

## **17. SOCIO-ECONOMIC ASSESSMENT**

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### **17.1 INTRODUCTION**

The socio-economic assessment provides an overview of the significant economic and social impacts associated with the construction and operational phases of the Viking Wind Farm. Mitigation and monitoring measures are presented within the final sections of the chapter.

This chapter has been prepared by A B Associates and is based on the Socio Economic Impact Statement prepared for the Viking Wind Farm by Avayl Engineering in conjunction with A B Associates and published as a separate document.

### **17.2 SCOPE OF ASSESSMENT**

The scope of the socio-economic assessment is:

- to quantify the baseline position of energy supply and demand in Shetland;
- to consider different scenarios for the development of the Viking Wind Farm
- to assess the social and economic impact of the proposed development upon Shetland, Scotland and the UK as a whole.

### **17.3 POLICY CONTEXT**

#### **17.3.1 International / European Level**

The relevant background and international renewable energy policy context is set out in detail within Chapter 2. The key objective of European policy is to achieve a 20% reduction in EU greenhouse gas emissions by 2020 compared to 1990 levels, to assist in combating the negative impacts of climate change. The policy sets out seven interlinked action plans, one of which is “to increase the share of renewable energy to 20% by 2020” which is currently only 7%. This 20% target covers all energy uses and translates into a mandatory 15% target for all energy use in the UK to come from renewable sources by 2020. The EU realises that only through increased use of renewable energy and energy efficiency improvements can greenhouse gas emission reductions be made. Consequently, the development of renewable energy schemes falls within the EU policy context that has set such challenging targets.

#### **17.3.2 National Level**

Both the UK and Scottish Governments have energy strategies within which there are ambitious targets for the take up of renewable energy. The UK Government has recently extended the Renewables Obligation, which underpins the market for renewable energy out to 2037. The current UK target is for 15.4% of electricity generation to come from

renewable sources by 2015. There is an expectation that the same target for 2020 may need to be adjusted to over 35%. The Scottish Government's target now stands at 50% of Scotland's electricity demand to come from renewable sources by 2020.

Scottish Government Planning Policy 6: (SPP6) recognises the role to be played by wind energy generation stating that "onshore wind power is likely to make the most substantial contribution to meeting renewable targets " Thus the development is very much in line with the national policy context.

### 17.3.3 Regional Level

Highlands and Islands Enterprise supports the development of renewable energy. Their strategy states, "The prospective importance of the renewables sector to the future prosperity of the area offers an example of where we must aspire to the highest levels of productivity. It is absolutely critical we build a long term competitive industry in power generation". HIE has also facilitated the Highlands and Islands Transmission Group which focuses on breaking down the barriers to connecting wind, wave and tidal energy projects to the UK national transmission grid.

The Shetland Renewable Energy Forum's Strategy (2002) states:

*"it will be worthwhile to maximise the acceptable contribution of large-scale, national grid-connected renewable developments, with one of the goals of the strategy being the provision of equivalent of 100% of Shetland's energy requirements from renewable energy sources."*

The Viking Energy project is also in line with the Shetland Structure Plan policy ENG3: "Proposals for the generation of power from renewable energy sources will be encouraged subject to other relevant policies in the Structure and Local Plans."

The Shetland Local Economic Forum 2012 Vision for Shetland, states that with respect to renewable energy, they wish to see "the attraction of large scale investment and operators in Shetland" with among the targets identified for 2012 the development of a large scale wind farm and the creation of 85 FTE jobs.

## 17.4 METHODOLOGY

The methodology used for the study involved the use of different approaches and techniques to address the elements of the project. These included:-

- Desk based research and survey work using interviews, questionnaires, and meetings;
- Scenario planning techniques and sensitivity analysis;
- Creation of a predictive financial model based on Crystal Ball Software;
- Economic impact analysis using standard impact techniques, input/output methodology, and including displacement and deadweight issues;
- Social impact analysis using standard matrices to capture qualitative information; and
- Development of management, finance and ownership options.

## 17.5 BASELINE CONDITIONS

This section provides a summary description of the Shetland economic indicators including demography, employment and economic output.

### 17.5.1 Socio Economic Context

The Shetland economy has been relatively buoyant over the last 5 years with employment and output growing and unemployment low. However there is an underlying fragility due to the peripheral location of the islands, harsh physical environment and higher costs of operating within a remote location. The two main sectors of oil and fisheries have had to undergo significant restructuring to survive, and in 2005 the Ministry of Defence announced the closure of its base in Unst with a negative knock on effect on that island. While there have been cut backs in public expenditure that has affected the construction sector, the full effects of the 2008 - 2009 global economic crisis has not yet had a noticeable effect except through the loss in value of the investments held by the Shetland Charitable Trust.

### 17.5.2 Population

The population within Shetland has been in decline but has become relatively stable over the last 15 years at around 22,000. However there have been significant changes in the structure such as the percentage of working age population decreasing by 10% between 1991 and 2006, whilst the proportion of older people changed from 16% of the population in 1991 to 22% in 2006; Therefore the population is aging. Despite the static population there is a growing demand for housing and substantial waiting lists.

### 17.5.3 Employment

The 1980s saw significant changes in some sectors, and after an initial fall in the early 80s, there was overall growth in employment numbers by 1991. A survey in 1997 by the Shetland Island Council's (SIC's) Development Department showed a further growth in employment despite negative trends within some sectors. Using data from other surveys, employment trends have continued to show positive changes, as described in Table 17.1.

#### 17.1. Trends in Employment by Sector 1983 – 2006

	Numbers					% of Total Employment				
	1983	1991	1997	2003	2006	1983	1991	1997	2003	2006
Primary	1,276	1,258	1,643	1,659	1,567	13	12	13	14	13
Manufacturing	923	1,121	1,392	1,144	1,038	9	10	11	9	8
Construction	763	817	946	978	978	7	8	8	8	8
Services	5,779	5,817	8,192	8,481	8,780	57	54	67	69	71
Self Employed	1,455	1,691	n/a	n/a	n/a	14	16	n/a	n/a	n/a
<b>TOTAL</b>	<b>10,196</b>	<b>10,704</b>	<b>12,173</b>	<b>12,262</b>	<b>12,363</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

Source: Development Department, SIC and ABA for 2006

Unemployment in Shetland is lower than most other areas of the UK and has been this way for some time. In January 2009, unemployment stood at 1.2% in Shetland. The unemployment that does exist is mainly males in the 20-24 year old age group.

Unemployment has only once been above 300 since January 2001 and has remained between 200 and 260 for the last few years. In January 2009 it was down to 160.

#### **17.5.4 Tourism and visitor numbers**

Total visitors in 2006 were estimated to be over 104,000 and total spend was £16.43m which compares with 66,484 visitors and £11.9m in spend in 2000. Therefore, visitor numbers have experienced a 57% increase and spending has grown by 38% within a 6 year timeframe. More recent figures would suggest that the growth in holiday visitors has not been maintained while business visitors have continued to grow.

#### **17.5.5 Current Energy Position – Electricity Provision and Renewables**

Electricity production in Shetland has traditionally relied upon Scottish Hydro Electric, now known as Scottish and Southern Energy (SSE), at the diesel/bunker fuel fired power station in Lerwick which has a capacity of around 60MW. Smaller-scale energy projects have been introduced including the Fair Isle wind generators and the Foula hybrid energy scheme. In 2000, the Shetland Aerogenerators wind farm was established and now produces up to 3.68MW. Another significant source of electricity is the gas fired power station at Sullom Voe that contributes up to 15 MW. It is expected that the main power station in Lerwick will have to be replaced by 2016 in order to meet emissions legislation, improve the economics of running an aged plant, and secure island demand. This is likely to happen regardless of what happens in relation to Viking Energy or the interconnector to the Mainland.

Overall electricity demand has increased by less than 2% per annum from 1995/6 to 2006 due to alternatives such as the Lerwick District Heating Scheme and energy efficiency measures.

A ‘Wind to Heat’ programme for installing 12 small scale community (6KW each) wind generators linked to village halls and schools has been completed with the aid of finance under Scottish Community and Householder Renewables Initiative (SCHRI); and there are 40 more community projects in the pipeline as well as a number of private projects using wind, heat pumps, and small scale hydro; a new Foula hydro/photovoltaics/wind scheme; and the PURE wind to hydrogen pilot project in Unst.

Additional renewable energy proposals that are currently being considered include North Yell Development Council 3.75MW wind farm. It seems unlikely that this will be connected to the grid at this stage due to grid capability. M D Developments (Shetland) Ltd have proposed a 10MW wind farm with up to 10 turbines, to be located near Quarff. It also cannot proceed due to local system constraints. A number of other R&D projects are continuing to test marine tidal current devices such as Stingray and other machines such as the ‘Leslie pump’. However the local grid constraints are a serious disincentive to attracting R&D projects to Shetland. Recent interest in a potential demonstration wave project, with Scalloway as a logistical hub, may not proceed due to these constraints.

## 17.6 IMPACT ASSESSMENT

The impact assessment and evaluation section describes the way in which the project is expected to interact with the existing economic and social setting during the construction and operation phases. Impacts are described for output, income and employment at the Shetland, Scotland and UK level.

### 17.6.1 Construction

#### (a) Revenue Generation and Income

The direct impact of a project is usually taken as the total value of development and construction cost and average turnover/income per annum, total jobs created during construction and operational phases, and income generated (i.e. total value of wages). Using this approach, the headline figures for the Viking Wind Farm have been calculated and are presented in Table 17.2 and include the estimates for CAPEX (direct, indirect, induced), ‘Total for the UK’ and ‘Rest of the World’.

#### 17.2. Headline Impact Figures for Construction

Development / Construction	Value of output £m	Employment			Income £m
		Job years	FTEs	Average jobs per annum	
Direct	384.81	4,814	481	963	110.77
Indirect	133.70	1,657	166	331	
Induced	56.33	819	82	164	
<b>Total UK</b>	<b>574.84</b>	<b>7,289</b>	<b>729</b>	<b>1,458</b>	
Rest of World	412.99	4,784	478	957	108.78
<b>Total</b>	<b>987.83</b>	<b>12,073</b>	<b>1,207</b>	<b>2,415</b>	<b>219.55</b>

If the appropriate economic multipliers are subsequently applied it is possible to quantify the gross impact in output terms by location which is presented in Table 17.3. For example this shows the significant impact on Shetland with direct local spend being nearly £70m over the construction period.

**Table 17.3 Output Impact by Region and Type (all figures in £000s)**

#### Summary Of Output £ By Region/By Type

All figures in £000s				Cumulative		Cumulative		Cumulative
DIRECT	Shetland	RoS	Scotland	RoUK	UK	RoW	Total	
Bulk Materials	19,999	44,898	64,896	72,422	137,318	159,333	296,651	
Plant / Equip	11,121	32,281	43,402	19,038	62,440	51,438	113,878	
Labour Related	29,292	57,019	86,311	39,505	125,816	120,962	246,778	
Overhead	3,376	7,803	11,179	8,062	19,240	20,650	39,890	
Profit	3,731	14,055	17,786	22,207	39,993	60,609	100,602	
<b>Total</b>	<b>67,518</b>	<b>156,056</b>	<b>223,574</b>	<b>161,233</b>	<b>384,807</b>	<b>412,992</b>	<b>797,799</b>	
% of Total	8%	20%	28%	20%	48%	52%	100%	
INDIRECT	15,189	31,988	47,177	86,525	133,701			
INDUCED	15,453	5,711	21,164	35,168	56,332			
<b>TOTAL</b>	<b>98,160</b>	<b>193,755</b>	<b>291,914</b>	<b>282,926</b>	<b>574,840</b>	<b>412,992</b>	<b>987,832</b>	

If the job figures are examined in more detail then it is possible to allocate by occupational categories and geographic levels, as presented in Table 17.4.

**Table 17.4 Direct Job Years by Region and Category**

Summary Of DIRECT Job Years By Region/By Category

All figures in Job Years							
DIRECT	Shetland	RoS	RoUK	RoW	Total	% Total	
Management	71	150	93	245	559	6%	
Administration	98	209	130	339	776	8%	
Technical / Engineering	255	459	237	575	1,526	16%	
Skilled Trades	330	884	902	3,060	5,176	54%	
Semi Skilled Trades	351	449	196	565	1,561	16%	
Total	1,105	2,152	1,557	4,784	9,598	100%	
% of Total	12%	22%	16%	50%	100%		

If the appropriate multipliers at the different levels are applied then it is possible to quantify the gross impact in employment terms, as presented in Table 17.5.

**Table 17.5: Employment Impact by Region and Type**

Summary Of Job Years By Region/By Category - CUMULATIVE

All figures in Job Years							
DIRECT	Shetland	RoS	Cumulative Scotland	RoUK	Cumulative UK	RoW	Cumulative Total
Management	71	150	221	93	315	245	559
Administration	98	209	307	130	436	339	776
Technical / Engineering	255	459	714	237	951	575	1,526
Skilled Trades	330	884	1,214	902	2,116	3,060	5,176
Semi Skilled Trades	351	449	800	196	996	565	1,561
Total	1,105	2,152	3,256	1,557	4,814	4,784	9,598
% of Total	12%	22%	34%	16%	50%	50%	100%
INDIRECT	324	694	1,018	638	1,657		
INDUCED	379	368	747	71	819		
TOTAL	1,808	3,214	5,022	2,267	7,289	4,784	12,073

The calculations above indicate the number of job years expected to be created in Shetland as 1,105, which equates to 221 jobs on average each year, over the 5 year construction period. If wages and salaries are examined in more detail then it is possible to allocate the income impact by occupational category and geographic levels. This information is provided in Table 17.6 and shows £25m (£5m per annum) coming into the Shetland economy over the construction period.

**Table 17.6: Income Impact by Region and Type**

Summary Of Net Salary By Region/By Category

All figures in £000s							
	Shetland	RoS	RoUK	RoW	Total	% Total	
Management	2,832	6,019	3,740	9,790	22,380	10%	
Administration	1,570	3,338	2,074	5,429	12,412	6%	
Technical / Engineering	6,629	11,939	6,165	14,940	39,673	18%	
Skilled Trades	7,255	19,457	19,838	67,320	113,869	52%	
Semi Skilled Trades	7,022	8,979	3,910	11,304	31,216	14%	
Total	25,307	49,733	35,727	108,782	219,549	100%	
% of Total	12%	23%	16%	50%			

**(b) Agriculture**

It is estimated that the physical area likely to be affected by the roads, hard standings, towers and control buildings will be 314 ha (including construction buffers), although the wider planning area involved is much larger at 18,700 ha. The buffers allow for temporary disturbance during construction, and when these have recovered the physical area affected is estimated to be about 252 ha.

Much of the land impacted by the project is currently used as common grazing or apportionment land, now featuring relatively low stocking densities of sheep. During construction of the wind turbines and related infrastructure (such as roads), sheep may need to be moved away from working areas. In certain circumstances this could result in compensatory claims for temporary loss of grazing land.

**(c) Tourism**

The impact on tourism during the construction phase is likely to be limited since it is not located in close proximity to the main tourist attractions, therefore there is unlikely to be any significant disruption due to noise, road works or other construction activity. Also since the construction period is now over 5 years the number of workers in most years should not impact on the holiday accommodation market. A peak of over 400 is expected in only one year. The numbers will be closely monitored in conjunction with other construction projects and action taken to avoid any accommodation problems if necessary.

**(d) Displacement**

Displacement impacts can occur on a project of this scale. For example, the employment of local skilled labour could prevent them from undertaking other types of employment during the construction phase, potentially causing local labour shortages. However with a relatively long phased construction period and sourcing labour from outside Shetland where required, any potential local negative impact is likely to be much reduced.

**(e) Supply Chain Opportunities**

There may be opportunities in establishing business activity focal points during construction with the aim of maximising local content. Production of turbine blades and individual towers is expected to take place within Europe, rather than in Shetland/UK due to current market conditions and the barriers of entering this manufacturing niche. Given the current low level of manufacturing within Shetland, it is likely that supply chain opportunities will be restricted to the supply of local labour, road building activities, civil engineering sub contract work, accommodation and other services.

**(f) Social Impacts**

Social impacts could arise in the construction phase due to:

- migration of employment seekers towards the area;
- new job opportunities benefitting individuals through income, skills and self esteem
- increased number of training opportunities to local people;

- negative perceptions of the area and the ‘unknowns’ associated with the final outcome during construction where the level of visual (and other) impacts are not yet fully realised;
- increase in the price of construction-related services to households/wider construction sector due to the demand for civil engineering expertise; and
- increases in the level of communication between communities linked to the overall rise in activity across the area.

**17.6.2 Operational Impact**

**(a) Revenue Generation and Income**

The level of local ownership within a project of this scale is unique. As a result revenue generation and income impacts during the operational phase will be significantly different from other projects with a more standard ownership model. It is expected that the cumulative potential financial benefit to Shetland could be over £26m on average each year over the 23<sup>1</sup> year life of the project. In addition there is a wider community benefit of £11.6m per annum as outlined in table 17.12. In a community of 22,000 this impact will be considerable.

Similar to the way in which revenue generation and income details were presented for the construction phase, Table 17.7 provides information associated with the operational phase.

**Table 17.7: Headline Impact Figures for Operation Phase**

Operation	Value of output average per annum	Total over 23 year life	Employment		Income Total over 23 years
			Job years	Average jobs per annum	
	£m	£m			£m
Direct	65.68	1,510.58	3,084	134	79.54
Indirect	5.10	117.25	1,205	52	
Induced	5.45	125.35	396	17	
<b>Total (UK)</b>	<b>76.22</b>	<b>1,753.17</b>	<b>4,686</b>	<b>204</b>	
Rest of World	5.83	134.07	951	41	24.74
<b>Total</b>	<b>82.05</b>	<b>1,887.24</b>	<b>5,636</b>	<b>245</b>	<b>104.28</b>

If the appropriate economic multipliers at the different levels are applied, it is possible to quantify the gross impact in output terms as indicated in Table 17.8. This shows the significant impact locally with direct local output at around £7.8m per annum over the 23 year operational life of the project.

<sup>1</sup> The economic assessment assumes a project lifetime of 23 years. The Section 36 permission, if granted, is likely to be for 25 years, and this is the lifetime which has been used in other assessment chapters. For economic purposes, however, it is prudent to assume a shorter productive lifetime, allowing for delays in construction, non-productive time etc.

**Table 17.8: Output Impact by Region and Type**

Summary Of Output £ By Region/By Type

All figures in £000s		Cumulative			Cumulative		Cumulative	
DIRECT		Shetland	RoS	Scotland	RoUK	UK	RoW	Total
	Bulk Materials	24,799	18,401	43,200	15,631	58,831	60,871	119,702
	Plant / Equip	19,238	11,710	30,948	2,405	33,352	18,036	51,388
	Labour Related	33,065	28,667	61,732	8,944	70,676	28,346	99,022
	Overhead	8,935	57,434	66,369	9,160	75,529	6,703	82,232
	Profit	92,659	1,032,471	1,125,130	147,060	1,272,190	20,110	1,292,300
	<b>Total</b>	<b>178,697</b>	<b>1,148,683</b>	<b>1,327,379</b>	<b>183,199</b>	<b>1,510,578</b>	<b>134,066</b>	<b>1,644,644</b>
	% of Total	11%	70%	81%	11%	92%	8%	100%
INDIRECT		48,929	25,038	73,967	43,282	117,249		
INDUCED		39,141	4,691	43,832	81,516	125,347		
<b>TOTAL</b>		<b>266,767</b>	<b>1,178,411</b>	<b>1,445,178</b>	<b>307,996</b>	<b>1,753,174</b>	<b>134,066</b>	<b>1,887,240</b>

If the operational figures are examined in more detail then it is possible to allocate by occupational categories and geographic levels, as indicated in Table 17.9.

**Table 17.9: Direct Job years by Region and Category**

Summary Of DIRECT Job Years By Region/By Category

All figures in Job Years		Shetland	RoS	RoUK	RoW	Total	% Total
DIRECT							
	Management	240	350	84	206	879	22%
	Administration	217	489	103	163	972	24%
	Technical / Engineering	362	602	143	275	1,382	34%
	Skilled Trades	300	139	56	307	802	20%
	Semi Skilled Trades	-	-	-	-	-	0%
	<b>Total</b>	<b>1,120</b>	<b>1,580</b>	<b>385</b>	<b>951</b>	<b>4,035</b>	<b>100%</b>
	% of Total	28%	39%	10%	24%	100%	

If the appropriate economic multipliers are applied, then it is possible to quantify the gross impact in employment terms as presented in Table 17.10.

**Table 17.10. Employment Impact by Region and Type**

Summary Of Job Years By Region/By Category - CUMULATIVE

All figures in Job Years		Cumulative			Cumulative		Cumulative	
DIRECT		Shetland	RoS	Scotland	RoUK	UK	RoW	Total
	Management	240	350	590	84	673	206	879
	Administration	217	489	706	103	809	163	972
	Technical / Engineering	362	602	964	143	1,106	275	1,382
	Skilled Trades	300	139	440	56	495	307	802
	Semi Skilled Trades	-	-	-	-	-	-	-
	<b>Total</b>	<b>1,120</b>	<b>1,580</b>	<b>2,699</b>	<b>385</b>	<b>3,084</b>	<b>951</b>	<b>4,035</b>
	% of Total	28%	39%	67%	10%	76%	24%	100%
INDIRECT		292	787	1,079	126	1,205		
INDUCED		305	82	387	9	396		
<b>TOTAL</b>		<b>1,717</b>	<b>2,449</b>	<b>4,166</b>	<b>520</b>	<b>4,686</b>	<b>951</b>	<b>5,636</b>

The calculations above indicate the number of jobs expected to be created in Shetland as 1,120 job years which means around 49 jobs each year over the 23 year operation period, plus a further 26 jobs per annum created in other sectors. If the wages and salaries are examined in more detail then it is possible to allocate by occupational categories and

geographic levels as presented in Table 17.11. This shows around £1.3m average income per annum to Shetland households.

**Table 17.11: Income Impact by Region and Category**

**Summary Of Net Salary By Region/By Category**

All figures in £000s						
	Shetland	RoS	RoUK	RoW	Total	% Total
Management	9,603	13,984	3,347	8,227	35,161	34%
Administration	3,479	7,817	1,650	2,607	15,554	15%
Technical / Engineering	9,401	15,656	3,708	7,160	35,925	34%
Skilled Trades	6,609	3,066	1,223	6,745	17,644	17%
Semi Skilled Trades	-	-	-	-	-	0%
<b>Total</b>	<b>29,093</b>	<b>40,524</b>	<b>9,928</b>	<b>24,740</b>	<b>104,284</b>	<b>100%</b>
% of Total	28%	39%	10%	24%		

(b) **Agriculture**

During the operation phase of the wind farm it is not expected that there will be any significant negative issues for the agriculture industry. Access and management will be made easier due to the wind farm's road network. Through arrangements for a habitat management plan, agricultural holdings could benefit financially from related incentives. The largest single impact on landowners and crofters would be financial in the form of rental payments. These would provide significant additional income streams.

Agriculture could be negatively impacted through a small loss of subsidy hectareage payments if there are roads and turbines situated within apportionments.

(c) **Tourism**

Visitor surveys from other areas suggest that a negative impact on tourism due to the visual impact of the wind farm is unlikely unless it is very close to key tourist attractions. This is not the case in Shetland, and therefore any impact should be small. The conclusion from other surveys is that the majority of tourists were conditionally positive towards wind farm developments, although there was a preference for smaller scale developments.

(d) **Displacement**

Displacement impacts within the operational phase would include activities, employment or output that could be displaced by the wind farm project such as alternative uses of the land, loss of jobs from other electricity production or reduction in tourism. Since the Lerwick Power Station needs to be replaced regardless of the Viking project no displacement is expected from operation of the wind farm. Given the data available, displacement within the areas of agriculture and tourism is also not expected to be likely.

(e) **Taxation**

The Viking Wind Farm is being developed by the Viking Energy Partnership. As any other normal private partnership, tax liabilities will occur during the operational phase of the development. A number of options are being considered to make tax liabilities as efficient as possible in relation to the part of the project in Shetland community ownership.

These include gift aiding the appropriate share of the profit to the Shetland Charitable Trust that should be able to reclaim the tax element.

The legal partnership that will own the asset represents SSE and VE Ltd as a 50/50 split and the profits will be distributed between these two organisations accordingly. The 50% profit allocated to SSE is assumed to have negligible impacts upon Shetland and will also be subject to national UK tax payments.

The business will be liable to pay Non-domestic Rates on building assets and turbines with the funds being channelled directly into the Scottish Government. The rateable value of the wind farm is likely to be around £12,500/MW, which implies a total rateable value of around £6.75 million. At a nominal rate of 48p the annual contribution is therefore likely to be around £3.1m during full production years.

(f) **Community Benefit**

Benefit to Shetland is likely to be derived from different elements of the project. In addition to the land rental that will be due to land owners and crofting tenants in the affected area, a number of wind farms have developed community benefit schemes to date so that local communities can benefit directly from their presence. At the time of writing, no community benefit scheme has been formalised, although the suggested level of community benefit currently sits at £2,000 per MW plus 2.5% of any ROC recycle value. This could amount to around £23m and would be available to the local communities most affected.

The profit, left after capital and interest paid and before tax, available to VE Ltd. is estimated to be nearly £600m over the life of the wind farm with 90% likely to be gift aided to the Shetland Charitable Trust.

The value of direct business to Shetland based contractors and suppliers from the operation of the wind farm could be another £178m.

The total is summarised in the table 17.12 that follows and could amount to around £37m per annum.

**Table 17.12: Total Benefit to Shetland**

Benefit	Lifetime Amount available	Average per annum over 23 years	Jobs direct	Jobs indirect
	£m	£m	jobs per annum	jobs per annum
<b>Land Rental</b>	59.4	2.6	2	26
<b>Community Levy</b>	22.9	1	2	10
<b>Profit to VE (50%)</b>	591.8	26	4	260
- 90% to Community	532.6	23		
- 10% to local shareholders	59.2	3		
<b>Income to Shetland-based Suppliers</b>	178.7	8		51
<b>Totals</b>	<b>852.8</b>	<b>37.1</b>	<b>8</b>	<b>347</b>

Note that the job figures are in addition to those identified in job table above (Table 7.10)

The jobs figures above are estimates of the additional jobs (around 350) that could be created as a result of the income coming into the local economy. These are over and above the jobs calculated from the normal multipliers and are based on an assumption of turnover required to sustain one job and on all the income being spent on projects in Shetland. The latter may not be the case if some of the income is invested for future spend beyond the end of the project.

(g) **Social Impacts**

Social impacts identified for the operation phase include:

- Improved social inclusion through investment in local facilities
- related follow-on developments in renewable energy schemes that could enhance the socio-economic status of the region;
- Improved social cohesion and reduced fuel and poverty issues
- use of local labour to fill approximately 40% of the long-term jobs created by the development; and
- greater confidence in local communities due to employment and funding opportunities

(h) **National Context**

The current scale of the project would provide enough electricity to meet the needs of 20% of Scottish households and this has obvious advantages at a national level. The project will also bring significant benefit to many Scottish contractors and businesses who have an opportunity to take advantage of the work required.

Within a wider context, the project will assist the UK in achieving European targets for CO2 emissions levels as well as business development initiatives across Scotland. The size of the investment would make a contribution through enhancement of the regional economy across Scotland, potentially boosting local companies through the supply chain

network, where awarded. Depending upon the award of manufacturing contracts, there is a possibility that spin-off activity, in the form of regional investment programmes to assist the local manufacturing base, may occur in the future.

## 17.7 MITIGATION

Mitigation measures to be used during the construction phase include:

- Development of a communication strategy to be used by VE to provide consistent and regular updates to the public and other interested parties;
- the use of local contractors for engineering services and related activities, where possible to do so;
- extension of the construction period to maximise use of local resources;
- the utilisation of raw materials from local sources, where possible; and
- careful planning of vehicle movements through a traffic management plan to minimise disruption to local traffic during the construction period.

Mitigation measures to be used during the operation phase include:

- Ongoing implementation and monitoring of the community benefit scheme;
- commitment to an access plan that maximises the potential benefits of the development through provision of public access through organised tours, development of mountain bike routes away from restricted areas, promotion of alternative walking routes, improvement in car parking, promotion of Shetland as a sustainable community with respect to energy production to generate an energy tourism market and the development of tourism view points;
- employment of local people to fulfil long-term employment roles, where possible;
- ensuring that revenues generated during operation of the development are used as tax efficiently as possible;
- ensuring that part of the land rental is shared, as is enshrined in crofting law, amongst the crofters and grazing committees as well as landlords; and
- active consideration of additional, follow-on developments to encourage wider renewable energy schemes (e.g. in wave and tidal energy) in addition to improvements in household level energy efficiency.

## 17.8 SUMMARY OF RESIDUAL EFFECTS

Residual effects arising from the scheme are hard to quantify and are qualitatively described below:

- Increased perception of the Shetland Islands working towards becoming sustainable with respect to energy production and being of national strategic importance in meeting the UK Government's goals for renewable energy production;

- long term socio economic benefits from recirculation of income created by the project, 50% of which will remain in the Shetland community;
- long-term, regional socio-economic benefits through the development of follow-on initiatives and other spin-offs associated with development of the local manufacturing and service base.

## 17.9 MONITORING

The monitoring to be employed during the construction phase includes the following activities:

- monitoring of available accommodation spaces within a 24 month period leading up to the start of construction activities to consider the significance for the tourism sector in reducing available spaces;
- monitoring of the price of local labour and related services;
- monitoring of tourist numbers, frequency of visit and their overall perception as to how the region is changing with respect to overall value, as construction work progresses;
- monitoring of vehicular traffic routes to ensure that mitigation measures designed to reduce traffic impacts are adequate; and
- establishment of a Shetland Wind Farm Environmental Advisory Group (SWEAG) to examine and advise on the environmental impacts of the Viking wind farm during construction, operation and decommissioning.

The measures to be employed during the operational phase include:

- Monitoring of tourism numbers, frequency and perceptions;
- monitoring of the effectiveness of any community benefit scheme with respect to strategic goals achieved, expenditure over time and other Key Performance Indicators (KPIs);
- ensuring training is available for local people to take advantage of direct new job opportunities, and encouraging training in the tourism sector; and
- encouraging promotion of Shetland as a tourist destination, especially promoting its green credentials.

## 17.10 CONCLUSIONS

The overall conclusion from the study is that the Viking Wind Farm proposal could have significant positive economic and social impacts at both the Shetland and national levels subject to careful planning and management in order to ensure local benefits are maximised and action is taken to mitigate any potential problems. The study has quantified these impacts as well as the probabilities and risks of different outcomes given different scenarios and variations in key factors that could alter the impact.

The main reason for the potential positive impact is due to the unique ownership structure with 50% local ownership. This brings significant economic and community benefits. It is expected that over £37m per annum over a 23 year period is likely to come into the economy directly as a result of the operation of the wind farm, of which over £23m will come to the Shetland Charitable Trust each year, plus £1m per year in wider community benefit payments.

The wind farm will create an average of 49 new jobs directly per annum and generate another 26 in support services. This is in addition to the impact during five year construction phase of around 221 jobs per annum, £5.0m per annum in income (wages) and £13.5m per annum in direct output that will go in to the local economy. On top of this there are wider effects not picked up by conventional impact analysis through the investment possible from the profits generated. It is estimated this could amount to at least an additional 350 jobs being sustained over the life of the wind farm. If some of the income is invested for longer term use then the figures would be lower per annum but spread over a much longer period.

For a community of 22,000 this level of impact is very significant and is unlikely to be matched by alternative developments. Also this new source of income could come at a time when the existing oil funds have been seriously depleted and there are insufficient resources to maintain existing facilities let alone undertake new projects.

## 17.11 REFERENCES

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