CHAPTER 14: SOCIO-ECONOMICS AND TOURISM

Technical Appendices (Volume 4)

Technical Appendix 14.1: Economic Impact Assessment of SSE Projects in the Great Glen

14. Socio-economics and Tourism

14.1 Executive Summary

14.1.1 The Highland Council area has a relatively older population than Scotland, with slower population growth expected particularly in rural areas. Economic activity is higher than the Scottish average and wages are comparable, but the working age population is relatively lower than the Scottish average.

14.1.2 Based on an indicative minimum installed capacity of 154.8MW, it was estimated that during the development and construction phase the Proposed Development could generate up to:

- £28.1 million GVA and 412 job years in Highland; and
- £64.4 million GVA and 983 job years in Scotland.

14.1.3 It was estimated that each year during the operation and maintenance phase the Proposed Development would generate:

- £1.4 million GVA and 16 jobs in Highland; and
- £2.5 million GVA and 29 jobs in Scotland.

14.1.4 It is expected that there would be community benefit funding associated with the Proposed Development, which will build on the existing Stronelairg Wind Farm Community Fund.

14.1.5 During the construction and operation of the Proposed Development there will likely be negligible effects on recreation and tourism assets in the study areas.

14.1.6 Throughout its operation, the Proposed Development would also contribute to local public finances and in this way supporting the provision of public services locally. It was estimated that the Proposed Development could contribute £1.8 million each year in non-domestic rates.

14.2 Introduction

14.2.1 This Chapter provides an assessment of the effects of the Proposed Development on socio-economics and tourism during the development, construction, operation and decommissioning phases. The assessment has been undertaken by BiGGAR Economics Limited, a specialist economic consultancy.

14.2.2 The assessment presented in this Chapter identifies any significant effects that are likely to occur when considering the Proposed Development against the existing tourism, recreation and employment baselines. Measures to enhance potential beneficial effects and potential beneficial cumulative effects are also considered.

14.2.3 The assessment has been undertaken on the basis of proposals for a 36 turbine development, each with a capacity of 4.3MW. This is anticipated to represent a minimum capacity, though this is dependent on the final turbine selection, which may result in differing levels of economic impact. This suggests an indicative minimum total generating capacity of 154.8MW.

14.3 Scope of Assessment

Study Area

14.3.1 The assessment in this chapter covers two key topics and accordingly the study area for each individual aspect has been defined based on the nature of the potential effects arising from the Proposed Development:

- the study areas for the socio-economic assessment are:
  - Highland: covers the Highland Council (THC) area; and
  - Scotland.
- the study area for the tourism and recreational assessment is a 25km buffer from the boundary of the Proposed Development.

Consultation Reponses

14.3.2 Consultation has been undertaken with statutory and non-statutory organisations to inform the scope of assessment reported in this EIA, as described in Chapter 5: Scoping and Consultation. The consultations responses relevant to the assessments in this chapter are summarised in Table 14.1.

Table 14.1: Consultation Responses

Consultee	Consultation Response	Comment/Action Taken
VisitScotland	VisitScotland ask that effects on tourism be considered	Tourism and recreation effects have been considered in Section 14.7, with reference to specific tourism assets and accommodation providers.
Mountaineering Scotland	Requested for specific sections on tourism and recreation.	Tourism and recreation effects have been considered in Section 14.7. See also Chapter 15: Land Use and Recreation.
Stratherrick and Foyers Community Council	Ask that reference be made to the newly finished South Loch Ness Trail and proposed Loch Ness 360 route.	Tourism and recreation effects have been considered in Section 14.7, with reference to specific recreational trails. See also Chapter 15: Land Use and Recreation.

14.4 Legislation, Policy and Guidance

14.4.1 There is no specific legislation, policy or guidance available on the methods that should be used to assess the socio-economic impacts of a proposed onshore wind farm development. The proposed method has however been based on established best practice, including that used in UK Government and industry reports on the sector.

14.4.2 In particular this assessment draws on two studies by BiGGAR Economics on the UK onshore wind energy sector, a report published by RenewableUK and the then Department for Energy and Climate Change (DECC) in 2012 on the direct and wider economic benefits of the onshore wind sector to the UK economy **,** and a subsequent update to this report published by RenewableUK in 2015 .

14.4.3 Similarly, there is no formal guidance on the methods that should be used to assess the effects that wind farm developments may have on tourism and leisure interests.

14.5 Methodology

Economic Impact Assessment

14.5.1 Analysis of economic impacts was undertaken using a model that has been developed by BiGGAR Economics specifically to estimate the economic impacts of wind farm developments. This model was also the basis of the UK onshore wind sector for the then Department of Energy and Climate Change (DECC) and RenewableUK in 2012. This was subsequently updated in 2015. The assessments are based on case studies of the local, regional and national economic impacts of wind farms developed in the UK and has been updated to reflect changes in the sector in recent years.

14.5.2 The assessment was also informed by a study undertaken by BiGGAR Economics for the Applicant that considers the economic impact of their projects in the Great Glen (see Technical Appendix 14.1).

14.5.3 The economic model was based on three main sources:

- the analysis undertaken in the 2015 report on behalf of RenewableUK, which examined the size and location of contracts for the development, construction and operation of existing wind farms;
- an analysis of the economies of the relevant study areas using local and national statistics; and
- BiGGAR Economics experience of evaluating the economic impact of nearby wind farms.

Stages in Socio-Economic Analysis

14.5.4 The starting point for estimating the likely economic activity supported by the Proposed Development was to consider the level of expenditure during the development, construction and operation and maintenance phases of the Proposed Development. The next step was to break this expenditure down into its main components and make reasonable assumptions about what would be expected to accrue to the main contractors and sub-contractors.

14.5.5 Applying these assumptions to the initial expenditure provided an estimate of the amount of each component contract that could be secured by companies in Highland and Scotland. There are two sources of economic activity:

- the first arising from each of the component contracts and the jobs they support; and
- the second is from anticipated spending in the relevant study areas of people employed in these contracts (the income effect).

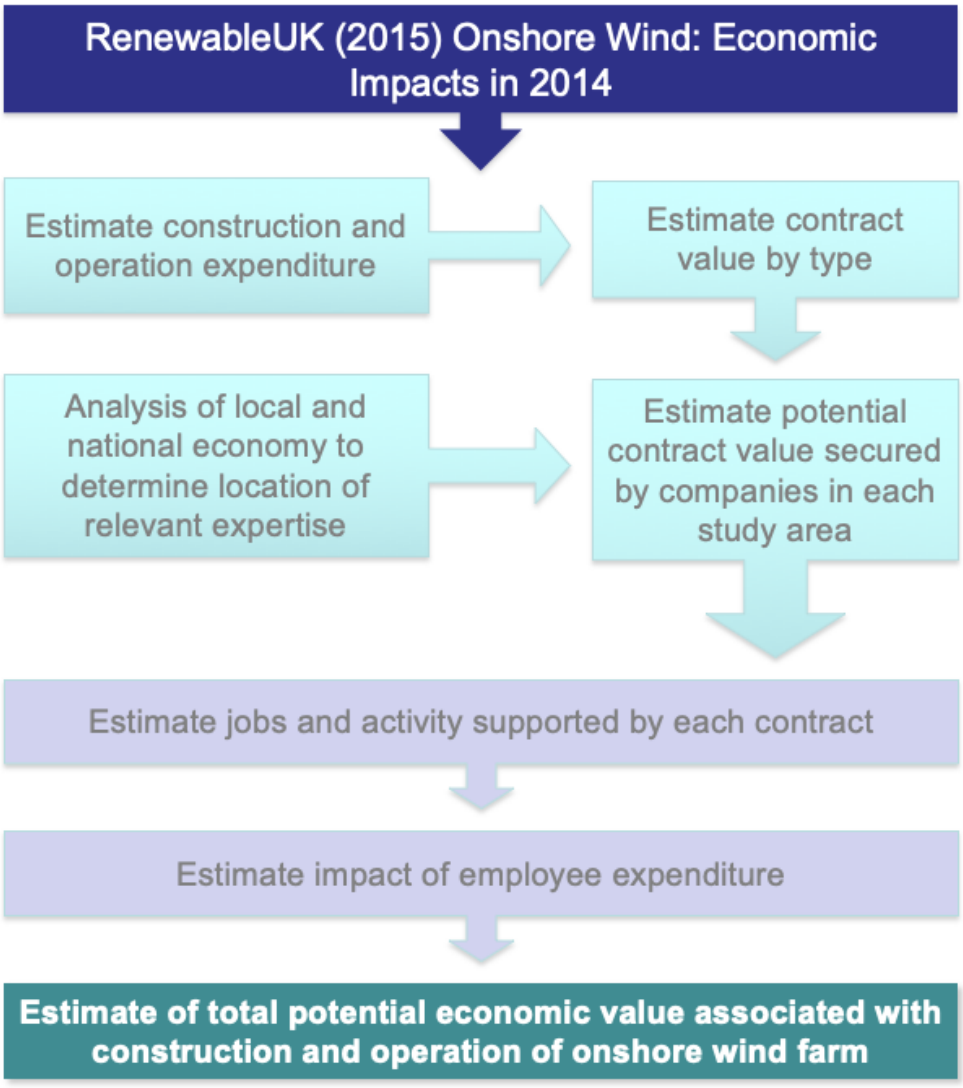
14.5.6 There are four key stages involved in this model:

- estimating the total capital expenditure;
- estimating the breakdown of capital expenditure into component contracts and subcontracts;
- assessing the capacity of the business case in each study area to carry out the contracts; and
- using the resulting figures to estimate the economic impact.

14.5.7 The units of measurement which are used to quantify the economic impacts of the Proposed Development are:

- Gross Value Added (GVA) - this is a measure of the economic value added by an organisation or industry and is typically estimated by subtracting the non-staff operational costs from the revenues of an organisation;
- Job years - this is a measure of employment which is equivalent to one person being employed for an entire year and is typically used when considering short term employment impacts, such as those associated with construction; and
- Jobs - this is a measure of employment which considers the headcount employment in an organisation or industry.

Plate 14.1 Approach to Economic Impact Assessment



Source: BiGGAR Economics

Tourism

14.5.8 Tourism and recreation assets within 25km of the Proposed Development were identified, and the potential effect of the Proposed Development on the asset was assessed, using the significance criteria outlined in Table 14.2.

Table 14.2: Significance Criteria

Significance	Description
Major	Major loss / improvement to key elements / features of the baselines conditions such that post development character / composition of baseline condition will be fundamentally changed. For example, a major long-term alteration of socio-economic conditions, a major reduction / improvement of recreational assets, or a substantial change to tourism spend.
Moderate	Loss / improvement to one or more key elements / features of the baseline conditions such that post development character / composition of the baseline condition will be materially changed. For example, a moderate long-term alteration of socio-economic conditions, a moderate reduction / improvement in the recreational asset, or a moderate change to tourism spend.
Minor	Changes arising from the alteration will be detectable but not material; the underlying composition of the baseline condition will be similar to the pre-development situation. For example, a small alteration of the socio-economic conditions, a small reduction / improvement in the recreational asset, or a small change in tourism spend.
Negligible	Very little change from baseline conditions. Change is barely distinguishable, approximating to a "no change" situation.

14.6 Baseline

Socio-economics

Economic Policy Context

Scotland's Economic Action Plan 2018-2020

14.6.1 The Scottish Government's Economic Action Plan sets out how it plans to make Scotland a leader in technological and social innovations. It aims to deliver higher productivity and greater competitiveness, while transitioning to a carbon neutral economy through measures that support business, and encouraging investment, innovation and upskilling.

14.6.2 At the heart of this strategy is inclusive growth, combining increased prosperity with greater equity, which requires getting the fundamentals right. These include:

- Investment: boosting private and public investment and delivering world-class infrastructure;
- Enterprise: ensuring a competitive business environment;
- International: growing exports and attracting international investment;
- Innovation: supporting world-leading innovation;
- Skills: providing a highly skilled workforce;
- Place: supporting thriving places;
- People: ensuring a sustainable working population where everyone can participate in and benefit from increased prosperity; and
- Sustainability: seizing the economic opportunities in the low carbon transition.

Highland and Islands Enterprise 2019-2022 Strategy

14.6.3 Highlands and Islands Enterprise's (HIE) Strategy sets out a vision for Highland and Islands to be successful, inclusive and prosperous region with a growing population.

14.6.4 Particularly important to Highland is to attract major investments, retain young people and prevent out-migration, support local communities to meet their needs through a place-based approach, and to address the climate emergency through decarbonising the economy.

14.6.5 Energy has been identified as one of the main regional opportunities in the area, with opportunities in the onshore wind supply chain and significant expansion in the offshore wind sector.

The Future of Energy in Scotland

14.6.6 In December 2017, the Scottish Government released the Scottish Energy Strategy, which set out the Government's vision for Scotland's energy future.

14.6.7 In 2016, 54% of all electricity consumed in Scotland was generated renewably, with a target of producing 100% from renewable sources by 2020. This increased to 70.3% in 2017, and provisional figures suggest it increased to 74.6% in 2018 . However, in 2015, electricity represented 24% of all energy consumed in Scotland, and the overall share produced by renewables was 17.8%. By 2030, the Scottish Government wants the proportion of all energy, including heat and transport, supplied from renewable sources to increase to 50%.

14.6.8 The Scottish Government has also highlighted that renewables present an economic opportunity as an expanding market which will continue to support Scottish growth. The Scottish Government will continue to support businesses in this sector.

14.6.9 Additionally, the Scottish Government has emphasised the importance of communities benefitting from renewable energy generation, including through community benefit funds and shared ownership .

Socio-economic Indicators

Population

14.6.10 In 2018 the population of Highland was 235,500, accounting for 4.3% of Scotland's population of 5,438,100 . The Highland Council area has a smaller proportion of the population that are working age, with 61.2% compared to 64.2% nationally, and higher proportion that are aged 65 and over; 22.1% compared to 18.9% (Table 14.3).

Table 14.3: Population (2018)

		Highland	**Scotland**
Population		235,500	5,438,100
	0-15	16.7%	16.9%
	16-64	61.2%	64.2%
	65+	22.1%	18.9%

Source: National Records of Scotland (2019) Population Estimates (Current Geographic Boundaries)

14.6.11 The population of the Highland Council area is expected to increase by 1.4% over the period 2016-41, compared to growth in Scotland of 5.3%. The regional population is also

expected to have a higher proportion of the population aged over 65 (30.4%) compared to Scotland (25.3%). The share of the population of working age is expected to decrease to 54.4% in Highland, compared to 58.9% in Scotland (Table 14.4).

14.6.12 Additionally, projections commissioned by the Highland Council suggest that much of the growth in Highland is expected to be concentrated in Inverness, with other areas, such as Badenoch and Strathspey and Lochaber, expected to have a decrease in population.

Table 14.4: Population Projections (2016-41)

		Highland		Scotland	
Population		234,770	237,988	5,404,700	5,693,201
	0-15	17.0%	15.2%	16.9%	15.8%
	16-64	61.6%	54.4%	64.6%	58.9%
	65+	21.3%	30.4%	18.5%	25.3%

Source: National Records of Scotland (2018), Sub-National Population Projections (2016-41)

Economic Activity

14.6.13 In 2018-19 the economic activity rate, a measure of how many people of working age participate in the labour market, was higher in Highland at 81.7% than in Scotland as a whole at 77.9%. Additionally, the unemployment rate was 2.4%, lower than the Scottish figure of 4.1%.

14.6.14 The median annual pay of full-time workers was £29,700 in Highland, compared to £30,000 in Scotland, a difference of about 1% (Table 14.5).

Table 14.5: Economic Activity and Earnings (2019)

	Highland	Scotland
Economic Activity Rate (16-64)	81.7%	77.9%
Unemployment Rate (16-64)	2.4%	4.1%
Median Annual Pay of Full-time Workers (£)	29,700	30,000

Source: ONS (2019), Annual Survey of Hours and Earnings, Jul 2018 - Jun 2019. ONS (2019), Business Register and Employment Survey 2019

Employment

14.6.15 As can be seen in Table 14.6 , the main industries of employment in Highland are health and social care, with 16.4% of employment compared to 15.1% in Scotland as a whole, and wholesale and retail trade (13.6% for Highland and Scotland). Agriculture, forestry and fishing is also an important industry with 10.0% of employment, compared to 3.2% in Scotland, due to Highland's rurality.

14.6.16 Highland have a relatively high share of employment (6.4%) in construction, compared to 5.5% nationally, which suggests that it may be well-placed to secure balance of plant contracts. It has a lower share of professional, scientific and technical services, with 5.2% of employment regionally and 7.0% nationally, which is often involved in the development phase of a wind farm.

Table 14.6: Business Register and Employment Survey, 2018

	Highland	**Scotland**
Accommodation & food services	10.8%	7.9%
Administration and support activities	5.2%	7.9%
Agriculture, forestry and fishing	10.0%	3.2%
Arts, entertainment and recreation	3.2%	2.7%
Construction	6.4%	5.5%
Education	6.0%	7.4%
Electricity, gas, steam and air conditioning	0.7%	0.7%
Financial and insurance	0.9%	3.4%
Human health and social work activities	16.4%	15.1%
Information and communication	1.8%	3.1%
Manufacturing	5.2%	6.9%
Mining, quarrying and utilities	0.4%	1.1%
Professional, scientific and technical services	5.2%	7.0%
Public administration and defence	5.2%	6.0%
Real estate activities	1.3%	1.5%
Transport and storage	4.4%	4.2%
Water supply, sewerage, waste	1.6%	0.8%
Wholesale and retail trade	13.6%	13.6%
Other service activities	1.5%	2.1%
Total	**125,000**	**2,611,500**

Source: ONS (2019), Business Register and Employment Survey 2018

Socio-economics Summary

14.6.17 Highland has a relatively older population than Scotland, with slower population growth expected particularly in rural areas. Economic activity is higher than the Scottish average and wages are comparable, but the working age population is relatively smaller than the Scottish average.

Tourism

Tourism Economy

14.6.18 The tourism sector is very important in the Highland economy. In 2017/18 the Sustainable Tourism Sector, as defined by the Scottish Government, supported 16,000 jobs in Highland and £317 million GVA . Highland accounts for 4.3% of the population of Scotland and 7.3% of the employment in Scotland in Sustainable Tourism (Table 14.7). Therefore, the tourism sector is 70% more concentrated in Highland than in Scotland as a whole.

Table 14.7: Sustainable Tourism Sector, 2017/18

	Highland	Scotland
Employment (2018)	16,000	218,000
GVA (2017)	£317 m	£4,127 m

Source: Scottish Government (2019), Growth Sector Statistics 2017/18

14.6.19 The tourism activity within the Great Glen is seasonal, and much of the activity occurs within the months between April and September. For example, the occupancy levels for hotels in Highland and Islands are above 90% for the months of June - August and below 55% between November and January. The seasons are more pronounced in rural areas and this is reflected in closure of hotels during this time period. Fort Augustus, the settlement closest to the Proposed Development, has four hotels. The months that these hotels are open are given in Table 14.8 which shows that half of the hotels are closed in the winter months.

Table 14.8: Season of hotels in Fort Augustus (Open months shaded in grey)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Caledonian Hotel												
Inch Hotel												
The Lovat												
Richmond House Hotel												

Source: Websites of respective hotels

Visitors

14.6.20 The number of visitors to Highland is shown in Table 14.9 below and compared with the total visitors to Scotland.

14.6.21 Visitor numbers are collated by VisitScotland in regional and national factsheets, which include day visitors, domestic overnight visitors and overseas visitors .

14.6.22 In total, there were over 13.5 million visitors to Highland, of which 11.3 million were day visitors, 1.7 million were GB overnight visitors and 0.5 million were from overseas.

Table 14.9: Visitors by Type

	Highland	Scotland
Day Visitor Trips	11,333,000	137,800,000
GB Overnight Trips	1,690,000	11,803,000
Overseas Trips	521,000	3,538,000
Total Trips	**13,544,000**	**153,362,000**

Source: VisitScotland (2019), Regional / National Factsheets 2018

14.6.23 The expenditure of visitors to Highland and Scotland is shown by type of visitor in Table 14.10. Visitors to Highland spend over £1 billion in the local economy. The majority of this expenditure was associated with day visitor and domestic overnight visitors who spent

£430 million and £425 million respectively. The share of domestic overnight tourism spending is higher than the rate across Scotland, reflecting the relative importance of this market.

Table 14.10: Visitor Spend by Type

	Highland	Scotland
Day Visitor Spend	£430 m	£5,069 m
GB Overnight Spend	£425 m	£2,762 m
Overseas Spend	£195 m	£2,206 m
Total Spend	**£1,050 m**	**£10,543 m**

Source: VisitScotland (2019), Regional/National Factsheets 2018

Tourism Assets

Regional Tourism Attractions

14.6.24 The most visited attractions in Highland by visitor numbers are displayed in Table 14.11 below, as well as their respective distances from the Proposed Development. Each of the attractions is at least 20km away, with three being over 40km away. Urquhart Castle and Loch Ness by Jacobite, which are respectively located 25km and 30km away, are both located on Loch Ness (Jacobite operates boat tourist) and will not have views of the Proposed Development.

Table 14.11: Top 5 Most Visited Attractions in Highland

	Number of Visitors	Approximate Distance from Proposed Site (km)
(1) Urquhart Castle	518,195	25
(2) Glenfinnan Monument	385,352	60
(3) Glenmore Forest Park	318,511	40
(4) Loch Ness by Jacobite	311,613	30
(5) Glencoe Visitor Centre	213,343	55

Source: VisitScotland (2019), Highland Factsheet

Local Tourism Attractions

14.6.25 Discussions with local tourism operators have also identified other local attractions that bring visitors to the Great Glen area of Highland. These are:

- Loch Ness;
- Ben Nevis;
- the Caledonian Canal;
- Coach tourism associated with cruises;
- Day Coach visitors, leaving from the cities and towns of Scotland;
- the wilds of Glen Affric;
- the Loch Ness & Exhibition centre at Drumnadrochit;
- the long-distance paths including the Loch Ness 360^{o} Trail and the Great Glen Way.

Local Accommodation

14.6.26 The main tourism facilities within the area are located within the population centres around Loch Ness. These include:

- Fort Augustus – the village of Fort Augustus is located approximately 10km to the west of the Proposed Development and serves as a base for visitors exploring the Great Glen. VisitScotland lists 64 accommodation providers in Fort Augusts including four hotels, two campsite / hostel facilities and multiple B&Bs and self-catering facilities;
- Drumnadrochit – the village of Drumnadrochit is located 25km to the north of the Proposed Development and is one of the main facility providers on the banks of Loch Ness. VisitScotland lists 23 accommodation providers in the village, ranging from large hotels to small self-catering facilities;
- Invermoriston – the village of Invermoriston is located 12km to the north-west of the Proposed Development. VisitScotland lists 11 accommodation providers in the village, primarily self-catering facilities and a hotel; and
- Cannich – the village of Cannich is 30km from the Proposed Development, at the junction of Glen Cannich, Glen Affric and Glen Urquhart. VisitScotland lists 8 accommodation provides in the village.

14.6.27 The settlement of Whitebridge, on the B852 has 8 accommodation providers listed on the VisitScotland website, including one hotel, two B&Bs and five self-catering facilities.

14.6.28 To the east of the Proposed Development, the accommodation providers are also clustered in settlements, in particular those in Newtonmore and Kingussie:

- Newtonmore – the village of Newtonmore is located 15km to the east of the Proposed Development and is particularly popular with anglers and grouse hunters. VisitScotland lists 22 accommodation providers in the area, primarily self-catering and B&B establishments; and
- Kingussie – the town of Kingussie is 18km to the east of the Proposed Development and VisitScotland lists 17 accommodations providers in the town. These include hotels, B&Bs and self-catering facilities.

14.6.29 In addition to the accommodation providers within these settlements, there are some accommodation providers in rural locations within the study area.

Local Tourism and Recreation Routes

14.6.30 There are a series of core tourism and recreational routes near to the Proposed Development.

14.6.31 The most prominent of these routes is the Great Glen Way, which stretches almost 120km from Fort William to Inverness. The closest the Great Glen Way comes to the Proposed Development is near Aberchalder, when the route is approximately 10km to the west of the Proposed Development.

14.6.32 The Loch Ness 360^{o} Trail is a new walking and cycling route that was opened in 2018 and is a 130km circular path around Loch Ness. The route can be split into sections, and the section which is nearest to the Proposed Development is Section 4 – Fort Augustus to Foyers, which passes 6km west of the Proposed Development.

14.6.33 The Loch Ness 360^{o} Trail circular route also includes part of the National Cycle Route 78, which stretches from Fort William to Inverness. This route also passes 6km west of the Proposed Development.

14.6.34 There are no Core Paths that pass through the site of the Proposed Development.

14.6.35 There are no National Tourist Routes near the Proposed Development.

14.6.36 In addition to the formal paths and routes listed above, the walking website WalkHighlands also lists some routes which are near the site of the Proposed Development. These include:

- Corrieyairack Pass: Laggan to Fort William – this path follows the old military road from Laggan to Fort Augustus and will pass within 5km of the Proposed Development;
- Carn a' Chuilinn, Via Glen Doe - which uses the access tracks constructed as part of the Glendoe Hydro Scheme and pass within 3km of the Proposed Development. Part of this path is also included in the Corrieyairack Pass; and
- Gairbeinn and Corrieyairack Hill, Melgarve - these two Corbetts are accessed via Melgarve to the south. The recommended route passes within 2.5km to the south of the Proposed Development.

14.6.37 In addition to the long-distance walks and the routes outlined on the WalkHighlands website, other organisations also promote routes within the area. One of these is the 'Monadhliath Trail', which is promoted by the website www.visitinvernesslochness.com. This route includes tracks that were constructed as part of the Stronelairg Wind Farm development and will pass through the site of the Proposed Development.

Summary of Tourism Baseline

14.6.38 The Sustainable Tourism sector in the Great Glen and wider Highland area is an important employer and visitors come from all over the world to see Loch Ness. The key attractions in the area are mainly outdoor activities and the sector is very seasonal. The tourism sector near the Proposed Development is highly seasonal and discussions with local tourism operators suggest that half of the hotels are closed over the winter months.

14.7 Potential Effects

14.7.1 This section describes the potential effects on socio-economics and tourism that could arise from the construction, operation and decommissioning of the Proposed Development.

Socio-economics

Development and Construction

14.7.2 The application is for 36 turbines with a capacity of 4.3MW each. This is anticipated to represent a minimum capacity, though this is dependent on the final turbine selection, which may result in differing levels of economic impact. This suggests an indicative minimum total generating capacity of 154.8MW.

14.7.3 Using research undertaken by BiGGAR Economics on behalf of RenewableUK in 2015 , the average expenditure on development and construction can be estimated based on the average spend per MW, the average spend per turbine, or a combination of the two, as appropriate. On the basis of this methodology the total development and construction cost was estimated to be £194.0 million.

14.7.4 The expenditure was split into four main categories of contract:

- development and planning;

- balance of plant;
- turbines; and
- grid connection.

14.7.5 The proportion of construction and development spending that is spent on each of the main categories was also informed by BiGGAR Economics' research into wind farms that are currently in operation in the UK. As can be seen in Table 14.12, this found that the largest proportion of capital expenditure (Capex) was on turbine related contracts (67.8%), followed by balance of plant (21.3%), development and planning (5.6%) and grid connection (5.4%). The grid connection is a separate planning consideration but is considered here to ensure that the full economic impact is captured.

Table 14.12: Development and Construction Expenditure by Contract Type

	% Capex	**Value (£m)**
Development and Planning	5.6	10.9
Turbines	67.8	131.5
Balance of Plant	21.3	41.2
Grid Connection	5.4	10.4
Total	**100**	**194.0**

Source: BiGGAR Economics Analysis

14.7.6 The economic impact of the development and construction spending was estimated for Highland and Scotland. Therefore, it was necessary to estimate the proportion of contracts that could be secured in each of the study areas. The assumptions were based on RenewableUK research, analysis of the industries and professions in the study area, and BiGGAR Economics' previous experience of evaluating the economic impact of other wind farm projects in Highland.

14.7.7 The Applicant has significant experience of developing and building wind farms in Highland, including Bhlaraidh Wind Farm, Dunmaglass Wind Farm and the adjacent Stronelairg Wind Farm, and has worked to develop a strong local supply chain.

14.7.8 On this basis, it was estimated that Highland could secure contracts worth up to £42.7 million, equivalent to 22% of Capex. The largest opportunity would be with balance of plant contracts as the companies in the area could secure 75% of contracts, worth £30.9 million.

14.7.9 Scotland could secure 40% of contracts, worth £77.5 million. Balance of plant contracts would represent the largest opportunity worth £35.0 million, followed by turbines worth £25.2 million (Table 14.13), assuming that the tower manufacture is sourced within Scotland, for example at CS Wind's tower manufacture facility on the Kintyre Peninsula.

Table 14.13: Development and Construction Expenditure by Study Area and Contract Type

	Highland		Scotland	
	%	£m	%	£m
Development and Planning	10	1.1	63	6.8
Turbines	4	5.0	19	25.2
Balance of Plant	75	30.9	85	35.0
Grid Connection	55	5.7	100	10.4
Total	**22**	**42.7**	**40**	**77.5**

Source: BiGGAR Economics Analysis

14.7.10 The contract values potentially awarded in each area would represent an increase in turnover in businesses in these areas. The Gross Value Added (GVA) impact, a measure of economic activity, was estimated using industry-specific data from the Annual Business Survey , which gives the turnover to GVA ratio for each of the industries involved.

14.7.11 On this basis, it was estimated that the development and construction of the Proposed Development could generate £20.7 million GVA in Highland, and £37.8 million GVA in Scotland (Table 14.14).

Table 14.14: Development and Construction GVA by Study Area and Contract Type (£m)

	Highland	Scotland
Development and Planning	0.8	4.6
Turbines	2.3	11.5
Balance of Plant	15.5	17.5
Grid Connection	2.2	4.2
Total	**20.7**	**37.8**

Source: BiGGAR Economics Analysis

14.7.12 Similarly, the contract values potentially awarded in each area would support employment. Turnover per employee for each of the industries involved is also given by the Annual Business Survey , which can be used to estimate the employment impact from any increase in turnover.

14.7.13 The employment impacts during the construction and development phase are reported in job years as the contracts would be short-term. Job years measures the number of years of full-time employment generated by a project. For example, an individual working on this project for 18 months would be reported as 1.5 job years.

14.7.14 In this way it was estimated that the development and construction impacts would support 310 job years of employment in Highland, with 226 job years supported in balance of plant contracts, and 588 job years in Scotland (Table 14.15).

Table 14.15: Development and Construction Employment by Study Area and Contract Type (Job Years)

	Highland	Scotland
Development and Planning	11	65
Turbines	39	204
Balance of Plant	226	256
Grid Connection	34	63
Total	**310**	**588**

Source: BiGGAR Economics Analysis

14.7.15 There would also be knock on effects associated with spending in the supply chain (indirect effects) and spending of employees in the wider economy (induced effects). Supply chain effects are estimated by applying Type I (indirect) GVA and employment multipliers to direct GVA and employment impacts.

14.7.16 These multipliers are for the Scottish economy as a whole and therefore it was necessary to adjust them for the Highland economy, which was assumed to capture 33% of the indirect effect supported by Highland-based businesses.

14.7.17 In this way it was estimated that the indirect effect was £2.9 million GVA and 47 job years in Highland, and £15.0 million GVA and 242 job years in Scotland (Table 14.16).

Table 14.16: Development and Construction Indirect Impact

	Highland	Scotland
Indirect Impact (£m)	2.9	15.0
Indirect Impact (job years)	47	242

Source: BiGGAR Economics Analysis

14.7.18 Similarly, the induced effects are captured by subtracting Type II multipliers (indirect and induced) from Type I multipliers (indirect). They were then adjusted for Highland, where it was assumed that the induced effect would be 70% of the national level, based on analysis of ONS household spending data .

14.7.19 On this basis, it was estimated that the induced impact in Highland would be £4.5 million GVA and 56 job years, and in Scotland it would be £11.6 million GVA and 153 job years (Table 14.17).

Table 14.17: Development and Construction Induced Impact

	Highland	Scotland
Induced Impact (£m)	4.5	11.6
Induced Impact (job years)	56	153

Source: BiGGAR Economics Analysis

14.7.20 The total impact, which is the sum of the direct, indirect and induced impacts was estimated to be £28.1 million GVA and 412 job years in Highland, and £64.4 million GVA and 983 job years in Scotland (Table 14.18).

Table 14.18: Economic Impact during Development and Construction

	Highland	Scotland
Economic Impact (£m)	28.1	64.4
Economic Impact (job years)	412	983

Source: BiGGAR Economics Analysis

14.7.21 The effect on the Highland economy was assessed as **minor beneficial** (temporary). In Scotland the effect is expected to be **negligible beneficial** (temporary).

Operation and Maintenance

14.7.22 The operation and maintenance impact of the Proposed Development would persist throughout its lifespan.

14.7.23 Annual expenditure on operations and maintenance on the Proposed Development was estimated based on analysis undertaken in the 2015 RenewableUK report. It was estimated that expenditure would be £4.8 million annually.

14.7.24 In order to estimate the economic impact of the operations and maintenance expenditure secured in Highland and Scotland it was first necessary to make assumptions about the proportion of contracts that could be secured in each of these areas. These assumptions were based on the contract proportions reported in the RenewableUK report, analysis of industries present in each area, as well as BiGGAR Economics understanding of existing onshore wind farms in Highland.

14.7.25 On this basis, Highland could secure 47% of operation and maintenance contracts worth £2.2 million and Scotland could secure 82% of contracts worth £3.9 million (Table 14.19).

Table 14.19: Annual Operation and Maintenance Expenditure by Study Area

	Highland		Scotland	
	%	£m	%	£m
Operation and Maintenance	47	2.2	82	3.9

Source: BiGGAR Economics Analysis

14.7.26 As with the development and construction impacts, the contract values awarded in each of the study areas would represent an increase in turnover in those areas. The economic impact of this increase in turnover was estimated by applying turnover to GVA and turnover per employee ratios for the relevant industries .

14.7.27 It was estimated that operation and maintenance contracts associated with the Proposed Development would directly support £1.1 million GVA and 13 jobs annually in Highland, and £1.6 million GVA and 18 jobs annually in Scotland (Table 14.20).

Table 14.20: Annual Operation and Maintenance Direct Impact

	Highland	Scotland
Economic Impact (£m)	1.1	1.6
Economic Impact (jobs)	13	18

Source: BiGGAR Economics Analysis

14.7.28 As with the development and construction impacts there would be indirect and induced impacts. Adding together direct, indirect and induced impacts, it was estimated that the total operation and maintenance impacts would be £1.4 million GVA and 16 jobs in Highland, and £2.5 million GVA and 29 jobs in Scotland (Table 14.21).

Table 14.21: Annual Economic Impact During Operation and Maintenance

	Highland	Scotland
Economic Impact (£m)	1.4	2.5
Economic Impact (jobs)	16	29

Source: BiGGAR Economics Analysis

14.7.29 The effect of operations and development on the Highland and Scottish economies was assessed as **negligible beneficial**.

Wider Benefits

Community Benefit

14.7.30 Though discussions are ongoing, there is also expected to be community benefit funding. This would build on the existing Stronelairg Wind Farm Community Fund, which makes around £0.6 million available to communities and charitable projects in the community council areas of Stratherrick & Foyers, Laggan, and Spean Bridge, Roy Bridge and Achnacarry. In addition, funding is made available to the community council areas of Fort Augustus and Glenmoriston, and Glengarry, where local community organisations administer the funds.

Shared Ownership

14.7.31 As set out in its guidance the Scottish Government is committed to shared ownership as a way to strengthen relations between developers and communities, build the capacity of communities and empower their members, and support Scotland's ambitious targets for locally owned renewables.

14.7.32 The Applicant is committed to supporting the Scottish Government's ambitions for shared ownership. It is currently considering the potential options and will engage with local communities at the appropriate time.

Non-Domestic Rates

14.7.33 The Proposed Development would be liable for non-domestic rates, the payment of which would contribute directly to public sector finances. Analysis of the rateable values of several wind farms nearby suggests that the average rateable value per MW is £22,300. On this basis the total rateable value would be £3.4 million.

14.7.34 Applying a poundage rate of £0.516 per £1 of rateable value it is estimated that the Proposed Development could contribute £1.8 million annually to public finances.

However, the actual contribution would depend on variables such as the actual load factor.

14.7.35 These non-domestic rates, by providing an additional revenue stream, would support the delivery of local government services. Over an illustrative 25 years, non-domestic rates contributions are expected to be £44.5 million.

14.7.36 The effect on the Highland economy was assessed as **negligible beneficial**.

Tourism

14.7.37 This section considers the potential economic effects that the Proposed Development could have on the tourism and recreation assets as described in the baseline section. The basis for this assessment is to consider if the development, construction and operation of the Proposed Development would result in changes in economic behaviour associated with these assets.

Wind Farms and Tourism Evidence

14.7.38 There are three main studies which are relevant to assessing the economic effects of wind farms on tourism and recreation assets. These are:

- The Moffat Centre (2008) The economic impacts of Wind Farms on Scottish Tourism;
- Scottish Parliament Economy, Energy and Tourism Committee (2012) Report on the achievability of the Scottish Government's renewable energy targets; and
- BiGGAR Economics (2017) Wind Farms and Tourism trends in Scotland.

14.7.39 The most comprehensive study of the potential effects of wind farms on tourism was undertaken by the Moffat Centre at Glasgow Caledonian University in 2008 (Glasgow Caledonian University / Moffat Centre, 2008). The study found that, although there may be minor effects on tourism providers and a small number of visitors may not visit Scotland in the future, the overall effect on tourism expenditure and employment would be very limited. The study is now about a decade old, although a Scottish Government report confirmed the findings, and in that time wind farms have become a more common feature in Scotland. As such, it would be expected that any adverse effects on the tourism economy would now be apparent.

14.7.40 The Moffat Centre study was based on what could happen, rather than what has happened. In 2017, BiGGAR Economics undertook a study into the effects of already constructed wind farms on tourism at the national, regional and local level.

14.7.41 Tourism employment was considered over the period 2009 to 2015, a six-year period over which Scotland and almost all local authority areas increased the number of wind farms, while employment in sustainable tourism also grew significantly. The analysis found no correlation between tourism employment and the number of turbines at the national or local authority level.

14.7.42 The study also considered the impact on employment at a much smaller, more granular level, in data zones up to 15 kilometres from developments. The sites considered were constructed between 2009 and 2015. As these sites did not exist in 2009, comparing employment in 2009 and 2015 was considered an effective measure of the effect of wind farms on local employment, while excluding construction impacts, such as wind farm related employees staying in local accommodation.

14.7.43 At the local authority level in these smaller areas, no link was found between the development of a wind farm and tourism related employment. In 21 out of the 28 areas considered employment in this sector grew. In 22 of the areas, employment either grew faster or decreased less than the rate for the relevant local authority area as a whole.

14.7.44 Overall, the conclusion of this study was that published national statistics on employment in sustainable tourism demonstrates that there is no relationship between the development of onshore wind farms and tourism employment at the level of the Scottish economy, at the local authority level, nor in the areas immediately surrounding wind farm development.

14.7.45 The findings of this research are in accordance with those of the Scottish Parliament's Economy, Energy and Tourism Committee, when they concluded that there is no robust, empirical evidence of an adverse link between wind farm development and tourism.

14.7.46 Overall, there is no research evidence that shows that fears of adverse effects on the tourism economy in Scotland as a result of wind farms have been realised.

14.7.47 Within that overall context, the following assessment nevertheless considers whether the Proposed Development could result in changes in the behaviour of tourists that might lead to effects on the tourism economy.

Visitor Attractions

14.7.48 The main visitor attractions which are listed in the baseline section of this chapter and within 25km of the Proposed Development are:

- Glen Urquhart Castle;
- Loch Ness;
- the Caledonian Canal;
- the Loch Ness & Exhibition centre at Drumnadrochit; and
- the long-distance paths including the Loch Ness 360^{o} Trail and the Great Glen Way.

14.7.49 A detailed assessment of the visual effect is contained in the Landscape and Visual Impact Assessment Chapter of this report. This shows that outwith the immediate vicinity of the Proposed Development, there is limited visibility of the turbines. Viewpoints from elevated positions in the hills are more likely to see more turbines than those at lower levels, such as along the A82 and the lower banks of Loch Ness and around the tourism clusters listed in the baseline.

14.7.50 Glen Urquhart Castle is located approximately 25km from the Proposed Development. The nature of visitors to the castle, including large numbers of coach visitors as described in the baseline, and the distance between the attraction and the Proposed Development would not suggest that there will be any change in the economic behaviour of these visitors. Therefore, the effect of the Proposed Development has been assessed as **negligible**.

14.7.51 Loch Ness is by far the most important tourism asset in the area, and given its international profile it is one of Scotland's most important assets. There will be minimal visibility of the Proposed Development from Loch Ness. Therefore, the effect of the Proposed Development has been assessed as **negligible**.

14.7.52 The Caledonian Canal is one of the main industrial heritage attractions in Highland, which highlights the engineering tradition of the region. There will be no visibility of the Proposed Development from the Caledonian Canal Centre, or at any point along the route

of the canal (excluding Loch Ness). Therefore, the effect of the Proposed Development has been assessed as **negligible**.

14.7.53 Drumnadrochit Loch Ness & Exhibition Centre is located approximately 25km from the Proposed Development and there will be no visibility from the Centre. Therefore, the effect of the Proposed Development has been assessed as **negligible**.

14.7.54 The long-distance paths, namely the Loch Ness 360º Trail, the Fort William to Inverness Cycle Route and the Great Glen Way are tackled in sections, or as whole. For the vast majority of these routes, there is no or minimal visibility of the Proposed Development and therefore during the operational lifetime the effect has been assessed as **negligible**.

14.7.55 During construction, for health and safety reasons, there may be instances where the Applicant will require exclusive use of a small section of the Fort William to Inverness Cycle Route and the Loch Ness 360º Trail which cover the B862. Due to the short-term nature of this activity the effect has been assessed as **negligible**.

Accommodation Providers

14.7.56 The main locations for visitor accommodation are the settlements of Fort Augustus, Newtonmore, Kingussie, Invermoriston, Drumnadrochit and Cannich as described in Section 14.6. The Proposed Development is not visible from these locations. There will be minimal potential visibility for accommodation providers around Whitebridge. Therefore the effect of the Proposed Development on local accommodation providers has been assessed as **negligible**.

Recreational Trails

14.7.57 The effects on the long-distance paths are considered with the other visitor attractions above.

14.7.58 In accordance with the Land Reform (Scotland) Act 2003, chapter 2 part 6(1) (g), general public access rights are removed from the construction site for health and safety reasons. The temporary disruption of access during construction is considered to be temporary and have been assessed as **negligible**.

14.8 Mitigation

Socio-Economics Mitigation (Enhancement)

14.8.1 The scale of the investment required to develop, build and operate a windfarm means that it represents a significant investment in the local area. Developers can maximise the associated impacts through a range of measures, which can have the benefit of increasing local support for a windfarm. It could also improve the delivery of the Proposed Development through having a more conveniently located supply chain and having scope to cut costs.

Best Practice in Supply Chain Development

14.8.2 Best practice is set out in a 2014 report by RenewableUK (RenewableUK, 2014), which considered how developers can increase economic impacts in the local area. There are six main recommendations:

- maximise your local presence and begin early – identify potential suppliers and increase your visibility in the local area;

- partnerships work – work with local authorities and business groups to gain information on local expertise and spread the message to local businesses;
- leverage primary contractors – ensure that primary contractors also consider the impact that they can make in the local area;
- provide the right information – give information in plenty of time and in the right format so that local businesses are able to prepare;
- communicate technical requirements early – provide opportunities for local companies to upskill and form local consortia; and
- demonstrate local content in planning – insert local-content commitments in the planning application where applicable and undertake post-construction auditing.

The Great Glen

14.8.3 This assessment assumes that the Applicant will follow best practice as it has with other projects in the Great Glen area.

14.8.4 BiGGAR Economics has recently undertaken an assessment of three wind farm projects in the Great Glen (Bhlaraidh Wind Farm, Dunmaglass Wind Farm and Stronelairg Wind Farm) on behalf of the Applicant. The emerging findings suggest that the proportion of contracts secured in Highland in these wind farm projects is higher, with 19% of Capex secured in Highland, than the average level for local authorities, which is 12% . Similarly, the share of Opex contracts secured in Highland is expected to be 48% for the Great Glen Wind Farms, compared to 42% for the average local authority.

Best Practice in Construction Practice

14.8.5 During the construction period there may be periods of time where the Applicant will require use of the roads and paths in the vicinity of the Proposed Development, which may also be used for tourism and recreational purposes.

14.8.6 The Applicant has previously worked closely with the community in this area to minimise impacts for similar developments. For example, during the construction of Stronelairg Wind Farm, the Applicant amended the delivery times of turbines from the day time to the evening in order to reduce the effects on other users of the road / path. An academic analysis of community engagement practices of wind farm developers identified the Applicant's pre-construction community engagement approach at the neighbouring site of Stronelairg Wind Farm as best practice. It is expected that this approach shall continue with the Proposed Development to negate any potential temporary impacts from path disruption. This is discussed further in Chapter 15: Land Use and Recreation.

14.8.7 The Applicant has set up a community liaison group to provide the local community with information about key construction activities and a mechanism by which concerns from within the local community could be shared and discussed. A similar working group would be established during the construction of the Proposed Development.

14.9 Residual Effects

Construction

14.9.1 Construction is likely to result in a temporary **minor beneficial** effect in Highland and **a negligible beneficial** effect in Scotland.

Operation

14.9.2 The effect of the Proposed Development's operation on the Highland and Scottish economies was assessed as likely to be **negligible beneficial**. Similarly, the effect of paying non-domestic rates was assessed as likely to be **negligible beneficial**.

Tourism / Recreation

14.9.3 The effect of the Proposed Development's construction and operation on recreation and tourism assets in the study areas was assessed as likely to be **negligible**.

14.10 Cumulative Effects

14.10.1 There may be beneficial cumulative effects associated with the development of an existing supply chain in Highland, which may increase the impact associated with construction.

14.10.2 There are not likely to be any adverse cumulative effects.

14.11 Conclusion

14.11.1 The Highland Council area has a relatively older population than Scotland, with slower population growth expected particularly in rural areas. Economic activity is higher than the Scottish average and wages are comparable, but the working age population is relatively lower than the Scottish average.

14.11.2 Based on an indicative minimum installed capacity of 154.8MW, it was estimated that during the development and construction phase the Proposed Development could generate up to:

- £28.1 million GVA and 412 job years in Highland; and
- £64.4 million GVA and 983 job years in Scotland.

14.11.3 It was estimated that each year during the operation and maintenance phase the Proposed Development would generate:

- £1.4 million GVA and 16 jobs in Highland; and
- £2.5 million GVA and 29 jobs in Scotland.

14.11.4 It is expected that there would be community benefit funding associated with the Proposed Development, which will build on the existing Stronelairg Community Fund.

14.11.5 During the construction and operation of the Proposed Development there will likely be negligible effects on recreation and tourism assets in the study areas.

14.11.6 Throughout its operation, the Proposed Development would also contribute to local public finances and in this way supporting the provision of public services locally. It was estimated that the Proposed Development could contribute £1.8 million each year in non-domestic rates.

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