

Type of Factor	Indicator	Explanation
Characteristics of Development	Scale of development (especially larger scale wind farms with more than 10 turbines)	The scale of development is strongly linked to the potential for physical presence and visibility within the landscape (although the nature of the topography will also be a factor)
	Clustering of multiple wind farms in close proximity to main visitor hubs or facilities (and in instances, proximity to major routes for visitors)	As above
	Extent to which wind farms feature on or in close to high quality landscapes	The quality of landscapes are affected by various factors including land based uses and existing or previous development. The impact of wind farms will vary depending upon their siting within the landscape and visibility.
Characteristics of Tourism Area	Extent to which high quality (and previously undeveloped) landscapes are a key feature of the visitor offer	High quality landscapes which are a key aspect of the visitor appeal, may be more sensitive to development.
	Diversity of the tourism offer	The greater the diversity of the visitor offer the wider the range of visitors and less the potential sensitivity of the tourism sector to wind farm related impacts
	Popularity of the tourism area, in particular the capacity at which it operates	Areas which are popular or growing in visitor terms, may able to adapt more readily if wind farm development were to be a threat to the local visitor economy
Characteristics of Tourists	The diversity of the visitors, in particular the representation of groups which might be more (eg olders visitors) or less sensitive to wind farms (eg overseas visitors or visiting for adventure activities)	Linked to the diversity of the visitor offer. This recognises that different types of visitors may be more or less sensitive to wind farm development (although some will be largely indifferent).
	Loyalty of visitors, in terms of their commitment to an area and repeat visiting behaviour	Regular visitors to an area may be more sensitive to changes in the natural environment if they feel ownership of the area. Again, a large number would be indifferent.

5.97 In light of the breadth of factors which affect potential impacts, and the possibility of their influence to be slight in some cases, the breadth of an area's tourism offer is an important consideration. As the research suggests that particular groups react differently to wind farm developments, it is feasible that effects might be lessened in areas where the tourism offer and visitor profile is more varied. For example, one segment of an area's tourism base may have characteristics which suggest that a net negative effect could be likely, however this effect could be offset by characteristics of another group which suggest a net positive effect is likely. Neither the evidence base, nor the availability of local data is strong enough to fully reflect this effect in the assessment. However, the breadth of the visitor base should be recognised as a factor.

5.98 It is very important to note that only a handful of studies provide a full and detailed assessment of all types of potential tourism impact. Some studies deal with various aspects of the effect separately (e.g. most of the scheme specific ex-ante studies focus on effects on visitor numbers, while a small number of academic studies look at pricing effects in isolation. The GCU study is widely recognised as the most comprehensive assessment and presents a detailed picture of potential impact. However, this study is of limited use in the context of this assessment given that its overall conclusions relate to Scotland's tourism sector as a whole – limited attention is paid to local impacts and the circumstances under which they might arise.

5.99 Notwithstanding the difficulty applying the findings of scheme specific studies outside of the context in which they were undertaken, the lack of attention paid to substitution, pricing and displacement effects in these studies means that they are of limited use in building a bottom up assessment of potential impacts.

5.100 Finally, the limitation to the evidence that exists in relation to the cumulative effects of multiple wind farms represents a real challenge for the assessment. In our view, the evidence that exists in this area is not conclusive and can be easily misinterpreted. In relation to the potential for cumulative effects, the most important finding of the literature review is in relation to effects on tourism materialising as a result of changing the character of a landscape. There is no simple metric or indicator that can be applied to capture this – the logical extension from this conclusion could be that a large number of small wind farms could have a substantial effect on the character of a landscape if the visual impacts were concentrated. However, the extent to which this change would be viewed positively or negatively (as for single wind farms) would be assessed subjectively by individual tourists and may not necessarily result in changes in behaviour.

6. Local Area Profiles

Introduction

6.1 This chapter presents the assessment of local tourism in each of the nine study areas where wind farms are located or planned. The key objectives of the profiles are as follows:

- Establish the nature of the tourism offer, visitor market and the indicative economic importance of tourism in each of the defined study areas using the best available tourism datasets;
- Assess the likely sensitivity of local visitor economies to wind farm development based on analysis of some of the key indicators identified in the framework.

6.2 The research methods applied in this section were primarily based on desk based research, including analysis of LANDMAP, a review of local destination management plans, tourism strategies and visitor surveys. The findings were also informed by consultations with local tourism officers about the nature of the local tourism economy, its key assets and the characteristics of visitors.

Estimating Volume and Value of Tourism

6.3 The estimates of tourism volume and value were based on the two visitor surveys which are available at local authority level. These are:

- Great Britain Tourism Survey, which covers the domestic visits and expenditure of overnight visitors from Great Britain. The data is based on three year averages, the latest of which is 2010-2012.
- Great Britain Day Visits Survey, which includes all visits of at least three hours for particular leisure activities, which take place in a destination outside the respondent's normal place of residence. The data is based on a two year average, the latest of which is 2011-2012.

6.4 These surveys do not capture the volume and value of visitors from overseas. The local authority area estimates therefore represent only a partial picture of total tourism activity. The key data source available for overseas visitors, the International Passenger Survey, is not available for local authority areas. Consequently there is no reliable and consistent method for estimating the local value of this market which this study is able to draw on. Across Wales as a whole, overseas visitors account for a small proportion of total visitor numbers (8%) but a significant proportion of visitor expenditure (16%)[10]. However, this varies in different parts of the country. The absence of local volume and value estimates for this part of the visitor market should be borne in mind when interpreting the estimates in this chapter.

6.5 Since all of the study areas do not correspond with local authority boundaries, it was also necessary to develop an apportionment methodology for estimating volume and value in the areas most affected by wind farms. This methodology made use of the two datasets which are

[10] Partnership for Growth, 2013, Tourism Strategy for Wales

available below local authority level:

- Business Register and Employment Survey: this is based on the inter-departmental business register and is the most reliable dataset for estimating employment in lower super output areas[11] (LSOAs). Estimates are available for detailed sectors. A group of sectors were defined as "tourism related industries" using 2007 SIC codes using DCMS's and ONS's agreed definition[12]. The analysis estimated tourism related employment using a best-fit of lower super output areas in each of the study areas.

- Bedstock Surveys: Visit Wales collect detailed information at postcode level for all visitor accommodation in Wales. Visit Wales conducted analysis of the total stock of visitor accommodation bed spaces in each of the study areas.

6.6 The volume of tourism related employment and bedstock in each of the study areas was calculated as a percentage of the totals for local authorities in which they are based, and used as proxies for tourism activity (both day and overnight visitors). The percentages were applied to the findings of the visitor surveys to provide an indicative range of estimates for the volume and value of tourism in the study areas.

6.7 This approach has been used in the absence of localised data on the scale and importance of the tourism economy in the local impact areas (i.e. below the local authority level). Whilst there are clear limitations to this approach, it should be borne in mind that it is only intended as a means of gauging the importance of the visitor economy in the vicinity of operational or proposed wind farms. The estimates have therefore been provided as a range, and should be treated as the best estimate of visitor activity given the data available.

Assessing Sensitivity

6.8 Each of the local area profiles are based around the indicators which were identified in Section Five as influencing the potential sensitivity of the visitors to wind farms. The profiles look at each of the following:

- The scale of development in the study area, distinguishing between operational, consented and planned wind farms. This assesses the degree to which wind farms are clustered, which could give rise to cumulative effects, and how dominant they would be on the landscape in relation to the key visitor locations.

- The character of the landscape in which the wind farms are located, drawing upon LANDMAP assessments.

- The key visitor assets and activities in the area, and their relation to wind farms.

- The characteristics of visitors to the study area, focusing particularly on the age of visitors, the proportion of repeat visitors and the reasons why people visit certain locations.

- The key messages from visitor brochures for the area. This is important in illustrating

[11] LSOAs are small areas, which on average have a population of around 1,500 people. They are used extensively as geographical units in socio-economic data collection and analysis.

[12] See appendix for full list of sic codes

how areas are portrayed to visitors, and whether wind farms may be inconsistent with the marketing of particular visitor destinations.

6.9 Each of the profiles provide a description of the area based on the above factors and concludes with the key points for the assessment. These are used to draw conclusions about actual and potential impact in Section Eight.

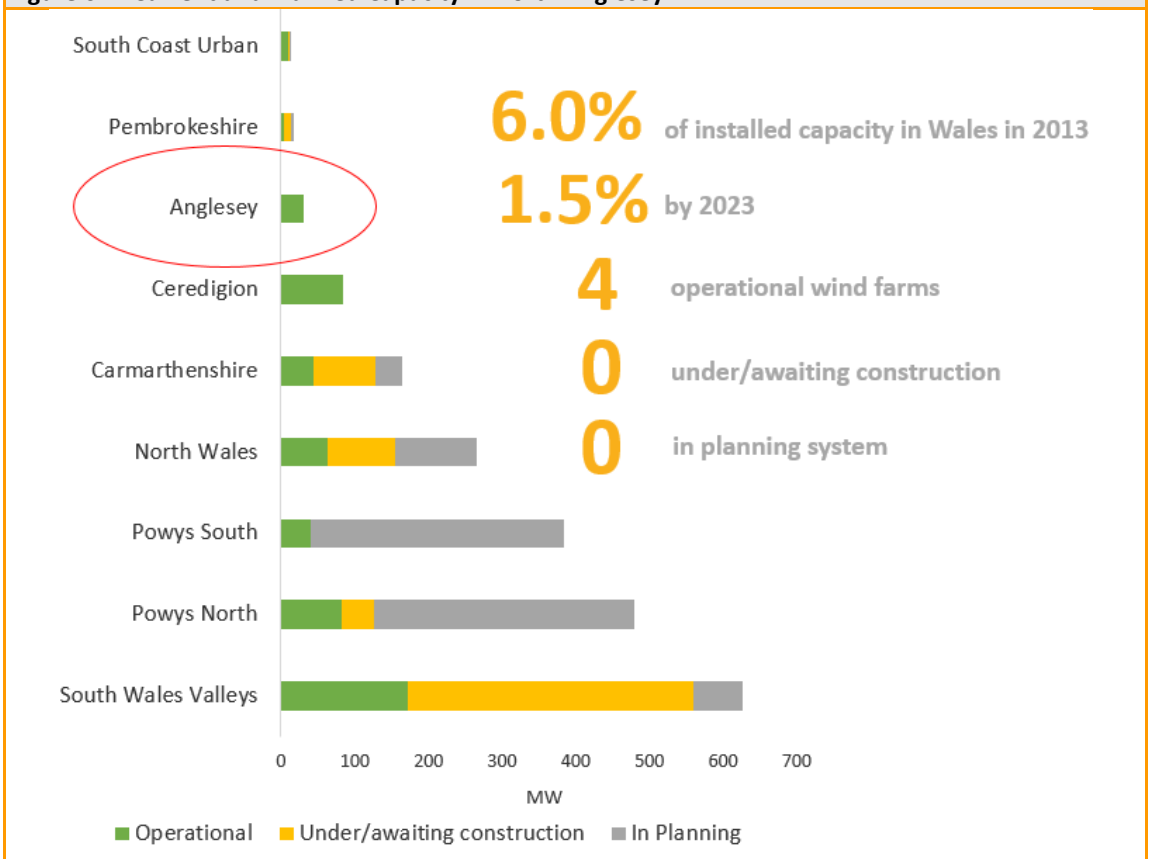
North Anglesey

Current and Planned Wind Farm Development

6.10 There are currently four onshore wind farms on Anglesey, all in close proximity in the north of the island. Although one of these may be repowered in the next ten years (Rhyd y Groes), there are currently no applications for wind farms (as opposed to single or multiple small turbines over 0.5MW in total) in the planning system. The largest operational wind farm is Llanbabo wind farm (34 turbines), followed by Rhyd y Groes (24 turbines). Due to the age of these wind farms, the turbines tend to be smaller than those currently used in modern wind farms.

6.11 Anglesey is not covered by a Tan 8 Strategic Search Area and as a consequence the island will be remote from the largest concentrations of wind farm development, although some smaller wind farms may be approved. The area is, however, the focus for wider energy development. Celtic Array wind farm is a large scale offshore wind farm (2GW) being built off the north coast of Anglesey. There are also plans to develop a new nuclear power station on the island, to replace the existing Wylfa plant.

Figure 6-1: Current and Planned Capacity in North Anglesey



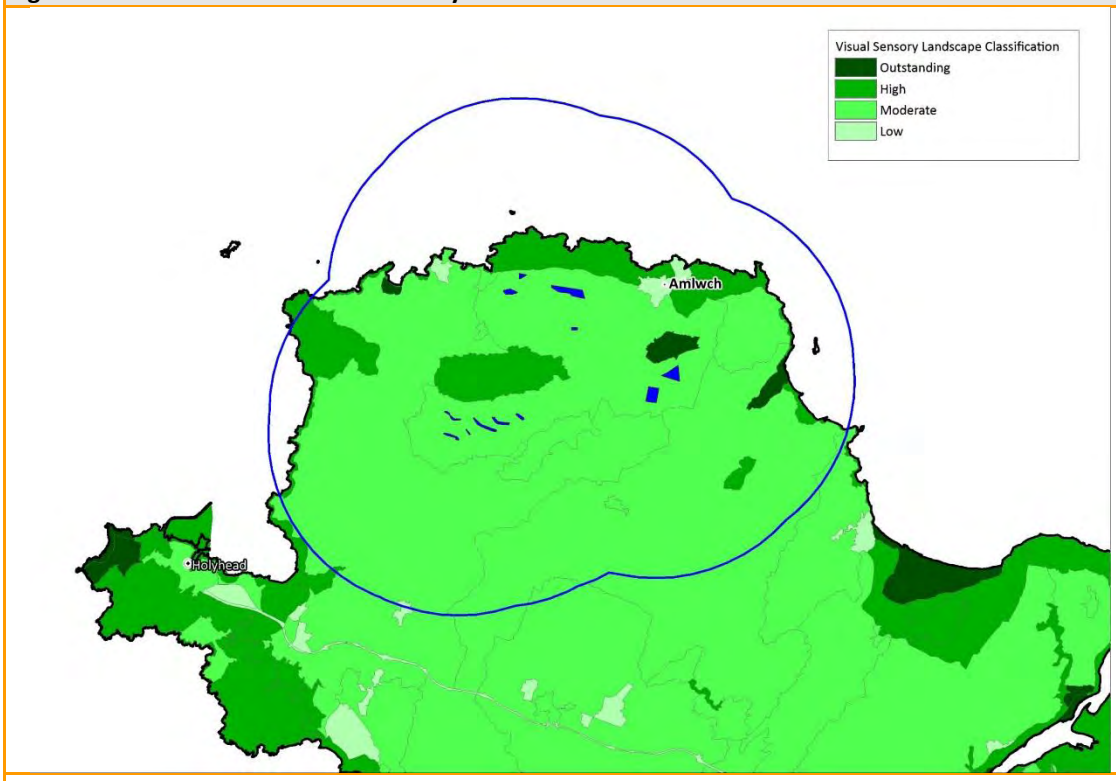
Source: DECC

Local Landscape

6.12 All four wind farms in Anglesey are located in an area of lowland farmland in the north of the island. LANDMAP classes the whole area as moderate for visual landscape quality, however this assessment is influenced by the presence of the turbines themselves. Landmap comments: "Wind turbines form very intrusive elements, lowering integrity but raising character and rarity"13.

6.13 The turbines are a dominant presence on the surrounding landscape: "Groups of wind turbines dominate the landscape in the north part of Anglesey, south of the A5025 and Amlwch, to Llyn Alaw, and west to around Mynydd Mechell". All three wind farms are in close proximity to high and outstanding quality areas, including the North Anglesey coast and Parys Mountain.

Figure 6-2: LANDMAP Visual and Sensory Assessment



Source: LANDMAP

Scale of Visitor Economy

6.14 Tourism is an important sector for Anglesey. Business Register and Employment Survey data shows there are around 2,400 jobs in tourism related sectors[14] (12.3% of employment). There are indications that the visitor economy has grown since most of the wind farms on the island were established (late 1990s). Annual Business Inquiry data shows there were around 1,700 jobs in tourism related sectors in 1998. This would represent an increase of 700 jobs (circa 40%) but

[13] LANDMAP forms its overall assessment based on a number of criteria including scenic quality, integrity, character and rarity. The assessment of integrity is based on the degree to which the area is unspoilt by large-scale development, while character is based on the degree to which features and qualities give a clear sense of place. Rarity is based on the degree to which the features are rare or representative locally.

[14] Tourism employment is likely to be highly seasonal. The BRES estimates are based on returns completed in September/October, so tourism employment could be higher during summer months and lower during winter.

should be treated with caution as it draws upon two different datasets which use different methodologies[15].

6.15 The key tourism datasets show there have been around 3.2m visits per annum to Anglesey in the last 2-3 years, with these visitors spending roughly £230m. This breaks down as follows:

- Great Britain Tourism Survey (GBTS) shows there were an average of 332,000 overnight domestic visitors during the three year period 2010-2012, with these visitors spending approximately £61m per annum.

- Great Britain Day Visits Survey shows there were an annual average of 2.95m day visits to the island over the period 2011-12, with these visitors spending £168m p.a.

6.16 In order to estimate the proportion of tourism volume and value in the local impact area, the figures above have been apportioned based on the share of tourism related employment (based on BRES) and visitor bedspaces (based on Bedstock data). Using a best-fit of LSOAs for the study area16, it is estimated there are around 270 jobs in tourism related sectors in the study area. This represents 11% of total employment17 in the impact area and 11% of all tourism related employment on Anglesey. Bedstock data shows there are 3,500 visitor beds in the local impact area (with over 70% in caravans), accounting for 12.1% of bedspaces in Anglesey.

6.17 Applying these percentages to the tourism datasets gives a range of 364 to 397 thousand visitors and £27m to £29m in visitor expenditure each year. These figures provide an indicative estimate of the volume and value of domestic tourism in the study area. They represent a best estimate given the data sources which are available, but should be interpreted with caution. It is likely that the estimates understate the number of visits from overnight visitors staying in other parts of the island.

Table 6.1: Estimate of Volume and Value of Domestic Tourism in Study Area using Apportionment Methodology

	Isle of Anglesey		Low Estimate for Study Area		High Estimate for Study Area	
	Visits (000s)	Expenditure (£m)	Visits (000s)	Expenditure (£m)	Visits (000s)	Expenditure (£m)
Day Visitors	2,950	167.9	327.5	18.6	357.0	20.3
Domestic Tourists	332	76.0	36.9	8.4	40.2	9.2
Total	3,282	243.9	364.3	27.1	397.1	29.5
Source: Calculations by Regeneris Consulting using Bedstock, BRES, GBTS and Day Visits survey						

Visitor Assets

6.18 Anglesey's Destination Management Plan (IACC, 2012) identifies the Area of Outstanding Natural Beauty which covers almost the whole coastal area as its key visitor asset. The AONB on the

[15] BRES was the successor to ABI. Both datasets are based on the interdepartmental business register but use different methodologies and are subject to inconsistencies over time. The 1998 figure also used 2003 standard industrial classification codes for estimating sector employment. The 2012 figure uses 2007 SIC codes but in the closest matching sectors.

[16] See appendix

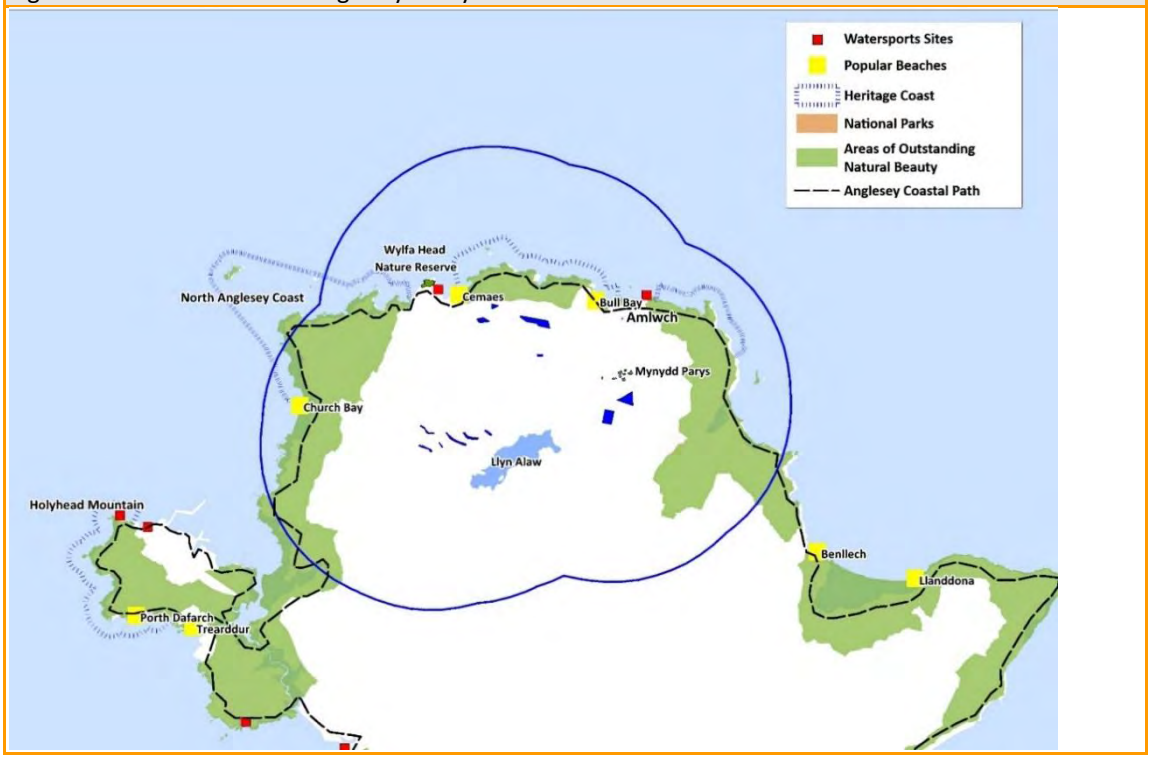
[17] This gives a location quotient of 1.2 indicating tourism employment accounts for a greater share of employment than the average for Wales

northern coast is in very close proximity to Rhyd y Groes, Anglesey's oldest onshore wind farm.

6.19 A coastal path runs around the entire island (through the AONB) and has become a popular visitor attraction. Again, the northern part of this path runs in close proximity to onshore wind farms. There are a number of very popular beaches on the island and opportunities for watersports. Three of these are in the study area. Cemaes Bay is the closest to the wind farms.

6.20 In the north east of the study area there are a number of historic attractions including Point Lynas, Porth Amlwch and Parys Mountain. Parys Mountain is in very close proximity to Trysglywyn wind farm. Inland the scenery is described as "pleasant but unremarkable" in the DMP. One notable attraction is Llyn Alaw reservoir which is popular for fishing. This is in very close proximity to Llanbobo wind farm, although the site of this wind farm has poor accessibility for the public.

Figure 6-3: Visitor Assets in Anglesey Study Area



Visitor Characteristics

6.21 There is no data available on visitor characteristics in the study area itself, however Anglesey's DMP highlights that the key visitor markets for the island are families mainly staying in a mix of caravan parks and unserviced accommodation during peak season, and short-stay, higher spending older visitors staying in higher quality accommodation.

6.22 Visitors to the island tend to be older than the Wales average, with 40% aged 55+ and 45% aged 35-54. The main reasons for visiting Anglesey given by visitors were the scenery/landscape/countryside (61%), the coast (61%), enjoyment of a previous leisure visit (52%), the peace and quiet (42%), convenience/ease of access (37%) and outdoor activities (37%).

Marketing and Promotion

6.23 Tourism marketing for Anglesey highlights the range of coastal and outdoor activities available

on the island and the coastal landscapes. There are very few inland, scenic landscapes included in visitor brochures, reflecting Anglesey's highly scenic, coastal areas.

Figure 6-4: Images from Marketing Brochures for Anglesey

Source: Images from Visit Anglesey brochure and website

Key Points for Assessment

- Anglesey has a number of large, well-established wind farms in close proximity in the north of the island. These are relatively clustered in one area and dominate the landscape in this particular area of lowland farmland. The Island is not in a TAN8 strategic search area and there are not current proposals for further large scale development (although there are multiple proposals for smaller single turbines).

- Tourism is an important sector in the north of the island (the study area), accounting for around a tenth total employment locally. However, the study area only accounts for a small percentage of Anglesey's tourism employment and visitor accommodation. The key tourism locations on the Island are remoter from these wind farms.

- The Anglesey coast is the key visitor asset. Some wind farms such as Rhyd y Groes are visible from the AONB and coastal path which may deter some visitors with negative views toward turbines. However, these turbines are small (31m) and are unlikely to be visually dominant (although there is a proposal to repower this particular scheme with larger turbines). The landscape in which the turbines are located, where they are visually dominant, is not considered to be of high scenic value and in its own right has limited visitor appeal.

- Anglesey has a diverse offer which includes watersports, beaches and historic attractions. The island attracts a diverse mix of visitors, families and older visitors dominate. Whilst the available data is limited, the older visitors are more likely to visit for the scenery and tranquillity. Research indicates that these visitors may be more sensitive to wind farm development and may avoid those parts of the island in closer proximity to the wind farms.

- If some of these visitors were deterred from visiting the north of the Island as a consequence of the wind farms, there is a low likelihood of them ceasing to visit the Island at all. Also, given the diversity of the visitor market, there is a good potential to replace those small number of visitors deterred from visiting the north part of the island.

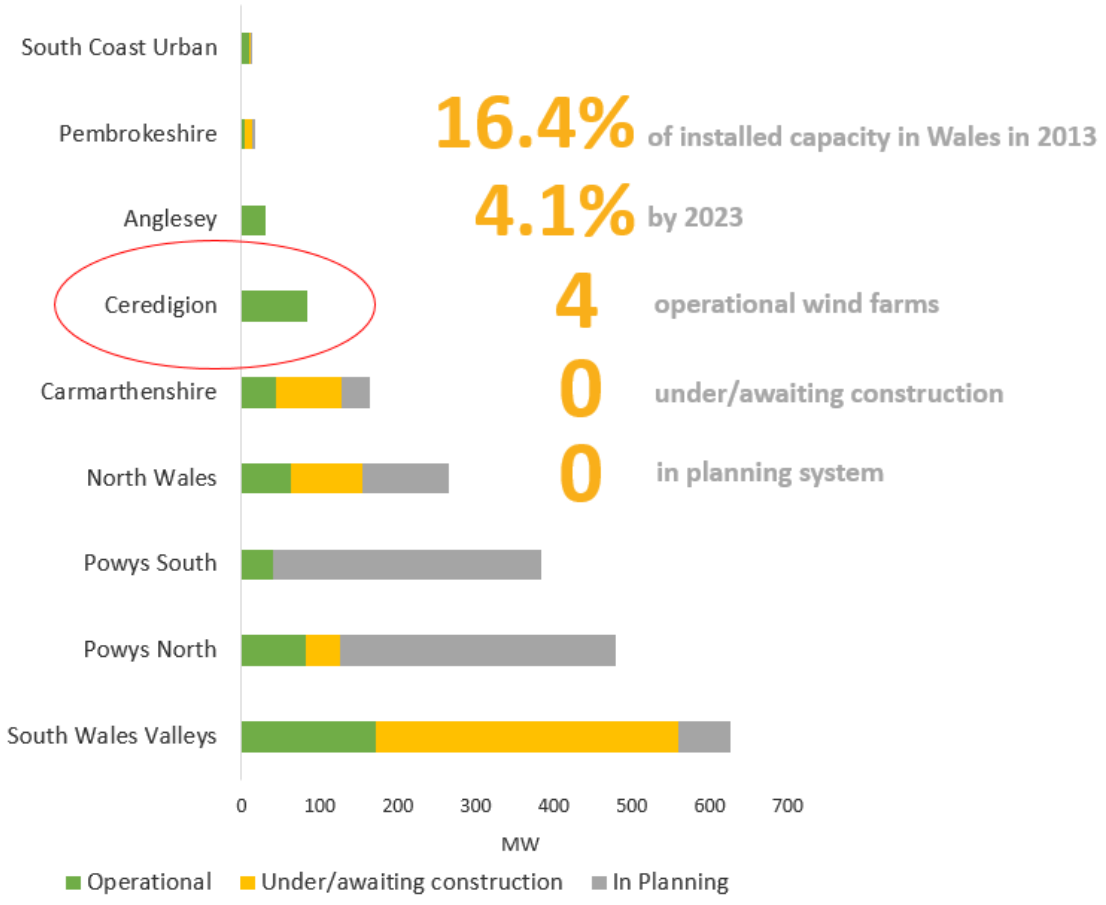
North Ceredigion

Current and Planned Wind Farm Development

6.24 The northern part of the district is covered by a Strategic Search Area meaning it could be a focus for future development. There are currently four operational wind farms, the largest of which includes 39 turbines (Cefn Croes). The district as a whole currently accounts for around 16% of Wales's total onshore installed generating capacity. There are currently no planning applications for major wind farms in Ceredigion.

6.25 The wind farms are spread out over a wide area. Whilst it is possible that two wind farms could be seen in the same view, they would be at a considerable distance and would be likely to include Rheidol wind farm, the smallest of the four developments with only eight turbines at 30m.

Figure 6-5: Current and Potential Capacity of Wind Farms in North Ceredigion



Source: DECC.
Note: Future capacity assumes all wind farms in planning system receive approval

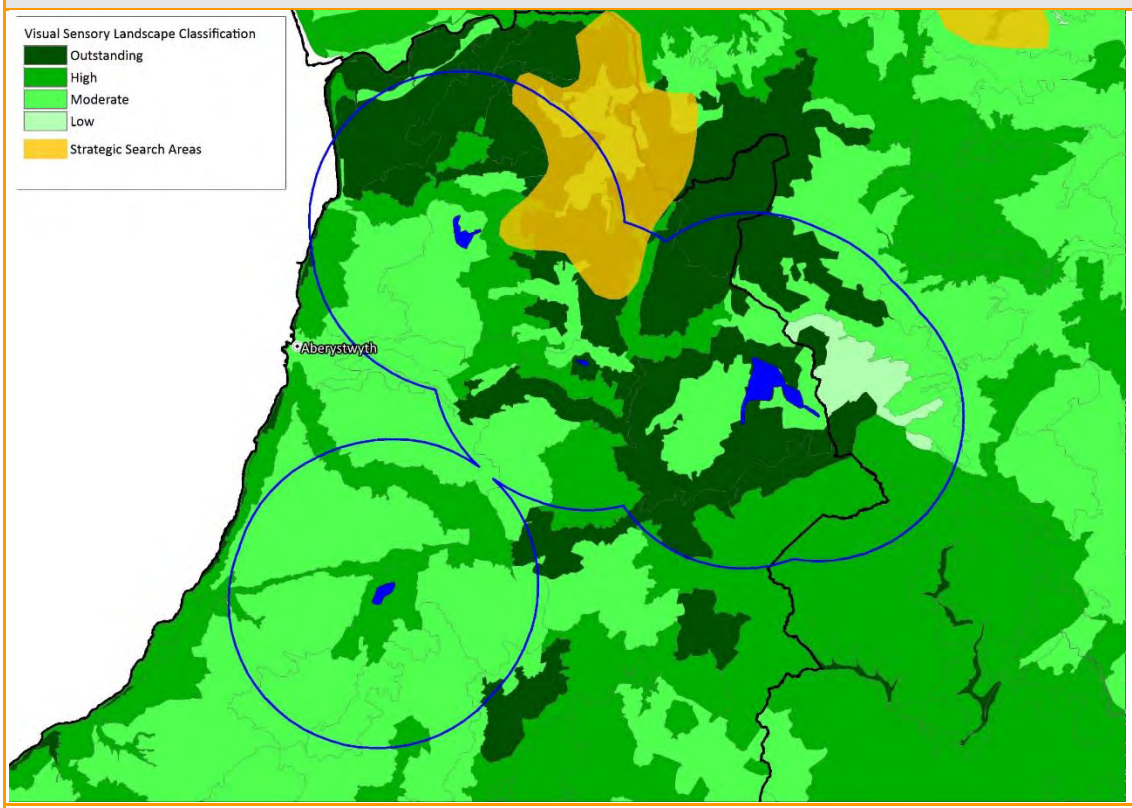
Local Landscape

6.26 Ceredigion's wind farms are located in predominantly remote, wild and expansive landscape in the north of the County. Three of the wind farms are located in areas where the landscape is assessed as outstanding or high quality, although the LANDMAP assessments for the two outstanding areas were carried out prior to the installation of the turbines. These assessments note the local landscape as a reason for visiting the area: "panoramic views…. are available from footpaths and roads through the area… (the) area is popular in places for visitors and this indicates its value".

6.27 The introduction of two wind farms in these areas following the completion of the Landmap assessment (Rheidol and Cefn Croes) will have to some extent detracted from the landscape character of the area.

6.28 The assessments for the other two areas were carried out when the wind farms had been installed. These note that the wind farms have detracted from the character of the area, however the assessments also note other factors which have contributed to the overall assessment, such as plantations and hedgerow deterioration.

Figure 6-6: LANDMAP Visual and Sensory Assessment



Source: LANDMAP

Scale of Visitor Economy

6.29 Tourism is a key sector in the study area. BRES shows there are around 540 jobs in tourism related sectors in the study area which represents 22% of employment. Over 300 of these jobs are in the LSOAs on the coast, reflecting the presence of coastal resorts north of Aberystwyth. There is far less employment in tourism related sectors inland. These 540 jobs account for 17% of tourism

related employment in Ceredigion, but does not include some of the highest concentrations in coastal resorts such as New Quay and Aberaeron. Bedstock data shows a total of 6,100 bed spaces, accounting for 19% of all visitor accommodation in Ceredigion.

Table 6.2: Total Visitor Bedspaces and Tourism Employment		
	Bedspaces	Employment
North Ceredigion Study Area	6,100	540
Ceredigion LA	32,800	3,200
Percentage in study area	18.5%	16.9%
Source: BRES and Bedstock data (Visit Wales)		

6.30 Applying this to the tourism datasets provides a range of 663 to 725 thousand visitors per annum and £29m to £32m in visitor expenditure – that is, a little less than a fifth of Ceredigion's overall visitor economy. As described above, this only provides an indicative estimate of the tourism volume and value in the study area, using the datasets which are available, and it doesn't capture the interrelationships between the study area and the rest of Ceredigion and the wider area.

Table 6.3: Estimated Volume and Value of Domestic Tourism in North Ceredigion Study Area						
	Local Authorities		Low Estimate for Study Area		High Estimate for Study Area	
	Visits (000s)	Expenditure (£m)	Visits (000s)	Expenditure (£m)	Visits (000s)	Expenditure (£m)
Day Visitors	3,580	84.7	605.0	14.3	662.3	15.7
Domestic Tourists	340	88.0	57.5	14.9	62.9	16.3
Total	3,920	172.7	662.5	29.2	725.2	31.9
Calculations by Regeneris Consulting using Bedstock, BRES, GB Day Visits Survey and GBTS						

6.31 There is little data available on occupancy, however the Tourism Strategy notes that tourism is highly seasonal in the district and a large proportion of business is turned away during the summer months. Occupancy is lower in the shoulder months and out of season.

Visitor Assets

6.32 Ceredigion's Tourism and Visitor Economy Strategy (CCC, 2011) identifies the coastal path, coastal resorts and beaches as the primary attractions for Ceredigion, however these are all largely remote from the wind farms and are unlikely to be directly affected.

6.33 Within the study area itself, the key visitor assets which could be affected by the wind farms are the dramatic upland areas of the Cambrian Mountains which are in close proximity to Cefn Croes, the largest of the local wind farms. The Cambrian Mountains are the subject of a new initiative to promote them actively as a tourist destination. This area is already popular for walking, cycling and nature watching.

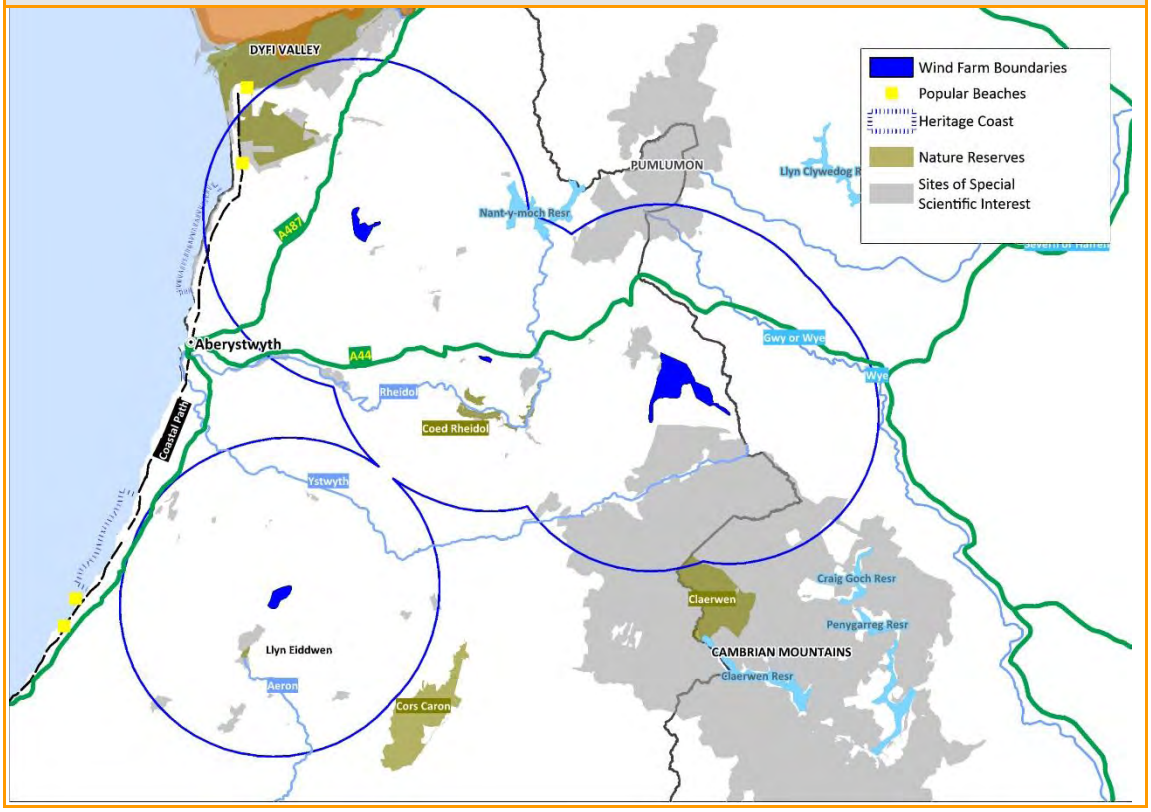
6.34 Attractive river valleys include the Aeron, Ystwyth, Rheidol and Dyfi, which are all popular walking routes. Walkers on the Rheidol river valley routes will be able to see Rheidol wind farm, while walkers in the northern part of the Aeron valley may encounter Llanwyryfon which lies next to Llyn Eiddwen, a lake and nature reserve. It is noted, however, that large areas of these valleys contain dense woodland which would mean wind farms are not visible for long stretches.

6.35 The visitor strategy also notes Ceredigion is popular with anglers, both for sea-fishing and river-

fishing. However, most activity will be unaffected by wind farms as it is located in coastal areas or on the Teifi to the south.

6.36 Cycling is also identified as an emerging strength. Road cycling routes from Aberystwyth to Shrewsbury (A44) run in close proximity to Rheidol wind farm, while Cefn Croes is also likely to be visible. A number of national cycle routes run north south through the area, with views over a number of the wind farms.

Figure 6-7: Visitor Assets in North Ceredigion



Visitor Characteristics

6.37 Ceredigion's Tourism Strategy notes that visitors to the County have a similar age profile to the Wales average, being older on average. The largest group of visitors are Empty Nesters (i.e. older people with grown up or no children) accounting for 48% of visitors. The next largest groups are Families (22%), followed by Older Independents (20%). The smallest group are Young Independents who account for 10% overall, in part reflecting the poorer accessibility and rural character of the area.

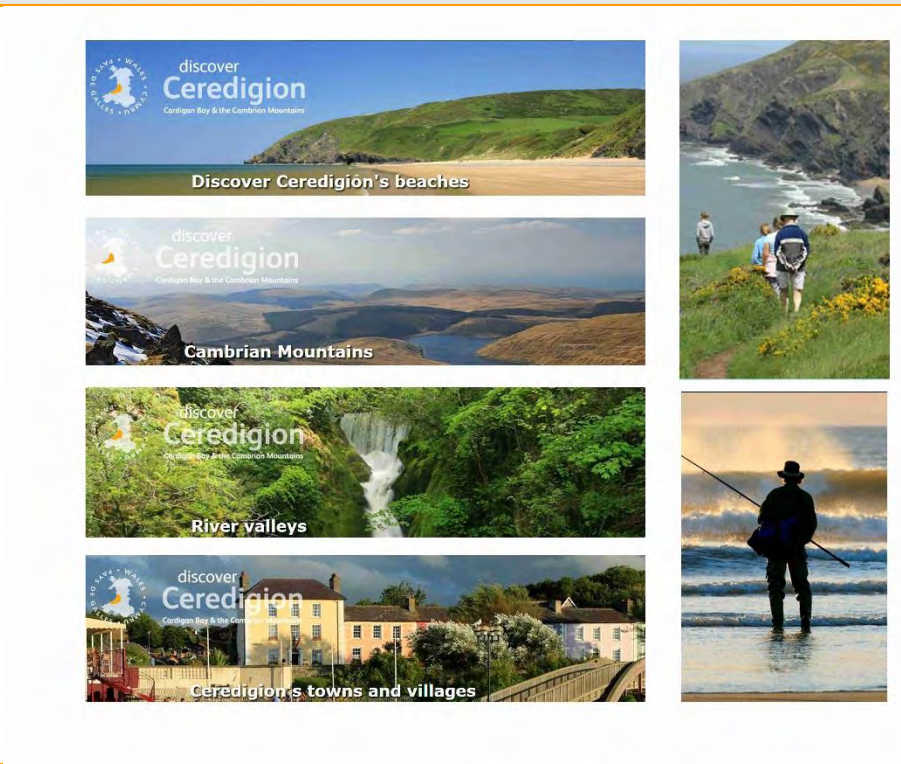
6.38 The poor accessibility and small catchment area of Ceredigion means that it attracts a lower proportion of day visitors as a percentage of all visitors (21%) compared with Wales as a whole (37%). About 35% of visitors are from Wales, 60% from the rest of the UK and 5% from overseas.

6.39 The main reasons for choosing to visit given by visitors to Ceredigion were the scenery/landscape, countryside and the coast.

Marketing and Promotion

6.40 The visitor brochures for Ceredigion reflects the relatively narrow basis of the County's visitor offer and highlights, among others, its beaches, river valleys and upland, unspoiled landscapes.

Figure 6-8: Marketing and Promotional Brochures for Ceredigion



Source: Visit Ceredigion

Key points for assessment

- North Ceredigion has a number of large, well established wind farms. However these are not clustered in the landscape and it is highly unlikely that there is potential for significant cumulative effects on views or the enjoyment of the countryside. Two of the wind farms are, however, located in highly scenic areas of the Cambrian Mountains. No additional wind farms are currently in the planning system.

- The wind farms are remote from many of the main visitor attractions of Ceredigion, including the main coastal resorts. This is reflected in the low level of estimated visitor expenditure in the study area – around a fifth of the total for Ceredigion.

- In tourism terms, the most sensitive area is, on balance, around the Cefn Croes wind farm, in the Cambrian Mountains. However, there is very little visitor accommodation in close proximity to this wind farm and tourism activity is low. There is the potential for some visitors to be discouraged from visiting the area, but this is likely to be limited and there is plenty of opportunity for these visitors to find similar unaffected countryside in other parts of the Cambrian Mountains.

- The majority of tourist visits to the Cefn Croes area are likely to occur in summer and shoulder months when there is little capacity in visitor accommodation in Ceredigion as

a whole[18]. There is some potential for replacement demand if any visitors were deterred from visiting the wind farms.

- The research has not identified any evidence to suggest that the existing wind farms have impacted negatively on the tourism economy, either in the study area or the wider Ceredigion area. However, it should be noted that the area has not been the focus of a more detailed case study.

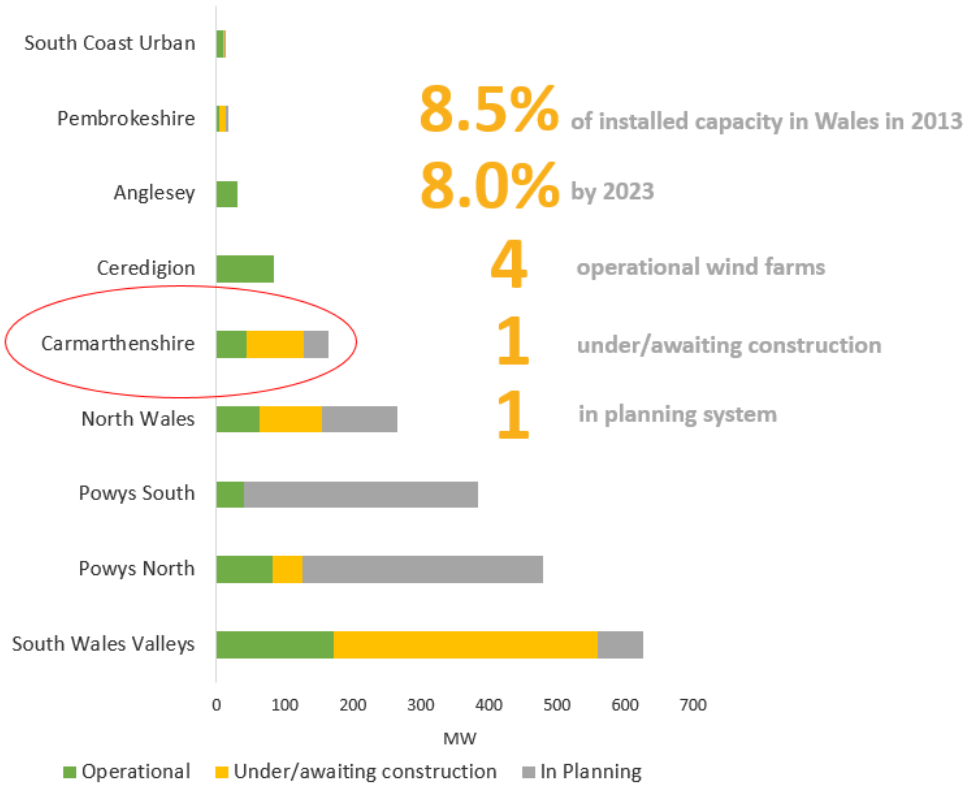
Carmarthenshire

Current and Planned Wind Farm Development

6.41 There are four operational wind farms in Carmarthenshire, however these are all relatively small. The largest is Parc-Cynog in the south of the County with 16 turbines19. There is a much larger wind farm of 28 turbines with planning permission in Brechfa Forest West. There is also a planning application submitted for a smaller wind farm of 12 turbines in Brechfa Forest East.

6.42 If both of the Brechfa Forest wind farms were developed, there would be a cluster of three wind farms in this area. Other than this, Carmarthenshire's wind farms are spread out over a wide area, and it is considered unlikely that there would be cumulative effects on the landscape beyond Brechfa Forest.

Figure 6-9: Current and Potential Installed Capacity in Carmarthenshire Impact Area



Source: DECC
Future installed capacity assumes all wind farm developments in planning are approved.

[18] There is no data available for the area around Cefn Croes itself,

[19] This includes the original Parc Cynog wind farm and the subsequent extension

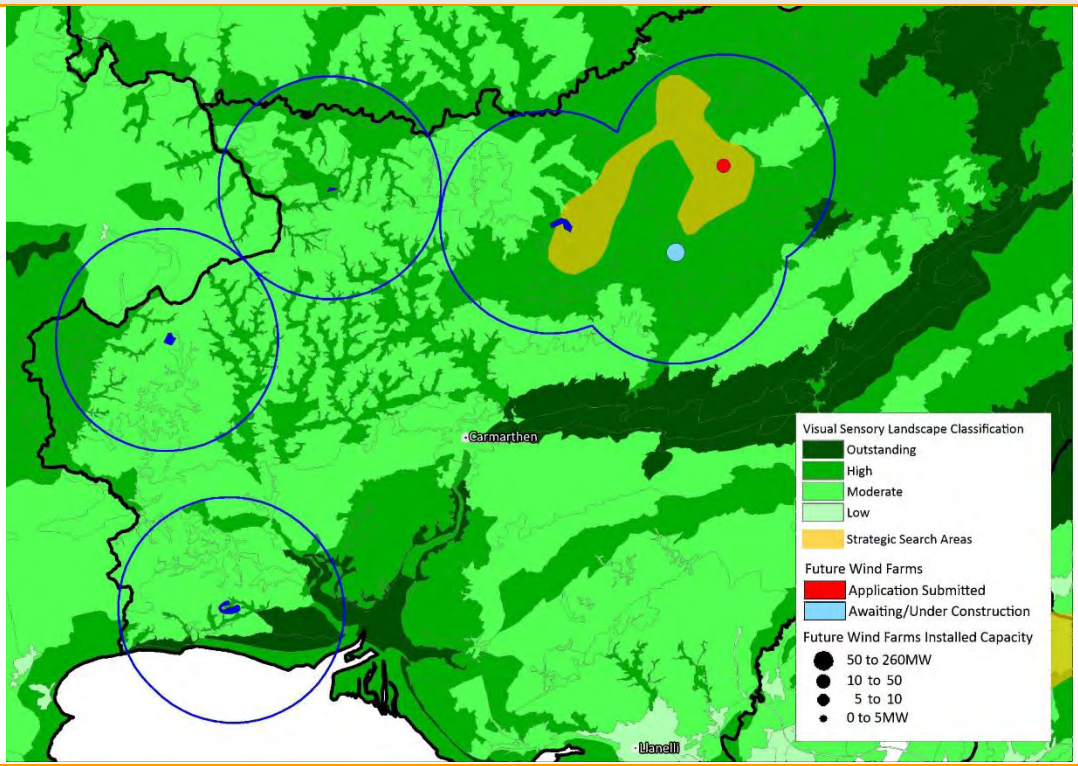
6.43 There is one other wind farm in the south-east of Carmarthenshire (Mynydd y Betws), however this is in close proximity to other wind farms in Swansea and Neath Port Talbot. It has therefore been included in the South Wales Valleys study area.

Local Landscape

6.44 Of the four operational wind farms, three are assessed by LANDMAP as being in high landscape quality areas. In some cases, the wind turbines are observed to contribute to the overall assessment as they provide additional interest and novelty in an area that has very few wind turbines: "there are very few landscapes in the county that currently support wind turbines, so while the scenic quality of the area is considered to be moderate, it scores high for rarity and character". Judgements such as these are highly subjective, however they contribute to the overall impression that the size and distribution of wind farms mean that they do not have a significant presence in large areas of Carmarthenshire. This may of course change as more wind farms are developed.

6.45 The areas which are likely to be the focus for future development (around Brechfa Forest) are also assessed as being high landscape quality, although these areas are a mix of farmland and woodland. The LANDMAP assessment notes the possible threat to the landscape integrity of the area from proposed wind farms. However, large numbers of turbines may not be visible in some areas because of forest cover.

Figure 6-10: LANDMAP Visual and Sensory Assessment for Carmarthenshire



Source: LANDMAP.

Scale of Visitor Economy

6.46 Tourism is a relatively important sector in the study area. BRES shows there are around 580 jobs in tourism related sectors representing 14% of total employment (compared to a Wales average of 9%). These 580 jobs represent 13% of tourism related employment in Carmarthenshire.

6.47 Bedstock data shows 6,100 visitor bedspaces representing 34.7% of the stock in Carmarthenshire. The high percentage reflects the inclusion of a large area of the Carmarthenshire coast within the study area, where there is a large concentration of visitor accommodation (including Amroth).

Table 6.4: Employment in Tourism Related Sectors and Visitor Bedspaces, 2012

	Carmarthenshire Study Area	Carmarthenshire LA	Percentage in Study Area
Jobs in tourism related sectors	580	4,520	12.8%
Bedspaces	6,100	17,600	34.7%
Source: BRES, Bedstock (Visit Wales)			

6.48 Applying these percentages for the study area to the tourism datasets gives a wide range of 708,000 to 1.9m visits per annum and £23m to £62m in visitor expenditure. The higher end of this range is driven by the area to the south. However a large amount of the visitor expenditure would be likely to occur outside the study area in places like Saundersfoot and Tenby.

Table 6.5: Estimated Volume and Value of Domestic Tourism in Carmarthenshire Study Area

	Local Authorities		Low Estimate for Study Area		High Estimate for Study Area	
	Visits (000s)	Expenditure (£m)	Visits (000s)	Expenditure (£m)	Visits (000s)	Expenditure (£m)
Day Visitors	5,280	115	678	15	1,830	40
Domestic Tourists	239	65	31	8	83	23
Total	5,519	180	708	23	1,913	62
Calculations by Regeneris Consulting						

Visitor Assets

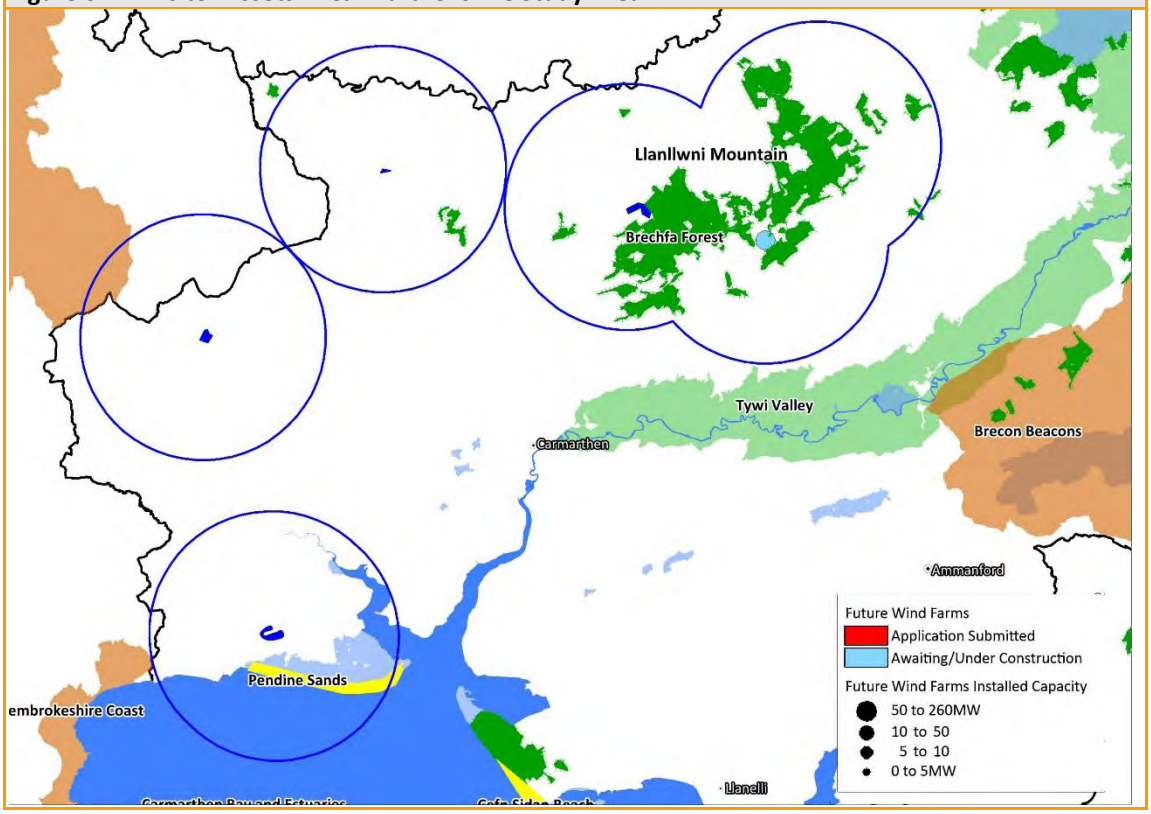
6.49 Carmarthenshire does not have a current tourism strategy, however the County's natural environment and cultural heritage are identified as the key visitor assets in the Unitary Development Plan (Carmarthenshire County Council, 2006). In particular, the Carmarthenshire coastline and beaches are popular visitor attractions and have protected status as special areas of conservation and sites of scientific interest. Parc Cynog is the only wind farm which might be encountered by walkers and other visitors to this particular area.

6.50 Carmarthenshire's most open landscapes are located in the western area of the Brecon Beacons National Park. These areas are remote from existing wind farm development. The proposed wind farms may be visible from these areas, however this would be at a considerable distance.

6.51 The key visitor asset within the study area is the southern area of the Cambrian Mountains, including Brechfa Forest and Llanwni Mountain. These areas are all classed as public forests or other statutory access land and are relatively popular with walkers, horse riders and mountain bikers. Although turbines may not be visible across a wide area due to forest cover, it is possible that there would be some disruption to public access in these areas during the construction of Brechfa Forest West wind farm (although it is normal for a mitigation strategy to be put in place to minimise this, if it were a significant issue).

6.52 Other special landscape areas in Carmarthenshire include the Towy and Cothi Valley. These are largely remote from wind farm development, although may be visible from a distance in some areas.

Figure 6-11: Visitor Assets in Carmarthenshire Study Area



Visitor Characteristics

6.53 There is very little information available about the characteristics of visitors to Carmarthenshire. The only visitor surveys available were carried out in East Carmarthenshire (Strategic Marketing, 2013) which has limited wind farm development. In keeping with many rural areas of Wales, this area has an older profile of visitors (51% are aged over 55) which is likely to be the case for the large parts of rural Carmarthenshire. However, we would expect the coastal areas to be popular with a much broader range of visitors, especially families and to some extent younger independent visitors.

Marketing and Promotion

6.54 The visitor brochures for Carmarthenshire highlights outdoor activities, unspoiled landscapes and attractive beaches as the key elements of the visitor offer. However, the unspoiled, open landscapes featured in the marketing material are from the Brecon Beacons which are largely remote from wind farm development. Brechfa Forest is marketed as a key destination for mountain biking and walking.

Figure 6-12: Images used in Marketing and Promotional Brochures for Carmarthenshire

Source: Visit Carmarthenshire

Key Points

- Most of Carmarthenshire's operational wind farms are relatively small in size and distributed over a wide area. As such, there is limited potential for cumulative landscape effects. They are not considered to be a dominant presence on Carmarthenshire's landscapes and would be highly unlikely to deter visitors.
- The largest existing wind farm, Parc-Cynog, is located in an area where the mix of visitors who are, on balance, likely to be less sensitive to the presence of the wind farm.
- The development of future wind farms around Brechfa Forest could create a cluster of turbines which could form a more significant intrusion on the landscape. However, much of the development area is forested, which will reduce the intrusion from the wind farms on the landscape.
- There is little known about the characteristics of visitors to the areas affected. Surveys in East Carmarthenshire showed the area attracted older visitors, who on average tend to be more sensitive to wind farm development. However, the area most affected by the future development is popular with mountain bikers. The South Wales Valleys profile (below) shows that similar locations (Afan Valley Park) tend to attract visitors who may be less sensitive to wind farm development. If there is the potential for disruption to walking and mountain biking routes during construction, this should be mitigated and short term.

Powys North

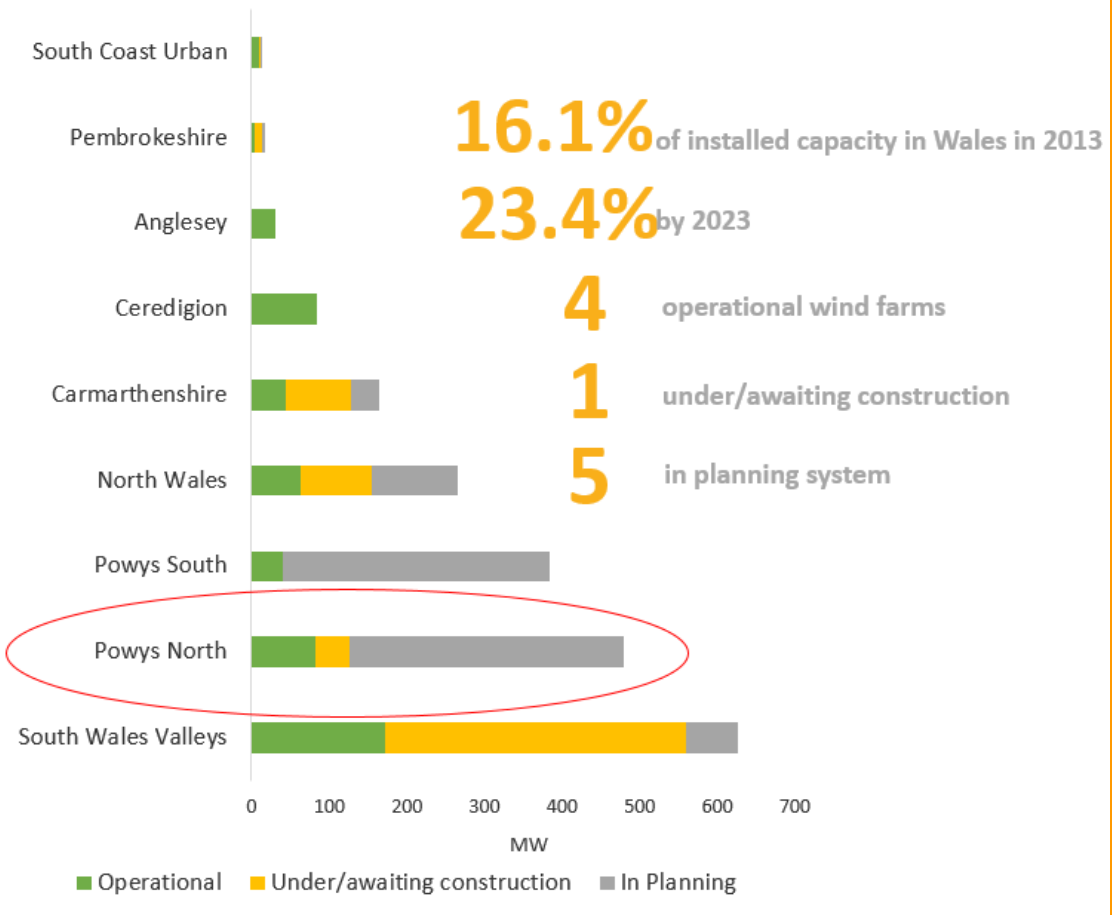
Key Statistics

6.55 Powys North comprises four operational wind farms. The largest of these is Carno wind farm, which comprises 112 turbines in total (half of these were installed in 1996 with the other half installed in 2009). Cemmaes wind farm is another well-established but smaller wind farm comprising 30 turbines. Current operational wind farm schemes account for around 16% of the total installed capacity in Wales.

6.56 There are a further five applications for potential future wind farms in the planning system. This includes an application for 150 turbines at Carnedd Wen and 69 at Llanbrynmair which would be adjacent to each other and cover an area of 45 sq km. If all of these proposed schemes were to go ahead, they would account for 23% of the total installed capacity within Wales. These schemes are currently the focus of a conjoined public inquiry.

6.57 The Powys North study area also includes additional infrastructure which would connect the wind farms located in Mid Wales to the National Grid. Part of this infrastructure would be buried underground, however large sections of it would be exported through overhead pylons linking to a substation in Shropshire.

Figure 6-13: Current and Potential Installed Capacity in Powys North



Source: DECC
Note: Future capacity assumes all wind farm developments in planning receive approval

Local Landscape

6.58 The Powys North study area is a remote and sparsely populated area of Mid-Wales with very few significant settlements (Newtown and Llanidloes are the closest). The landscape includes a mix of open, upland moorland and heaths. However, there are also a number of extensive conifer plantations which alter the landscape in some areas and may detract from the area's appeal in terms of its landscape quality and to some extent as a visitor destination.

6.59 Both Carno and Cemmaes were operational at the time of the latest LANDMAP assessment and influenced the overall assessment, albeit with different results:

- The landscape in which Carno is located was assessed as moderate, with the assessor noting "*Upland moorland that suffers from some degradation due to the extensive forestry adjacent to the south and extensive wind farm development*".

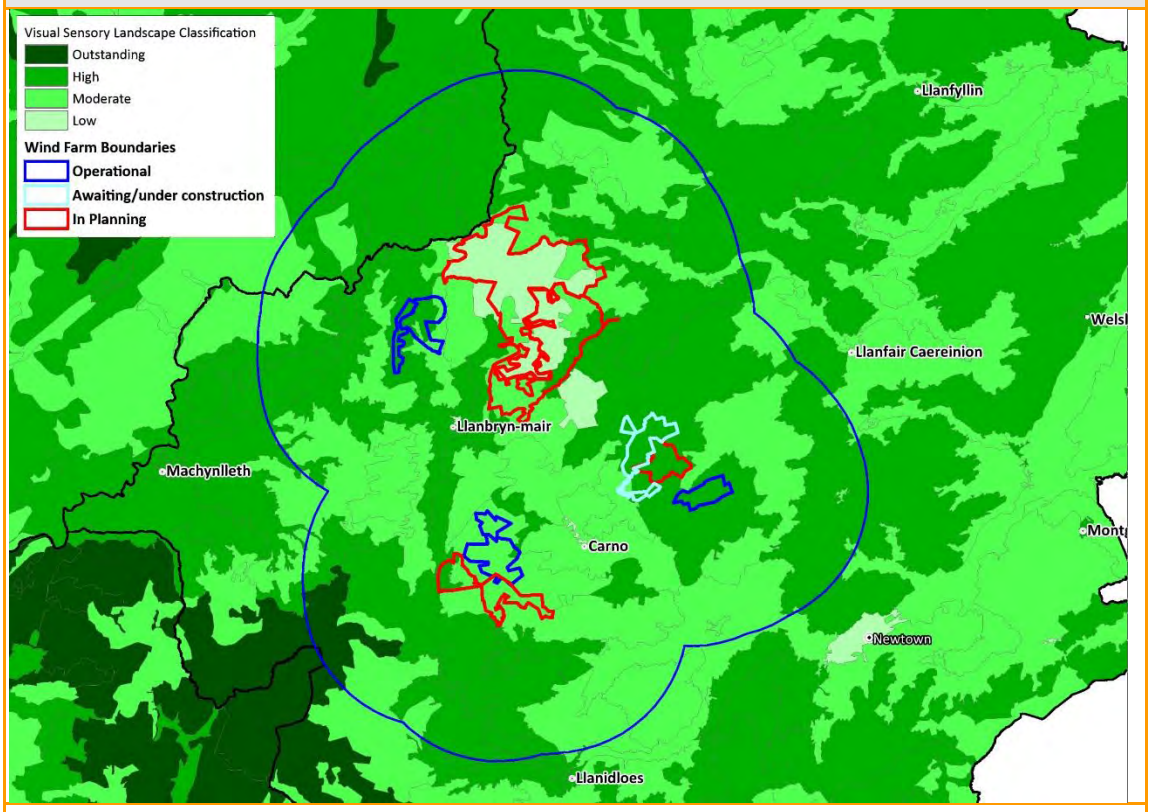
- The landscape surrounding Cemmaes was assessed as high, with the assessor noting that the wind farm had enhanced the landscape: "*Wind turbines provide a contrasting visual experience and overall focus for the surrounding area that does not necessarily degrade or detract from the aesthetic quality - rather it complements it and provides for a unique experience*."

6.60 In the case of potential future developments, the local landscape in which Llanbrynmair and Carnedd Wen are located is assessed as poor. The justification for this assessment is that "*large scale coniferous afforestation blankets the subtleties of the underlying landform and produces intrusive conifer fringes and harsh plantation edges into an otherwise open expanse of upland moorland and grazing*". The assessment also notes that there is little or no public access in this area of upland.

6.61 A feature of the proposed Carnedd Wen scheme is an environmental scheme which would remove much of the forestry plantation and restore the moorland habitat. This has the potential to significantly improve the landscape quality, wildlife habitats and the setting of the Glyndwr's Way (a long distance national walking trail).

6.62 One of the other proposed wind farms (Esgair Cnwoen) is also located in landscapes which are altered by conifer plantations. This contributes to an overall assessment of moderate, while Tyrgwynt wind farm is assessed as high quality due to its patchwork upland grazing.

Figure 6-14: LANDMAP Visual and Sensory Assessment for North Powys Study Area



Source: LANDMAP

Scale of Visitor Economy

6.63 Although tourism is limited in the study area, it is nevertheless an important source of employment in this part of Powys. In total there are around 250 jobs in tourism related sectors in the best-fit LSOAs, accounting for around a quarter (24%) of employment. These jobs only account for a very small share of tourism related employment in Powys as a whole. The largest concentrations lie in the Brecon Beacons National Park to the south and to a lesser extent some of the market and spa towns.

6.64 There are approximately 1,100 bedspaces in visitor accommodation, comprising a mix of caravans, serviced accommodation and self-catering. This represents a little less than 3% of the bedstock in Powys.

6.65 These low percentages partly reflect the size of Powys which is Wales's largest county, and that this area is not a well established and popular tourism location compared to other parts of the County. However the high share of employment in tourism related sectors shows that this is still a valued sector for the local area.

Table 6.6: Tourism related Employment and Visitor Bedspaces, 2012

	North Powys Study Area	Powys LA	Percentage in Study Area
Jobs in tourism related sectors	250	5,300	4.7%
Bedspaces	1,100	40,400	2.7%
Source: BRES and Bedstock (Visit Wales)			

6.66 Applying these percentages to the visitor surveys shows a range of 176 to 305 thousand visitors and £8m to £14m in visitor expenditure in a typical year (less than 5% of the total visitor economy for Powys as a whole). This is a low figure for volume and value, but is still likely to represent an important source of income in an area with a very narrow economic base.

Table 6.7: Estimated Volume and Value of Domestic Tourism in North Powys Study Area

	Powys		Low Estimate		High Estimate	
	Visits (000s)	Expenditure (£m)	Visits (000s)	Expenditure (£m)	Visits (000s)	Expenditure (£m)
Day Visitors	6,140	222	167	6	290	10
Domestic Tourists	334	84	9	2	16	4
Total	6,474	306	176	8	305	14
Calculations by Regeneris Consulting						

Visitor Assets

6.67 The Mid Wales Tourism Strategy (TPMW, 2011) recognises the natural environment as Powys's key visitor asset. The County has unspoiled landscapes in mountain ranges in the south (Brecon Beacons), the north (Berwyn Mountains) and the west (Cambrian Mountains). The North Powys study area takes in part of these mountain ranges and also includes part of Snowdonia National Park. Although no existing or proposed wind farms are located in Snowdonia, Cemmaes wind farm can be seen from some locations on the south eastern boundary (as would Carnedd Wen, if it was developed).

6.68 The study area also takes in more gentle areas of Montgomeryshire to the east. These areas are less dramatic and the relatively low levels of visitor accommodation in the area implies that they have less visitor appeal than other parts of Mid Wales. However they still attract visitors for the isolation and remoteness offered by the area. Large areas of this part of Powys are designated as open country or other statutory access, providing opportunities for walking, cycling and wildlife watching. It is in this area where National Grid have proposed to install overhead pylons to connect the wind farms to a substation in Shropshire.

6.69 A National Trail (Glyndwr's Way) passes through the south of the study area, from where Carno wind farm is already visible. The trail then passes directly through the proposed site for Carnedd Wen and Llanbrynmair, where walkers would pass in close proximity to the turbines. The pylons from the grid infrastructure would not cross the National Trail. This section of the grid connection would be underground which would minimise intrusiveness for walkers in this area. It is likely, however, that the pylons would still be visible from some parts of the trail.

6.70 The scale of development in this area (for the grid infrastructure and the pylons) could cause disruption during construction through closure of pathways, traffic and noise, however we would expect for this to be considered and minimised through the planning process if it were a significant issue.

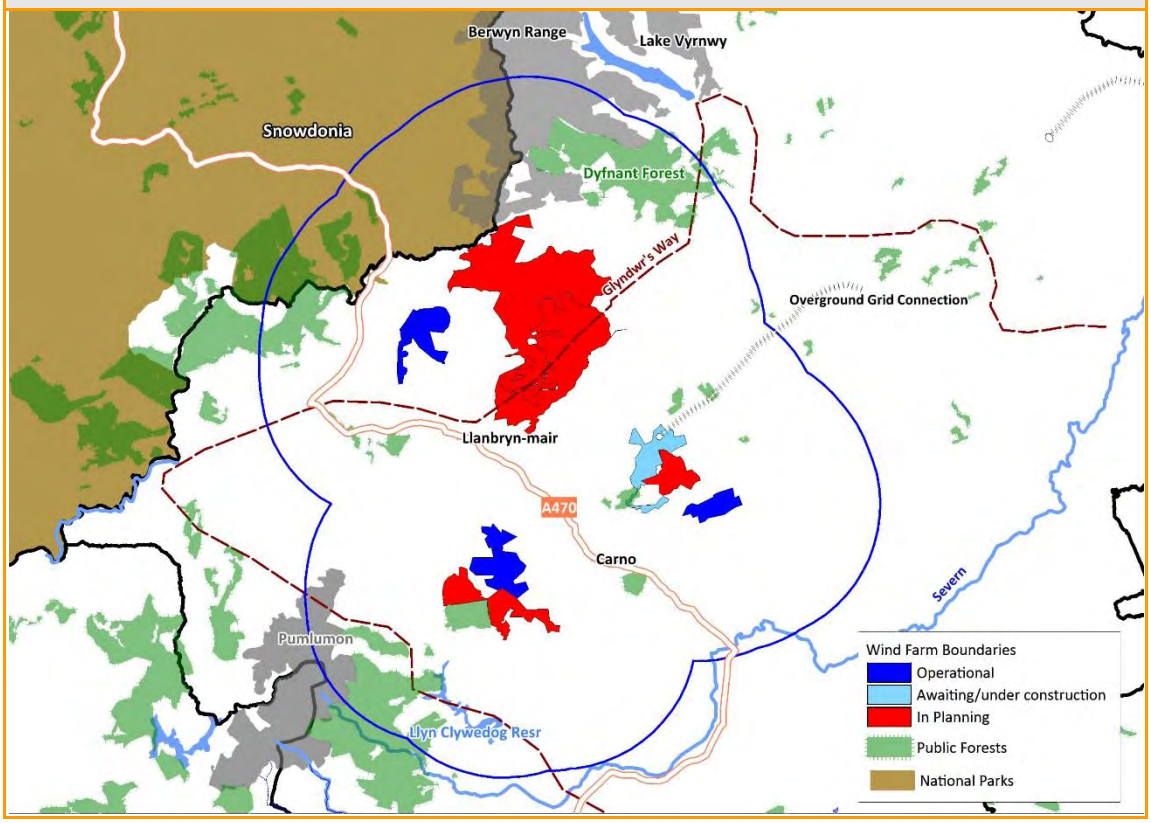
6.71 Llyn Clywedog reservoir is located in the south of the study area. This is popular with walkers, anglers and wildlife watchers (buzzards and red kites are common in the area).

6.72 The A470, which is a busy tourist route for visitors travelling north-south, passes through the centre of the clusters of wind farms. Carno and Cemmaes wind farms are both visible to motorists and cyclists on this route, although neither come in very close proximity (around 2km at the

closest point). The two large proposed wind farms, Llanbrynmair and Carnedd Wen would also be likely to be visible from this road and would be in much closer proximity than the existing wind farms.

6.73 The minor roads across the moorland here are used partly for the access they offer to remote countryside, but also for an attractive driving experience. Drivers on these roads would also be likely to encounter wind farms. In some areas this would be at close quarters.

Figure 6-15: Visitor Assets in North Powys



Visitor Characteristics

6.74 The 2011 Mid Wales Tourism Survey (TPMW 2011b) shows that Powys typically attracts older visitors. Half of the visitors surveyed were "empty nesters" aged 55 or above. A further 22% were families while only 10% were "young independents".

6.75 Over 80% of visitors to Powys were day visitors and only 5% of all visitors were from overseas. The survey also showed that visitors to Powys tend to be very loyal, with one in ten visitors to Powys being a repeat visitor.

6.76 It should be noted that this survey was for the whole of Powys which covers a very large area. No survey evidence was available for the North Powys study area itself. However, given that a large number of visitors visit the area for its remoteness, older visitors and couples may be a dominant market here too (as opposed to families and younger groups).

Marketing and Promotion Brochures

6.77 The visitor brochures for Powys place an emphasis on open country, unspoiled landscapes and

activity orientated holidays. It relies heavily on its relatively unspoilt high quality landscape, especially the Brecon Beacons which are remote from operational or proposed wind farms.

Figure 6-16: Images from Marketing Brochures for Powys

Source: Explore Mid Wales and the Brecon Beacons

Key points for assessment

- Tourism volume and value in the North Powys study area is low, accounting for less than around 5% of the total for Powys. Despite this, tourism is still a very important sector locally given the narrow economic base, accounting for around a quarter of all employment. The local economy would therefore be sensitive to any potential changes in tourism activity.

- There is already a number of wind farm developments in the area, however this would increase significantly if most or all of the currently planned wind farms were approved. Wind turbines would be a dominant feature on the landscape in a number of extensive areas within the study area (although in some instances this is lessened by development occurring within or in close proximity to forestry plantations) and would come in to close proximity to a number of important visitor assets (eg Glyndwr's Way). However, the proposed Carnedd Wen scheme would enhance the quality of the local landscape and setting of Glyndwr's Way through the restoration of the natural moorlands and wildlife habitats.

- There is also new grid infrastructure proposed for the area, which would include pylons and underground lines. Evidence indicates that visitor perceptions of electricity pylons are more negative than wind turbines. The current proposals for an additional export route will, however, keep the pylons away from some of the key visitor assets in the area (such as Glyndwr's Way).

- The area has fewer visitor assets than the more popular visitor areas in surrounding parts of Powys and Snowdonia, but appears to attract visitors for its relative tranquillity and remoteness. Visitors also tend to be older and more likely to be repeat visitors.

- The area has a relatively narrow visitor offer. Walking, wildlife watching and cycling are all popular activities, as well as general relaxation. However, the area is not as established as other neighbouring areas for these activities.

- Although the literature points to small changes in visitor behaviour as a result of wind farm development, the points above would indicate that this area's visitor economy is potentially more sensitive to wind farm development than other parts of Wales.

South Wales Valleys

Current and Planned Wind Farm Development

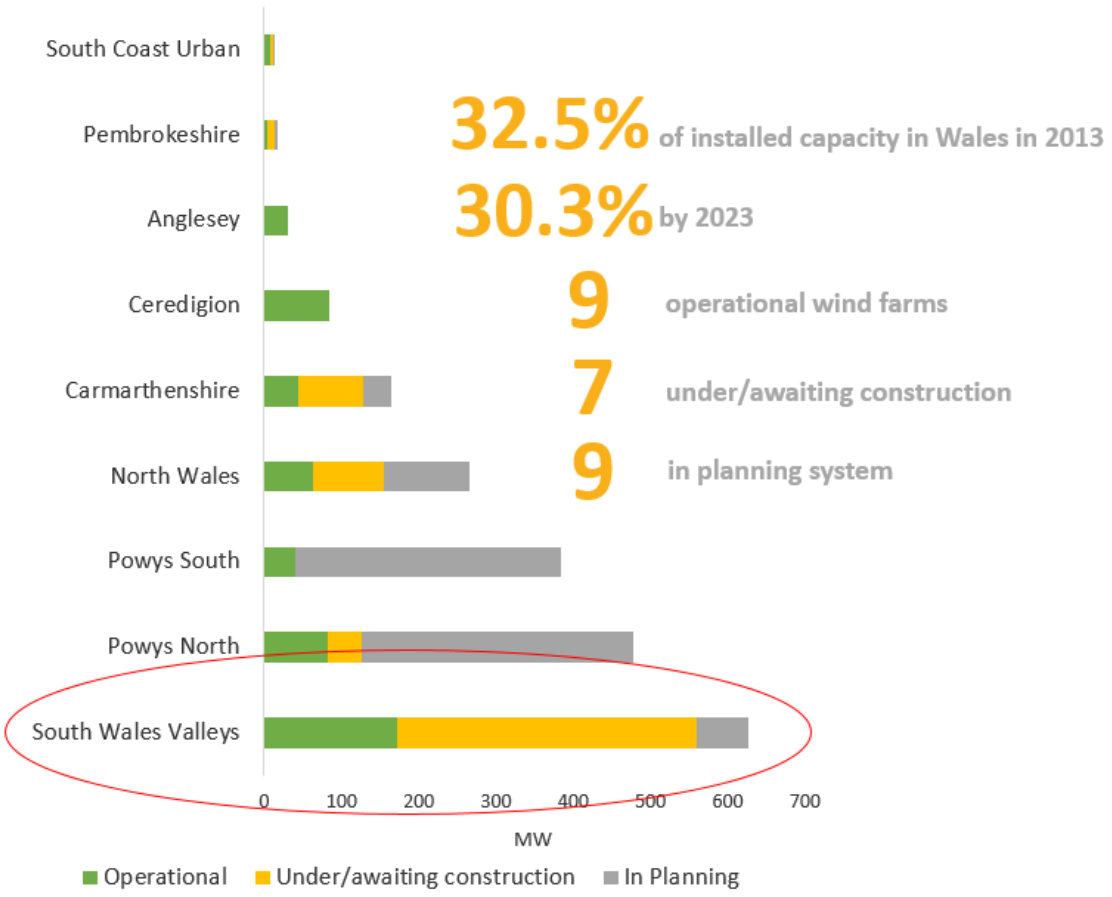
6.78 The South Wales Valleys impact area, covering large parts of Neath Port Talbot (NPT) and Rhondda Cynon Taff (RCT) as well as smaller parts of a number of other districts, has been the location of a number of wind farm developments. There are also a large number of consented wind farms and schemes seeking planning permission, mostly located in NPT and RCT.

6.79 Wind farm databases show there are around nine wind farms in total in the study area. It may be difficult for observers to distinguish these wind farms as many of them are extensions to existing schemes or are in very close proximity to each other (Mynydd Portref and Taff Ely for example).

6.80 To date there have been 102 turbines installed, with a generating capacity of around 170MW. This accounts for nearly a third of total installed capacity in Wales, making this currently the largest study area in terms of installed energy capacity.

6.81 The current largest concentration of turbines is the cluster of Mynydd Portref and Taff Ely in RCT, with a little over 30 turbines. However, this will be surpassed by Pen y Cymmoed, a development of 76 turbines which will be in close proximity to the existing Ffynnon Oer development (16 turbines) and the consented Maerdy and Mynydd Bwllfa developments. This will create a significant cluster in the forested area covering the NPT/RCT border.

Figure 6-17: Current and Potential Future Capacity in South Wales Valleys



Source: DECC
Note: Future capacity assumes all planned wind farm developments receive consent

Local Landscape

6.82 The only parts of the study area assessed as outstanding by LANDMAP's visual sensory assessment are to the north in the Brecon Beacons national park. In some places these are within 3km of an existing wind farm. A large number of the wind farms are, however, in areas assessed as high quality.

Table 6.8: LANDMAP Visual and Sensory Assessments for South Wales Valleys Wind Farms

	Operational	Under/awaiting construction	In Planning	Total
High	6	4	2	12
Moderate	3	3	6	12
Low	0	0	1	1

Source: LANDMAP

6.83 Despite having quite a high population density overall most of the settlements are located in the valleys, while wind farms are located in upland areas. In many places, the landscapes retain a feeling of tranquillity despite close proximity to towns and villages.

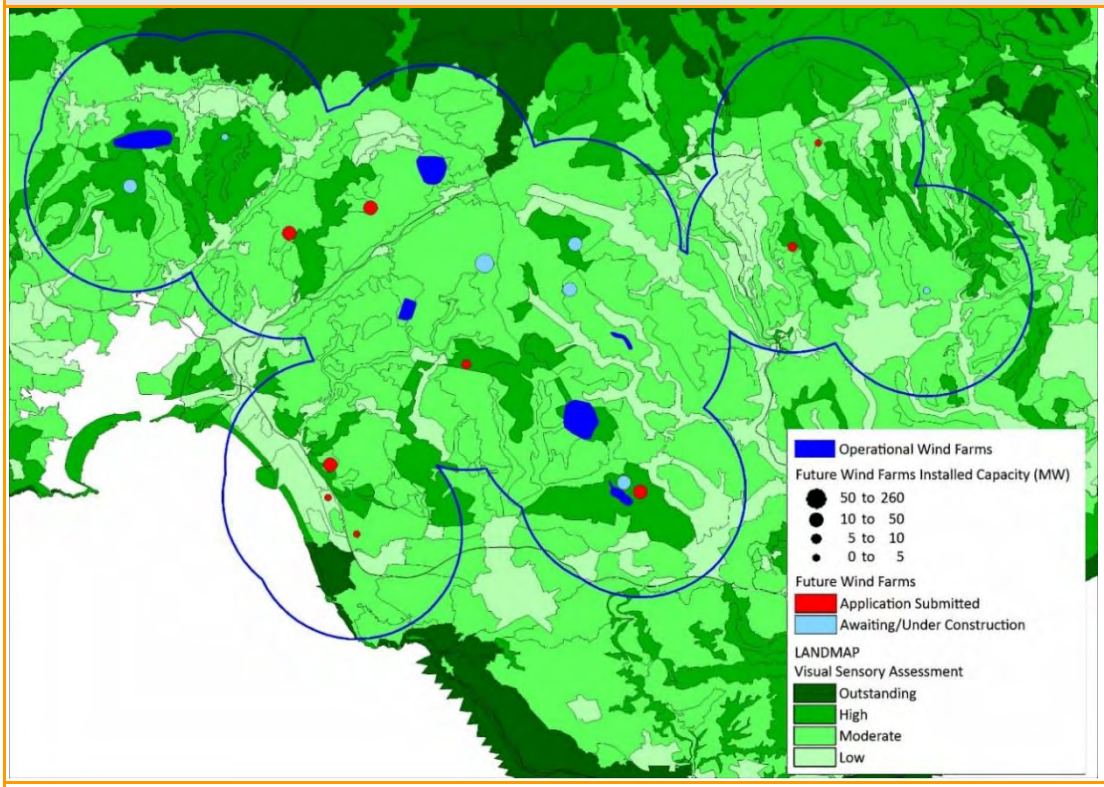
6.84 In other locations, such as in the north west of the study area, around the Mynydd y Betws wind

farm, the landscape has retained a sense of wilderness and isolation. The LANDMAP assessment was conducted prior to the installation of the turbines, and it is possible that the wind farm may have detracted from the "unspoilt" character of the area.

6.85 Some of the other key wind farm locations are in much closer proximity to settlements. The Landmap assessment concludes that the cluster around Taff Ely detracts from the integrity (or "unspoiltness") of the area, but enhances the character and sense of place which contributes to the overall assessment of high landscape quality.

6.86 The major focus for future development is the area around the existing Ffynnon Oer wind farm and consented Pen y Cymmoed development. This area is heavily forested and is assessed as moderate by LANDMAP. On scenic quality, the assessment notes that the trees on the valley sides give drama, but "in many areas the abrupt forest edge sits uncomfortably with the surrounding open landscape... *Cleared areas of forest are unsightly*".

Figure 6-18: LANDMAP Visual and Sensory Assessment



Source: LANDMAP

Scale of Visitor Economy

6.87 BRES shows there are around 10,700 people employed in tourism related sectors in the study area, representing 36% of all tourism related employment in the eight local authority areas covered. Bedstock data shows there are a total of 6,200 bedspaces in the study area which represents only 9% of all bedspaces in the local authority areas.

6.88 This provides a wide range for the estimate of tourism volume and value which is located in the study area. It is likely that the figure is closer to the lower estimate from the bedstock data. This is because a large proportion of the tourism related employment is in food and beverage sectors. Given that the study area covers a very densely populated area of Wales, it is likely that a large

proportion of the jobs are driven by demand from locals as opposed to visitors.

Table 6.9: Visitor Accommodation and Employment in Tourism Related Sectors		
	Bedspaces	Employment
Valleys Study Area	6,200	10,700
Local Authorities	67,600	30,000
Percentage in study area	9%	36%
Source: BRES and Bedstock (Visit Wales)		

6.89 Applying this to the tourism datasets provides a range of 2.6m to 10.1m visitors per annum and £88m to £342m in visitor expenditure. As described above, the true values are likely to be towards the lower end of this scale.

Table 6.10: Estimated Volume and Value of Tourism in South Wales Valleys Study Area						
	Local Authorities		Low Estimate for Study Area		High Estimate for Study Area	
	Visits (m)	Expenditure (£m)	Visits (m)	Expenditure (£m)	Visits (m)	Expenditure (£m)
Day Visitors	27.5	725.7	2.5	66.9	9.8	258.8
Domestic Tourists	0.7	234.0	0.1	21.6	0.3	83.5
Total	28.2	959.7	2.6	88.5	10.1	342.3
Calculations by Regeneris Consulting						

Visitor Assets

6.90 The South Wales Valleys study area is not as well established as a tourism location as many of the other study areas. It is however, recognised as a growth area, with both Neath Port Talbot and Rhondda Cynon Taff adopting tourism strategies in order to increase the contribution of the sector to the local economy. It also has distinctive assets which differentiate the visitor offer from many other parts of Wales. Mountain biking is identified as a particular asset in Neath Port Talbot's tourism strategy (NPT, 2011) as it is home to Afan Forest Park which contains mountain biking trails with an international reputation. RCT's tourism strategy (RCT, 2007) also identifies cycling and mountain biking as growth areas as it contains the Celtic Trail, part of the National Cycle Network. Many of the key cycling destinations are in very close proximity to the area which will see considerable wind farm development in coming years.

6.91 Walking and other outdoor activities are a key part of the offer in the Brecon Beacons which occupies the northern part of the study area. Walkers here are likely to encounter views of Maesgwyn and Mynydd y Betws wind farms. To the south, there are large upland areas, which include open moorland and dense forestry. There are walking routes throughout this area and large areas of open country which offer people the right to roam across the countryside, with many of these areas containing planned or operational wind farms. Many of the walks are densely forested which would restrict views of turbines in large sections.

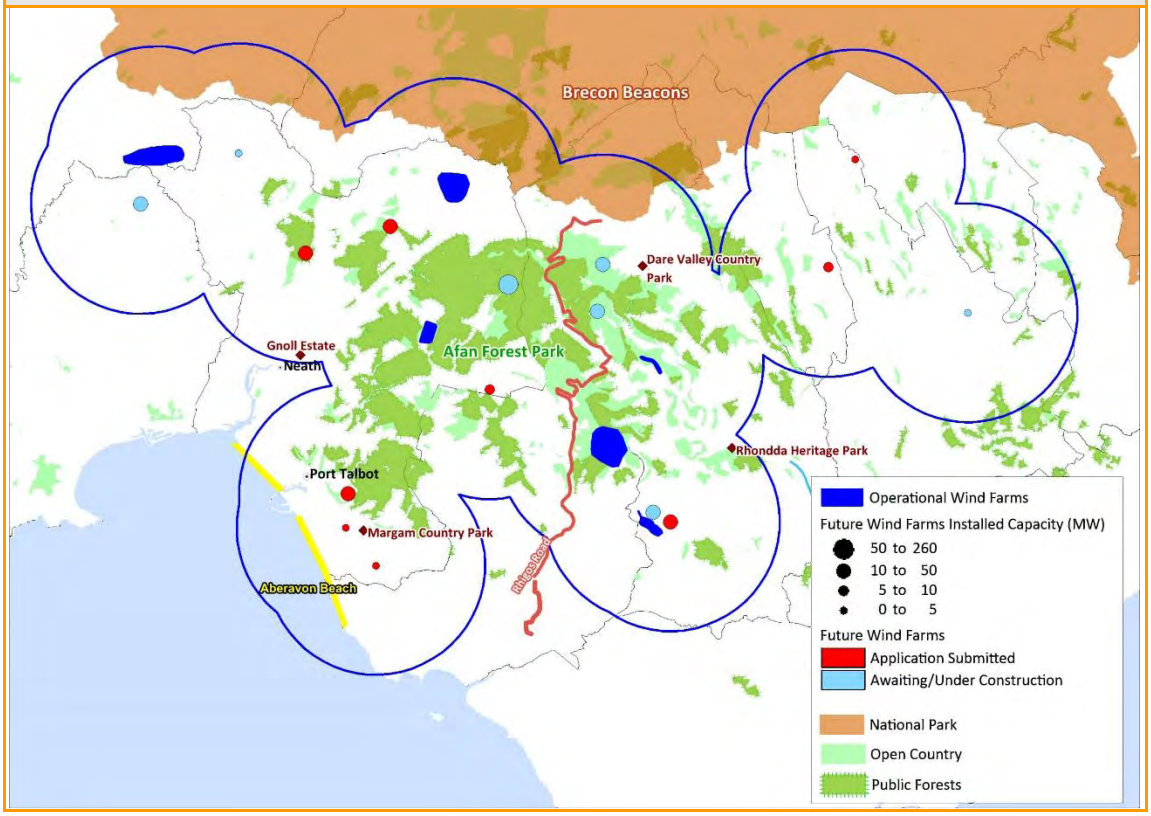
6.92 There is a question over the degree to which this area is an established walking location for tourists compared to other areas of Wales. Both NPT and RCT's strategies identify walking as a growth market, however a large proportion of the walkers in the areas affected by wind farms are likely to be local. RCT's tourism strategy notes that the countryside product is "not fully developed for tourism".

6.93 Culture and industrial heritage are other key assets, although more so in RCT than NPT. RCT's strategy identifies industrial heritage as an asset and the opportunity to develop niche markets such as genealogy. Rhondda Heritage Park and Cynon Valley Museum and Gallery are both relevant attractions which each attract around 50,000 visitors per annum.

6.94 In the south of the study area, Aberavon beach is a popular location for surfing. There are a number of small, planned wind farms in close proximity. These are mostly located in, or very close to, built up and industrial areas so would not be expected to detract from the scenery. Margam Country Park is close to this cluster, and it may be possible to see turbines from parts of the estate.

6.95 The Rhigos Road is a popular route for scenic drives and bike rides and this dissects a number of the wind farm developments. The turbines on some parts of this drive are already clearly visible, and some of the largest consented wind farms will also be located in close proximity to this road.

Figure 6-19: Visitor Assets in South Wales Valleys Study Area



Visitor Characteristics

6.96 The area attracts a high proportion of day visitors. The respective tourism strategies suggest 60% of visits to NPT were day visitors and 40% in RCT. The data from the Day Visits survey and GBTS suggest that the proportions are substantially higher than this (around 99%) but this is likely to reflect differences in the way the surveys were conducted. The high proportion of day visits reflect the accessibility of this area and the large population within driving distance. It also reflects its own poorly developed holiday offer and its proximity to established holiday destinations such as the Gower and Brecon Beacons.

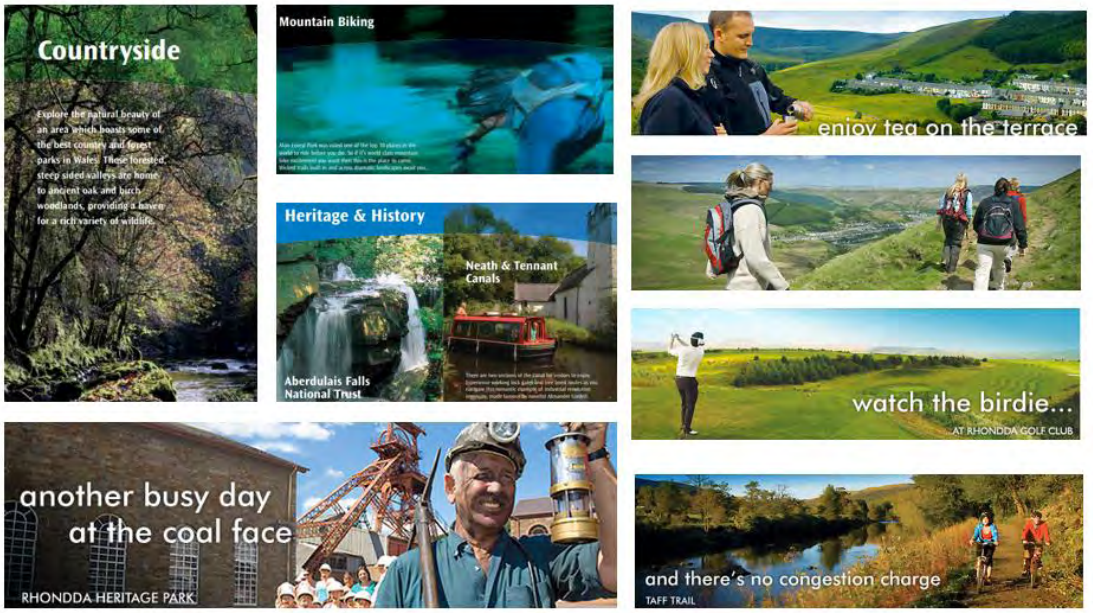
6.97 NPT's tourism strategy notes that the district attracts a younger visitor mix - 30% are aged 16-

24 compared to 20% across Wales. In Afan Forest Park, 51% of visitors are aged 35-59 which reflects the popularity of mountain biking for this demographic. RCT's strategy does not provide information on the average age of visitors.

Marketing and Promotion Brochures

6.98 Although unspoiled, open landscapes do feature in some of the marketing brochures for RCT, in general both areas highlight the diversity of the offer, including industrial heritage, mountain biking and other outdoor activities.

Figure 6-20: Marketing and Promotional Brochures for South Wales Valleys



Source: Visit Neath Port Talbot and Visit Rhondda Cynon Taff

Key Points for Assessment

- There are a number of existing wind farm developments in this study area and a number of additional major schemes which have been consented. Although these wind farms are spread out over a wide area, there will be a very large concentration of turbines in the central area around Afan Forest Park (NPT's key visitor asset), the border of NPT and RCT and in the south of RCT.

- These wind farms will be relatively dominant features on the landscape in some parts of this area, particularly where landscapes are open and unspoiled in the north west of the study area. However, large areas are forested (including major forestry plantations) which would limit visibility for tourists in some of these areas. Many of the wind farms are also close to existing developed and former industrial areas which will limit their impact on the quality of landscapes and their attractiveness to visitors.

- The area has a diverse offer which includes walking, adventure sports, mountain biking, heritage, beaches and surfing. Many of these markets are not likely to be sensitive to wind farm development which increases the potential for substitution of visitors if some visitors are deterred.

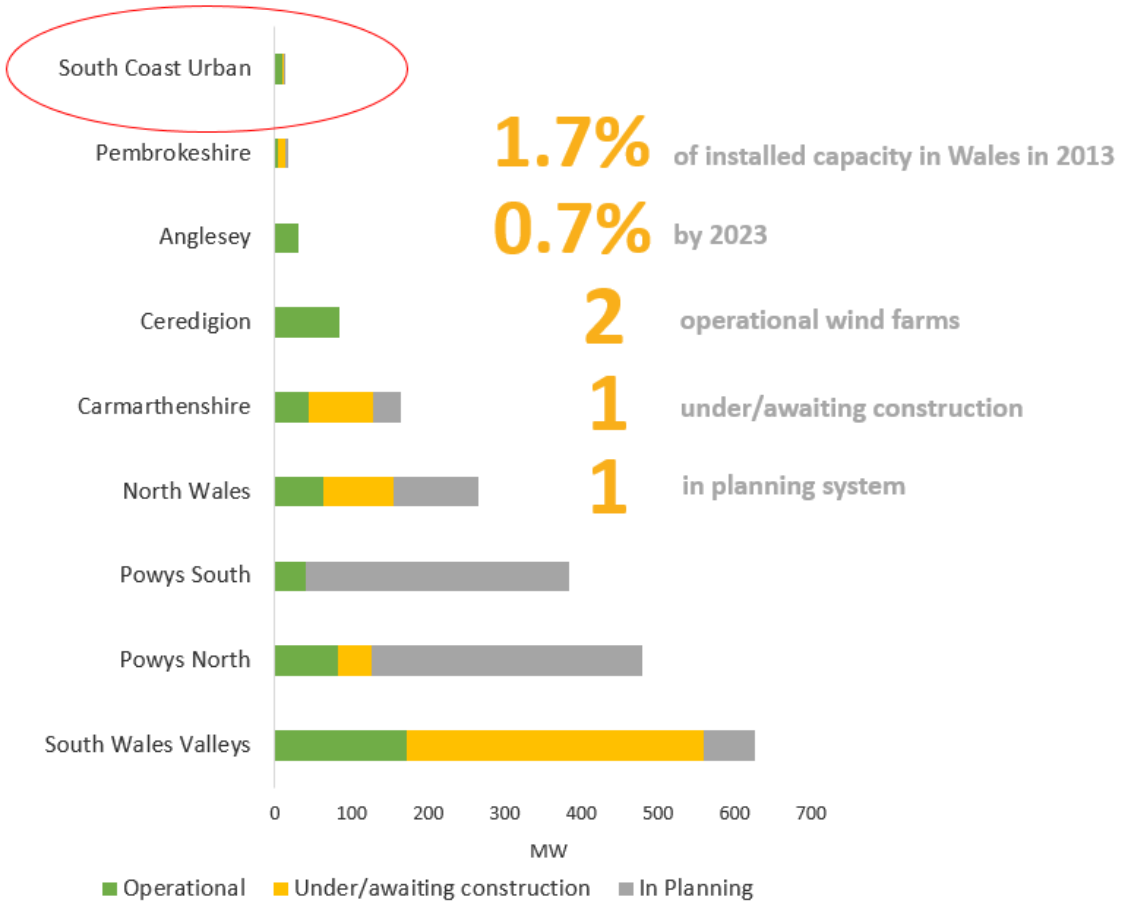
- Surrounding areas in the Gower and Brecon Beacons National Park are more established as areas of high scenic value and walking destinations. Although the study area does attract people for walking and upland landscapes, many of these are likely to be locals or day visitors from surrounding areas who spend less while visiting the area.

South Coast Urban Area

Current and Planned Wind Farm Development

6.99 This study area comprises four small wind farm developments, predominantly in built up areas of Cardiff, Newport and Monmouthshire on the south coast of Wales. It is the smallest of the study areas in terms of energy production. Each of the wind farms contains only one or two turbines.

Figure 6-21: Current and Potential Future Capacity in South Coast Urban Area



Source: DECC

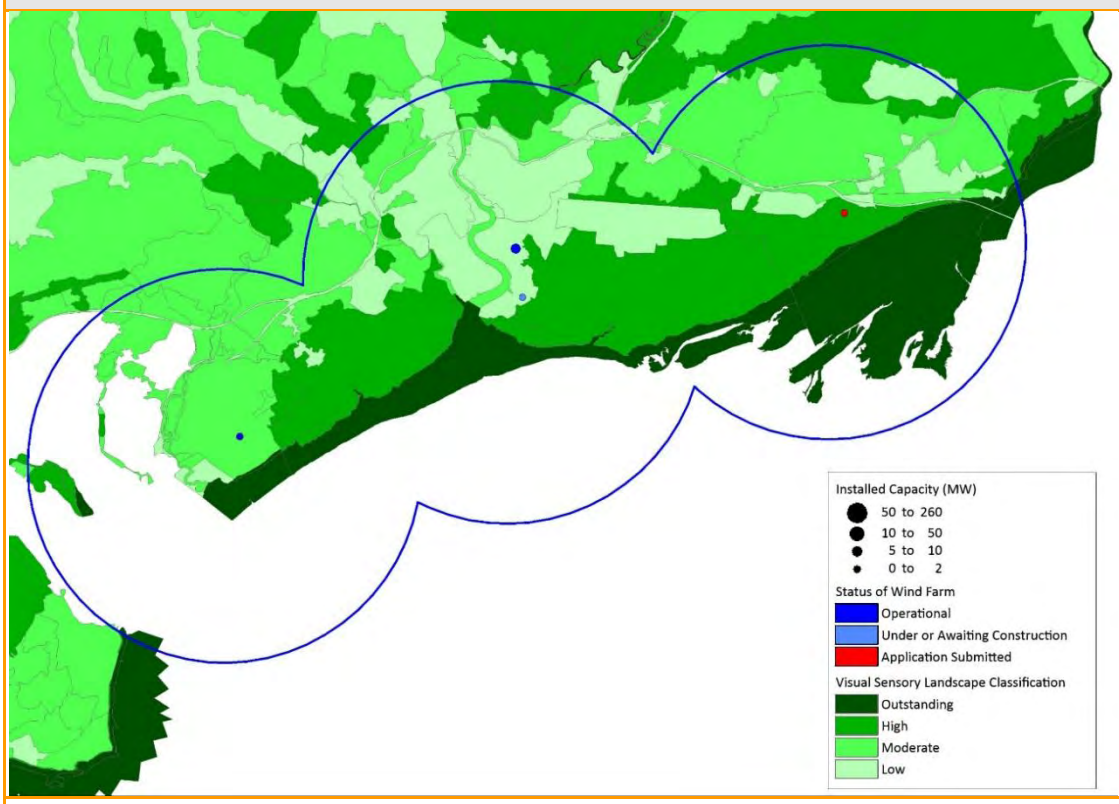
Local Landscape

6.100 The study area contains long stretches along the coast which are assessed as being outstanding in LANDMAP's visual and sensory assessment. This is due to the open seascapes with long views to the English coastline: "*the views form part of the Severn estuary which has a very distinctive estuarial and maritime character and strong sense of place*". The assessment notes that "*large-scale industrial development visually intrudes upon this open and exposed landscape*", however this does not detract from the distinctiveness of the area.

6.101 The operational and consented wind farm in close proximity to each other are both in an area assessed as low quality as they are located in a built up, commercial area. The wind farm in Cardiff is assessed as moderate as the "degraded nature of area reduces scenic quality". The wind farm in Monmouthshire is in an area assessed as high quality for its "long views framed by attractive pollarded willows". This wind farm is however adjacent to the M4 motorway.

6.102 Despite the proximity of the wind farms to some high and outstanding quality landscapes, it is unlikely that single turbines would have a noticeable effect on the landscape given the industrial development in the area.

Figure 6-22: LANDMAP Visual and Sensory Assessment for South Coast Urban Area



Source: LANDMAP

Scale of Visitor Economy

6.103 The study area contains 17,800 jobs in tourism related sectors and 23,200 bedspaces in visitor accommodation, representing between 76.7% and 85.9% of the total for the local authorities. The high percentages here are because the study area contains Cardiff city centre.

Table 6.11: Tourism Related Employment and Bedspaces in Visitor Accommodation

	South Coast Urban	Local Authorities	Percentage in Study Area
Jobs in tourism related sectors	17,800	23,200	76.7%
Bedspaces	23,200	27,000	85.9%

Source: BRES and Bedstock data (Visit Wales)

6.104 Applying this to the tourism datasets provides a range of 20.1m to 22.5m visitors per annum and £1.1bn to £1.3bn in visitor expenditure. Again, this reflects the number of visitors to Cardiff city centre.

6.105 It should be noted that this data excludes foreign visitors which is an important market for Cardiff, accounting for 25% of overnight visits according to the 2012 visitor survey. The data is therefore likely to substantially underestimate the total volume and value for the area.

Table 6.12: Estimates of Tourism Volume and Value in South Coast Urban Area

	Local Authorities		Low Estimate		High Estimate	
	Visits (m)	Expenditure (£m)	Visits (m)	Expenditure (£m)	Visits (m)	Expenditure (£m)
Day Visitors	25.6	1,282.1	19.6	983.3	22.0	1,101.2
Domestic Tourists	0.5	260.1	0.4	199.4	0.5	223.3
Total	26.1	1,542.2	20.1	1,182.7	22.5	1,324.6
Calculations by Regeneris Consulting						

Visitor Assets

6.106 The visitor assets in this study area centre around Cardiff, its cultural and sporting attractions, shopping, entertainment and heritage. It is also by some margin, Wales's most established location for business tourism and conferences. Around a quarter of overnight domestic visits to Cardiff are business related (GBTS) – substantially more than any other area of Wales. Monmouthshire attracts smaller number of visitors than Cardiff but offers large areas of unspoiled countryside. This is all remote from the proposed wind farm development adjacent to the M4 motorway.

6.107 Given the nature of the visitor offer in this study area, it is unlikely that there would be any disruption from the small amount of wind farm development that exists or is planned.

Visitor Characteristics

6.108 As stated above, Cardiff's 2012 visitor survey (Cardiff City and County Council, 2012) found that a large proportion of visitors are from overseas (25%) which is substantially more than the average for Wales. GBTS data also shows it attracts a large number of business visitors and people visiting friends and relatives, who are unlikely to be deterred by the small amount of wind farm development.

6.109 For those on holiday visits, the visitor survey found a broad mix of ages and visitor types. Cardiff's tourism strategy identifies a number of priority target markets, including "young entertainment seekers" (aged 23-35), "independent explorers" (30+) and "middle of the roaders" (35-50, often with families).

Marketing and Promotion

6.110 Cardiff's marketing and promotional brochures highlight a vast range of cultural and sporting assets. Open, unspoiled landscapes are not portrayed as an important part of the offer. The countryside plays a more important role for Monmouthshire, but here too, unspoiled landscapes are not included in much of the material.

Figure 6-23: Images from Promotional and Marketing Brochures for South Coast Urban Area

Source: Visit Cardiff and Visit Monmouthshire

Key Points for Assessment

- There is limited wind farm development in this study area. Each contains only one or two wind farms and these would not represent a significant intrusion on the existing urban landscape.
- Visitors to the area come primarily for the shopping, cultural, sporting and heritage attractions of Cardiff. None of these markets are likely to be threatened by the minimal wind farm development planned for the area.

North East Wales

Current and Planned Wind Farm Development

6.111 This study area incudes much of Conwy and Denbighshire, a small part of Gwynedd and a small area of Flintshire (due to the presence of one planned wind farm on the Flintshire coast). The area is covered by a Strategic Search Area.

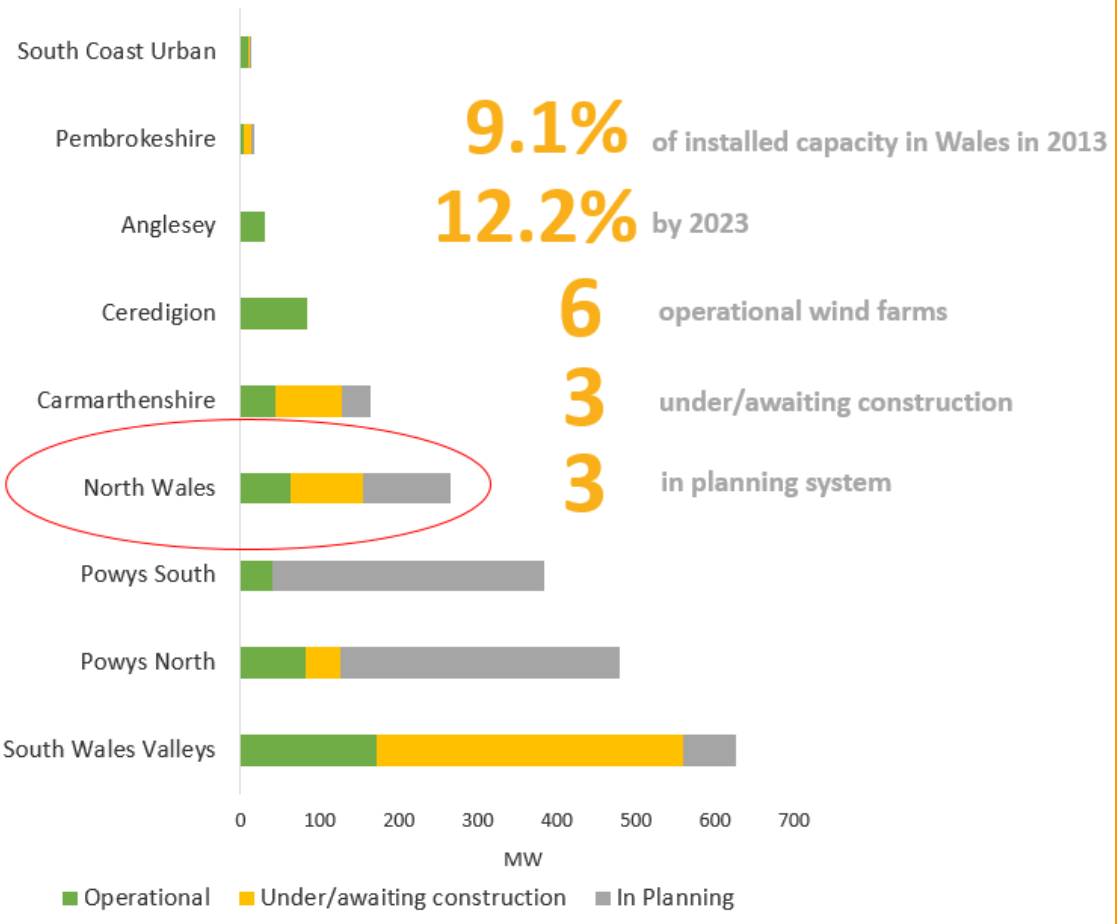
6.112 There are six operational wind farms. The wind farms in the south of the study area are all very small, each comprising three or four turbines. The largest operational wind farm is at Tir Mostyn and Foel Goch, comprising 25 turbines in total over two sites in the centre of the study area.

6.113 All of the future wind farms are considerably larger in terms of the proposed installed capacity. Derwydd Bach, Nant Bach and Brenig wind farms have each received planning permission and each contain between 10 and 16 turbines (37 in total).

6.114 An application has also been submitted for a wind farm in Clocaenog Forest which would be the area's largest wind farm if approved, comprising 32 turbines.

6.115 The wind farms are dispersed over a wide area, however there would be a cluster of wind farms around Clocaenog forest if the above scheme received planning approval.

Figure 6-24: Current and Potential Future Installed Capacity in North Wales Impact Area



Source: DECC
Note: Future capacity assumes all planned wind farms receive consent

Local Landscape

6.116 The area includes a varied landscape, with a number of wind farms in areas assessed by LANDMAP as high, moderate and low in its visual and sensory assessment.

Table 6.13: LANDMAP Visual and Sensory Assessment for North Wales Wind Farms

	Operational	Under/awaiting construction	In Planning	Total
High	3	1	1	5
Low	0	0	1	1
Moderate	3	2	1	6

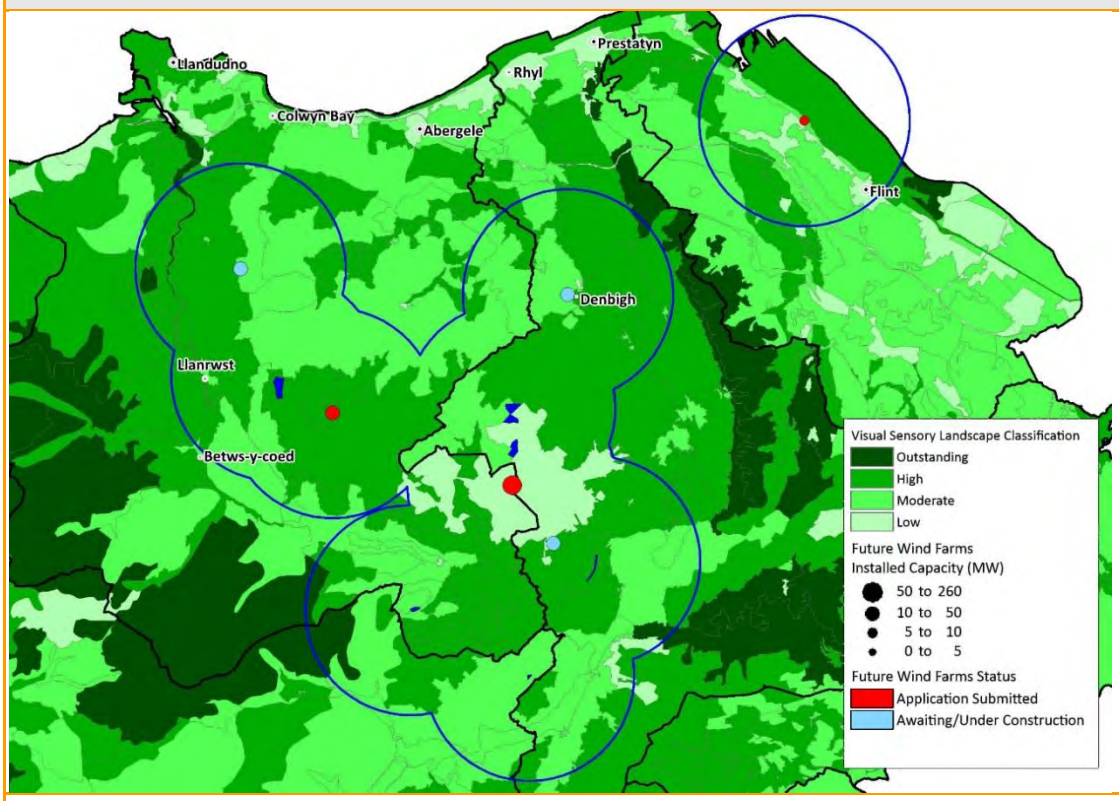
Source: LANDMAP

6.117 The area at the centre of the study area, which includes the largest operational wind farm (Tir Mostyn and Foel Goch) and the largest proposed wind farm (Clocaenog) includes a number of forestry plantations which LANDMAP considers to detract from the scenic quality "Dominant single species tree cover gives a monotonous view of the area.. (which) suppresses underlying landscape qualities".

6.118 To the west of this forested area is an area of open and deserted heathland which is assessed as high quality for its "natural plateau topography" and "panoramic long views to Snowdonia". This area contains both existing and planned wind farms. To the south, the area is also assessed as high quality for its attractive wooded valleys, and its "attractive, traditional, small scale, gentle, intimate and cared for landscape". This area too contains existing and consented wind farms.

6.119 The study area does contain small areas assessed as outstanding in LANDMAP's visual and sensory assessment. These are areas on the eastern edge of Snowdonia National Park from where some of the turbines are visible and likely to detract from the scenic quality for some visitors.

Figure 6-25: LANDMAP Visual and Sensory Assessment



Source: LANDMAP

Scale of Visitor Economy

6.120 The study area contains an estimated 1,800 jobs in tourism related sectors. This represents around 9% of total employment in the study area which is in line with the average for Wales, and also around 9% of tourism employment in the four local authority areas (Gwynedd, Conwy, Denbighshire and Flintshire). Bedstock data shows there are 10,200 bedspaces which represents 4.1% of the total for the local authorities.

6.121 The low percentages here reflect the fact that the study area does not cover any of the main coastal resorts on the North Wales coast (Llandudno, Colwyn Bay etc) and only covers a small proportion of Snowdonia National Park, areas in which there will be much higher concentrations of accommodation.

Table 6.14: Tourism Related Employment and Visitor Bedspaces in North Wales Study Area			
	North Wales LIA	Local Authorities	Percentage in Study Area
Jobs in tourism related sectors	1800	21,700	8.3%
Bedspaces	10,200	250,000	4.1%
Source: BRES and Bedstock data (Visit Wales)			

6.122 Applying these percentages to the tourism datasets provides a range of 1m to 1.9m visitors per annum and £45m to £91m in visitor expenditure for the study area. As described previously, these should be treated as an indicative estimate of tourism volume and value.

6.123 It should also be noted again that these figures do not include visits and expenditure from overseas tourists which may be significant in these local authorities.

Table 6.15: Estimated Tourism Volume and Value in North Wales Study Area						
	Local Authorities		Low Estimate		High Estimate	
	Visits	Expenditure	Visits	Expenditure	Visits	Expenditure
Day Visitors	20.8	569.2	0.8	23.2	1.7	47.2
Domestic Tourists	2.6	527.0	0.1	21.5	0.2	43.7
Total	23.4	1,096.2	1.0	44.7	1.9	90.9
Calculations by Regeneris Consulting						

Visitor Assets

6.124 The key visitor assets for North Wales are the coastal resorts and beaches on the North Wales coast, Snowdonia National Park to the west and the Clwydian Range to the east, which is designated as an area of outstanding natural beauty. The Clywydian Range also includes Offa's Dyke which is the only National Trail in the area. Although some of the wind farms will be visible from these areas, only small parts fall within the 7km boundary which indicates wind farms will not be visually dominant or intrusive for visitors.

6.125 Within the study area itself, the key visitor assets are the area of open heathland containing Mynydd Hiraethog, a site of special scientific interest. This area is likely to appeal to walkers attracted to open, remote and wild landscapes and nature watchers (the area contains a number of upland breeding birds). Walkers in these areas would come very close to operational and planned wind farms.

6.126 In the same area there are two large bodies of water (Llyn Brenig and the Alwen reservoir). These are popular beauty spots, with wide views over the heathland and wooded valleys. The lakes provide opportunities for walking, fishing, cycling, sailing, windsurfing and canoeing. The area also attracts wildlife watchers as the area is home to black grouse, butterflies and red squirrels.

6.127 The area of forestry which includes the largest operational and planned wind farms has good access to the public and is also likely to attract some walkers and mountain bikers.

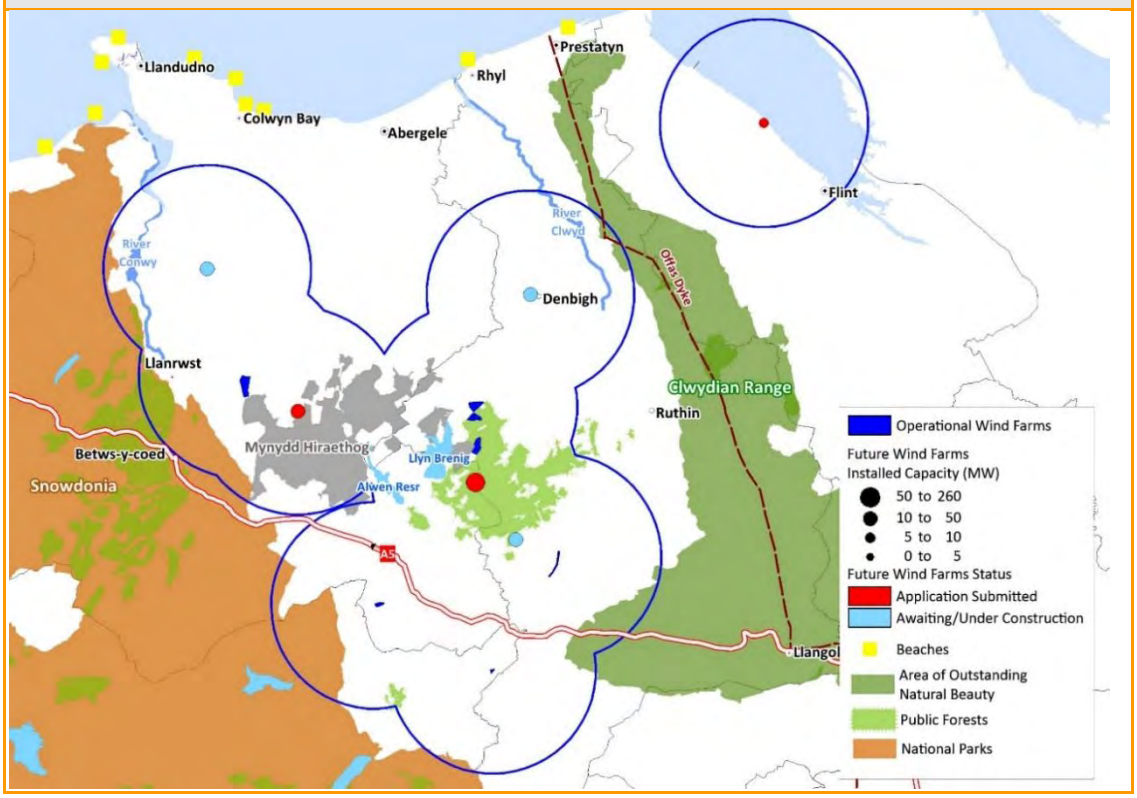
6.128 Again there is uncertainty over the number of tourists who visit these areas, which are in close proximity to more established walking and outdoor activity locations (to the east and west). The North Wales Tourism Strategy (TPNW, 2010) does not identify them as key visitor assets, however they are likely to attract local people and day visitors. The lack of any data on visitor numbers for small areas makes this difficult to determine.

6.129 The Strategy does identify the market towns of Denbigh, Mold and Ruthin as popular visitor assets. Of these, Denbigh is the town most likely to be affected by wind farms, as it is in close proximity to Brenig wind farm (16 turbines).

6.130 The A5 from Llangollen to Snowdonia is an important visitor route. This road comes within close proximity of a number of wind farms, however these are all small and unlikely to be a dominant feature on the landscape.

6.131 Conwy and Denbighshire County Councils have published a joint Sustainable Tourism Development Action Plan for the Hiraethog area (CCC/DCC, 2010). This recognises the potential to exploit the proposed wind farms as a visitor asset. It advocates "using the proposed windfarm development as an asset and opportunity rather than a weakness, or a threat, by maximising the educational potential it generates, seeking to develop an innovative visitor attraction around the concept of sustainable energy, maximising the community benefits made available from the windfarm development".

Figure 6-26: Visitor Assets in North Wales Study Area



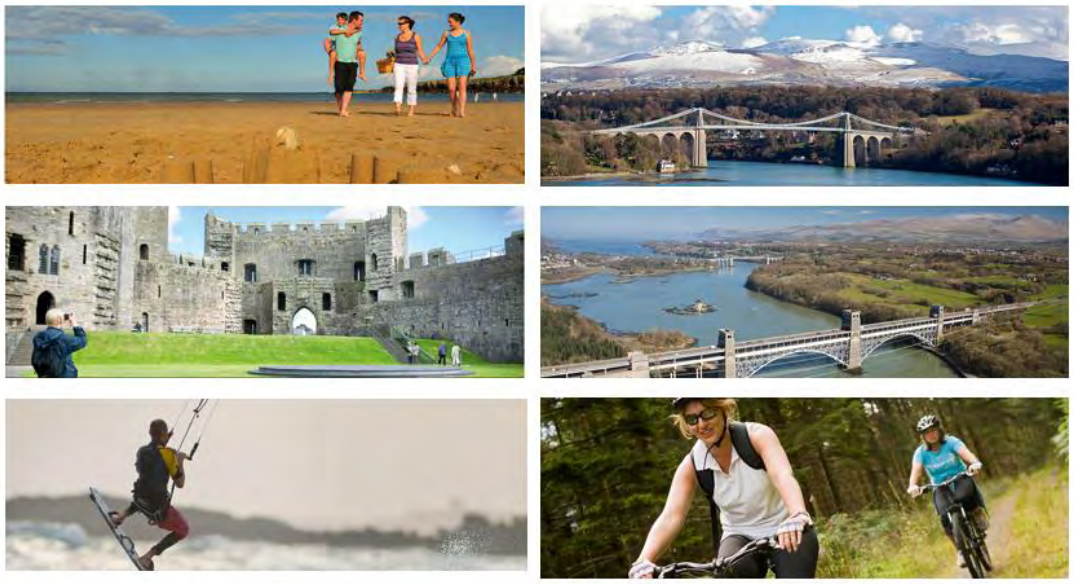
Visitor Characteristics

6.132 The North Wales tourism strategy (TPNW, 2010) identifies its key market segments in order of size as UK adult breaks (45%), family holidays (20%), activity-led holidays (15%), visits to friend and relatives (10%), overseas visitors (10%), and business tourism (5%). It does not provide an age breakdown of visitors, however the area is reported to attract a large share of older visitors enjoying coastal breaks. Of the staying visitors, a large number are repeat visits (82% according to the Strategy). Again, it must be emphasised that this relates to North Wales as a whole and not just the study area.

Marketing and Promotion

6.133 Marketing and promotional material highlights heritage assets, beaches, watersports and outdoor activities. Landscapes featuring Snowdonia in the background are also prominent, although this area does not contain any wind farms.

Figure 6-27: Marketing and Promotional Material for North Wales



Source: North Wales Tourism

Key points for assessment

- Most of the operational wind farms in this study area are small and located over a wide area. The wind farms are not considered to be visually dominant in the landscape across this wide area and are unlikely to be a factor in deterring visitors.

- There are a number of larger consented and planned wind farms in the central part of the study area, around Clocaenog Forest. If these were all developed, there would be a greater clustering of wind farms in some areas, which could have a more significant impact on the landscape. Despite this, these schemes will be spread over a large area and a number are proposed in forested areas which would limit the overall visibility of turbines.

- The wind farms are located or proposed in areas remote from North Wales' key natural assets and visitor attractions. All wind farms are remote from the Clwydian range to the east and Snowdonia National Park to the west. This explains the relatively low estimated volume and value of tourism in the study area.

- The key visitor attractions in close proximity to the wind farms are the area of open heathland in the Mynydd Hiarethog SSI, Clocaenog Forest and the Llyn Brenig reservoir. These areas are popular for nature watching, fishing, walking, mountain biking and watersports. Although a small number of visitors may be deterred from visiting the area, the variety of activities in this area mean there is high potential for replacement of visitors.

- Denbighshire and Conwy County Councils have recognised an opportunity to use the proposed wind farms as a visitor asset by developing a visitor centre around renewable energy.

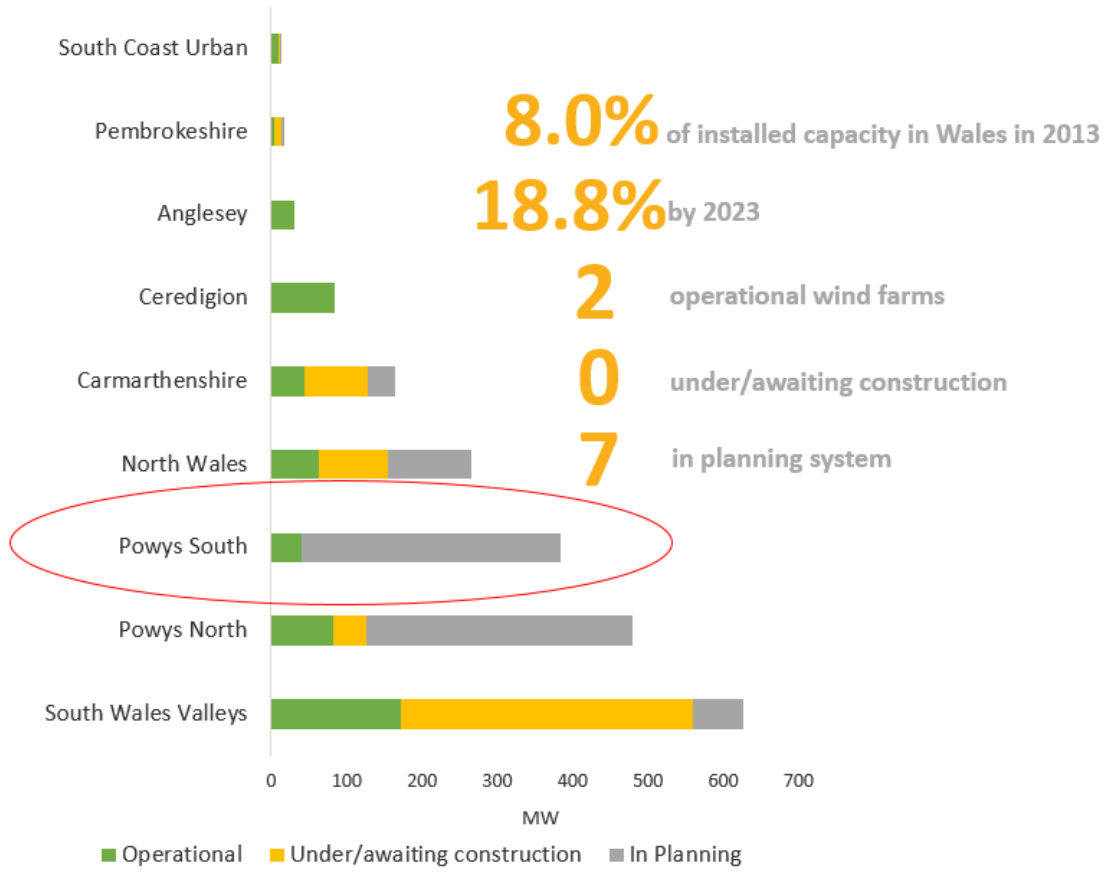
Powys South

Current and Planned Wind Farm Development

6.134 There are two existing wind farms in Powys South. These are large wind farms of 22 and 103 turbines (Bryn Titl and Llandinam), which have been established since the early nineties. There is little evidence of whether these wind farms have affected tourism. However, a social survey of public attitudes towards three wind farm sites in Wales commissioned by the Countryside Council for Wales in 1994 found that 65% of local people felt that the Llandinam wind farm would attract tourists to the area. This evidence is very out of date and the survey was taken at a time when the wind farms are likely to have had novelty value. However there is no evidence that there have been detrimental impacts since then.

6.135 There are seven further wind farms in the planning system, which would cumulatively add to an additional 350 MW in this area of Powys. The proposed sites would all be very close to each other, meaning there would be potential for cumulative effects.

Figure 6-28: Current and Potential Future Installed Capacity in Powys South Impact Area



Source: DECC
Note: Future capacity assumes all planned wind farms receive consent

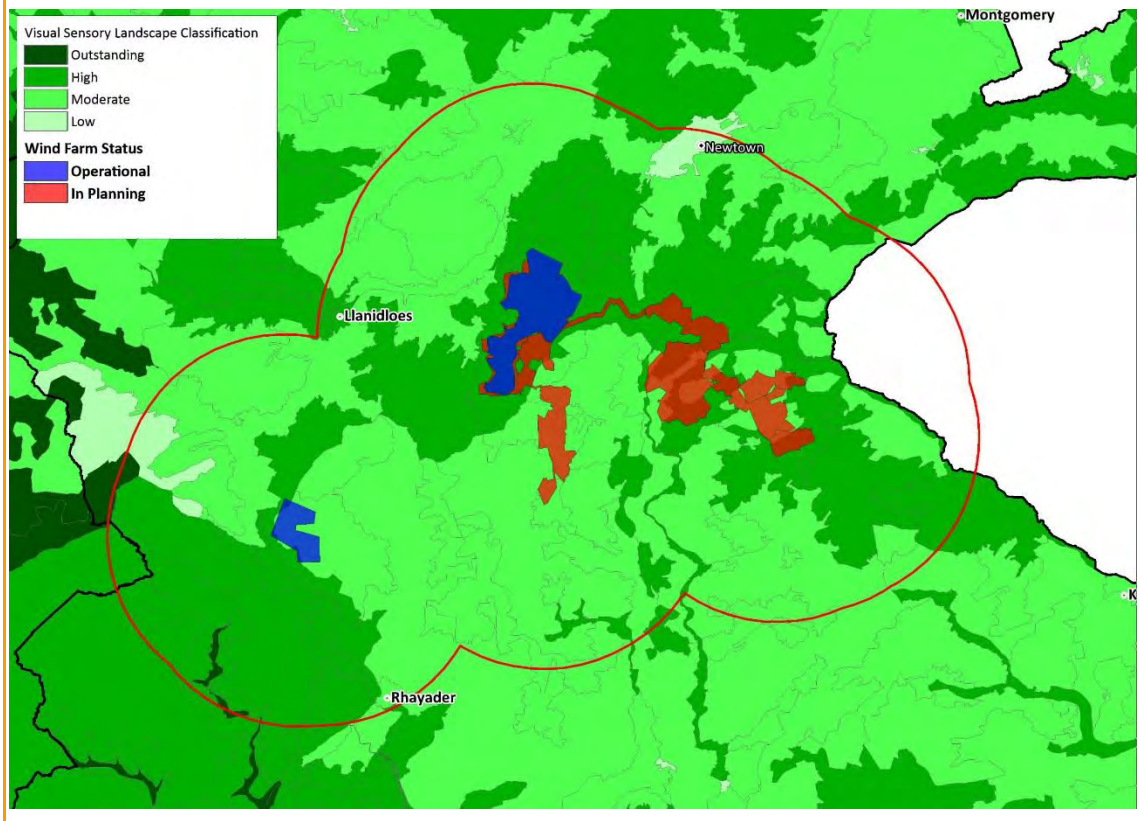
Local Landscape

6.136 The operational and planned wind farms are all located in an area of upland moorland. The areas in which operational wind farms are located are assessed as moderate (BrynTitli) and high (Llandinam) in LANDMAP's visual and sensory assessment. In both case, the turbines influence the assessment of scenic value. In the case of Llandinam, the turbines are judged to "*provide a dramatic visual link looking in to the area*" and complement the expanse of moorland vegetation. For Bryn Titli, the assessment notes that the turbines and recent enclosures "*may detract*" from the scenic quality. Again, these assessments reflect the subjectivity of reactions to wind farms.

6.137 The future wind farms are all in areas assessed as high or moderate in the visual and sensory assessment. A large number of the areas are described as tranquil, remote, attractive and exposed, while some areas are deemed to be of lower value because of intensive farming practices.

6.138 It should be noted that the largest planned wind farm is a repowering of the existing Llandinam wind farm. While these turbines would be likely to be larger than the existing turbines, the fact that wind farms are established in the area means the additional impact on the existing landscape may be limited.

Figure 6-29: LANDMAP Visual and Sensory Assessment for Powys South



Source: LANDMAP

Scale of Visitor Economy

6.139 In contrast to Powys North, tourism accounts for a much lower share of total employment in this study area. 6.6% of jobs are in tourism related sectors (330 in total), which is lower than the

Wales average (8.7%). These jobs only account for 6.2% of tourism related employment in Powys as a whole.

6.140 There are approximately 890 bedspaces in visitor accommodation, comprising a mix of caravans, serviced accommodation and self-catering. This represents just 2.2% of the bedstock in Powys.

6.141 These low percentages partly reflect the size of Powys which is Wales's largest county, and that this area is not as well established as a tourism location as other parts of the County.

Table 6.16: Tourism related Employment and Visitor Bedspaces, 2012

	Powys South Study Area	Powys LA	Percentage in Study Area
Jobs in tourism related sectors	330	5,300	6.2%
Bedspaces	890	40,400	2.2%
Source: BRES and Bedstock (Visit Wales)			

6.142 Applying these percentages to the visitor surveys shows a range of 142 to 401 thousand visitors and £7m to £19m in visitor expenditure in a typical year. This is a low figure for volume and value of tourism but is an important source of income for the local tourism sector. It does imply however, that any changes in visitor behaviour would be small in absolute terms.

Table 6.17: Estimated Volume and Value of Domestic Tourism in North Powys Study Area

	Powys		Low Estimate		High Estimate	
	Visits (000s)	Expenditure (£m)	Visits (000s)	Expenditure (£m)	Visits (000s)	Expenditure (£m)
Day Visitors	6,140	222	135	5	381	14
Domestic Tourists	334	84	7	2	21	5
Total	6,474	306	142	7	401	19
Calculations by Regeneris Consulting						

Visitor Assets

6.143 As described in the Powys North case study, the natural environment is recognised as Powys's key visitor asset in the Mid Wales Tourism Strategy (TPMW, 2011). The Powys South study area is also predominantly located in the more gentle areas of rural Montgomeryshire but is in close proximity to the Brecon Beacons in the south and the Cambrian Mountains in the west.

6.144 The Elan Valley lies in the west of the study area and covers 180km^2 of lake and countryside. Over 80% of this valley is designated as Sites of Special Scientific Interest (SSSI). The Elan Valley estate notes that the area is popular with walkers, wildlife watchers, people who come for the peace and quiet and scenery and outdoor activities[20]. The Elan Valley trail is a popular cycling route which makes a loop from Rhayader around the reservoirs, including Pen y Garreg which lies within the study area. Visitors to this area may encounter Bryn Titli, an existing wind farm of 22 turbines.

6.145 The open heath and moorland, where the largest wind farms are planned, are remote from the Elan Valley and unlikely to be visible, except from a very long distance. Large areas of this part of Powys are designated as open country or other statutory access, providing opportunities for walking and wildlife watching. As with Powys North, this area is very sparsely populated and has

[20] http://www.elanvalley.org.uk/visiting-elan/

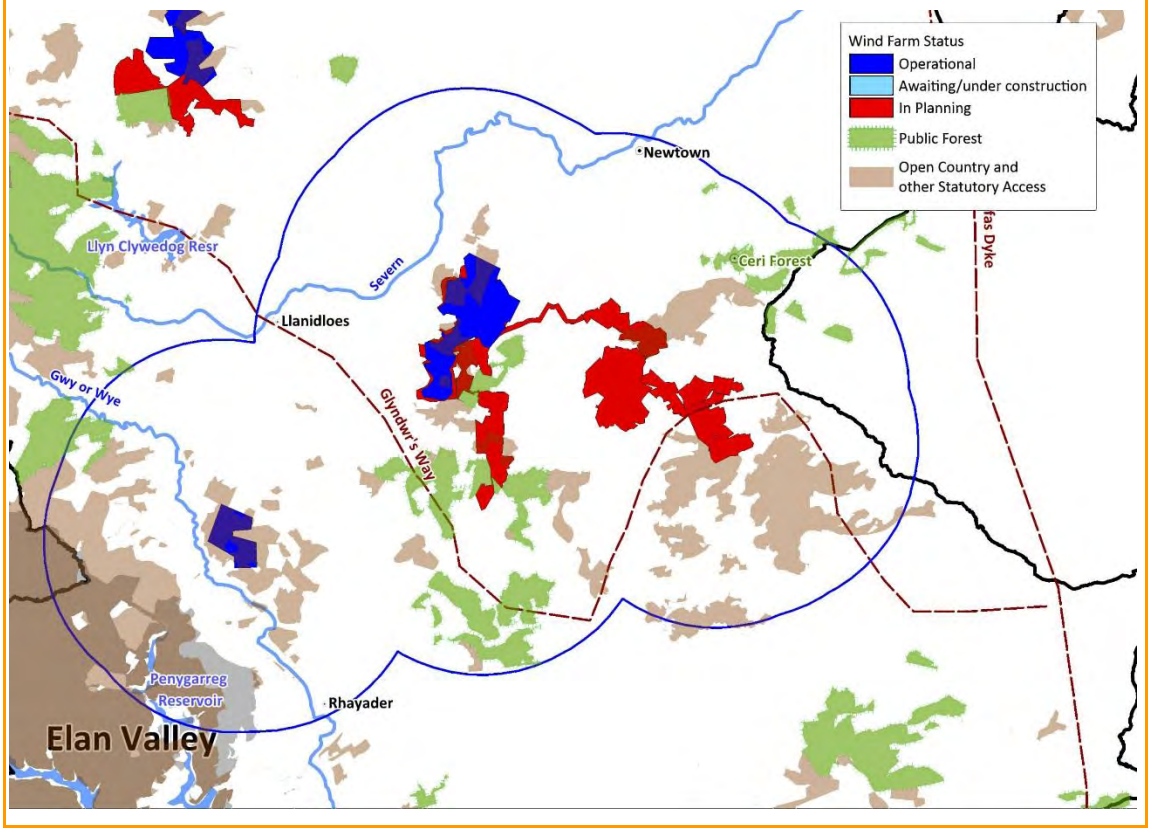
very little development. Although not as dramatic as other areas of Powys the area still attracts visitors for the tranquillity, remoteness and feeling of isolation.

6.146 Glyndwr's Way, the National Trail, also passes through the proposed site for a number of the planned wind farms (Bryngydfa and Garreg Lwyd) and comes in to close proximity to the existing wind farm Llandinam. The proximity of these wind farms means they would be perceived to be dominant features on the landscape.

6.147 There are public forests to the south and to the east (Ceri Forest). The Kerry Ridgeway runs in close proximity to Ceri. This route follows a ridgetop offering panoramic views of England and Wales over a long distance. The route is popular with walkers, horse riders and mountain bikers

6.148 Both the Severn and Wye pass through the study area in close proximity to existing and planned wind farms. Both rivers are popular for fishing.

Figure 6-30: Visitor Assets in Powys South



Visitor Characteristics

6.149 There is no information available for the specific characteristics of visitors to this part of Powys. The information here is therefore taken from the same as the Powys North case study.

6.150 The 2011 Mid Wales Tourism Survey shows that Powys attracts older visitors. Half of the visitors surveyed were "empty nesters" aged 55 or above. A further 22% were families while only 10% were "young independents".

6.151 Over 80% of visitors to Powys were day visitors and only 5% of all visitors were from overseas.

The survey also showed that visitors to Powys tend to be very loyal, with one in ten visitors to Powys being a repeat visitor.

Marketing and Promotional Material

6.152 The promotional material for Powys puts heavy emphasis on open country, unspoiled landscapes and walking holidays (see Figure 6-16). This imagery of Mid Wales as an unspoiled landscape may be considered by some to be inconsistent with the extent of wind farm development proposed for the area. It is noted however that most of the images used in marketing material is from the Brecon Beacons which is remote from wind farm development.

Key Points for Assessment

- Tourism volume and value in this area of Powys is low, representing between 2.2% and 6.2% of the total for Powys. Tourism also accounts for a relatively low share of employment, meaning that the local economy may be less sensitive to potential changes in tourism activity than the North Powys study area.

- The existing wind farm developments are in close proximity to some notable visitor assets (Elan Valley and the Glyndwrs Way). These wind farms have been established for 20 years, however there is no evidence to suggest that there has been a fall in visitor numbers to the area.

- The number of turbines would increase significantly if all planned wind farm developments were approved. These would be highly clustered and may be perceived to be dominant features on the landscape across a large part of the study area, including parts of the Glyndwr's Way. The large number of turbines may deter some walkers and other visitors who hold negative views towards wind farms from visiting these areas.

- Like Powys North, the area most affected by wind farm development has fewer visitor assets than surrounding areas, but attracts visitors for feelings of peace and quiet, isolation and wilderness. Visitors also tend to be older and are repeat visitors.

- The area has a narrow visitor offer. Walking, wildlife watching and cycling are all popular activities. However the area is not as established as other areas for these activities.

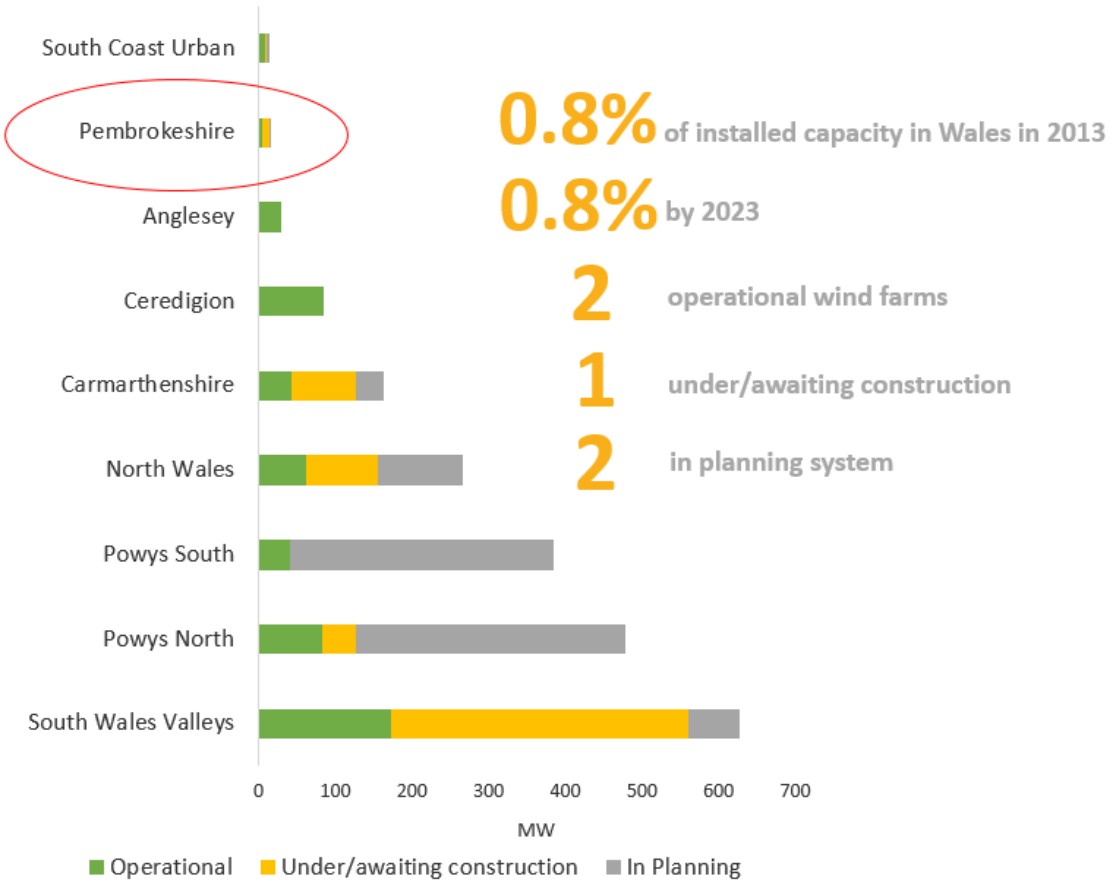
- Although the literature points to small changes in visitor behaviour as a result of wind farm development, the points above would indicate that this area's visitor economy is more sensitive to wind farm development than other parts of Wales.

Pembrokeshire

Current and Future Wind Farm Development

6.153 There are two existing wind farms in Pembrokeshire, one comprising four turbines (Castle Pill) and one comprising a single turbine (Lodge Farm). There is one further consented wind farm and two in the planning system, however these are all small in scale. The area is not covered by a SSA so is not likely to be the focus for future large scale development.

Figure 6-31: Current and Potential Future Installed Capacity in Pembrokeshire Impact Area

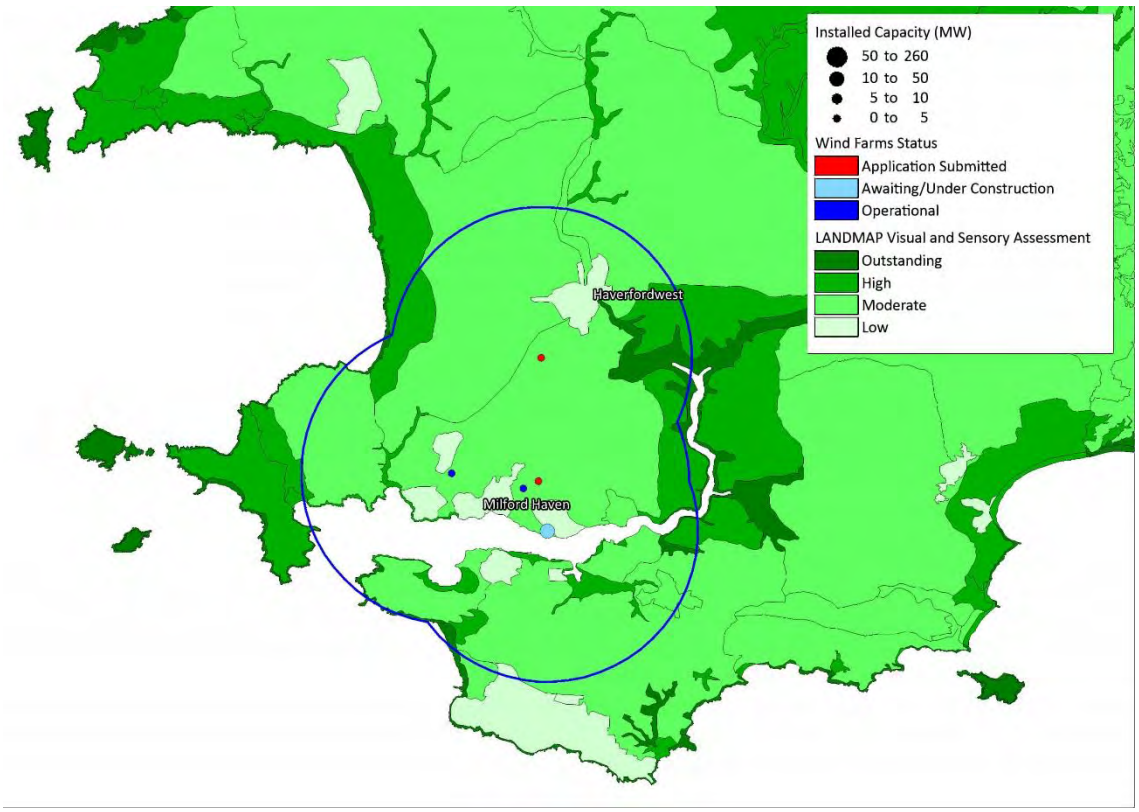


Local Landscape

6.154 All of the planned and operational wind farms are in an area of lowland farmland which has been assessed as moderate in LANDMAP's visual and sensory assessment. It notes: "*The farmland landscape of the Aspect Area is generally pleasant in internal views such as in valleys and to the north, east and west but views to the south are affected by the detractors of industrial works and oil refineries and the area is crossed by imposing pylons".*

6.155 Most of the wind farms are in close proximity to the built up areas. The largest wind farm which has received planning consent is in close proximity to an industrial estate.

Figure 6-32: LANDMAP Visual and Sensory Assessment



Source: LANDMAP

Scale of Visitor Economy

6.156 There were around 2,000 jobs in tourism related sectors in the South Pembrokeshire study area in 2012, accounting for 7.9% of total employment (below the Wales average). These jobs account for just under a third of tourism related employment in Pembrokeshire. This may overestimate the number of jobs supported by tourism since the study area includes the town of Milford Haven. Local residents are likely to support many of the jobs in the food and beverage service sector which accounts for the majority of jobs in tourism related sectors.

6.157 Bedstock data shows there are 6,670 bedspaces, accounting for 6.7% of the total stock for Pembrokeshire.

Table 6.18: Tourism related Employment and Visitor Bedspaces, 2012

	South Pembrokeshire Study Area	Pembrokeshire LA	Percentage in Study Area
Jobs in tourism related sectors	2,000	6,700	29.1%
Bedspaces	6,670	99,330	6.7%
Source: BRES and Bedstock (Visit Wales)			

6.158 Applying these percentages to the visitor survey data would imply there are between 0.4m and 1.7m domestic visitors to the study area each year. This is a wide range of estimates. The actual figure is likely to be toward the lower end of the range since a large proportion of the jobs in tourism related sectors are likely to be supported by local's expenditure.

Table 6.19: Estimates of Volume and Value of Tourism in South Pembrokeshire Study Area						
	Pembrokeshire		Low Estimate		High Estimate	
	Visits (000s)	Expenditure (£m)	Visits (000s)	Expenditure (£m)	Visits (000s)	Expenditure (£m)
Day Visitors	5,900	161	395	11	1,717	47
Domestic Tourists	815	223	55	15	237	65
Total	6,715	384	450	26	1,954	112
Calculations by Regeneris Consulting						

Visitor Assets

6.159 Pembrokeshire's key visitor asset is its coastline, most of which is covered by the Pembrokeshire Coast National Park. This area also includes a coastal path and numerous beaches, many of which have blue flag status. Pembrokeshire's Destination Management Plan (DPP, 2011) notes that the county is "*the most popular coastal holiday destination in Wales, with some of the best preserved coastline in Britain*".

6.160 The 2011-12 Pembrokeshire visitor survey found the most important reasons for visiting Pembrokeshire were the award winning beaches, the range of natural assets and opportunities for walking. The coastline and beaches present numerous opportunities for walkers, family beach holidays, watersports and wildlife watching. There are also numerous cycle trails and opportunities for mountain biking.

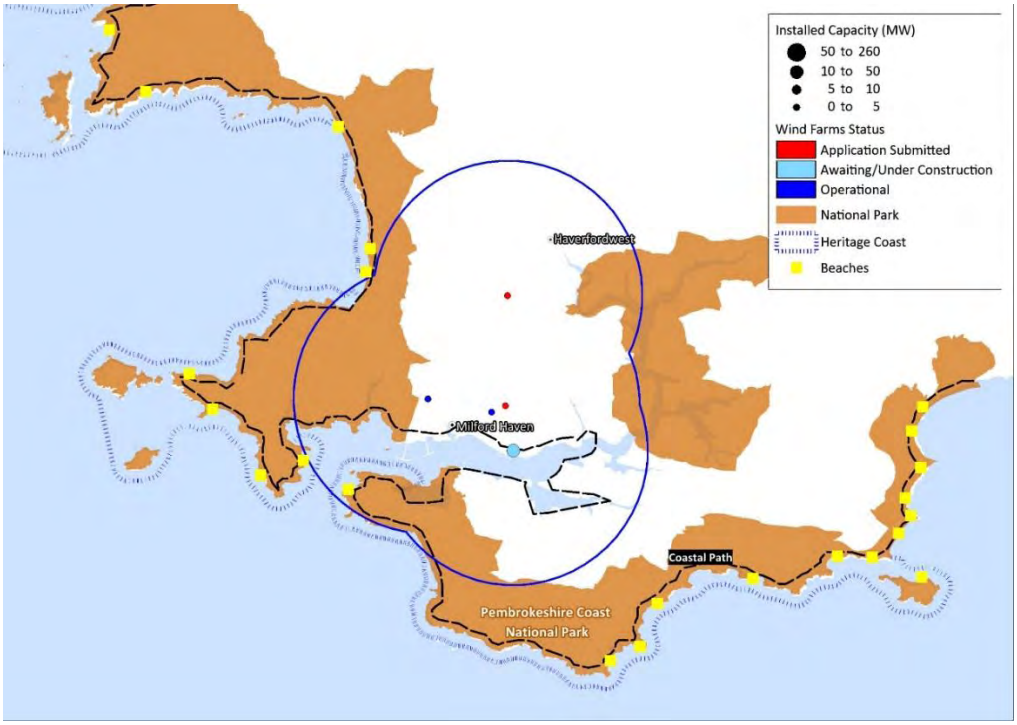
6.161 Although some of the wind farms do come in close proximity to the coastal path and National Park, they are generally on edge of town locations, remote from the most sensitive areas, with the largest consented wind farm being located next to an industrial estate. The small scale of these wind farms also means they are unlikely to be considered to be a dominant feature on the landscape for most visitors to the area.

Visitor Characteristics

6.162 Pembrokeshire attracts a very diverse visitor base, however the 2011-12 Pembrokeshire Visitor Survey found (DPP, 2012) that South Pembrokeshire was popular with younger visitors. 49% of visitors to the area were aged 44 or below.

6.163 Pembrokeshire attracts half of its visitors from within Wales, with the next largest markets being London and the South East (14%). The survey also found a high proportion of repeat visitors to the County (85 % overall).

Figure 6-33: Visitor Assets in South Pembrokeshire Study Area



Marketing and Promotional Material

6.164 Pembrokeshire's marketing material highlights the high quality beaches and coastal landscapes, opportunities for walking, outdoor and family activities. The location of wind farm developments in less scenic, farmland areas would suggest there is limited scope for the turbines to conflict with the images which are used to market the key visitor assets.

Figure 6-34: Images from Marketing Material for Pembrokeshire

Source: Visit Pembrokeshire

Key points for assessment

- The scale of operational and planned wind farm development in Pembrokeshire is very low, and it is unlikely that this area would be the focus for future large scale development.
- The locations of wind farms in less scenic, inland areas of the County mean that they are remote from the most sensitive tourism areas, including the National Park.
- The area attracts a younger profile of visitors who tend to be less sensitive to wind farm developments and may be coming for specific activities, including beach holidays and watersports.

7. Case Studies

Introduction

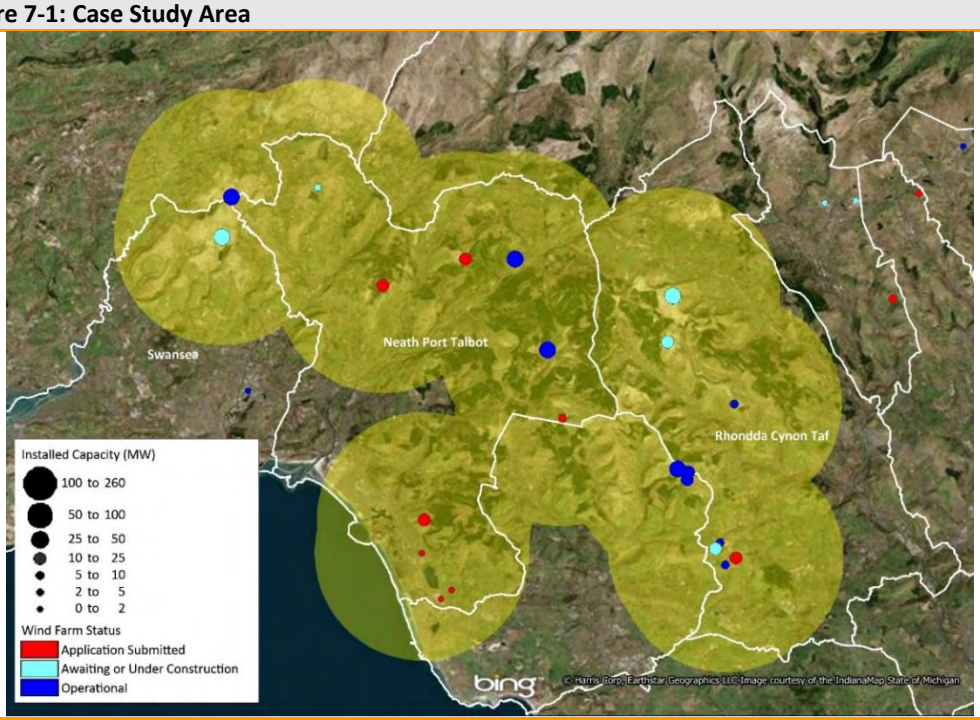
7.1 This section presents the findings of three case studies conducted as part of the study. The purpose of the case studies was to gather actual evidence of the impact of operational wind farms upon tourism in Wales in three different contexts, and to test the findings from the literature review. The case study areas are: Neath Port Talbot and Rhondda Cynon Taf; North Anglesey; and North Powys.

7.2 The case study locations were selected because they each have a number of operational wind farms but differ in terms of the nature of their visitor economy and visitor characteristics. The case studies drew upon the local area profiles in Chapter Six and supplemented these with a desk based assessment of any local research which had been conducted in to wind farms and tourism. The case studies also included a set of structured telephone interviews with local authority tourism officers and tourism trade associations. These organisations were the key consultees as they represent a wide range of tourism businesses and have an understanding of the key factors affecting the local tourism economy. Consultations were also conducted with individual businesses which are located less than 7km from existing wind farms. The purpose of these consultations was to complement the rest of the research by providing a greater understanding of the specific experiences of businesses located in close proximity to wind farms.

Neath Port Talbot/Rhondda Cynon Taff

7.3 This case study has focused on the area shown in Figure 7.1. This area differs from the South Wales Valleys area profile in Chapter Six which includes large areas of other districts. This area was selected for the case study because of the greater number of operational wind farms.

Figure 7-1: Case Study Area



7.4 There is extensive wind farm development in both counties. There are around 90 operational turbines installed across nine separate wind farms, although a number are clustered in close proximity to each other. There are a further eight applications in the planning system and six under or awaiting construction. This includes Pen y Cymoedd, the largest approved scheme in Wales, which will include 76 turbines.

Figure 7-2: Ffynnon Oer Wind Farm in Neath Port Talbot

Source: © Copyright Nigel Davies and licensed for reuse under this Creative Commons Licence

Consultees

7.5 This case study presents the results of a desk based assessment of socio-economic data, tourism data and marketing materials, as well as a set of structured telephone interviews held with the following:

- Tourism Officers from both Neath Port Talbot and Rhondda Cynon Taff Councils.
- Director at Tourism Swansea Bay, a local trade association supporting tourism businesses including those in Neath Port Talbot.
- Ten local businesses located within 7km of existing wind farms, with five from NPT and five from RCT. These included hospitality businesses (holiday cottage owners, B&Bs, camping and caravan sites) and other businesses which are reliant on local tourism including cycle hire companies and outdoor adventure companies. The local authorities provided a list of businesses to contact, and these were supplemented by contacting businesses within 7km of wind farms identified through directory searches.

Local visitor economy characteristics

7.6 The research undertaken for the case studies in to the key reasons why people visit NPT and RCT

was consistent with the local area profile in Chapter Six:

- Outdoor activities (particularly cycling and mountain biking) are identified in local strategies (NPT, 2011; RCT, 2007) as key reasons to visit both areas, and this was echoed by all consultees. Most consultees perceived mountain biking and cycling to be the one thing which differentiates the area's tourism offer from other areas of Wales because of Afan Forest Park's international reputation.

- The peace and quiet and quality of the natural environment are both reasons for visiting, but it was recognised that NCT and RCT are not as well established as other areas of Wales for walking holidays, and a large proportion of the people who walk in the area are either locals or day visitors. This is recognised in RCT's tourism strategy.

- The accessibility of NPT and RCT for people living on the M4 corridor is also perceived as a key strength for the area, and means that many people who do holiday there will use the area as a base and travel to other parts of South Wales, including the Gower peninsula, Pembrokeshire and Cardiff.

- The nature of the tourism offer in the area (geared toward outdoor activities) mean that the typical visitor to the area tends to be younger than the average for Wales (25 to 45). A number of consultees, particularly those running holiday cottages, also said that older couples and families also visit the area.

Recent performance

7.7 GBTS data shows that domestic overnight visits to NPT and RCT have fallen by around 8,000 (15%) over the past five years. Data is not available for day visits which make up the vast majority of tourism visitors to NPT and RCT. The trend of declining visitor numbers was not observed by all consultees. Tourism officers and trade associations believed the performance to have been flat, and some types of businesses reported increasing demand (particularly those running holiday cottages).

7.8 The poor recent performance was attributed to the recession and continuing challenging economic conditions in the area. Businesses who were dependent on the mountain biking market also identified specific reasons why visitor numbers were not as high as they had been when the trails were first opened. The ash dieback disease affecting the valley meant that many trees had to be cut down, thereby changing the landscape, while a large number of routes were closed down. This had deterred some mountain bikers from coming back regularly.

7.9 Most consultees were confident about future business prospects, particularly the local authorities, trade association and cottage businesses. However, a number of businesses suggested more work needs to be done in terms of changing perceptions of the local area, which is characterised as deprived and industrial. Marketing initiatives were seen as having helped (such as through the Valleys Regional Park), however there is more work to be done to change perceptions of the area and make the most of their existing assets.

Wind Farms

Awareness and Perceptions of Wind Farms

7.10 There was divided opinion over the extent of wind farm development in the area, which in part reflects the fact that consultees were drawn from a very wide area. Those which were located closer to concentrations of wind farms were more likely to feel that the extent of wind farm development was already substantial, while those further away thought it was modest. All agreed that they had been positioned in some of the most scenic areas of NPT and RCT, close to a number of popular walking and cycling routes.

7.11 Reported reactions of the public to wind farms were very mixed, with some people very positive about wind farms, many people indifferent and some people vehemently opposed. However there was also evidence that people's reactions can change over time. Local authority officers and other consultees said that many locals had got used to the long-established wind farms and become more accepting of them over time. Others reported that the modest scale of wind farm development meant that they currently have novelty value and were a talking point, but this could change if the number of turbines was to increase.

Impacts on Visitor Enjoyment

7.12 The potential impacts on visitor enjoyment varied according to the visitor markets, according to consultees.

- Bikers/Cyclists: Wind farms are unlikely to impinge upon the enjoyment of people who visit for cycling/mountain biking. There was no reported dissatisfaction from this visitor market, for whom the quality of bike trails is the most important reason for visiting. Indeed, the wind farms have brought considerable investment in to the trails. Since 2005 RWE have been sponsoring the Afan Mountain Bike Trails which run close to the Ffynnon Oer wind farm. Vattenfall has also committed to funding a new £350,000 mountain bike trail as part of the Pen y Cymoedd project which crosses both NPT and RCT boundaries.

- Walkers: it was agreed that the locations of wind farms in scenic areas popular with walkers could affect their enjoyment. However, this was not always due to their impact on the scenic landscape. In RCT, the local council reported more complaints on the grounds of closures and diversions to popular walking routes than the effect on the landscape itself.

- Peace and quiet: people who visit for the peace and quiet are the group most likely to be affected. This was not identified as a particular issue to date due to the limited scale of development, but could become a concern as more wind farms are developed. Proximity to wind farms is also perceived to be an issue for this group because of the dominance of large turbines on the landscape at close quarters, although there are few instances of holiday accommodation in close proximity to the turbines at present.

Impacts on Levels of Business

7.13 All of the consultees including the trade associations and local authorities agreed that it was unlikely that wind farms had so far deterred people from visiting the area, although it was difficult for them to say this categorically. This was true of those people who thought that wind farm

development was already extensive and those who thought it was modest. Those who thought it was modest were concerned about the future scale of development, particularly if they are very large wind farms. The trade association, Tourism Swansea Bay, as well as specific businesses were concerned about reaching a 'tipping point' beyond which turbines become a dominant feature on the landscape, which could deter people from visiting.

7.14 Concerns about the future were greatest for those businesses in very close proximity to proposed wind farm developments where turbines would be between one and two kilometres away and highly visible from the accommodation. This was a particular concern for those businesses which attract visitors because of the peace and quiet and who use images of the local scenery in their marketing material. Some businesses claimed that many guests had reported that they would not return if there was a wind farm located there. They also expressed concern that they could no longer market their cottages as offering tranquillity or use local images, as this would be misleading and would be likely to deter future guests if it was reported on TripAdvisor.

7.15 A key question, therefore, is whether those businesses in close proximity to wind farms who could potentially lose a segment of the market can adapt and attract a greater number of visitors from other markets who do not object to wind farms.

7.16 A small number of consultees (including Tourism Swansea Bay) stated that further wind farm development was one of the most significant threats to the future visitor economy. However, most consultees identified a number of other factors as being of greater importance. These include the continuing challenging economic conditions, transport connections to NPT/RCT and possible delays during the electrification of railways, and the need to invest in the supporting infrastructure for the local tourism sector, including marketing and improved signage.

Potential Positive Benefits

7.17 None of the consultees thought that the turbines themselves were already attracting people to the area and none thought that the turbines on their own would be sufficient to attract people in future. A number of consultees did, however, identify potential opportunities to increase tourism through better use of community benefit funds. This includes the tourism officer at RCT. As described above, a number of consultees cited the example of the investments in mountain biking trails being made by RWE and Vattenfall which have the potential to reinforce the area's reputation for mountain biking and attract more people to the area.

7.18 A number of other consultees, particularly those in RCT, also identified opportunities to use the turbines as part of initiatives to market the area as a centre for renewable energy. RCT stakeholders, including businesses involved in the development of the Destination Management Plan have been supportive of a scheme to develop an Environmental Visitor Centre in the area, which educates people about renewable energy, including but not limited to wind farms. Other businesses identified an opportunity to link this to the area's heritage and longstanding association with energy production. The visitor centre could chart the area's transformation from a coal mining area in to an area at the forefront of renewable energy production.

7.19 When asked about the potential scale of visitor numbers that such a facility could attract, some cited the Whitelee wind farm in Scotland which had attracted large numbers of visitors21.

[21] Whitelee wind farm's visitor centre was reported to have attracted over 120,000 visitors in its first year of being open.

Consultees did not believe that the attraction would be sufficient to increase the number of overnight visits in the area. However, given that the area is reliant on day trips and holiday makers who may travel over a wide area while they are on holiday (combining shopping and rural pursuits), this could offer an additional reason to make a visit the area. There may also be opportunities to attract school visits across a wide area.

7.20 Those that did support the idea of a visitor attraction believed that it could only happen through investment from the community benefit funds. However there was a perception that these are currently being spread over too wide an area and would be far more effective if they were targeted and invested in the areas most affected by wind turbines.

Conclusions

7.21 There is no evidence to indicate that visitor numbers to RCT and NPT as a whole have been affected by the wind farm development which has occurred to date. Even those businesses which were most concerned about the scale of future development (holiday cottage owners), concluded that the operational wind farms have so far not had any detrimental effect on visitor numbers. Indeed, these consultees reported the strongest growth in visitor volumes over the last five years, a period when there has been considerable wind farm development in the area.

7.22 Although a concern for some, wind farms are not considered to be one of the most significant threats to future growth in the overall visitor economy in the case study area. Some consultees were concerned about the scale of future wind farm development. However, even those consultees who considered the scale of development to already be extensive reported no observed impact on visitor numbers. For most consultees, issues such as improving the quantity and quality of visitor accommodation, better marketing and product development were all considered to be more important issues for the future growth of the sector.

7.23 **Wind farms are not likely to pose a threat to some of the main tourism markets.** The area has an established reputation for mountain biking and is perceived to be popular with people who will use the area as a base for exploring areas of South Wales further afield, combining city, coastal and rural activities. Neither of these markets were considered to be under significant threat from wind farm development.

7.24 **There is potential for negative impacts at a very local level.** Hospitality businesses in very close proximity to wind farms (less than 2km) are concerned that a large part of their customer base who visit the area for peace and quiet, will not make future visits because of the dominance of wind farms on the landscape and possible noise effects. Although this was not based on observed impacts, some consultees had anecdotal evidence which suggested visitors would not return to that particular accommodation. The future health of these businesses would then depend on their ability to adapt to cater for those markets and visitors less sensitive to wind farm development. The diversity of the visitor market suggests there is scope for these businesses to adapt compared to other parts of Wales.

7.25 The proposed wind farm developments are in themselves unlikely to attract visitors (although there is the possibility of this occurring in some particular locations), but better targeting of community benefit funds could support the local visitor economy. There were some examples of how community benefit funds are already improving visitor assets (e.g. mountain biking trails). However, there was a perception that, in general, these funds are not being used as effectively

as they could in order to achieve economic development goals and are being spread across too wide an area. There is an opportunity to exploit the turbines as a visitor asset. However this would be dependent on much greater engagement with tourism stakeholders by developers and more focused investment in the areas most affected by turbines.

North Anglesey

Background

7.26 Anglesey currently has four operational on-shore wind farms, which between them have a total of 74 turbines. The wind farms are within 3½ miles of each other and located in a lowland farmland area in the north of the island. The image below shows the Rhyd y Groes wind farm which is the most northerly of the wind farms, in close proximity to Cemmaes Bay.

Figure 7-3: Rhyd y Groes Wind Farm, Anglesey

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7.27 Aside from the wind developments referred to above, Anglesey is also the location for other sizeable energy-related infrastructure. Most notable amongst this is Wylfa A nuclear power plant located on the northern coast of the island. Operational since 1971, the plant is currently being decommissioned but is expected to be replaced with a new reactor set to be built from 2017. There is also a major set of pylons and overhead lines running across the island, mainly carrying power from the power station to the National Grid (crossing onto the mainland at the Menai Straits).

Consultations

7.28 This case study presents the results of a set of structured telephone interviews held with the following:

- *Anglesey tourism officers*. Principal Tourism Development Officer and Senior Tourism Officer at Isle of Anglesey County Council
- *Representative of Anglesey tourism trade*. Chair of the Anglesey Tourism Association (ATA)
- *Tourism businesses that operate within close proximity to existing wind turbines*. A total of seven businesses were interviewed. The businesses were all drawn from the accommodation sector, including serviced and non-serviced providers. The local authority was unable to provide a list of businesses to contact so businesses were selected by virtue of being within a mile or two of at least one of the four wind farms listed in the table above.

Local visitor economy characteristics

7.29 The local area profile for Anglesey in Chapter Four described the key visitor assets for Anglesey as the high quality natural landscape and coastline, with a large number of visitors coming for beach holidays and outdoor activities. The consultations confirmed these reasons for visiting Anglesey but also showed a large number of people come for the peace and quiet that the island offers.

7.30 The DMP for Anglesey (IACC, 2012) shows that the main markets attracted to Anglesey are families (during the summer months) and mature couples at other times of the year, and that the main visitor markets are staying visitors as opposed to day visitors. This was also borne out by the consultations with local tourism officers, trade associations and businesses. Businesses were clear that many of their visitors were repeat customers and were very loyal to the island.

Recent performance

7.31 GBTS data shows that the number of holiday visits is unchanged on the level from five years ago, although it has fluctuated over this time, with a fall in visitor numbers during and following the recession. This was consistent with a number of the business consultations which reported challenging conditions but signs of recovery in the last year or so.

7.32 Performance was attributed to a range of factors but the two which received most mentions were the weather and the economic recession. 2012's poor business conditions were largely attributed to the very poor summer weather experienced that year. Likewise, 2013's better performance tended to be linked to a better summer of weather. Tourism officers attributed Anglesey's recent strong performance to the Council employing a more targeted approach to their destination marketing.

7.33 Tourism officers from IACC were the most bullish of the consultees about future prospects for the sector, with others cautiously optimistic. Improving economic conditions lay behind the optimism felt by some whilst others felt that this year's better weather had led to an increase in advance bookings for next year. Key concerns for the future included the building of the new nuclear

power plant in the north of the island. This could result in a great deal of construction activity on the island and a shortage of accommodation for visitors if workers stay in the hotels and B&Bs on the island.

Impact of wind farms

Awareness of wind farms amongst those interviewed

7.34 All of the consultees were aware of the location of the major wind farms, with those from the trade the most aware. All of the businesses spoken to were able to see one or more of the wind farms from their properties. Some said that they were able to see all of the turbines.

7.35 The majority of those representing tourism businesses felt that that the scale of onshore wind development was already considerable. The level of impact was partly attributed to the clustering of the wind farms in relatively close proximity in the northern part of the island, compared to the southern half which has relatively few, individual turbine installations.

Impact on visitor enjoyment

7.36 There are no visitor surveys in Anglesey which have estimated the overall proportion of visitors who feel wind farms detract from the visitor experience. However, the tourism officer did cite focus group research commissioned by the Council which had, amongst other things, asked existing and potential visitors to Anglesey their opinions on wind farms. The research found that most participants did not have strong views on the subject of wind turbines. Overall, they tended to either find them intriguing or to feel neutral about them. However, a very small number of participants strongly disliked them, considering them to be an eyesore.

7.37 There was a divided response among consultees in terms of whether wind farms are affecting visitor enjoyment among business consultees, which largely drew upon anecdotal evidence. However, again, the number of consultees who thought the wind farms were detracting from the visitor experience were in the minority. A small number of consultees believed that the wind farms were having a negative effect based on remarks visitors had made to them. For example, one business owner had been asked how he could live with the turbines, while another stated that visitors had told him that they were a blot on the landscape.

7.38 The businesses that believed that the wind farms were not affecting enjoyment referred to the lack of any negative comments. These included businesses which were in close proximity to the turbines and businesses which had been established for a long time. While some visitors had remarked on the turbines or shown an interest in them, none had made any adverse comments about them or indicated they have detracted from their holiday.

Impact on levels of business

7.39 The focus group research cited above also found that the presence of wind farms would not have a great impact on participants' decisions on whether to visit Anglesey, although some felt that it might affect which accommodation they might choose to stay in on Anglesey (i.e. they might not want to stay too near to wind turbines).

7.40 All of the consultees acknowledged the lack of actual evidence on the issue of wind farms and their impacts on the overall tourism economy. Several expressed a desire to see improvements

in this evidence base so that decisions could be based on factual information rather than conjecture. It was very difficult for most to isolate the specific effects of the presence of wind farms on business performance compared to other factors.

7.41 Although these caveats need to be borne in mind, the majority of consultees believed visitor numbers had not been affected by wind farm development. There were however a small number of consultees who believed they had, and some anecdotal evidence in the form of two groups of visitors who had said that they would not be returning to that part of the island because of the wind turbines. Although this provides evidence that some visitors are deterred, it is not possible to derive from this that the overall level of business would be affected as there is potential for these visitors to be replaced.

7.42 There was some evidence, however, that the presence of turbines was affecting the investment decisions of some businesses, with some consultees stating that they had held back expansion plans because of the threat of further wind farm construction in that part of the island.

Additional observations and findings

7.43 The visibility of turbines from visitor accommodation appeared to be an important factor in determining the attitude of business owners toward turbines and whether they believed them to be having a negative effect on their business. The businesses with uninterrupted views of turbines were more likely to have negative reactions towards them. However this was not true of all consultees with clear views. Proximity to wind farms was a less important factor if the wind farms were not clearly visible, for instance if the views were obstructed by local topography or trees. There were examples of businesses located less than 1/3 mile from turbines, but which had received no negative feedback from visitors.

7.44 Some consultees compared the impact of wind farms with that of other energy-related infrastructure. One or two consultees that felt that pylons were more of an issue than wind turbines. This was because pylons were thought to be uglier, more visually intrusive and more widespread across the island than wind farms. Plans to build a new nuclear power station were also seen as being more of an issue than wind farms amongst some of the consultees.

7.45 Most consultees felt that there were a number of measures that could be implemented to mitigate the future impact of wind farms on tourism, mainly related to the characteristics of the future development. These included avoiding excessive clustering in any particular part of the Island and protecting particularly sensitive views (such as that from Anglesey looking over to Snowdon and Snowdonia).

Conclusions

7.46 Evidence on the impact of wind farms on tourism in Anglesey to date is unclear and hard to assess precisely. None of the existing evidence to date has identified any negative impacts on Anglesey as a whole, despite most wind farms being established for around twenty years. IACC's own research has found the majority of visitors are positive or neutral about wind farm development, but it may affect their choice of accommodation.

7.47 Consultees were divided in their opinion on the impact of wind farms on tourism and in the anecdotal evidence provided, illustrating the differences in the personal perspectives of consultees and the uncertainty which exists on this topic.

7.48 **In general, the impact of the wind farms on overall tourism performance appears to be very limited**, with other factors such as the weather, the state of the economy and public sector investment in the sector being much more important.

7.49 There is some anecdotal evidence that a small minority of visitors react negatively to the wind farms and this may affect their intention to return. However, the nature of Anglesey's visitor market means that even if some visitors are discouraged, there is reasonable potential for substitution with other markets.

North Powys

7.50 The North Powys Case study area is focused on a relatively remote part of mid Wales (see Figure 6-15 in Section Six). There are four operational wind farms in the area and one under construction. A further five developments in the in the planning system would represent a large increase in the installed capacity if consented. The study area also includes the proposed grid infrastructure needed to connect mid-Wales wind farms to the National Grid.

7.51 The case study presents the results of a desk based assessment of socio-economic, tourism data and marketing materials, as well as structured set of telephone interviews held with the following:

- Tourism officers at Powys County Council;
- Nine local businesses located within 7km of existing wind farms, encompassing accommodation providers and tour operators.

7.52 Material submitted by developers, local authorities and the general public as part of the conjoined Public Inquiry for the proposed wind farm development in Powys has also been reviewed as part of the case study analysis.

Local visitor economy characteristics and recent performance

7.53 The visitor economy in the impact area is small in absolute terms and makes a relatively minor contribution to Powys' overall visitor economy. However, tourism is a very important sector locally and accounts for almost a quarter (24%) of local employment (at least as measured by BRES, which understates agricultural employment).

7.54 The area is part of a wider tourism area where the offer is based around the natural environment, outdoor activities, a small number of historic towns and villages, and the overall tranquillity of the area. Tourism attractions, activity and accommodation is highly dispersed. Although day visitors account for the vast majority of visitors, staying visitors are nevertheless important in value terms.

7.55 Key features of the area's visitor economy are outlined below.

- The visitor base is dominated by **day visitors** (more than 90% of annual visits, but far less in terms of expenditure). The accommodation sector is not particularly well developed and is made up predominantly of smaller B&Bs, holiday cottages and a small number of caravan and camping sites.
- As with other parts of rural Wales, the **high quality natural environment** is central to

North Powys' visitor offer although the landscape is less dramatic than other parts of Wales. The gentle landscape, **isolation, peace and tranquillity** differentiate the area from other, higher profile areas such as Snowdonia and the Breacon Beacons.

- The **low volume nature of tourism** is driven by the area's relative inaccessibility and absence of major tourism attractions. This supports to the sense of isolation and tranquillity that is central to north Powys offer and the tendency for the area to appeal to those looking for an alternative to more busy parts of Wales where tranquillity can be more difficult to achieve during busy times of year. For this reason, the area is seen by consultees as **unique within Wales**, competing with areas such as Northumberland and rural Scotland.

- The day visitors which make up a large proportion of the area's visitor base predominantly come from the surrounding parts of Wales and the Midlands and tend to come for sporting and outdoor pursuits related activities, as well as general leisure visits. The area is **popular with cyclists, walkers and ramblers, and nature watchers**.

- The comparatively small base of staying visitors tend to engage in similar activities to day visitors. Staying visitors are reported to be relatively affluent, and attach particular value to the non-traditional nature of tourism in North Powys. Staying tourists tend to remain within a reasonable distance of their accommodation, and rarely use the area as a base to explore other locations.

- The visitor offer in this area appeals particularly to **older people and young professionals** (who together dominate the visitor profile). Although a relatively small part of the staying market, families with teenage children are reported to be a growing segment.

- There is a growing **green and alternative tourism offer** in the northern parts of the case study area which has reportedly been catalysed by the presence of the Centre for Alternative Technology in Machynnlleth (slightly outside of the study area). Linked to this, there has been an expansion in the availability of alternative accommodation options, including tipis, eco-lodges and others.

7.56 Data held by Powys County Council suggests that there has been some fluctuation in visitor numbers and spend over recent years which make it difficult to pick out overall trends. Visitor numbers dipped in 2012 but, in light of the very good weather during summer 2013 are expected to show an increase when the next tranche of data is released. Some businesses report consistent growth over recent years, whilst others pointed to a lack of growth in overall visitor numbers having a dampening effect on the performance of their businesses.

7.57 Consultee businesses highlighted a number of factors affecting the overall performance of the sector. Weather conditions, fuel costs and IT connectivity were highlighted as key drivers of the sector's performance.

7.58 A perceived lack of active promotion of the area is also viewed by some to be a threat - most likely linked to Powys CC's strategy for tourism in the area - the council is not actively looking to grow the overall visitor base but do indicate that they have an aspiration to encourage more staying visitors (and hence higher average spend).

Impact of wind farms

7.59 On the whole, the current level of development is not perceived as an issue (either positive or negative) by businesses or, according to Powys CC, tourists. In spite of the proximity to existing wind farms and, for some consultees, direct and prominent views of turbines, there was no sense amongst business consultees that current developments deter visitors, although some visitors are reportedly not particularly fond of them.

7.60 Proposed wind farm and grid infrastructure developments are perceived by businesses to be amongst the dominant threats to the tourism sector. Although these concerns run counter to the lack of impact of existing developments, consultees emphasise the increased scale of development that proposed wind farms would represent (in terms of turbine height and the number of developments) and suggest that proposed developments are sited in more sensitive locations than existing ones. The Carnedd Wen proposals, which will surround part of Glyndwr's Way are seen as particularly sensitive. The number of separate developments (current and proposed) which would be seen along parts of this particular stretch of the A470 is a major concern for many of the consultees. The debate is also shaped in part by the perception that local communities are shouldering a lot of the risk without accessing much of the benefit.

7.61 The consultees' concerns about the potential effect of future developments on the local visitor economy centre on the following.

Disruption during Construction

7.62 It is difficult to reach a conclusion about the extent to which traffic congestion and disruption during construction will arise until the phasing of construction activities for the proposed developments are known. Business concerns centre on potential for disruption to have a damaging effect on the quiet and relaxing nature of the area. Potential disruption on the A470 (an important visitor route within the area) is also a concern for businesses. We would expect the consenting process for proposed developments to identify any significant adverse effects and agree mitigation measures to minimise congestion and the potential implications for tourism businesses.

Visual impact of developments on the landscape

7.63 The addition of man-made structures to an otherwise natural environment is presented by some businesses as being at odds with the area's tourism offer and having potential to diminish the ability of the area to offer a high quality natural environment.

7.64 This viewpoint is echoed in much of the information in relation to potential tourism effects that has been submitted by the scheme opponents to the Conjoined Public Inquiry. Representations made by members of the public and businesses tend to be underpinned by the assumption that where turbines are visible there will be an effect on tourism activity which arises through a loss of landscape amenity.

7.65 Although a large number of representations in relation to potential tourism impacts has been made, there has been little new primary evidence submitted. Results of a visitor survey undertaken by Welshpool Community Council (slightly outside of the case study area) in March and April 2013 have been submitted. The findings run counter to the findings of the wider evidence base relating to the potential impact of wind farm developments on tourism and appear

to suggest that a large proportion of visitors would respond negatively to the developments. Overall, 48% of visitors replying to the questionnaire indicated that they would not consider taking holidays in mid-Wales if the schemes were to go ahead.

7.66 A full description of the research methodology has not been made available so it is difficult to comment fully on the research and the conclusions that it has informed. As the conjoined inquiry is not yet complete, it is not clear how this evidence has been used or the weight that has been attached to it in the assessment of evidence. We would expect the conclusions drawn from this survey to be carefully interpreted in light of:

- Sample size – the sample consists of a small number of completed questionnaires (48 visitors and 28 tourism business owners)
- Sampling methods – self-completion questionnaires were distributed at Tourism Information Offices and sent to tourism businesses. The survey response rate is not stated, however the small number of completed questionnaires suggests that this might be low. This, together with the potential for self-selection bias in self-completion methods could undermine the validity of results.
- Question phrasing – it is not clear how the proposed developments were presented to visitors (e.g. whether illustrations were used, verbal descriptions etc) and what background information about their locations was given, so it is not possible to comment fully on the validity of the responses.

7.67 North Montgomeryshire Local Council Forum point towards similar survey evidence (from Spring 2012) in their submission to the inquiry. The information available to us was only partial, so it was not possible to draw full conclusions about the robustness of the survey. For example, 10% of tourists are reported as stating that they would stop visiting the area if proposed wind farms and infrastructure were constructed. This proportion must be interpreted in light of the proportion who state that they would not change their behaviour or who may visit more often. These counterpart statistics are not yet available.

7.68 The addition of turbines and pylons would undoubtedly cause a change in the area's landscape which some visitors may view negatively. The extent to which visitors might alter their behaviour as a result is difficult to predict (given the variety of factors which could influence this). However, the nature of tourism in the area (in particular the reliance on the natural environment and narrow tourism base) suggest that visitors to the area (particularly staying visitors) may be more sensitive to change in landscape than that in many other parts of Wales. It is also likely that, in light of the area's narrow tourism base and niche offer it may be more difficult to attract other tourists to replace deterred visitors.

7.69 However, while there may be greater potential for some visitors to be deterred from visiting the parts of the area where the concentration of turbines is greatest, there is no evidence to suggest that the overarching conclusions from the evidence review would not hold. That is, the majority of visitors would be unlikely to alter their behaviour and those who are deterred would be a minority. It should also be noted that there is potential for these deterred visitors to find similar enjoyment in alternative parts of the local impact area or other parts of Mid Wales less affected by wind farm development.

7.70 Although apparently not a material consideration for the consulted businesses, the potential

landscape enhancements that some schemes could deliver should be recognised. The Carnedd Wen scheme (which if consented would extend across Glyndwr's Way to the north of the case study area) involves an extensive habitat management programme which would see a large area of forestry plantation (which resulted in the area's landscape being downgraded in the LANDMAP assessment) being deforested and restored to open moorland over the course of a decade. This would open up views from this stretch of Glyndwr's way (which is currently densely forested) which would potentially enhance the walking experience along this stretch of the footpath.

The Noise impacts of developments once operational

7.71 Businesses in close proximity to proposed developments have concerns about noise associated with construction and operation and the potential for this to undermine their ability to offer guests peace and tranquillity as an integral part of their stay. Evidence from the conjoined inquiry suggests noise related effects would not be widespread, although there is potential for localised noise effects.

7.72 These could disturb the tranquillity of highly localised areas and perhaps discourage some visitors who value this particularly highly.

Potential positive effects

7.73 Awareness of potential benefits of proposed schemes appears to be limited to community benefit payments and discounts on electricity bills which some developers are offering to residents and businesses near to proposed development sites. Few businesses see any opportunities for potential benefits of wind farm developments to mitigate perceived or actual disbenefits for the tourism sector. The potential benefits associated with such payments are not seen as being significant enough to offset the perceived risk to tourism activity.

Effect of grid infrastructure

7.74 Consultees views in relation to the grid infrastructure largely mirrored their concerns about wind turbines and a similar set of mechanisms for impact were proposed. That is, visual impacts, operational noise and construction related disruption are expected to be the primary sources of any negative effects that might arise.

7.75 Although most consultees expressed a view that pylons are more visually unacceptable than wind turbines, their overall level of concern about the proposed grid extension's impact on tourism activity was less pronounced. It should be noted that the distribution of tourism businesses in the case study area means that there are very few businesses in close proximity to the proposed pylon route. Although businesses expressed some concern over the impact of the proposed route on the area's tourism resource in a general sense, concerns about direct effects on business performance were not widely reported.

Conclusions

- Whilst the tourism economy in the North Powys local impact area is relatively small in volume and value terms, it is nevertheless an important economic sector locally. This, together with the comparative narrowness of North Powys' tourism offer, its focus on isolation, tranquillity and remoteness mean that **the area's tourism economy is more sensitive to development than in other parts of Wales**

- The narrowness of the tourism base, dominance of the natural environment and importance of tranquillity to the area's offer means that **the visitor economy is more at risk to wind farm developments than many other parts of Wales**.

- The lack of evidence of impacts of existing wind farms on tourism activity has not reduced concerns about potential future developments. Business concerns about the effect of future developments centre on the changes to local landscapes that could materialise if **all planned developments were to proceed**. There is however recognition that any landscape changes would be interpreted differently by visitors - while some may see developments as detrimental others may view them as an enhancement (through the resulting improvements in access and habitat restoration). Wider evidence on the impact of wind farm developments on tourism activity indicates that even where changes to the landscape are viewed as detrimental this will not always result in a change in visitor behaviour.

- Traffic congestion and delays associated with the construction of the developments could have an **adverse effect on the area's accessibility**. Given the limited capacity on strategic road routes in the summer season in particular, any congestion or delays caused by the movement of heavy vehicles could deter visitors. It is difficult to judge the potential for congestion until the conjoined Inquiry is finished, there is greater clarity on scale and timing of development, as well as any proposed mitigation.

Conclusions and Implications for Assessment

7.76 The three case studies have brought together the experiences of three locations in Wales which have already been the subject of wind farm development. In many cases these wind farms have been established for twenty years, yet there have been no comprehensive and robust studies which have demonstrated any observed impact on the local visitor economies (positive or negative) in any of the case study areas.

7.77 The case studies were designed to provide an additional strand of evidence for the assessment as a whole, rather than as standalone research. They drew upon local research where it was available and a set of structured consultations with local tourism trade associations and local authority tourism officers. Whilst these consultees provided views for their particular communities and stakeholders, these views were also tested through consultations with tourism businesses in close proximity to existing wind farms or catering for visitors most likely to be affected (up to ten additional consultations).

7.78 The limited number of interviews conducted clearly brings some limitations in terms of the comprehensiveness of the case studies and the robustness of the findings. In the absence of any detailed studies, the case studies have relied to a large extent on consultees' own views of the impact of wind farms, however, as many of them observed, it is very difficult to attribute changes in visitor volumes to specific factors such as wind farms.

7.79 Despite these caveats and limitations, there are a number of points of relevance to the study:

- There is very little evidence of any impacts to date from wind farm development in the case study areas. Only in the Anglesey case study was there any anecdotal evidence that visitors had stayed away from an area due to wind farms, however the majority of consultees did not think it had had a negative effect on the local visitor economy to date.

All case studies concluded that other factors are of far greater importance than wind farms in explaining trends in the local visitor economy.

- A number of the findings are consistent with the evidence review, and provide further support for the framework as a means of assessing sensitivity. In particular:

  - The scale of development and dense clustering of wind farms were considered to increase the potential for negative reactions by visitors. It should be noted however that this was based on consultees' concerns for the future rather than observed impacts.

  - The importance of natural scenery, undeveloped landscapes and remoteness in an area's visitor offer may mean its visitor markets are more sensitive to wind farm development, especially where there are very few alternative visitor activities or assets in the area. Again, this was based on concerns for the future.

  - There is some evidence that it tends to be older visitors who are more likely to be sensitive to wind farm development. However, younger visitors and those visitors who come to an area for a specific purpose (eg mountain biking or beach holidays) are less likely to be deterred.

- Proximity to wind farms may deter certain types of visitors, but not all. A number of consultees expressed concern about wind farms deterring visitors from staying in accommodation in close proximity to turbines (especially in Neath Port Talbot). However, many of the businesses in Anglesey and Powys were in very close proximity to existing turbines and had reported no impact. Again, this may be explained by the characteristics of visitor markets and differences in the reactions to wind farms.

- Disruption during construction and closures/diversions to popular walking routes or trails were all identified as annoyances for visitors. Although there is no evidence that these disruptions have deterred people from visiting, they are often raised as frustrations and should be minimised or mitigated through the planning process. This is of particular concern for North Powys which could face a long period of construction if all applications were approved.

- There is scope for positive tourism effects from wind farm development, however the turbines on their own are unlikely to be sufficient. There may, however, be some instances where wind farm development could enhance existing visitor attractions or be an attraction in their own right, where they are accompanied by further investment, for instance through visitor centres.

8. Impact Assessment

Local Assessment

8.1 This section presents the assessment of sensitivity of visitor markets to wind farms in each of the local impact areas. The framework for assessing impact as set out in Section Three has been applied to each of the local impact areas based on the review of local area profiles and case studies. Each indicator has been rated on a scale of one to five, where one equals very low sensitivity and five equals very high sensitivity.

8.2 The final row in each table presents the overall sensitivity and draws out the conclusions for what this may mean in terms of changes in visitor numbers. It is important to note that the assessment for each indicator relates to potential sensitivity to wind farms and not an assessment of impact. The conclusions of the literature review point to very little impact overall, but identify circumstances where **some** visitors may be more sensitive to wind farm development. Even in cases where the assessment points to high sensitivity, this would not translate in to a large impact on visitor numbers.

8.3 The tables show that the majority of impact areas would be unlikely to experience a significant change in the volume and value of tourism. However the tables do identify some areas which are likely to be more sensitive to wind farm development, particularly Powys South and Powys North.

8.4 Although there is very little evidence of any impact to date in these areas, both areas could be the focus for large scale development over the next ten years, with multiple wind farms in close proximity to each other. These areas tend to attract staying visitors who are older and who come for the natural scenery, landscapes and feelings of tranquillity offered by the area, and it is these markets which may be sensitive to large scale wind farm development.

8.5 These areas also attracts a large proportion of day visitors who come for a specific purpose (e.g. to walk the Glyndwrs Way trail), a large proportion of whom may not change their visiting behaviour as a result of wind farm development. The assessment has therefore concluded that the overall change in visitor numbers in these areas would be low, but may be moderate for certain visitor markets.

8.6 Although these areas account for a small proportion of tourism employment in Wales as a whole, the narrow economic base in these areas means the sector is a very important source of local employment and income (particularly for Powys North). The businesses in these locations may be sensitive even to small changes in visitor numbers as a result of wind farm development, and there may be a particular challenge for them replacing those visitors which are deterred.

North Anglesey – Small tourism economy within impact area but important sector locally

Framework Indicator	Sensitivity	Justification
Scale of development	2	Large number of turbines in the north of the island, but are mostly smaller developments. Not the focus for large scale future development over next decade.
Clustering near other wind farms	4	Wind farms are located close to each other, and all wind farms can be seen from certain locations in the north of the island. But confined to a relatively small area.
Dominance of wind farms on landscape in key tourism areas	2	Wind farms are judged to be a dominant presence on the landscape in a large area of lowland farmland. Some are located close to the AONB, however they are unlikely to be visually intrusive on coastal landscapes and beaches for most visitors.
Scenery and Landscape Quality	2	All located in pleasant but unremarkable inland countryside. Assessed by LANDMAP as moderate quality, although presence of turbines influence this assessment.
Unspoiled, open landscapes central to visitor offer	2	Unspoiled coastal landscapes are central to visitor offer, but wind farms not likely to detract from these. Visitor offer is diverse, including beach holidays, watersports and outdoor activities.
Capacity of Local Tourism Sector	3	DMP shows visitor numbers are highly seasonal, so likely to be operating under capacity during winter months. Most visitors during winter months are likely to be older visitors who may be more sensitive to wind farms.
Loyalty of tourist base	3	DMP shows around 60% of visitors to serviced accommodation and 50% of self catering are repeat visitors, but these are not likely to be any more concentrated amongst those more sensitive to WF development.
Age of visitors	3	40% of visitors are aged 55+, attracting a large number of older couples who may be more sensitive to WF development. Families are also an important market, but these are not particularly sensitive to WF development.
Overall Assessment	2	Although a number of indicators point to potential for increased sensitivity to wind farms, IACC's own research has not identified negative effects. Case study identifies some anecdotal evidence of visitors staying away but a large proportion of operators have not experienced fall in visitor numbers due to wind farms. Diversity of offer means there is high potential for replacement of visitors who are deterred. **Overall, minimal visitor economy impacts expected.**

North Ceredigion – Small tourism economy but very important sector given the narrow economic base

Framework Indicator	Sensitivity	Justification
Scale of development	2	Four operational wind farms containing 77 turbines, but spread across wide area. One large wind farm containing 39 turbines. No future wind farms planned.
Clustering near other wind farms	1	Wind farms spread out over a wide area, with little potential for cumulative effects.
Dominance of wind farms on landscape in key tourism areas	3	Some walkers in Cambrian mountains likely to come in close proximity to Cefn Croes but most wind farms further distance from key visitor assets and routes. No evidence that Cefn Croes has affected visitor numbers.
Scenery and Landscape Quality	3	Two of the landscapes containing wind farms assessed as "outstanding" in LANDMAP, including Cefn Croes. Others assessed as "moderate".
Unspoiled, open landscapes central to visitor offer	3	Important part of visitor offer in Cambrian mountains, but part of a more diverse offer which is less sensitive to wind farm development.
Capacity of Local Tourism Sector	3	Tourism is highly seasonal, but large proportion of business turned away during summer months, and smaller proportion during shoulder months. Most tourism visitors to Cefn Croes would be in summer months. So some potential for replacement of visitors.
Loyalty of tourist base	2	Tourism strategy notes that many of the older visitors staying in caravans by coast are repeat visitors to the area, but most of these are remote from wind farm development.
Age of visitors	4	48% of visitors are "empty nesters" over 55, with potential for this group to be more sensitive than average to wind farm development.
Overall Assessment	2	No evidence identified that existing wind farm development has affected visitor numbers. Most sensitive area would be around Cefn Croes. Some visitors could be discouraged, but likely to be limited in extent and potential for these to go to other local destinations not affected by developments. **Overall, minimal visitor economy impacts expected.**

Powys South – Small tourism economy and a small share of total employment

Framework Indicator	Sensitivity	Justification
Scale of development	5	Two large, established wind farms and a number of large wind farms in planning system.
Clustering of multiple wind farms	4	All wind farms in relatively close proximity. Potential for some cumulative effects, although limited to some extent by topography of area.
Dominance of wind farms on landscape in key tourism areas	3	Large wind farms in close proximity to some visitor assets (Glyndwr's Way, open access land), but not major in terms of visitor numbers. Elan Valley another important visitor asset which is further from wind farms.
Scenery and Landscape Quality	3	Some wind farms in areas assessed as high for landscape quality, others assessed as moderate. Landscapes not as dramatic as other areas of Powys (Brecon Beacons). Wind farms may enhance the landscape for some visitors in some locations (eg Llandinam).
Unspoiled, open landscapes central to visitor offer	4	Open, unspoiled landscapes and feeling of isolated wilderness are important part of offer, but fishing, walking, cycling and other outdoor activities also popular.
Capacity of Local Tourism Sector	4	Limited information available for Powys or local area. Mid Wales tourism strategy indicates occupancy levels are low but this covers a very wide area. Likely to be seasonal.
Loyalty of tourist base	4	Visitor surveys indicate one in ten visitors to Powys are repeat visitors who may be more sensitive to wind farm development.
Diversity of visitor base	4	Limited information for the study area itself, but Mid Wales tourism strategy shows that half of visitors to Powys are "empty nesters" aged 55+. These visitors may be more sensitive to wind farm development.
Overall Assessment	4	The scale of development combined with the visitor profile and wilderness offer of this study area leave it more sensitive to wind farm development than other areas of Wales. Narrow visitor offer and proximity to other more established tourism areas mean there may be less potential for replacement of visitors than other areas. **Potential for effect on visitor economy. The effect is likely to be small but there is a risk that it could be moderate for some visitor markets.**

South Coast Urban – Large visitor economy dominated by Cardiff city centre

Framework Indicator	Sensitivity	Justification
Scale of development	1	All operational, consented and planned wind farms are very small (comprising one or two turbines each)
Clustering near other wind farms	1	Two wind farms in close proximity but both very small
Dominance of wind farms on landscape in key tourism areas	1	Size of windfarms and urban context means they are not dominant feature on landscape
Scenery and Landscape Quality	1	All in areas assessed as low or moderate for landscape quality
Unspoiled, open landscapes central to visitor offer	1	Urban context means unspoiled landscapes do not feature in visitor offer
Capacity of Local Tourism Sector	1	Surveys indicate hotel occupancy in Cardiff is below capacity, however this is less relevant in this context
Loyalty of tourist base	1	Day visitors likely to be frequent visitors, but this is for shopping and cultural breaks. Weekend breaks less likely to be repeat visitors
Age of visitors	1	Attracts a broad mix of age ranges
Overall Assessment	1	No threat to visitor economy from wind farm development because of nature of visitor offer (shopping, culture, city breaks) and limited scale of wind farm development. **No specific impacts expected on the visitor economy.**

Carmarthenshire – Sizeable visitor economy and an important source of employment and income

Framework Indicator	Sensitivity	Justification
Scale of development	3	Most operational wind farms are small, but future wind farms will be larger. Largest wind farm will be the consented Brechfa Forest East (28 turbines).
Clustering near other wind farms	3	Operational wind farms are distributed over wide area. Planned and consented wind farms may create a cluster of three wind farms in Brechfa Forest.
Dominance of wind farms on landscape in key tourism areas	2	Small wind farm located close to coast which is a key visitor asset, but unlikely to be intrusive for visitors to beach or walkers. Future wind farms in Brechfa Forest may be dominant in some areas, but dense forestry would limit intrusiveness.
Scenery and Landscape Quality	3	Brechfa Forest landscapes assessed as high scenic value. Presence of wind farms may detract from views and overall enjoyment for some visitors.
Unspoiled, open landscapes central to visitor offer	2	Open landscapes are important part of offer in the east of the County but less so in impact area. Beaches unlikely to be affected by wind farm development. Brechfa Forest is popular with mountain bikers who are likely to be less sensitive to wind farm development.
Capacity of Local Tourism Sector	2	Very little information available, but likely to be seasonal. Mountain biking in Brechfa Forest likely to be less seasonal than other activities.
Loyalty of tourist base	N/A	Very little information available for level of repeat visits to Carmarthenshire as a whole or the impact area.
Age of visitors	2	Limited information available. East Carmarthenshire survey showed area is popular with older visitors. However, area most affected is Brechfa Forest which is likely to attract younger visitors (mountain bikers) who are in general less sensitive to WFs.
Overall Assessment	2	The scale of development in Carmarthenshire is limited compared to other parts of Wales. Some visitors to Brechfa Forest may be deterred by change to landscape, however the area is popular for mountain biking and other outdoor activities. These visitors are less sensitive to wind farm development. **Nevertheless, very little overall visitor economy impacts expected.**

Powys North – Small tourism economy but important sector given narrow economic base

Framework Indicator	Sensitivity	Justification
Scale of development	5	Over 150 existing turbines and a number of consented or planned wind farms in close proximity. Also new proposed grid infrastructure.
Clustering near other wind farms	5	There would be three separate clusters of wind farm developments if all applications were approved.
Dominance of wind farms on landscape in key tourism areas	4	Large wind farms in close proximity to visitor assets (Glyndwr's Way and open country)
Scenery and Landscape Quality	3	Wind farms mostly in areas of upland moorland and grazing land, which are less dramatic than other parts of Powys. Largest wind farms are located in an area assessed as poor for landscape quality because of forestry plantations.
Unspoiled, open landscapes central to visitor offer	4	Open, unspoiled landscapes and feeling of isolated wilderness are important part of offer, but fishing, walking, cycling and other outdoor activities also popular.
Capacity of Local Tourism Sector	4	Limited information available for Powys or local area. Mid Wales tourism strategy indicates occupancy levels are low but this covers a very wide area. Likely to be seasonal.
Loyalty of tourist base	4	Visitor surveys indicate one in ten visitors to Powys are repeat visitors who tend to be more sensitive to wind farm development
Age of visitors	4	Half of visitors to Powys are "empty nesters" aged 55+. This group tends to be more sensitive to wind farm development.
Overall Assessment	4	The scale of development combined with the visitor profile and wilderness offer of this study area leave it more sensitive to wind farm development than other areas of Wales. Narrow visitor offer and proximity to other more established tourism areas mean there may be less potential for replacement of visitors than other areas. **Potential for impact on visitor economy. The impact is likely to be small but there is a risk that this could be moderate for certain visitor markets.**

South Wales Valleys – Growing visitor economy but not an important source of employment

Framework Indicator	Sensitivity	Justification
Scale of development	5	102 turbines already installed, and a large number of wind farms with consent or in the planning system, including Pen y Cymoedd (76 turbines). This will create large scale development in NPT and RCT
Clustering near other wind farms	5	Large cluster of wind farms in NPT/RCT, including existing and consented wind farms
Dominance of wind farms on landscape in key tourism areas	4	Large wind farms in close proximity to visitor assets (Afan Forest Park and upland areas of NPT and RCT). Visibility of wind farms may be reduced in forested areas. Dominance on landscape may be limited by proximity to developed areas.
Scenery and Landscape Quality	2	Half of wind farms are in areas assessed as high for landscape quality. However many are close to former industrial areas and settlements which detracts from "unspoiledness" of landscapes
Unspoiled, open landscapes central to visitor offer	2	Unspoiled, open landscapes are part of offer in some areas. The countryside offer is not fully developed for tourism compared to other locations in Wales. Mountain biking, culture and heritage, beaches and outdoor activities more important.
Capacity of Local Tourism Sector	3	Evidence from case studies showed a mixed picture. Some markets have experienced strong growth, but overall tourism growth has been flat and there is likely to be some capacity.
Loyalty of tourist base	1	Not clear from the evidence, but mountain bikers are a key market and likely to be repeat visitors for mountain bike trails in Afan Forest Park. This market is less sensitive to wind farm development.
Age of visitors	2	Area attracts a large proportion of younger visitors for mountain biking and activities. These markets are less sensitive to wind farm development.
Overall Assessment	2	Large scale development but not established as a visitor location for high scenic value. Visitors tend to be younger and come for specific activities. Case study indicates limited potential for some visitors to be deterred but high potential for replacement of deterred visitors with other markets. **Very little overall impact on visitor economy expected, and some WF related opportunities.**

North Wales – Small visitor economy with average share of employment in tourism

Framework Indicator	Sensitivity	Justification
Scale of development	3	Six operational wind farms, but mostly small or medium in scale (largest has 25 turbines). Potential for six future developments which would be larger.
Clustering near other wind farms	3	Potential for clustering of wind farms around Clocaenog forest if applications were approved, but limited clustering overall. Also some screening in these areas due to forestry locations.
Dominance of wind farms on landscape in key tourism areas	3	Wind farms are in close proximity to Llyn Brenig and Mynydd Hiraethog SSSI. These are popular areas but lower profile than other visitor assets. Wind farms may be visible from parts of Snowdonia and Clwydian Range but would be unlikely to be dominant features on landscape.
Scenery and Landscape Quality	3	Some wind farms in areas assessed as high for landscape quality, but greatest concentration of turbines in an area assessed as low due to forestry plantations.
Unspoiled, open landscapes central to visitor offer	3	Scenery is a key reason for visiting the area. But areas also popular for nature watching, fishing, walking, mountain biking and watersport, so there is potential for replacement of visitors who are deterred.
Capacity of Local Tourism Sector	N/A	Very little evidence about capacity of local tourism sector. Likely to be seasonal.
Loyalty of tourist base	3	Around ¾ of visitors are repeat day visitors who have not travelled far. Some repeat visitors may be deterred by wind farms, but large number of visitors likely to have visited out of convenience and may be less sensitive to wind farm development.
Age of visitors	4	51% of visitors are over 55. Visitors in this age group may be more sensitive to wind farm development.
Overall Assessment	2	Large number of wind farms but mostly dispersed over a wide area. Although some people who visit for the scenery may be deterred, there are numerous alternative visitor markets which may be less sensitive to wind farm development. Also potential for positive effects by using wind farms as a visitor asset, identified by Denbighshire and Conwy County Councils. **Very little overall impact on visitor economy and some WF related opportunities**

Pembrokeshire – Small visitor economy accounting for small share of employment

Framework Indicator	Sensitivity	Justification
Scale of development	1	Two existing wind farms and up to three future developments, but all small in scale
Clustering near other wind farms	2	Four of the wind farms are in close proximity, but these are all small so this does not have significant effect
Dominance of wind farms on landscape in key tourism areas	1	Size and locations of wind farms in less scenic areas means they are unlikely to be dominant presence in key visitor locations
Scenery and Landscape Quality	2	One wind farm is close to scenic areas of Pembrokeshire Coast National Park, but all wind farms are in farmland assessed as moderate by LANDMAP
Unspoiled, open landscapes central to visitor offer	1	Unspoiled coastal landscapes and seascapes are central to the visitor offer, but wind farms are remote from these locations.
Capacity of Local Tourism Sector	1	Highly seasonal, but less relevant for this case study where wind farms would be unlikely to have any effect on visitor behaviour
Loyalty of tourist base	2	85% of visitors to Pembrokeshire are repeat visitors, but this is less relevant when considered alongside other factors which suggest wind farms would have limited effect on visitor behaviour
Age of visitors	1	Pembrokeshire visitor survey shows area is popular with younger visitors who tend to be less sensitive to wind farm development.
Overall Assessment	1	Small scale of development and location of wind farms away from the beaches and coastal areas with high scenic value mean there is likely to be limited potential for impact from wind farms and **no overall impact on the visitor economy.**

National Assessment

8.15 The focus of the study has been a bottom-up assessment of impacts in local impact areas. These have concluded that there has been very little evidence of tourism impacts to date, and that any future impacts are likely to be small in nature and highly localised. Although the study has not conducted a top down assessment at national level, there are strong grounds to conclude that there is likely to be very little change in visitor numbers in Wales as a whole. The key reasons for this are as follows:

- **Any local negative impacts would be very small in the national context**. Those negative impacts which have been identified through the local area assessments are likely to take place in areas remote from the main concentrations of tourism activity. While tourism may be an important sector locally, these areas account for a very small share of total tourism volume and value for Wales, so any negative effects would be small for Wales as a whole.

- **Negative impacts likely to be displaced elsewhere**. Any negative reactions to wind farms would be likely to result in tourism being displaced from some areas to others. The policy to concentrate wind farm development in SSAs means there would be large areas of Wales which are remote from wind farm development, including many of the country's key natural assets and protected areas. These areas would be likely to see a small increase in visitor volume and value at the expense of other areas.

- **Perceptions of Wales would be unlikely to change**. Following on from the above, the scale of development in certain locations may change peoples' perceptions of these areas and make them less likely to visit. However, the large areas of Wales which would be unaffected from wind farms mean it is unlikely that visitor perceptions of the country as a whole and their decisions to visit would be changed.

8.16 The most comprehensive and robust assessment of tourism impacts of wind farms at a national level was the GCU study for Scotland, which provides support for this assessment. The study found very little impact for Scotland as a whole[22], and that where negative effects do arise, these occur in the form of displaced tourism. Clearly a great deal of caution is required when applying the findings of this study to the Welsh context. However, the two countries have similar visitor markets, particularly in the areas affected by wind farms, where a large proportion of visitors visit for the natural scenery and landscape. The scale and density of development is far greater in Scotland than Wales, and there remain large, scenic areas of Wales unaffected by wind farms which offer alternatives to those visitors who are deterred. There are therefore strong grounds to conclude that a similar pattern would occur in Wales.

[22] In the worst case scenario, it found the impact on Scotland in employment terms would be 200 FTEs

9. Conclusions and Recommendations

Conclusions

9.1 This study has sought to address a number of challenging questions on a hotly debated topic; that is, the relationship between current and future onshore wind farm development and the visitor economy of Wales. The potential scale of onshore development over the next ten years could possibly lead to a fourfold increase on the current level of installed generating capacity, much of this concentrated in the Tan 8 Strategic Search Areas. This has raised a number of concerns amongst the tourism sector and local communities about the potential impacts on the visitor economies.

9.2 The study has carefully assessed the evidence of existing tourism impacts, but also taken a future view of potential impact if all planned developments were approved. Whilst this equates to approximately 2GW of installed capacity constructed by 2025, this should be seen as a maximum scale of development. Given the uncertainty affecting the deployment of all of this additional capacity, it could be much lower in practice.

9.3 The study has drawn on the extensive body of evidence examining the relationships between wind farms and tourism in devising the bottom-up assessment method. This method uses local area assessments to better understand the existing and future impacts of the wind farm development on the visitor economy, both for the nine areas in which development is concentrated and Wales as a whole.

Limited evidence of tourism impacts to date for Wales as a whole

9.4 While there are few national studies of the impact of onshore wind development on tourism, the weight of the evidence suggests that at the national level, effects on tourism will be limited. The evidence suggests that, where negative effects do arise, these are typically quite modest in scale and will often occur in the form of displaced tourism. That is, the small proportion of tourists who adjust their visiting behaviour in response to the presence of wind farms are likely to choose to visit other neighbouring locations which are not affected by wind farms.

9.5 While these national studies were not conducted in Wales, there are strong grounds to conclude that the findings can be applied in this context. The scale and density of development in Scotland (where much of this research has been conducted) is much greater than Wales. Given the Welsh policy to focus development in SSAs, there are still extensive scenic areas of Wales unaffected by wind farms which offer alternatives for the small proportion of people who might be deterred.

9.6 The case studies also showed little evidence of impact to date at a more local level, despite the presence of large wind farms in close proximity to tourism centres. While there were clearly challenges for consultees in accurately assessing the effects of wind farms on visitor numbers, the majority believed there to have been no impact to date. This view was view held by most businesses, local authority and trade body consultees.

Planning Policy has ensured wind farms are remote from Wales's key visitor assets

9.7 Following on from the above, the analysis in this study has shown that Wales's key tourism areas and visitor assets are, for the most part, unlikely to be affected by wind farm development. Although TAN8 did not explicitly seek to focus development outside of key tourism areas, this has resulted indirectly by concentrating development away from key natural assets such as areas of outstanding natural beauty and national parks.

9.8 While there are examples of wind farms which can be seen from highly protected areas, these tend to be from a long distance, meaning they are not dominant features on the landscape. It is highly unlikely that visitors to these areas would be deterred from making future visits as a consequence.

9.9 The areas affected by wind farms tend to have relatively low levels of tourism, as reflected in the analysis of visitor accommodation and tourism employment in these areas. However, some of these areas also have a small and narrow overall economic base and so the contribution of tourism, albeit small, is nevertheless quite important to them.

Reactions to wind farms are complex and may change over time

9.10 A consistent finding across much of the evidence is that visitor responses and reactions to wind farms are subjective and depend on the individual's own judgements and interpretation of the relative value of wind farms and their aesthetics.

9.11 A key factor is the reaction of individual tourists to the impact of wind farms in the landscape. This is potentially very important to the performance of tourism in many parts of Wales, where surveys have shown that beautiful and unspoiled countryside is an important reason for the visit and a key contributor to visitor enjoyment. However, previous studies have shown that while individuals vary widely in their reaction to wind farms, a clear majority do not react negatively to them in the landscape and will not change their destination choice on account of the presence of wind farms.

9.12 The breadth of factors which could influence people's perceptions of wind farms is complex. These are likely to include their views on renewable energy and the effectiveness of wind farms as a means of energy production. The research suggests that these wider perceptions play a role in how tourists weigh up the positive and negative aspects of wind farm development.

9.13 Based on current evidence of visitor responses and reactions, and the balance of public support for wind energy over time, there is little to suggest that the planned increase in onshore wind production would result in significant changes in visitor numbers, even in those areas where there may be multiple wind farm developments.

9.14 However, it is important to recognise that the wider perceptions that influence visitor reactions are not set in stone. They are likely to be influenced by a wide set of factors related to climate change and energy production over the next ten years, including changes in energy prices and views on the relative merits of wind energy compared to alternatives, such as fracking or other forms of renewable energy.

9.15 There is also a potential danger that the increased rate of development in some parts of Wales

could change the value judgements made by some visitors if they feel a point is reached when wind farms become too dominant a presence on Welsh landscapes. This could alter their perceptions of the relative merits of wind turbines and in turn change their visitor behaviour.

9.16 While this needs to be acknowledged as a potential risk, the spatial concentration of turbines in areas remote from the main tourism locations means that it is unlikely that Wales as a whole would be perceived to be dominated by turbines for most visitors. The risk also needs to be considered in light of the fact that wind farms will become a more common sight in the UK and Europe in general, including those parts of the UK which may be considered Wales's competitor locations[23]. This increased familiarity with turbines could mean that many visitors become more tolerant of turbines as a feature of rural landscapes, and their visiting behaviour may change little as a result.

Higher sensitivity to wind farms for certain visitor markets in close proximity

9.17 While most of the evidence points toward limited impacts on tourism from wind farms, there are examples of certain locations which are, on balance, more sensitive to wind farm development. This is on account of their landscapes, types of visitor, limited product diversity and proximity to wind farms. This is particularly the case where the key visitor markets are older people visiting for the tranquillity, remoteness and natural scenery offered in some parts of Wales. Remoter parts of Powys are the most notable examples of where this may be the case.

9.18 In these locations, the study has concluded that the potential negative effect on visitor numbers may still be low overall, but in some circumstances could be moderate. The case studies have revealed that there is clearly a great deal of uncertainty around the potential impact which may arise in practice. Greatest concern exists amongst areas and businesses closest to wind farms and appealing to visitor markets most sensitive to changes in landscape quality. The case studies did highlight some businesses reporting negative reaction from visitors and also holding back investment on account of the uncertain impact, although a majority were not affected negatively at all.

9.19 Although these areas account for a small proportion of tourism employment in Wales as a whole, the narrow economic base in these areas means the sector is an important source of local employment and income. The businesses in these locations may be sensitive even to small changes in visitor numbers as a result of wind farm development. They may have a particular challenge for businesses replacing those visitors which are deterred in areas where there may be limited appeal for other visitor markets.

Some potential for positive impacts, often requiring further investment

9.20 Although a number of studies point to the potential of the wind farms in their own right to attract visitors, these are often based on visitors' stated intentions in surveys rather than any observed positive impacts. There is little evidence that these positive effects occur in practice, and this was borne out by the case studies where there are established wind farms.

[23] If all wind farms currently in the planning system were approved, Scotland would have 12GW of installed capacity, compared to Wales's 2GW. The density of turbines (in terms of MW per 1,000 sq km) would be 50% higher in Scotland than in Wales.

9.21 There may, however, be some instances where wind farm development could enable the enhancement of existing visitor attractions or be an attraction in their own right through for example investment in related visitor facilities. While it is unlikely that such facilities would be sufficient to attract holiday tourism, they are likely to present opportunities for those areas which attract a large share of day visitors and have a large catchment population in close proximity, such as the South Wales Valleys or North East Wales. These are two areas which are already exploring the potential to utilise wind farms as a visitor attraction. The case studies showed there was enthusiasm for these types of projects among local stakeholders and an opportunity to make better use of community benefit funds to achieve economic development goals.

No evidence that wind farms on visitor routes deter tourists

9.22 The study has shown there are a number of visitor routes which will be in close proximity to large concentrations of turbines. The evidence base on how visitors react to wind farms on these routes is not well developed. However, for most visitors, these encounters will be brief and we believe would be unlikely to affect their enjoyment of the main purpose of their visit. The general survey evidence presented in this study offers the only proxy for how visitors would react to these wind farms. This shows that small minorities of visitors would be encouraged, whilst others would be discouraged. Overall, however, there is no evidence to suggest that there would be any significant change in visitor numbers using these routes to reach destination elsewhere.

Negative impacts during construction

9.23 The study has not shown there to be any evidence of a fall in visitor numbers as a result of disruption during construction. However, this was identified as a concern for many businesses in the case studies, particularly in relation to noise and traffic, and the closure and diversion of public footpaths or other popular routes. Given that some areas examined in this study could be affected by construction of wind farms for a number of years, it is vital that these disruptions are minimised and mitigated wherever possible through the planning process. There are also several examples of rights of way or trails which were enhanced during construction, and these improvements should be communicated to locals and visitors.

Associated infrastructure

9.24 The evidence base for tourism impacts of associated infrastructure is far less developed than that for wind farms. The few studies which have addressed the subject have focused on visitors' opinions of pylons, which consistently find that reactions are far more negative than toward wind turbines. This strong feeling toward grid infrastructure presents an increased risk for those areas where new pylons are proposed alongside considerable wind farm development, particularly North Powys. However, there is no evidence that the existing National Grid infrastructure which is concentrated in North and South Wales, often in popular scenic areas, discourages visitors.

9.25 Nevertheless, the lack of robust evidence means the assessment of the potential impact of the proposed supporting grid infrastructure is particularly challenging. The proposals by National Grid will now see a significant proportion of the connection to the grid buried undergrown, including the section which crosses the Glyndwr's Way. This would reduce the visual impact upon one of North Powys's key visitor asset and mitigate potential impacts.

Recommendations

9.26 The recommendations are set our below, grouped in three categories: (i) land use planning considerations, (ii) economic development, and (iii) maximising opportunities and minimising disbenefits.

Land Use Planning Considerations:

- There is little guidance available to developers, planning authorities and communities on the best approach to assessing the potential impacts of wind farm proposals on local visitor economies and visitor assets (as part of Environmental Assessments which support planning applications). The fact that the assessment of these effects can be challenging and subject to aspects of uncertainty (especially in terms of cumulative assessment), points to the need for improved guidance. Welsh Government should consider supporting others stakeholders such as the Planning Inspectorate and other devolved administrations to develop this guidance.

- Linked to this point, the assessment framework which has been used in this study for assessing the sensitivity of local visitor economies to wind farm development would provide a helpful tool which could be used within this guidance.

- Although most local tourism economies will face minimal or no threat from wind farm development, the nature of the visitor economies in some parts of Wales does mean they are at greater risk of negative impacts. In these instances, there is a need for developers to undertake thorough research and consultation to understand the nature and extent of the threat, the potential opportunities (if relevant) and any actions which need to be taken. The emphasis should be upon reaching agreement on these issues with the local tourism sectors and other stakeholders where this is possible, prior to submission of the planning application.

- The study has concluded that there is the risk that some future wind farm development could have a minor or even moderate negative impact on local visitor economies. However, these assessments are often subject to a degree of uncertainty and for this reason it is important to monitor the actual impact of new development upon tourism in these areas. Given the shortcomings in visitor data at this localised level and the wide range of factors which influence the visitor economy, it will be important to agree a suitable approach to do this.

- Whilst the potential impact of onshore wind farms on the visitor economy was not a criteria in the selection of the strategic search areas within the TAN 8 policy (although the impact on landscape was), there is merit in it having a more explicit role in informing locational choices for any successor policy. The reason for this is that as the additional generation capacity associated with Tan 8 is implemented, the potential consequences of any further development in these areas on the local visitor economy would need to be carefully considered.

Maximising Opportunities and Minimising Dis-benefits

- The development of renewable energy in general and wind farms more specifically provides some opportunities for linked tourism development (and the report has

highlighted instances where this has been successful). The more significant opportunities for generating additional economic benefit impact are linked to new visitor attractions and facilities. They are more appropriate in locations with large day visitor catchments, good accessibility and a significant degree of complementarity with the local tourism strategies.

- In other instances, there will often be small scale opportunities to improve the visitor offer in close proximity to and linked to a wind farm development, including all weather access, signage and way marking, and information boards. Where landscape and habitats are being improved as part of a wind farm development, this may provide some opportunity to share information with visitors as a point of interest and to raise awareness

- In other instances, it is important to minimise the potential for disbenefits during construction periods. This includes rerouting public access, clear signage and effective communication of the potential disruption to user groups.

- In all of these instances, the scope to link public sector resources (Rural Development Programme and ERDF, for example) with community benefit payments from wind farm developers in creative ways should be explored. This provides potentially important way of providing additional resources to support local, often rural economies

Tourism and Economic Development

- Where a clear link can be established between a specific wind farm development and the likelihood of significant negative impacts upon the tourism economy, this would need to be mitigated through the planning approval.

- Although in other instances wind farm developments are far less likely to result in significant negative impacts, they are nevertheless seen by the tourism sector and other stakeholders as significant threats and may actually discourage some private sector investment as a consequence of the associated uncertainty. There is a role in these areas to use community benefit funds, where they are available and matched by public sector resources (including the new European programmes for the period 2014-20), in a much more strategic way to support the tourism sector. Good practice examples of these strategies and investments should be shared with local stakeholders and the tourism sector.

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