CHAPTER 16 - SOCIO-ECONOMIC IMPACT

Introduction

16.1 This chapter assesses the potential direct, indirect and wider socio-economic effects (primarily employment impact) associated with the construction and operation of the proposed wind farm project.

16.2 The assessment in this chapter is principally a literature review and no consultations have been carried out to verify the details established through web or other research into publicly available information.

16.3 The first part of the chapter looks at the wider social and economic implications of wind energy projects at a national or international scale, which serves to set the scene and demonstrate the expanding employment opportunities within the wind energy sector. The second part of the chapter looks at the local economic benefits, which suggest that construction and operation of wind farms can have a positive impact on the local economy, especially during the construction period where a larger proportion of the workforce is likely to be recruited from areas local to the wind farm itself. In addition, employment opportunities can also be generated during the operation period of the proposed project although to a less significant degree. The impact of wind farms on tourism and house prices is also examined, and again, based on secondary evidence. The extent to which the wind farm will enable local people to initiate local projects will be described.

Methodology

16.4 The "Overarching National Policy Statement for Energy (EN-1)" was published in July 2011 and sets out national policy for the energy infrastructure. EN-1 requires that where a project is likely to have socio-economic impacts at a local or regional level, an assessment of these impacts should be undertaken. This includes the following:

- "*the creation of jobs and training opportunities;*
- *the provision of additional local services and improvements to local infrastructure, including the provision of educational and visitor facilities;*
- *effects on tourism;*
- *the impact of a changing influx of workers during the different construction, operation and decommissioning phases of the energy infrastructure. This could change the local population dynamics and could alter the demand for services and facilities in the settlements nearest to the construction work (including community facilities and physical infrastructure such as energy, water, transport and waste). There could also be effects on social cohesion depending on how populations and service provision change as a result of the development; and*
- *cumulative effects – if development consent were to be granted to for a number of projects within a region and these were developed in a similar timeframe, there could be some short-term negative effects, for example a potential shortage of construction workers to meet the needs of other industries and major projects within the region*".

16.5 These impacts have been assessed in the following sections.

16.6 There is no prescribed methodology or commonly used standard criteria for assessing the socio-economic effects of developments within the UK. However, there are many studies available looking at the socio-economic impact of renewable energy and many specifically on wind farms. This assessment is based on these studies to estimate the potential socio-economic impact in terms of employment and income generation.

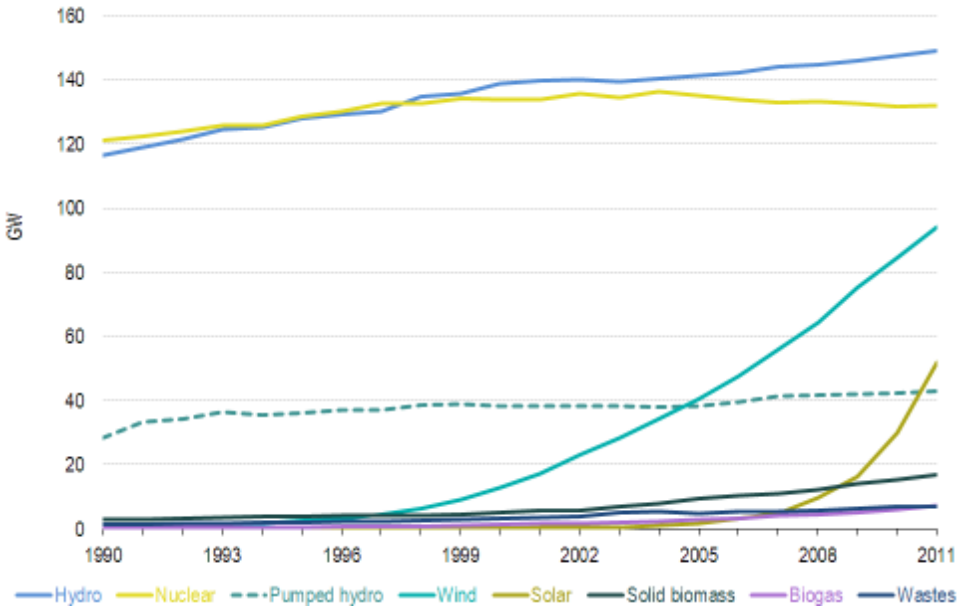
16.7 This chapter presents the results of a desk based assessment, which draws upon relevant information readily available from published papers and secondary data sources. The assessment looks at the likely economic contribution that will be derived through the proposed wind farm development at four stages of activity:

- the development phase - including project design, environmental studies, legal agreements, project funding and planning permissions;
- the construction phase – including turbine manufacturing (the tower, blades and internal components); installation (activity and supplies required to install completed turbines which include civil and project management; roads and access; foundations and infrastructure) and grid connection;
- the operational phase – maintaining and operating the site over the life time of the proposed wind farm; and
- the decommissioning phase - removing the turbines and restoring the site or repowering, at the end of the operation and maintenance period.

The Wider Economic Perspective - Wind Energy

16.8 The EU is committed to a binding target that 20% of its energy consumption should be from renewable sources by 2020 (EC DG Energy, 2010). The EU Renewable Energy Directive (2009/28/EC) sets out a set of legally binding national targets adding up to the share of 20% in the EU as a whole, in which the UK target is set as 15% of all energy (electricity, heat and transport) from renewables by 2020.

16.9 As of 2011, the share of renewable energy of gross final consumption of energy in the UK was 3.8%, which is lower than the EU-27 average (13%) and only higher than the share in Malta (0.4%) and in Luxembourg (2.9%) (Eurostat, 2013). A rapid growth of renewable energy is required in order to meet the expected UK target of 15%. Most of the growth in renewable energy in the UK is expected to come from electricity generation - although electricity represents only a fifth of the country's energy consumption; and most of the extra renewable generation is expected from wind turbines, which offer the most readily available short-term enhancement of renewable electricity at a relatively cheap base cost (House of Lords, 2008). **Graph 16.1** shows the contribution of renewables to electricity generation capacity in the EU, which suggests that wind is the second biggest source next to Hydro (not counting nuclear).



Graph 16.1: Electricity Generation Capacity, EU-28, 1990-2011
Source: Energy from renewable sources (Eurostat, 2013)

16.10 Wales has the potential to deliver 34.5kWh/d/p from renewable resources (Welsh Government, 2010) with the aims of generating twice as much electricity from renewable sources than was used in 2010. Wind power is the country's fastest growing renewable energy technology, but the Welsh Government aim to generate three times as much electricity from off-shore wind farms than from onshore turbines. Apart from offshore wind, biomass and tidal energy are seen as the major generators of renewable electricity.

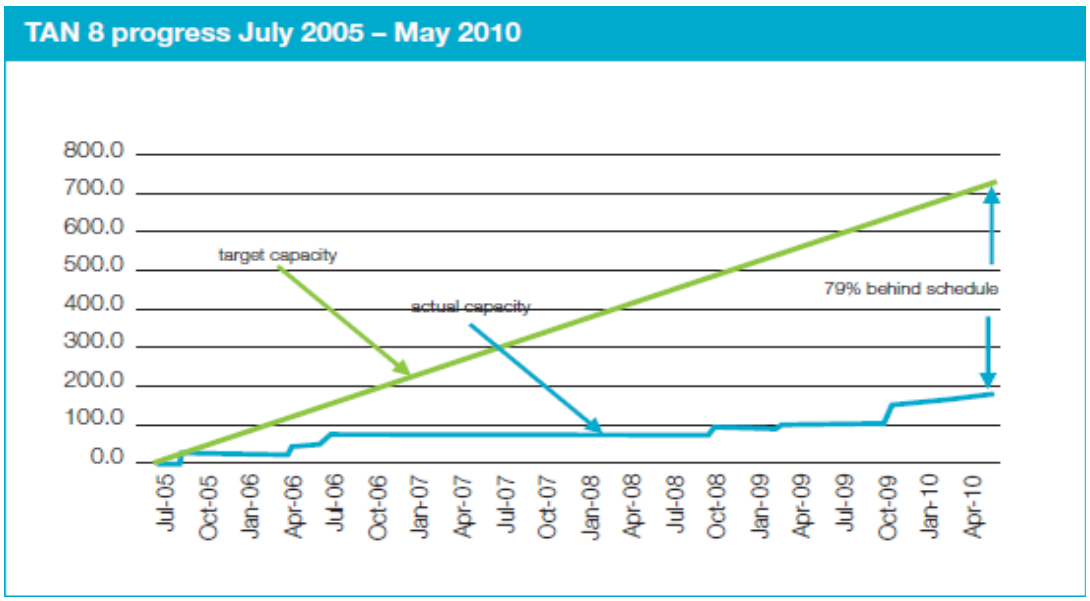
16.11 The Welsh Government's target is to meet all of the local energy needs by low carbon generation by 2050. They have an interim target of generating twice as much electricity annually from renewable sources than was used in 2010 by 2025 (Welsh Government, 2010).

16.12 The Welsh Government published its planning guidance to renewable energy in 2005 "Technical Advice Note 8 ("TAN 8"): Planning for Renewables", which set out a renewable electricity production target to generate 4TWh per annum by 2010 and 7TWh by 2020. In order to achieve this target, the Assembly Government concluded that an additional 800MW of installed capacity should be delivered by onshore wind sources. However, the delivery of the target is behind schedule. As illustrated in **Graph 16.2**, it was estimated that Wales had only met 19% of the additional onshore wind target which was 79% behind schedule as of May 2010.

16.13 According to the Renewable UK 2013 State of the Industry report, the operational capacity of wind farms in Wales was 481MW, 67MW was in construction at the end of 2012/13 and 156MW was consented by the end of 2012/13. This is still lower than the 2010 target of 800MW. In addition, the Welsh Government published their Energy Policy Statement in March 2010 and raised the ambition from 800MW to 2GW (equating to 4.5 kWh/d/p[1])

[1] kWh/d/p – Kilowatt hours per day per person (based on a population of 3 million). Source: A Low Carbon Revolution - The Welsh Assembly Government Energy Policy Statement (Welsh Government, 2010).

installed capacity of onshore wind by 2015/17. This requires a far more rapid development of wind farms than is currently being achieved.



Graph 16.2: TAN 8 Progress in Relation to Onshore Wind Energy in Wales (July 2005-May 2010)
Source: The Economic Value of Wind to Wales-A Survey (RenewableUK, May 2010)

Socio-economic Profile of Local Communities

16.14 According to Fifty Facts about Powys (Powys County Council, 2012), Powys covers a quarter of Wales and is the most sparsely populated county in England and Wales. It has a population of 133,071 in mid 2011. The working age population is 61% of population, compared to the Wales average at 65%. 12.3% were aged 65 to 74, (Wales 9.9%) and 10.6% were aged 75 and over, (Wales 8.6%). The mean average age of the Powys population was 44.5 in mid 2011 (Wales 41.2).

16.15 Compared to the Wales average, a lower proportion of the workforce has no qualifications (6.9% in Powys vs. 7.3% in Wales as of 2011) and there is a high rate of self-employment (15.9% in Powys vs. 8.6% in Wales as of March 2012).

16.16 A breakdown of employment in key economic sectors in the Powys area is shown in **Table 16.1** below, which suggests that main sectors in Powys are:

- Agriculture and Fishing;
- Manufacturing;
- Distribution, Hotels and Restaurants/ Tourism; and
- Public Admin, Education and Health.

Table 16.1: Summary of Employment by Economic Sectors in Powys and Wales		
	Powys	**Wales**
Agriculture and Fishing	11%	2%
Energy and Water	<1%	2%
Manufacturing	11%	11%
Construction	10%	7%
Distribution, Hotels and Restaurants	19%	19%
Transport and Communications	3%	5%
Banking, Finance and Insurance	8%	12%
Public Admin, Education and Health	26%	35%
Other Services	10%	7%
Source: Annual Population Survey-workplace analysis, April 2012-March 2013.		

16.17 Other sectors that make an important contribution to the economy of Powys include professional services, construction and logistics.

16.18 According to the Statistical Bulletin for Mid Wales (Knowledge and Analytical Services, Welsh Government 2013), Powys had a total Gross Value Added ("GVA") of £1.75 billion in 2011. In terms of productivity in Wales, Powys County Council published Powys-i report (2013) with headline figures based on the experimental estimates of productivity from Office for National Statistics ("ONS") on 10th April 2013. The data suggests that labour productivity in Powys is low, compared to Wales and UK averages. In terms of GVA per hour worked, Powys was 65.5% of the UK average in 2011 (fell from 70.2% in 2007), the lowest in Wales and the lowest in Great Britain. Similar for GVA per filled job, Powys was the lowest in Wales and the lowest in the UK, accounting for 64.0% of the UK average in 2010 (fell from 71.3% in 2006). This difference is down to lower GVA per job, out-commuting from the region and a higher proportion of elderly residents, although partly offset by higher activity rates.

16.19 In summary, key issues and challenges for Powys include an ageing population, retention of educated young people in the area and low productivity.

Overview of Socio-economic Impact of Wind Farm Development

16.20 In terms of economic impact, employment potential is the most frequently cited socio-economic benefit of renewable energy, including wind energy, in literature. For example, a Worldwatch Institute report (2008) indicates that renewables *"tend to be a more labour-intensive energy source than the still-dominant fossil fuels, which rely heavily on expensive pieces of production equipment. A transition toward renewables thus promises job gains".*

16.21 There are two categories of jobs in relation to wind energy: (a) direct jobs and (b) indirect jobs. According to the definition by the European Wind Energy Association ("EWEA") (2009):

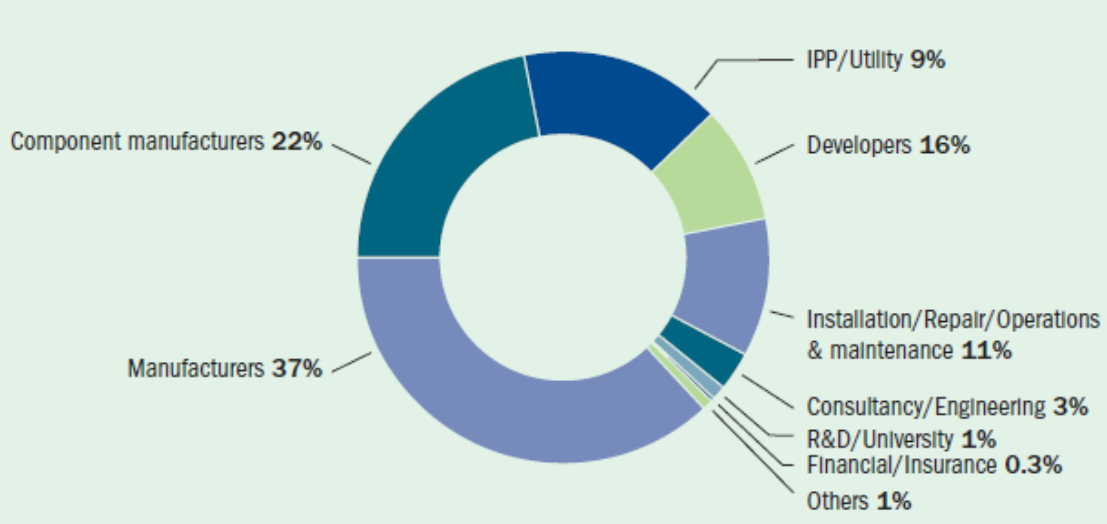
- 'direct jobs' refer to the employment in the following areas of wind turbine manufacturing companies and manufacturers, whose main activity is the supply of wind turbine components; wind energy project developers including installation,

operation and maintenance; utilities selling electricity from wind energy; major research and development; and engineering and specialised wind energy services; and

- 'indirect jobs' relate to the employment in any other company producing intermediates or components, providing services or sporadically working in wind-related activities.

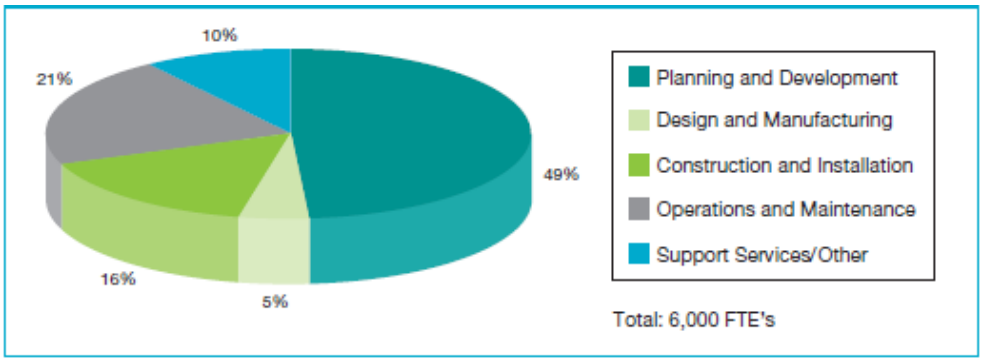
16.22 In the EWEA report (2009), it is estimated that at the EU level wind energy sector directly employed 108,600 people in 2007. In addition to direct jobs, it is estimated that some 45,400 indirect jobs linked to wind energy are also created. Therefore, the figure for total direct and indirect jobs is estimated at approximately 154,000 jobs, with direct jobs accounting for 71% of the total jobs created in the wind energy sector in Europe.

16.23 In terms of the composition of direct jobs, wind turbine and component manufacturers enjoy the biggest share of direct employment, which is estimated at 59% (See **Graph 16.3** for a detailed breakdown by sector of direct employment in the wind energy industry in the EU).



Graph 16.3: Direct Employment by Type of Company in the Wind Energy Sector, Based on the Results of the EWEA Survey
Source: EWEA (2009). Wind at Work: Wind energy and job creation in the EU.

16.24 In the UK context, wind energy is the fastest growing energy sector creating jobs with every megawatt installed. It is estimated in a report by RenewableUK and Energy & Utility Skills (EU Skills) (2011) that 6,000 direct full-time-equivalent ("FTEs") jobs are sustained in the UK's large-scale onshore wind industry. A breakdown of these FTEs by sector shows that nearly half of these FTEs, 2,900, are in Planning and Development (see **Graph 16.4**); a further 1,200 FTEs are employed in Operations and Maintenance, whilst almost 1,000 FTEs are employed in Construction and Installation. This is the equivalent to one employee per 3MW installed.



Graph 16.4: Direct Employment in Large Scale Onshore Wind (2010)
Source: Working for a Green Britain Employment and Skills in the UK Wind & Marine Industries (February 2011).

16.25 The Renewable UK 2013 State of the Industry report states that as of April 2013, the UK wind section directly employs 16,741 people, of which 6,609 full-time equivalent posts are in the large onshore wind sector (Renewable UK, 2013).

16.26 A survey in 2010 of the wind energy sector in Wales estimated that the sector would be employing 1,041 people (full-time equivalent) on high average salaries (£44,000 per annum) in Wales by 2012 (Welsh Government, 2011). The survey also found that in total the wind energy sector contributed £103 million directly to the Welsh economy, which increased to £158 million if considering the multiplier effect by applying a standard industry multiplier coefficient (1.53) to the direct expenditure.

16.27 If measured on a per MW basis, an EWEA paper on "Wind Energy – The Facts" (Volume III Industry and Employment) (2009) shows that an average of 9 employees/MW for installation and 0.1 employee/MW in maintenance are generated in the UK in the wind energy sector. Compared to the other EU countries where it is estimated to generate 1.2 employees/MW, the employment figure for installation in the UK is rather high. This can be partly attributed to the remote siting of wind farms, that often requires quite extensive road construction and grid infrastructure investment. In terms of jobs generated in maintenance, it is estimated at 0.1-0.33 jobs/MW for EU countries. For onshore wind energy sector, the study by RenewableUK and EU Skills (2011) shows that the 6,000 FTEs employed in the sector relates to 3.5GW of installed capacity which implies a ratio of 1.7 FTE/MW.

16.28 However, it should be noted that there is wide variance in reported values of jobs/MW in past research due to different definitions and methodologies, as illustrated by a recent Irish study (Dalton, G.J. and Lewis, T., 2011).

16.29 Overall, there is secondary evidence suggesting that wind farms can generate local employment opportunities throughout the life of the project, although there is a concentration in the construction period.

Local Benefits

16.30 This section focuses on the potential local employment opportunities that the development could bring in the development, construction and the operation stages of the proposed wind farm. The mechanisms by which local employment can be achieved are also considered.

Total Investment

16.31 In order to estimate the scale of investment and impact at all stages of the wind farm development, the installed costs should be estimated first for the proposed wind farm.

16.32 Different estimates on capital investment of onshore wind projects have been used for different studies. In "Project Discovery-Energy Market Scenarios" (2009) by the Office of Gas and Electricity Markets ("Ofgem"), £1,200/kW was assumed for the capital cost of onshore wind. In a report for the Department of Energy and Climate Change ("DECC") (June 2009), a range of capital investment from £1,186/kW to £1,227/kW was assumed for year 2011. In a forecast report on the wind market prepared by AEA Technology (2009) for Scottish Enterprise, the installed cost of an onshore wind farm was estimated at £1.4 million per MW (i.e. £1,400/kW). According to the RenewableUK submission to the House of Lords Economic Affairs Committee, costs for UK wind farms were estimated in the range of £1,250/kW to £1,573/kW, with a weighted mean of £1,334/kW (2010). If this £1,334/kW is used to calculate the installed cost, the proposed wind farm which consists of twenty-seven 3MW wind turbines (a total capacity of 81MW), the capital investment (installed cost) is estimated at £108 million.

16.33 A more recent study conducted by the DECC and Renewable UK (2012) has assessed the direct and indirect economic impacts of the commercial onshore wind sector in the UK in the decade to 2020. In the study, the direct and supply chain economic impact of onshore wind deployed in the UK has been estimated using data gathered from case studies of 18 existing wind farm projects around the UK[2]. The data gathered from the case studies was weighted to reflect the profile of all operational projects in the UK to ensure that the results are as robust as possible. The results were expressed on per MW basis. It has also made further estimates on the shares of the benefits that can be retained locally, within the region/nation and in the UK. The total capital investment is estimated at £1.29 million per MW (total spend in the development stage estimated at £0.11m per MW and in the construction stage at £1.18m per MW). This estimate is in line with a 2013 study conducted by Regeneris Consulting and the Welsh Economy Research Unit ("WERU") at Cardiff Business School for RenewableUK Cymru (Regeneris 2013), in which it was estimated that total average construction costs per MW of installed capacity were £1.13m.

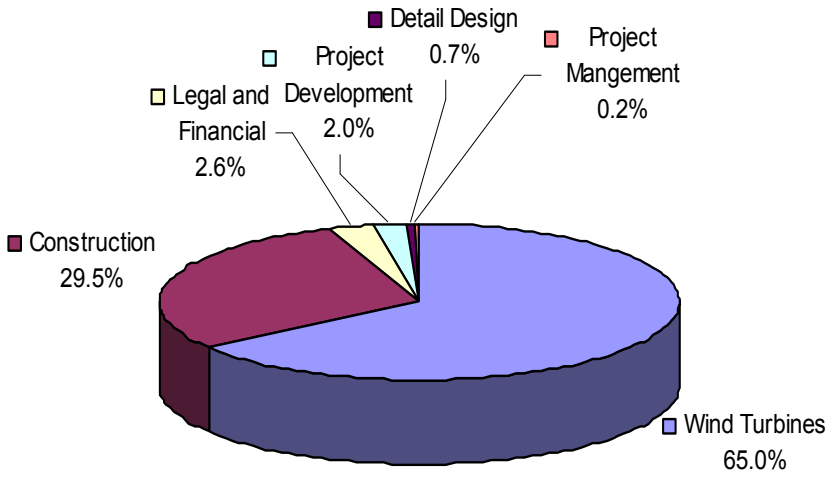
16.34 If using this figure to estimate the total investment, the proposed wind farm with a capacity of 81-89.1MW will cost £105 million.

Economic Effects

Development and Construction Stages

16.35 A detailed breakdown of capital cost at development and construction stages is presented in **Graph 16.5**, which shows the cost of wind turbines is the biggest element of the capital costs and accounts for 65% of the total investment. Construction cost is about 30% of the total capital cost.

[2] Three of these case studies are in Wales, five are in England, one is in Northern Ireland and nine are in Scotland. The projects chosen range in size from a single turbine to projects with more than 150 turbines.



Graph 16.5: Breakdown of Capital Cost
Source: AEA Technology (2009). Energy Industry Market Forecasts (Renewable Energy 2009-2014): The Wind Market, A report to Scottish Enterprise Energy Team.

16.36 This estimate is in line with the DECC and Renewable UK study (2012), which suggests that the turbine contracts account for the majority of the value at 65.1%, the balance of plant contracts (installation) account for 27.3%.

16.37 Since the wind turbine is by far the largest single element of the project capital cost, the majority of the benefits of the capital investment goes to the manufacturers who are currently predominantly international companies. As recognised in the Energy Industry Market Forecast report on the Wind Market (AEA Technology, 2009), the UK supply chain is limited with respect to wind turbine components, balance of plant and services. It is also recognised that it has been difficult for new UK suppliers breaking into continental supply chains due to the dominance of German, Danish, Spanish and US owned wind turbine manufacturers and their associated supply chains.

16.38 There are, however, examples of UK competence and manufacturing for the wind industry. For example, in January 2010 Chepstow based engineering firm Mabey Bridge announced that it was investing £38 million in a factory to manufacture and paint wind turbine towers in Wales. In addition, as recognised in the "State of the Industry Report 2013" for the wind energy sector in the UK (RenewableUK, 2013), Welsh businesses are actively involved in the supply chain of wind energy and contributing directly in the following aspects:

- the supply of small components for the balance of plant – for example, cattle grid supply by Hopkins Steel in Newtown, Powys;
- the turbine components' supply chains - for example, manufacture of turbine gearing systems by Compact Orbital Gears in Rhayader, supply and export of brushes, Morgan AM&T, in Swansea; and
- small wind turbine manufacturing - for example, Quiet Revolution in Pembroke.

16.39 This will encourage local supply of materials needed for the wind energy sector in Wales, and hence retain more economic benefit in the Welsh economy.

16.40 The trend is for turbine manufacturer employment in the UK to grow with a number of European companies setting up offices in the country to respond to the increase in wind turbine deployment in the UK. The UK base for the supplier REPower is in Edinburgh with service centres in Dumfries, Peterborough, Preston and Hirwaun in South Wales. A few major turbine manufacturers have established bases in the UK, including Nordex, GE Energy, Gamesa and Clipperwind.

16.41 In addition, these manufacturing companies would require support in craneage, transportation, labour, accommodation and subsistence, much of which can be sourced locally. Many such companies are sensitive to local issues and do endeavour to source contract content locally to help promote the project and wind industry generally. Local content is viewed as an investment since the company, the project and the local community have to live together for the project lifetime (up to approximately 28 years including the construction and decommissioning phases) and good relations are encouraged at an early stage.

16.42 The grid connection works, which are undertaken by the regional electricity company, will also contain a local element.

16.43 A Scottish study conducted by O'Herlihy & Co. Ltd. in 2006 looking at the economic impact of wind farm construction of three wind farm developments in Scotland gave a more detailed breakdown of local and regional elements for each component spend. The estimated local and Scotland element of investment of these wind farm developments are shown in **Table 16.2**, which can be an illustration of what local proportions could look like in all the stages of the proposed wind farm development, although these examples are in the context of the Scottish economy.

Table 16.2: Local and Scotland Content of Wind Farm Developments

Activity	Scotland Proportion	Local Proportion
1. Wind assessment and feasibility review	100%	15%
2. Land agreement	100%	100%
3. Planning process	100%	20%
4. Construction (roads)	100%	40%
5. Construction/erection services	33%	0%
6. Internal grid and grid connection	50%	40%
Source: O'Herlihy & Co. Ltd. (2006). Windfarm Construction: Economic Impact Appraisal. Final Report to Scottish Enterprise.		

16.44 The DECC and RenewableUK (2012) study has also made estimates on the shares of the benefits that can be retained locally, within the region/nation and in the UK. The results are summarised in **Table 16.3**, which shows the following:

- At the development stage, 8% of the direct economic benefits (in terms of turnover) will be retained locally and 41% will be retained in the wider region. If using these

percentages to estimate the direct economic benefits, the proposed wind farm would bring £0.7 million to the local economy and £3.6 million to the Wales economy; and

- At the construction stage, although the share of the direct economic benefits retained locally or regionally will be smaller the amount will be very much greater. It is estimated that 7% of the direct economic benefits (in terms of turnover) will be retained locally and 29% will be retained in the wider region. If using these percentages to estimate the direct economic benefits, the proposed wind farm would bring £6.7 million to the local economy and £27.8 million to the Wales economy.

Table 16.3: Shares of Benefits of Wind Energy Retained Locally, in the Region/Nation, and the UK

Stage	Weighted Spend per MW	Local	Region/ Nation	UK	Local Benefits*	Benefits to Wales*
Development	£108,759	8%	41%	98%	£0.7 m	£3.6 m
Construction	£1,182,612	7%	29%	45%	£6.7 m	£27.8 m
Total capital investment*	£1,291,371	-	-	-	£7.4 m	£31.4 m

Source: DECC and RenewableUK (May 2012). Onshore Wind: Direct & Wider Economic Impacts.
*: Own calculations based on the results from the DECC and RenewableUK study.

16.45 However, direct economic contribution only partially reflects the overall impact and contribution to the Welsh economy. There are indirect benefits from the development and construction stages of the wind farm on the local economy which would typically include the provision of food and accommodation for on site construction staff, the management team and visiting staff during the construction works. Those benefiting will include hotels, B&Bs, pubs, restaurants, taxi firms, fuel and repair garages, cinemas and other attractions and local shops. This direct expenditure will be passed on in the form of further rounds of spending induced by the initial expenditure. To account for these indirect and induced effects, a multiplier should be applied to the direct expenditure figure. If using a standard industry multiplier of 1.53 as indicated in the study of 'The Economic Value of Wind to Wales' (RenewableUK, 2010), the overall economic contribution to allow for indirect and induced impact of the proposed wind farm would be bring £11 million to the local economy and £47 million to Wales economy. However, it should be noted that the estimate of the impact on local economy may slightly exaggerate the effect, as the multiplier used represents the effect to the Welsh rather than the local economy. Multipliers of the local economy tend to be lower than the ones for Welsh economy as smaller percentage of expenditure would be retained locally. In absence of estimates on multipliers of the local economy, the multiplier used should nonetheless represent the best estimate that is available.

Operational Period Effects

16.46 The wind farm will be designed to operate for a period of 25 years and will need to be regularly maintained and serviced to ensure efficient operation. Whilst such regular planned maintenance is scheduled to take place at six monthly intervals, there will be a requirement for full time and part time staff throughout the operating life of the project for

unscheduled maintenance issues. Wind turbine manufacturers generally employ local labour and can provide good training and career opportunities to those they employ. The companies also generally like to source a lot of consumable items (tools, fuels, oils etc) and plant hire locally to help improve response times to unplanned maintenance requirements and keep the wind farm operating efficiency as high as possible.

16.47 The DECC and RenewableUK (2012) study estimates that the operation and maintenance of a wind farm would generate a turnover of £52,659 per MW of capacity annum over its life time, 29% of which will be retained in the local economy and 65% will be retained in the regional economy (see **Table 16.4**). Based on these estimates, the proposed wind farm (81MW) would generate £1.2million locally and £2.8million in Wales annually during its life time.

Table 16.4: Economic Benefits of Operating and Maintaining Wind Farms to the Local, Regional and UK Economy

Stage	Weighted Spend per MW	Local	Region/ Nation	UK	Local Benefits*	Benefits to Wales*
Operation and Maintenance, per annum	£52,659	29%	65%	90%	£1.2 m	£2.8m

Source: DECC and RenewableUK (May 2012). Onshore Wind: Direct & Wider Economic Impacts.
*: Own calculations based on the results from the DECC and RenewableUK study.

16.48 The Regeneris Consulting (2013) study suggests that the expenditure at Operations and Maintenance stage would be estimated at £38,600 per MW per annum and 76% of this expenditure would be expected to be retained in Wales. Although this estimate was lower in terms of the total spend than the estimate from the DECC and RenewableUK (2012) study, the percentage of what would be retained in the Welsh economy was higher. Therefore the estimate based on the Regeneris study (2013) of the total economic benefits to Wales (£2.4m=38,600 per MWx81M) is similar to the estimate at **Table 16.4** (£2.8m).

16.49 The largest items of expenditure at operational stage include Non-Domestic Rates (business rates), now collected by the Welsh Government, and land rentals and access payments. Community Benefit payments are also an important and substantial element of operational expenditure for local communities around wind farms, and the spending is largely local and targeted at good causes.

The Decommissioning Phase

16.50 There has been limited evidence on the economic impact of decommissioning as the operating period for most wind farms is 25 years and there are few examples of sites being decommissioned. However, there is some evidence available from the case studies carried out by the DECC and RenewbleUK (2012) which suggests that each turbine is anticipated to require work in the order of £60,000 in turnover when they come to be decommissioned. Also recognised in the report is that many of the sites that have come to the end of their operational period have been repowered which has allowed significant increases in capacity and therefore higher economic benefit, due to the higher capacity wind turbines that are now available.

Employment Effect of the Development

16.51 The proposed wind farm could potentially offer rural landowners and communities economic benefits through employment effects by creating short-term jobs during the construction phase and some long-term employment during the operation and maintenance phase.

16.52 For the proposed project consisting of twenty-seven 3MW wind turbines, it would be expected that 8.1 FTE positions will be required for the lifetime of the project if based on the estimate from EWEA paper (2009) that approximately 0.1 jobs per MW will be generated in the maintenance stage.

16.53 If using the higher estimate from the study by RenewableUK and Energy & Utility Skills (EU Skills) (2011), i.e. one employee per 3MW installed, the proposed project would generate 27 jobs for the lifetime of the project.

16.54 As mentioned in previous section, the O'Herlihy & Co. Ltd. study (2006) provided detailed analysis on the economic impact of three wind farm developments in Scotland which could inform the potential scale of impact of the proposed wind farm. The results from this research in relation to job generation are presented in **Table 16.5**.

Table 16.5: Employment Impact of the Selected Wind Farms in Scotland

Activity	Clyde	Dalswinton	Harestanes
Total Value of Project [£m]	498.4	38.4	170.4
Capacity (MW)	623	48	213
Employment Projection – Scotland [FTE]	849	29	253
Employment Projection – Local [FTE]	246	10	74
FTE/MW –Local*	0.39	0.21	0.35
FTE/MW-Scotland*	1.36	0.64	1.19
FTE (Local)**	32	17	28
FTE (Wales)**	110	52	96

Source: O'Herlihy & Co. Ltd. (2006). Windfarm Construction: Economic Impact Appraisal. Final Report to Scottish Enterprise.
*: Own calculation based on wind farm capacity and employment figures.
**: Own extrapolation based on the results from the O'Herlihy & Co. Ltd. (2006) study.

16.55 If assuming similar employment impact will be achieved by the proposed wind farm as the employment projections made by O'Herlihy & Co. Ltd., the proposed twenty-seven 3MW turbine wind farm could generate 52-110 FTE jobs in Wales (including both direct and indirect jobs), roughly 30% of which could be local jobs (17-32 FTEs).

16.56 It should be noted that this estimate on job creation of the proposed development is based on a simple extrapolation (on a per MW basis) of the results from the study by O'Herlihy & Co. Ltd (2006) in absence of detailed studies on the employment impact of wind farms in Welsh context.

16.57 A couple of recent submissions of Welsh wind farm appraisals followed a similar approach of borrowing research results from Scottish studies on the basis that there is lack of Welsh equivalent of employment multipliers[3] (RWE Npower Renewables, 2011) and the wind farms researched are in a relatively remote and rural location in Scotland which is broadly analogous to Powys[4] (ScottishPower Renewables, 2011).

16.58 The estimate of 52-110 FTE jobs generated in Wales of the proposed wind farm is largely in line with the estimate suggested by the RenewableUK and EU Skills study (2011), which implied a ratio of 1.7 FTE/MW (6,000 FTEs employed in the onshore wind sector in the UK of 3.5GW installed capacity). If using 1.7 FTE/MW, the estimate would be 137 FTEs; bearing in mind this is for UK where larger employment impact is anticipated as a higher percentage of benefits would be retained in the UK as a whole than in Wales alone.

16.59 The DECC and RenewableUK study (2012) also estimates the employment effects of wind farms and the results are presented in **Table 16.6** which shows that on average, it would generate 1.1 jobs per MW installed at the development stage; 8.0 jobs per MW at the construction stage and 0.3 jobs per MW at the operation and maintenance stage. However, the jobs generated at the development and construction stage will be short-term jobs, normally over a 2-4 year period. The operation and maintenance stage would generate long-term employment over the lifetime of the wind farm.

16.60 Based on the results from the DECC and RenewableUK study (see **Table 16.6**), it is estimated that the proposed wind farm would create:

- 7 local jobs and 35 jobs in Wales at the development stage, which equates to 2.8 FTE locally and 14 FTE in Wales assuming that the development stage is over a four-year period;
- 45 short-term local jobs and 187 jobs in Wales at the construction stage, which equates 9 FTE locally and 37.4 FTE in Wales assuming that the construction will take 13 months;
- 6 FTE long-term local jobs and 14 FTE jobs in Wales over the lifetime of the proposed wind farm as a result of operation and maintenance of the site; and
- in total, the proposed project would generate 17.8 FTE jobs locally and 65.4 FTE jobs in Wales.

[3] See RWE Npower Renewables (October 2011). Brechfa Forest West Wind Farm: Environmental Statement Chapter 11. Public Access, Recreation and Socioeconomics. This appraisal is for a proposed wind farm of 28 turbines in Brechfa forest, Camarthenshire, Wales with a maximum capacity of 56 to 84MW depending on turbine choice.
[4] ScottishPower Renewables (December 2011) Llandinam Windfarm Repowering and Extension Environmental Statement – Supplementary Environmental Information. Chapter 13: Land Use, Recreation and Socio-Economics. This appraisal is for a proposed windfarm in Powys containing 39 turbines and the 2.3MW candidate turbines with a capacity of 89.7MW.

Table 16.6: Employment Effects of Wind Farms					
Stage	**Turnover per employee**	**Turnover**	**Jobs per MW***	**Local jobs created by the proposed project***	**Regional jobs created by the proposed project***
Development	£102,000	£108,759	1.1	7 (2.8 FTE)	35 (14 FTE)
Construction	£148,290	£1,182,612	8.0	45 (9 FTE)	187 (37.4 FTE)
Operation and Maintenance	£198,000	£52,659	0.3	6 FTE	14 FTE
Total*	-	-	-	17.8 FTE	65.4 FTE
Source: Climate Change (DECC) and RenewableUK (May 2012). Onshore Wind: Direct & Wider Economic Impacts.					

16.61 These estimates are consistent with those based on the results from the above mentioned Scottish study (O'Herlihy & Co. Ltd., 2006) which suggest that the proposed wind farm would generate 17-32 local jobs and 52-110 jobs in Wales.

Controlling Project Procurement

16.62 The highest value item in a wind farm development is the turbine and its components, which are typically estimated to account for approximately 65% of the overall development cost. Local content of the development may include: services (consultancy, planning advice); construction (roads, access, etc); cabling (throughout the site and from the site to the grid access point); and Operations and Maintenance. However, these are generally lower value activities (accounting for about 35% of the project investment).

16.63 Therefore, local sourcing of contractors, materials and labour is essential to retain as many benefits as possible within local areas that the proposed wind farm could bring, both direct and indirect economic benefits to the communities surrounding the development site and the wider region as a whole. A proactive local sourcing approach to procuring the wind farm infrastructure from local companies as far as possible (for example, the civil and electrical engineering works) is desirable to maximise the benefits to the local economy.

Cumulative Effects

16.64 At the time of assessment, there are two wind farms in planning within 10km (although Nant y Moch is on hold), 4 wind farms in planning within 10-20km, 7 wind farms in planning within 20-30km, 3 wind farms within 30-60km. Nant y Moch is the closest wind farm, was at the scoping stage and is presently (and indefinitely) on hold.

16.65 There is unlikely to be a shortage of construction workers because some of the work e.g. erecting, testing and commissioning the turbines will be completed by turbine specialists while local labour would be used for road construction, digging foundation trenches and cable trenches. This is a small labour force compared to some other developments, given the short construction period.

16.66 There is a theoretical possibility that if all wind farm developers try to construct wind farms at the same time, there would be a shortage of skilled workers. However the planning system, grid connection dates and transport limitations mean than it is unlikely that all of these projects will be at the same phase of construction at the same time.

16.67 **Table 16.6** above estimated that the Mynydd y Gwynt Wind Farm could create 45 short-term local jobs at the construction stage, which equates to 9 FTE. Within 10km from Mynydd y Gwynt there is an application for a 48MW wind farm (Carno Extension 3) and a 162.5MW wind farm at the scoping stage (Nant y Moch – figures based on the April 2010 Scoping Document). Using the same assumptions as in Table 16.6, the Carno Extension 3 Wind Farm could create 20 short-term local jobs (4 FTE) and Nant y Moch (indefinitely on hold) could create 91 short-term local jobs (18 FTE). Therefore if all three wind farms were to be constructed at the same time, there would be a peak demand of 156 local jobs, equating to 31 FTE. Neither figure is likely to lead to a diversion of construction workers away from other projects.

16.68 There could also be potential for a positive cumulative impact if some communities receive community funds from more than one wind farm development e.g. the Blaenrheidol (Ponterwyd) area already benefits from the Cefn Croes Wind Farm Community Fund and will receive a portion of the community benefit from the Mynydd y Gwynt wind farm in addition.

Tourism and Recreation

16.69 A number of studies have been carried out to assess the perceived potential and actual effect of wind farms on the local economy, with a focus on tourism implications.

16.70 In 2003, Star Consultants produced a report for Friends of the Lake District to look at the impact of wind farms on tourism. Opinions were sought from tourism organisations and tourists at locations near three existing wind farms and one proposed wind farm. This report stated 87% of tourists and 88% of tourism organisations felt reasonably positive about wind farm developments. It was also reported that 75% of the respondents felt that increases in the number of turbines in the next few years would not have any effect on them visiting in the future.

16.71 In 2004, as part of the Fullabrook Wind Farm proposal in North Devon, the University of West of England (“UWE”) was commissioned to undertake a study investigating the effect of wind farms on visitor numbers and the tourist experience. The study looked into the perceived potential effects of the proposed wind farm, and some evidence of the tourism-related effects of two existing wind farms in Cornwall (Bears Down and St Breock), and two in mid-Wales (Carno and Bryn Titli). Results showed that 58.2% of tourists in North Devon thought that the wind farm would have no effect on their visitor experience and 14.8% felt that it would enhance their visit. The results from North Devon found that 86.7% of those questioned said that the development of a wind farm would have no bearing on the likelihood of their visiting the area. The questionnaires in mid-Wales showed that only 5.4% of respondents opposed renewable energy in Wales and 57% thought more wind farms should be constructed onshore.

16.72 NFO WorldGroup produced a report for Wales Tourist Board in 2003 to look at the impact (both positive and negative) that the existing/proposed/anticipated development of wind farms in Wales is likely to have on tourism in Wales. The results showed that:

- 78% of all respondents had a neutral or positive view on wind farm development and 21% had a negative view;
- 68% said it would make no difference to their likelihood to take holidays in the Welsh countryside if the number of wind farms increased; and
- most respondents were in principle supportive of renewable energy and the development of wind farms in Wales.

16.73 A Scottish Government commissioned report in 2008 concluded that wind farm developments have a minimal impact on tourism provided they are not visible from important tourism corridors (see **Chapter 8**). Results from the report showed that 93-99% respondents thought wind farms would have no impact on their decision to return to Scotland; 68% felt positive that a 'well-sited wind farm does not ruin the landscape' with a further 12% neutral about that statement.

16.74 In 2011 VisitScotland commissioned omnibus research to learn more about consumer attitudes to wind farms and their effect on tourism, in order to inform VisitScotland policy (Insight Department, 2011). Questions were entered onto an omnibus study with OnePoll, an online market research company. 2,000 interviews were undertaken with a nationally representative UK sample with a further 1,000 interviews conducted with a Scotland representative sample (both samples being asked very similar questions). In the survey, it was asked whether the respondent felt that wind farms spoiled the look of the UK/Scotland countryside. 18.7% UK respondents and 19.6% Scotland respondents reported yes, while the majority (approximately 52% for both UK and Scotland respondents) do not feel that wind farms spoil the look of UK/Scotland countryside. The rest, 28-29% of respondents, did not express a clear view. When asked whether the presence of a wind farm would affect their decision about where to visit or where to stay on a holiday or short break in UK/Scotland, 80% of respondents stated that their decision would not be affected, with 20% claiming that it would be affected. For the Scotland residents, 83% stated their decision would not be affected by the presence of a wind farm, with 17% claiming that it would affect their choices.

16.75 A study commissioned by Renewables Cymru (YouGov plc, 2013) reported that about 64% of the 1,003 respondents surveyed in Wales are supporting continuing development of wind power as part of a mix of renewable and conventional forms of electricity generation. The percentage of people supporting wind farms is lower in Mid and West Wales, with 54% expressing that they support continuing development of wind power. When asked if they in general would be for or against the development of large-scale wind farm projects being built in their local council area, 64% of respondents in Wales reported that they are generally for, and 20% are generally against wind farm projects, with 11% being neutral and 5% not knowing. Again, the percentage of people who reported that they are generally for wind farm projects in their local area is lower in the Mid and West Wales with 55% of respondents in these areas supporting local wind farm projects. When asked whether the presence of a wind farm would affect or not affect their decision of visiting that area, the majority (66%) of respondents reported that their decision would not be affected, 26% said it would be affected, and the rest (8%) stated that they do not know. In Mid and West Wales, the percentage is slightly lower (62% vs. 66%) of those who reported their decision would not be affected, with a higher percentage (33%) of respondents in these areas reporting that their decision would be affected.

16.76 A more recent study commissioned by the Welsh Government was carried out by Regeneris Consulting and The Tourism Company (2014). The study undertook a literature review, an analysis of visitor economies in nine local areas with existing and planned wind farms and looked at three case studies. The literature review indicated that effects on tourism at a national level will be limited and any negative effects are likely to be modest in scale and likely to be in the form of displaced local tourism.

16.77 The case studies focused on areas of Wales that already have a wind farm presence and the study concluded that: "*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*." The study notes that some areas of Wales, particularly remote parts of Powys, may be more sensitive to wind farm development due to their landscape, types of visitor (older people visiting for the tranquillity, remoteness and natural scenery), limited product diversity and proximity to wind farms. The study concludes that the overall impact on visitor numbers are still likely to be low in these areas but could be moderate in some circumstances.

16.78 The study did not find any evidence that wind farms on visitor routes deter tourists or that disruption during construction causes a fall in visitor numbers. Although visitors' opinions of pylons are more negative than of wind farms, the study did not find any evidence that the existing National Grid infrastructure in North and South Wales, often in popular scenic areas, has a negative impact on visitors. Overall, evidence suggests that local tourism has seen no significant negative effect due to the wind farms operating in the UK. There is no clear evidence that wind farm developments positively or negatively affect levels of tourism.

16.79 Within the study area there is a wide range of informal tourist attractions, many of which are focused around walking on long-distance routes over the hills, mountain bike activities and recreation along the river valleys. The main formal tourist attraction in the study area is the Rally Complex at the site itself. Other than that, however, the only significant tourist attractions in the context of the site are the Hafren Forest and Llyn Clwedog.

16.80 The site itself is used for leisure purposes. According to the landowner in 2012 the site was used as follows in **Table 16.7**.

Table 16.7: On-site Leisure Use

Activity	Days Per Year	Average Use Per Day	Average Estimated Annual Use
Rally car testing	80	1 car and 8 people	640 people
Rally driving tuition	15	10 people	150 people
Rally events	15	300-700 people	4,500 – 10,000 people
Rally Great Britain	1 (plus 5 days set-up)	8,000	8,000 (does not take place every year)
Motorbikes	65	10 people	650 people
Shooting range	122	5 people	600 people

16.81 In total, it is estimated that approximately 9,000-17,000 people visit the site per year, making it one of the largest business/leisure sites in Mid Wales. The landowner has consulted with all of the business users of the site, all of whom have confirmed that the wind farm would not affect their decision to continue to use the site.

16.82 In addition, a survey was carried out by FBA at the Bill Gwynne Rallyschool Coracle Stages rally event held on Sunday 21st July 2013 at the site. The survey identified that 96% of the 200 people interviewed reported that they would still attend rallies at the site if the turbines were built.

Public Rights of Way

16.83 There are three public rights of way crossing the site, including a bridleway. One right of way (Wye Valley Walk) appears to have very light usage compared to many long distance walks elsewhere in Wales and the other two rights of way have almost no usage at all (based on recorded observations during August 2013 and information from the landowners). Within 10km of the site there are four long-distance or named paths and 32 sections of public rights of way within 5km. Within 10km there are also two Sustrans routes, National Cycle Routes 8 and 81.

16.84 The visual impact assessment in **Chapter 8** assessed that there would be significant visual impacts on public rights of way within 3.5km in unforested areas and under 1.8km for the named long-distance paths, including the Wye Valley Walk and the Severn Way. However the assessment does concede that there is some variation within these distances in the well forested areas and enclosed valleys. Significant visual impacts on the Sustrans routes are assessed to be limited to within 5.4km.

16.85 Although there maybe localised significant visual impacts on the public rights of way, the studies described above suggest that the effects are unlikely to be significant.

Impact on Property Prices

16.86 The level of the effect of wind farm development on house prices is inconclusive but surrounding communities may have a concern regarding their property price. Some studies systematically examined the relationship between the proximity of a wind farm and property prices, but overall the evidence base is still not sufficient enough to reach a firm conclusion.

16.87 The Royal Institution of Chartered Surveyors ("RICS") and Oxford Brookes University carried out a study in March 2007 to look at the impact of wind farms on house prices. The study examined the impact on a number of sites in Cornwall and there was initial evidence suggesting that there was an effect: terraced houses sited within 1 mile of a wind farm were observed to be 54% lower in value and semi detached houses within 1 mile of the nearest turbine were 35% lower than similar houses at a distance of four miles. However, when it was investigated more closely, there were generally other factors which were more significant than the presence of a wind farm (for example, location near the largest open cast slate mine). The study found no change in property prices beyond one mile from the wind farms. It was concluded that there was no clear relationship between the proximity of wind farms and property prices. However, the results from the study should be treated with caution due to limited data.

16.88 An extensive study in the U.S. by Ernest Orlando Lawrence Berkeley National Laboratory and San Diego State University examined whether property prices close to wind farms were affected, funded by the Office of Energy Efficiency and Renewable Energy (Wind & Hydropower Technologies Program) of the U.S. Department of Energy (2009). The research collected data on around 7,500 sales of single family homes situated within 10 miles of 24 existing wind facilities in nine different U.S. states. Based on eight different hedonic pricing models as well as both repeat sales and sales volume models, the results showed that there was no conclusive evidence of the existence of any widespread property value impacts that might be present in communities surrounding wind energy facilities. The evidence suggested that neither the view of the wind facilities nor the distance of the home to those facilities were found to have any consistent, measurable and statistically significant effect on home sales prices. The study concluded that although there might be possibility that individual home values or small numbers of homes could be negatively impacted by wind facilities, the potential impacts were either too small and/or too infrequent to result in any widespread, statistically observable impact. A more recent study carried out by Ernest Orlando Lawrence Berkeley National Laboratory (2013) using data from more than 50,000 home sales in relation to 67 different wind facilities among 27 counties in 9 US states found no statistical evidence that home values near turbines were affected in the post-construction or post-announcement/ pre-construction periods. However, it is difficult to draw a direct comparison between the situation in the UK and the US due to differences in the UK and US housing markets.

16.89 Another study conducted by the Edinburgh Solicitors Property Centre ("ESPC") in Scotland (2007) considered property sales near Crystal Rig wind farm in the Scottish Borders and found no evidence of a negative effect on the price of property in nearby areas. The ESPC study conducted an analysis of relative movements in residential property prices in areas surrounding Crystal Rig wind farm over a seven year period from 2000 to 2006 and compared trends observed in the nearby town of Dunbar (approximately 10km north of the farm) with those witnessed overall in the East Lothian region. The study found that prices in the village of Dunbar had risen from below to above the regional average during the previous four years, during which time the wind farm was built, and that since the wind farm began operating, property price inflation in Dunbar had continued to exceed that achieved across East Lothian.

16.90 A more recent study by the UK Spatial Economics Research Centre (Gibbons, S., 2014) compared house price changes occurring in postcodes where nearby wind farms became operational and visible, with the price changes occurring where nearby wind farms became operational but are hidden from view. The study found that wind farms reduce house prices in postcodes where the turbines are visible compared to where the turbines are not visible. The study estimated by averaging over wind farms of all sizes, that the price reduction is around 5-6% within 2km, falling to less than 2% between 2 and 4km, and less than 1% by 14km.

16.91 Another study was carried out by RenewableUK and Cebr (2014) to determine whether wind farms have an effect on house prices within a 5km radius. The study firstly compared house prices within 5km of 7 different wind farms against country-wide house prices and then looked at whether the announcement, construction or completion of 5 different wind farms caused a statistically significant impact to price growth observed within a 5km radius. Of the seven sites studied only one site showed a downturn following the announcement that a wind farm would be built but house prices again returned to the

countrywide norm following erection of the turbines. The study concluded that there was no evidence of the sites studied to indicate a long-term negative impact on house prices, either during the period of construction or post completion of the wind farms.

16.92 The evidence from the majority of the above mentioned studies suggest that there is no clear relationship between the proximity to a wind farm and property values although one study did find a relationship between the visibility of wind farms and property prices. The evidence base in the UK may not be sufficient to come to a definite conclusion and more systematic research is needed in this area to provide further evidence. Therefore it is difficult to conclude with certainty whether the proposed wind farm would have a negative, positive or neutral impact on house prices.

16.93 It is important to note in this context that the site is unusually remote (even by the standards of the Powys uplands) and that there are only four non-participating dwellings within 1 mile of the proposed wind farm boundary. Therefore, even if it could be demonstrated that wind farms cause some negative impact on property prices, such impact in the case of this proposal would be extremely limited.

Community Benefit

16.94 Mynydd y Gwynt has pledged £3,500 per MW of installed capacity to be paid annually on commencement of generation to a local community fund. Although the form and structure of the fund will be finalised following further local consultation, it will be constituted so as to be able to make best use of the available money. Importantly, it will be locally managed and controlled, by local people.

16.95 The community benefit is based on the installed capacity, at the rate of £3,500 per installed MW per annum. Hence if 3.3MW machines are installed there will be 8.1MW greater capacity, resulting in community benefit payments being increased by £28,350 per annum, in addition to the £283,500 yearly already promised for good causes in the local community on the basis of 3MW machines.

16.96 This means that over a 25 year life span a minimum of £7-7.8m would be available for local good causes. The fund may be used to support local projects, to build, repair, adapt and maintain local facilities and so on. Less obviously it may also be used to provide, for example, training, bursaries, scholarships and apprenticeships for local people, or loans or grants for local people to buy equipment and tools for their work, or to assist with marketing and promotion of local businesses.

16.97 It may be applied to help local people with energy efficiency projects such as insulating their homes, or to assist with community renewable energy schemes. It could assist in alleviating local fuel poverty. In an area where affordable housing for young people, especially, is a concern it may be used to develop such housing.

16.98 Further, if managed astutely it may be used for securing matched funding, effectively doubling the amount of money available for particular projects, drawing from, for example, EU, National and Local Government development programmes and the National Lottery.

16.99 The impact of this funding will be directly driven by the ability and ambition of the fund's administrators. As illustrated above the fund will have the capacity to generate considerable employment opportunities and to secure jobs and opportunities in the local

economy long into the future. Over a 25 year life span £7m would be introduced specifically to be spent as local people require; with even modest use of matched funding this figure should increase substantially. On any basis it has the capacity to make a real and very positive impact in the local area.

Conclusion

16.100 Based on evidence from literature, it is reasonable to assume that 20-30% of the capital cost of the proposed wind farm project could be awarded to suitable local and regional companies. Assuming a total project cost of approximately £105-£108 million this could equate to between £11 million and £47 million for local and Wales economy.

16.101 Proactive local sourcing of materials and labour will ensure that maximum benefits can be retained in the local areas in the vicinity the proposed wind farm and minimise transportation.

16.102 It is, therefore, concluded that a proportion of the total project costs would be likely to benefit the local area during construction in the form of direct employment, the use of local contractors for suitable elements of the work and tertiary benefits in the form of the provision of accommodation, meals and leisure activities for those employed on the site. Furthermore, short-term jobs will be created during the construction phase; while long term employment opportunities will arise for operational site management and maintenance, although this is on a much less significant scale compared to the impact at construction stage. It is estimated that the proposed wind farm project would generate 17 FTE locally and 65 FTE for Wales.

16.103 In addition to the benefits from the development and construction period, some £1.2m - £2.8m would be available for local projects over the life of the proposed wind farm as a result of operation and maintenance activities.

16.104 There is no clear evidence that wind farm developments positively or negatively affect levels of tourism. It is not considered likely that tourism and recreation in the vicinity of the site will be adversely affected by the proposal.

16.105 In conclusion, the proposed wind farm will have no detrimental socio-economic impact at the local or regional level. Instead, it will have a small positive effect on the economy and employment. As there is no intention to have visitor facilities because of the other uses of the site (rallying/shooting) and published studies suggest wind farm developments would not affect the levels of tourism, there would be no effect on tourism of the proposed wind farm.

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