



Chapter 14

Land use and socio-economics

Table of contents

14.1	Introduction	3			
14.1.1	Overview	3			
14.2	Approach to assessment & methods	3			
14.2.1	Legislation, policy and guidance	3			
14.2.2	Study area	3			
14.2.2.1	Wider Study Area (WSA)	3			
14.2.2.2	Local Area of Influence (LAI)	3			
14.2.3	Effects assessed in full	3			
14.2.4	Effects scoped out	3			
14.2.5	Baseline determination	3			
14.2.5.1	Data sources	3			
14.2.5.2	Field survey	3			
14.2.5.3	Consultation	3			
14.2.6	Approach to assessment of effects	4			
14.2.6.1	Assessment of likely effects on the WSA	4			
14.2.6.2	Assessment of the likely effects on the LAI	4			
14.2.6.3	Sensitivity of receptor	5			
14.2.6.4	Magnitude of impact	5			
14.2.6.5	Potential effects	6			
14.2.6.6	Mitigation	6			
14.2.7	Significance of effect	6			
14.2.7.1	Statement of significance	6			
14.3	Baseline conditions	6			
14.3.1	Wider study area	6			
14.3.1.1	Population	6			
14.3.1.2	Labour market and supply chain	6			
14.3.2	Tourism economy	8			
14.3.2.1	VisitScotland	8			
14.3.2.2	The economic value of the regional renewables industry	8			
14.3.3	Local Area of Influence	8			
14.3.3.1	Land use	8			
14.3.3.2	Formal tourism and recreation assets	8			
14.3.3.2.1	Local centres	8			
14.3.3.3	Informal tourism and recreational receptors	8			
14.3.3.3.1	Galloway Forest Park and Dark Skies Park	8			
14.3.3.3.2	Walking	8			
			14.3.3.3.3	Cycling	9
			14.3.3.3.4	Mountain biking	9
			14.3.3.3.5	Horse riding	9
			14.4	Assessment of effects	9
			14.4.1	Potential construction effects	9
			14.4.1.1	Potential effects on the WSA	9
			14.4.1.2	Gross employment and GVA estimates	9
			14.4.1.3	Net employment and GVA estimates	10
			14.4.1.4	Summary – total net FTE employment and GVA during the construction phase	11
			14.4.1.5	Supply chain and procurement	11
			14.4.1.5.1	Embedded measures	11
			14.4.1.6	Effects on tourism economy	11
			14.4.2	Potential effects on the LAI	11
			14.4.2.1	Land use	11
			14.4.2.2	Tourism and recreation assets	12
			14.4.2.2.1	Formal tourism and recreation receptors	12
			14.4.2.2.2	Informal tourism and recreational receptors	12
			14.4.2.3	Embedded mitigation	12
			14.4.2.4	Proposed mitigation	12
			14.4.2.5	Residual construction effects	12
			14.4.2.6	Cumulative effects	12
			14.4.3	Potential operational effects	12
			14.4.3.1	Embedded mitigation	13
			14.4.3.2	Community Benefit Payment and Community Investment	14
			14.4.3.3	Effects on tourism and visitor economy	14
			14.4.3.4	Potential effects on the LAI	15
			14.4.3.5	Embedded measures	16
			14.4.3.6	Proposed mitigation	16
			14.4.3.7	Residual operational effects	16
			14.4.3.7	Cumulative effects	16
			14.5	Summary and statement of significance	16
			14.6	References	16

List of Figures

Figure 14.1: Socio-Economic Receptors in Local Area of Influence

List of Technical Appendices

Technical Appendix 14.1: Socio-economic Data Sources

Technical Appendix 14.2: Accommodation Services



Chapter 14

Land use and socio-economics

14.1 Introduction

14.1.1 Overview

1. The Site is located within the south eastern part of the South Ayrshire administrative area, close to the border with Dumfries & Galloway. The surrounding area is upland and sparsely populated in nature, characterised by open heathland and forestry.
2. Local settlements are located along the surrounding roads and valleys and encompass Barrhill and surrounding small communities such as Colmonell and Pinwherry. As the proposed Development boundary extends some way to the east to connect the access road with the A714 at Wheeb Bridge, the Site extends to the western edge of the Galloway Forest Park.
3. This Chapter has been prepared by SLR Consulting Ltd.

14.2 Approach to assessment & methods

14.2.1 Legislation, policy and guidance

4. Legislation, policy and guidance relevant to this assessment is provided in **Technical Appendix 4.1**.

14.2.2 Study area

5. A two-tiered study area is proposed for the assessment, defined as follows:

14.2.2.1 Wider Study Area (WSA)

6. The WSA is intended to encompass the area within which significant effects on employment and the local economy could occur. The WSA is required for certain receptor groups because the majority of the business and labour market effects that could occur would be experienced by population and business centres located across a wide area. The WSA area is primarily set at the boundary of the South Ayrshire and Dumfries & Galloway administrative areas but effects are also considered within the rest of Scotland and the UK where relevant.

14.2.2.2 Local Area of Influence (LAI)

7. The LAI forms the focus for assessment of both direct and indirect effects on those receptors that are likely to experience effects at a more local level, specifically land use and tourism assets. The LAI for such projects is generally defined by the application boundary together with an area extending to 5 km from the Site. A 5 km LAI would encompass Barrhill and surrounding small communities such as Colmonell, and Pinwherry. As the application boundary extends some way to the east to connect the access road with the A714 at Wheeb Bridge, the LAI includes the western edge of the Galloway Forest Park (including Galloway Forest Dark Skies Park).

14.2.3 Effects assessed in full

8. Employment and economic effects arising from the construction and operation of the windfarm are assessed quantitatively. The assessment also includes effects on local tourism and recreational receptors that are promoted regionally/nationally and are therefore likely to draw in visitors from outside the area.
9. Land use effects, including recreational use, on the Site during construction stage are assessed in full.

14.2.4 Effects scoped out

10. As the construction phase of the windfarm would be relatively short term (18 months) it is not expected that construction workers from outside the WSA would have a significant effect on the demand for housing, health or educational services. Effects on demand for such community services are therefore scoped out.
11. Recreational activities outwith the Site are scoped out unless they are promoted regionally/nationally and are therefore likely to draw in visitors from outside the area.
12. Land use effects during the operational phase are scoped out as the operation of the windfarm would have minimal effect on agricultural or recreational uses.

14.2.5 Baseline determination

13. Baseline conditions have been determined using desk survey techniques, including access to Points of Interest and Address point data GIS databases.

14.2.5.1 Data sources

14. The assessment uses desk based information sources to assess the likely effects, supplemented by consultation with relevant stakeholders where necessary and professional judgement based on previous experience. A complete schedule of data sources referred to in undertaking this assessment is contained in **Technical Appendix 14.1: Socio-Economic Data Sources**.

14.2.5.2 Field survey

15. No specific field survey has been undertaken with regard to socio-economic and land use effects, although information has been gathered where relevant from surveys undertaken in respect of other disciplines, notably landscape and visual (**Chapter 7**).

14.2.5.3 Consultation

16. The assessment uses desk-based information sources to assess the likely effects, supplemented by consultation with stakeholders where necessary. Information to inform the baseline has been sought from various sources, including SAC; community councils; Galloway Forest Park; British Horse Society Scotland; Scottish Natural Heritage; Whithorn Way Steering Group; VisitScotland.
17. Consultation with stakeholders has principally been conducted by way of the request for a Scoping Opinion, as described in **Chapter 6**. This, together with additional communication on socio-economic issues, is summarised in **Table 14.1**

Consultee	Date of correspondence	Comments	Action	Reference within EIA Report
Scottish Natural Heritage	29 November 2018	The full costs, including constraints payments and system costs need to be included. The full range of possible rural tourism impacts, including the effects on rural sporting tourism interests, should properly be part of the net impact assessment which should be specific to the geography of this area	These issues will be addressed in the socio-economic assessment, as set out in the scoping report. This will include effects on the tourism sector of the economy within the wider study area	Section 14.4
VisitScotland	2 November 2018	Highlights that scenery and the natural environment have become the two most important factors for visitors in recent years when choosing a holiday location.	The socio-economic assessment will take account of the findings of the landscape and visual impact assessment as part of its qualitative assessment,	Section 14.4

Consultee	Date of correspondence	Comments	Action	Reference within EIA Report
		<p>It is also requested that full consideration is given to Scottish Government's 2008 research on the impact of wind farms on tourism, and to provide a tourism impact assessment statement. Consideration should be given to any adverse local impacts on tourism are minimised:</p> <ul style="list-style-type: none"> The number of tourists travelling past en route elsewhere The views from accommodation in the area The relative scale of tourism impact i.e. local and national The potential positives associated with the development The views of tourist organisations, i.e. local tourist businesses or VisitScotland. 	<p>including potential effects on visitor numbers. This chapter assesses the likely effects of the proposed Development on tourism receptors within the local area, and on the tourism economy as a whole, based on published research rather than bespoke studies. The assessment includes views from tourist routes including footpaths and bridleways, and views from accommodation businesses. The assessment considers both potential adverse and beneficial effects.</p>	
British Horse Society (BHS) Scoping Response	20 November 2018	<p>In South Ayrshire and Dumfries and Galloway horse riders and carriage drivers often rely on wind farms providing opportunities for safe off road hacking and driving. There are paths and tracks in Arcleoch that horse riders and other access takers rely on. Please can SPR be encouraged not to obstruct public access and even facilitate it in keeping with their responsibilities as a land manager in this development.</p>	<p>The assessment includes effects on horseriders during both construction and operation of the proposed windfarm, and considers both adverse and beneficial effects. Information provided in BHS document titled 'EQUESTRIAN ACCESS THROUGH WIND FARMS IN SCOTLAND', VWG, Updated March 2018 has been taken into account.</p>	Sections 14.3 and 14.4
SAC Access Officer	7 March 2019	<p>Confirmation provided of accuracy of the online interactive map showing Core Paths</p>	<p>Information incorporated into baseline</p>	Section 14.3

Table 14.1: Consultation – key issues

14.2.6 Approach to assessment of effects

18. There are no published standards or technical guidelines that set out a preferred methodology for assessing the likely socio-economic effects of an onshore windfarm proposal. However, there is a series of commonly used methodologies and recognised approaches to quantifying economic effects both during the construction of a development and following its completion that have been widely used in other major projects. These have been adopted here and are described below.

¹ Gross value added (GVA) measures the contribution to an economy of an individual producer, industry, sector or region.

19. The approach to the socio-economic assessment is presented in two parts, addressing both the construction phase aspects of the proposed Development and the longer term economic effects once the proposed Development is built and operational.

14.2.6.1 Assessment of likely effects on the WSA

20. This part of the assessment comprises a quantitative assessment of the likely direct, indirect and induced effects of the proposed Development on the WSA (as defined in Section 14.3.1) in terms of investment, employment, additional Gross Value Added (GVA)¹ and contribution to the labour market.
21. The employment effects that are attributable to the proposed Development are divisible into three components. These are:
- direct:** the employment and other economic outputs that are directly attributable to the delivery of the proposed Development. These include any new jobs that are created to manage and supervise the construction and operational phases of the proposed Development and that are filled by employees of SPR or the appointed Contractor (or sub-contracted employees);
 - indirect:** employment and other outputs created in other companies and organisations that provide services to the proposed Development (i.e. procurement and other supply chain effects); and
 - induced:** additional jobs and other economic outputs that are created in the wider economy as a result of the spending of employee incomes and other ripple effects that occur as a result of direct and indirect effects of the proposed Development.
22. Construction phase job creation and investment has been assessed through the use of employment estimates provided by ScottishPower Renewables (SPR) and the estimated construction elements categories within which these jobs would fall. SPR has recent relevant experience of developing a windfarm of a similar scale (11 turbines) at Glen App Windfarm, and this experience has been used as appropriate in this assessment. The assessment addresses the potential effects of the proposed Development to the labour market and the local supply chain and economic output in terms of GVA. The estimate for construction phase GVA is calculated using the latest regional estimates for the average yield of GVA per worker for the construction and civil engineering sector in South Ayrshire and Dumfries & Galloway obtained from the Office of National Statistics (ONS).
23. Information gathered from the baseline data review has been used to develop a quantitative economic model which includes direct, indirect and induced effects of the development.
24. In the case of operational phase effects, quantitative economic modelling has been undertaken based on information regarding likely creation of permanent jobs provided by SPR. As well as direct job creation (e.g. facility management and maintenance), the assessment models indirect and induced job effects (i.e. supply chain jobs and multiplier effects; and jobs arising from investment of funds from the shared ownership scheme and community benefit fund). Again, experience on other windfarms in Scotland provides a detailed understanding of the likely level of local employment and expenditure during the operation of the windfarm.
25. This Chapter assesses the significance of the likely socio-economic effects of the proposed Development based on the magnitude of the impacts and the sensitivity of the receptor groups. The following sections set out the criteria for establishing magnitude of impact and sensitivity of the receptors.
- #### 14.2.6.2 Assessment of the likely effects on the LAI
26. The proposed Development may have direct and indirect effects on tourism and recreation receptors within the LAI. This part of the socio-economic assessment comprises a qualitative assessment of the effects of the proposed Development on receptors within the LAI including core paths and rights of way, long distance routes, and tourist attractions.
27. As with effects on the WSA, significance of the likely socio-economic effects of the proposed Development is assessed based on the magnitude of the impacts and the sensitivity of the receptor groups. The following sections set out the criteria for establishing magnitude of impact and sensitivity of the receptors.

14.2.6.3 Sensitivity of receptor

28. There are no published standards that define receptor sensitivity relating to socio-economic assessment. As a general rule, the sensitivity of each receptor or receptor group is based on its importance or scale and the ability of the baseline to absorb or be influenced by the identified effects. For example, a receptor (such as a public footpath or a supply chain business) is considered less sensitive if there are alternatives with capacity within the study area. In assigning receptor sensitivity, consideration has been given to the following:

- the importance of the receptor e.g. local, regional, national, international;
- the availability of comparable alternatives;
- the ease at which the resource could be replaced;
- the capacity of the resource to accommodate the identified impacts over a period of time; and
- the level of usage and nature of users (e.g. sensitive groups such as people with disabilities).

29. Based upon professional judgement and experience on other large scale projects, four levels of sensitivity are used: high; medium; low; and negligible. These are defined in **Table 14.2**.

Sensitivity	Description
High	<u>The receptor:</u> has little or no capacity to absorb change without fundamentally altering its present character; or is of high socio-economic, recreational, or tourism value ² ; or is of national or international importance; or is accorded priority in national policy; or has no alternatives with available capacity within its catchment area; or is a destination in its own right (as regards tourism and visitor attractions).
Medium	<u>The receptor:</u> has moderate capacity to absorb change without fundamentally altering its present character; or has a moderate socio-economic, recreational or tourism value; or is of regional importance; or is accorded priority in local policy; or has some alternatives with available capacity within its catchment area; or is a destination for people already visiting the area (as regards tourism and visitor attractions); or forms a cluster of low sensitivity receptors.
Low	<u>The receptor:</u> is tolerant of change without detriment to its character; or is of low socio-economic, recreational or tourism value; or is of local importance; or is accorded low priority in policy; or has a choice of alternatives with available capacity within its catchment area; or is an incidental destination for people already visiting the area (as regards tourism and visitor attractions).
Negligible	The receptor is resistant to change and is of low socio-economic, recreational or tourism value or there is a wide choice of alternatives with available capacity within its catchment area.

Table 14.2: Socio-economic sensitivity criteria

30. In considering the sensitivity of a receptor it is important remember that, in the case of socio-economic assessment, the sensitivity is often subjective and different receptors will have differing sensitivities depending on matters such as the economic profile of the local area, perception of the type of development and attitude to the potential benefits of a development. This assessment is based on the assumption of a worst-case which assumes that there is a negative perception of the proposed Development.

² Which may include being of high value to a user group of high sensitivity (e.g. mobility impaired users).

14.2.6.4 Magnitude of impact

31. There are no published standards that define thresholds of magnitude for socio-economic, tourism or recreation impacts. In order to aid clear and robust identification of significant effects, specific and targeted criteria for defining the magnitude of impacts have been developed for this assessment based on experience on other similar projects. The following four levels of magnitude have been adopted using professional judgement: high; medium; low and negligible. These impacts can be beneficial, adverse or neutral. Proposed criteria for each of these levels of magnitude for each receptor group are set out in **Table 14.3**.

Receptor Group	High	Medium	Low	Negligible
WSA economy	An impact that would dominate over baseline economic conditions by >10 %.	An impact that would be expected to result in a moderate change to baseline economic conditions by >5 %.	An impact that would be expected to result in a perceptible difference from baseline economic conditions by >0.5 %.	An impact that would not be expected to result in a measurable variation from baseline economic conditions.
WSA labour market	An impact that would dominate over baseline labour market conditions and/or would affect a large proportion (>10 %) of the existing resident workforce.	An impact that would be expected to result in a moderate change to baseline labour market conditions and/or would affect a moderate proportion (>5 %) of the existing resident workforce.	An impact that would be expected to result in a perceptible difference from baseline labour market conditions and/or would affect a small proportion (>0.5 %) of the existing resident workforce.	An impact that would not be expected to result in a measurable variation from baseline labour market conditions.
WSA tourism and visitor economy	An impact that would dominate over baseline tourism and visitor economy conditions.	An impact that would be expected to result in a moderate change to baseline tourism and visitor economy conditions.	An impact that would be expected to result in a perceptible difference to baseline tourism and visitor economy conditions	An impact that would not be expected to result in a measurable variation from baseline tourism and visitor economy conditions
Tourism and recreation assets	An impact that would be expected to cause a major restriction of access to or availability of tourism and visitor assets in the LAI or would result in a major change to existing patterns of use.	An impact that would be expected to have a moderate restriction of access to or availability of tourism and visitor assets in the LAI or would result in a moderate change to existing patterns of use.	An impact that would be expected to have a small restriction of access to or availability of tourism and visitor assets in the LAI or would result in a small change to existing patterns of use.	An impact that would be unlikely to result in a noticeable difference to tourism and visitor assets in the LAI.
Land use	An impact that would lead to a major restriction on the operation of a receptor, e.g. forestry business, or complete closure of receptor.	An impact that would lead to a moderate to major restriction on the operation of the receptor.	An impact that would lead to a minor restriction on the operation of the receptor.	An impact that would lead to a negligible restriction on the use of the receptor.

Table 14.3: Magnitude of impact

14.2.6.5 Potential effects

32. The level of effect of an impact on socio-economic, recreational and land use receptors is initially assessed by combining the magnitude of the impact and the sensitivity of the receptor. The level of effects presented in **Table 14.4** provides a guide to the decision making process.

Sensitivity or value of resource or receptor	Magnitude of impact			
	High	Medium	Low	Negligible
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

Table 14.4: Level of effects matrix

33. Effects may be positive (beneficial) or negative (adverse). Where an effect is classified as major, this is considered to represent a 'significant effect' in terms of the EIA Regulations. Where an effect is classified as moderate, this may be considered to represent a 'significant effect' but should always be subject to professional judgement and interpretation, particularly where the sensitivity or impact magnitude levels are not clear or are borderline between categories or the impact is intermittent.

34. The level of effects matrix shown in **Table 14.4** therefore provides a guide to decision making, but is not a substitute for professional judgement. Impacts and effects can be beneficial, neutral or adverse and these would be specified where applicable. It should be noted that significant effects need not be unacceptable or irreversible.

14.2.6.6 Mitigation

35. The assessment takes account of any environmental principles that are incorporated into the design of the proposed Development. These include good practice measures with regard to traffic management, control of noise and dust, signage and provisions for maintaining access for walkers, details of which are set out in **Technical Appendix 3.1: Outline Construction and Environmental Management Plan (CEMP)**. Any additional mitigation measures that would reduce the level of any significant effects are set out and considered prior to assessing residual effects.

14.2.7 Significance of effect

36. A statement of residual effects, following consideration of any specific mitigation measures, is provided.

14.2.7.1 Statement of significance

37. The assessment approach is to describe the baseline conditions, to identify likely effects from construction and operation of the proposed Development, consider the sensitivity of receptors, and then to assess the likely significance of any effects. Any adverse effects considered to be 'significant' are further considered with regard to bespoke mitigation measures and residual effects following mitigation are then identified.

38. Any significant effects which would be direct, indirect, secondary, cumulative, short, medium and long term, permanent or temporary are examined and their significance assessed. These effects are identified as being positive or negative.

14.3 Baseline conditions

14.3.1 Wider study area

39. The WSA for the assessment of socio-economic effects focuses principally on the boundary of the South Ayrshire and Dumfries & Galloway administrative areas, although data for Scotland and the UK and /or Great Britain are provided for comparison as appropriate.

14.3.1.1 Population

40. According to the most recent mid-year estimates, the South Ayrshire population stands at 112,700, and the Dumfries & Galloway population at 149,200 both collectively are less than 5 % of Scotland's population of 5,424,800. The proportion of the South Ayrshire population of working age (16-64) at 59.6 % is lower than Scotland's average at 64.4 % the population of working age of Dumfries & Galloway is also less than the average for Scotland at 59.2 % (NOMIS, 2017).

14.3.1.2 Labour market and supply chain

41. The Office of National Statistics (ONS) Annual Population Survey reports that there were 49,000 economically active residents in South Ayrshire in 2018, implying an economic activity rate of 72.6 %. There were 68,100 economically active residents in Dumfries & Galloway, which implies an economic activity rate of 74.4 %. Both of these are lower than the equivalent rate for Scotland as a whole (77.6 %). The South Ayrshire employment rate of 69.4 % and the Dumfries and Galloway employment rate of 72.1 % are also lower than the Scotland average (74.3 %) (NOMIS, 2018).

42. The unemployment rate in South Ayrshire as of September 2018 was 4.6 %, 0.4 % higher than the average for Scotland as a whole (4.2 %) The unemployment rate for Dumfries & Galloway was lower than the average for Scotland and South Ayrshire at 3.2 % (NOMIS, 2018).

43. Economic inactivity (i.e. those of working age who are not employed nor seeking work) is higher in South Ayrshire (27.4 %) and Dumfries & Galloway (25.6 %) than in Scotland as a whole (22.4 %) (NOMIS, 2018).

44. The level of self-employment in South Ayrshire (8.6 %) and Dumfries & Galloway (12.9 %) as of September 2018 are higher than the Scottish average (8.2 %) (NOMIS, 2018).

45. Useful insights into the dynamics of the labour market are often revealed by consideration of the occupational structure of those in employment as shown in **Table 14.5** (NOMIS, 2018). South Ayrshire and Dumfries & Galloway have higher than average proportions of their workforces in caring and leisure and skilled trades occupations compared with Scotland as a whole, and a lower than average proportion of its workforce in professional roles. Skilled trades occupations are likely to include skills and services that would be required for windfarm construction and operation.

Occupation	South Ayrshire (numbers)	South Ayrshire (%)	Dumfries and Galloway (numbers)	Dumfries and Galloway (%)	Scotland (%)
1 Managers, directors and senior officials	3,800	8.1	5,700	8.6	8.4
2 Professional	8,400	18.0	9,800	14.8	20.4
3 Associate professional & technical	6,000	12.7	7,500	11.3	13.1
4 Administrative & secretarial	4,500	9.6	5,800	8.7	10.1
5 Skilled trades	6,400	13.6	10,100	15.2	11.2
6 Caring, leisure and other service	5,800	12.3	7,300	11.0	9.9
7 Sales and customer service	3,800	8.52	5,100	7.7	8.5
8 Process plant & machine operatives	2,900	6.2	6,000	9.1	6.8
9 Elementary	5,200	11.0	8,600	12.9	11.1

Table 14.5: Employment by occupation

46. Degree-qualified (or equivalent) residents of working age account for 41.7 % of the population of South Ayrshire, and only 33.9 % of the population of Dumfries & Galloway, both of which are lower than the average for Scotland as a whole (43.9 %). The proportion of the working age population with no qualifications is 11.1 % in South Ayrshire, which is considerably higher than the average for Scotland as a whole (8.7 %) The proportion of the working age population with no qualifications is 8.6 % in Dumfries & Galloway is just less than the average for Scotland (8.7 %) (NOMIS, 2017).
47. According to the ONS Annual Survey of Hours and Earnings (ASHE) for 2018, average weekly gross earnings levels for residents of South Ayrshire were £594.30, £131.60 higher than the Scottish average of £562.70. The average for Dumfries & Galloway was £476.80, £85.49 lower than the average for Scotland (NOMIS, 2017a).
48. Data on an area's business population can be obtained from the ONS UK Business Counts data series (which is sourced from the Interdepartmental Business Register (NOMIS, 2017b)). This data source can be used to identify the structure of the local business base by sector: this is potentially useful in assessing the capacity of the local area to host supply chain activity for infrastructure and other large-scale construction projects such as the proposed Development. **Table 14.6** provides the latest (2017) data on the structure of the local business base, both in absolute and relative terms.

Industry	South Ayrshire 2017		Dumfries and Galloway 2017		Scotland 2017
	No. of Persons	%	No. of Persons	%	%
B : Mining and quarrying	100	0.2	175	0.3	1.3
C : Manufacturing	5,000	11.1	6,000	10.5	7.4
D : Electricity, gas, steam and air conditioning supply	45	0.1	250	0.4	0.7
E : Water supply; sewerage, waste management and remediation activities	150	0.3	700	1.2	0.8
F : Construction	2,250	5.0	3,000	5.3	5.7
G : Wholesale and retail trade; repair of motor vehicles and motorcycles	8,000	17.8	10,000	17.5	14.3
H : Transportation and storage	2,500	5.6	3,000	5.3	4.4
I : Accommodation and food service activities	5,000	11.1	5,000	8.8	7.7
J : Information and communication	400	0.9	500	0.9	2.8
K : Financial and insurance activities	500	1.1	450	0.8	3.4
L : Real estate activities	500	1.1	900	1.6	1.3
M : Professional, scientific and technical activities	1,750	3.9	3,000	5.3	6.9
N : Administrative and support service activities	1,250	2.8	2,500	4.4	7.8
O : Public administration and defence; compulsory social security	2,500	5.6	3,000	5.3	6.4
P : Education	3,500	7.8	5,000	8.8	7.9
Q : Human health and social work activities	9,000	20.0	10,000	17.5	16.3
R : Arts, entertainment and recreation	1,500	3.3	1,500	2.6	2.8
S : Other service activities	1,250	2.8	1,000	1.8	1.8

Table 14.6: Structure of the business population of South Ayrshire and Dumfries & Galloway 2017

49. The data in **Table 14.6** show that manufacturing is an important employment sector within South Ayrshire and Dumfries & Galloway. Accommodation and food services, often associated with tourism, are above the average for Scotland as a whole for both South Ayrshire and Dumfries and Galloway. Professional and financial services are poorly represented, especially in South Ayrshire.

14.3.2 Tourism economy

50. Tourism was worth some £108.8m annually to South Ayrshire in 2014 (the most recent year for which data are available) and £132.7m annually to Dumfries & Galloway. South Ayrshire employed 6,000 people in the sustainable tourism³ sector and Dumfries & Galloway employed 6,500 according to Tourism in Scotland's Regions 2016 (Visit Scotland, 2017). These are mid-range figures compared with other local authority areas in Scotland.

14.3.2.1 VisitScotland

51. South Ayrshire Visitor Survey 2015-2016 (Visit Scotland, 2016) combines tourism data for South Ayrshire within the remainder of Ayrshire and the Isle of Arran. The most popular reason for visiting this combined region is given as for the scenery & landscape (68 %); sightseeing is the most popular activity (72 %) followed by visiting a beach (62 %) and visiting a historic house (54 %). The inclusion of the Isle of Arran and North Ayrshire in these figures means it is difficult to establish significant data for South Ayrshire alone.

52. Dumfries & Galloway Visitor Survey 2015-2016 (Visit Scotland, 2016) similarly shows that the most popular reason for visiting this region is for the scenery & landscape (63 %); sightseeing is the most popular activity (70 %) followed by a short walk (61%) and visiting a historic house (48 %).

14.3.2.2 The economic value of the regional renewables industry

53. The total economic value of the renewables industry within South Ayrshire and Dumfries and Galloway is not known, but data are available for the south west Scotland region as a whole. One of the most recent studies, which was undertaken in 2018 by independent renewable energy analysts BVG Associates (BVG Associates, 2017), looked at economic benefits created by eight SPR onshore windfarms in south west Scotland commissioned between 2016 and 2017. The windfarms have a combined capacity of 474MW. The study showed that, for these windfarms alone, investment in the local area amounted to £257million, in addition to which the schemes generated a further £297million GVA and created 7,768 local full time equivalent (FTE) years.

54. Within these figures (i.e. as part of the operational expenditure), the annual funds available for distribution by communities total almost £2.5 million at 2016 prices. Annual contributions by SPR will be index linked. Over a 25 year period assumed for the purpose of analysis, this gives total community benefit fund (CBF) income of almost £59 million. An estimated total of 9,300 FTE years is created locally from CBFs. At an estimated average of £23,000 gross earnings per FTE year; this would give additional local area earnings totalling around £213 million at 2016 prices.

14.3.3 Local Area of Influence

14.3.3.1 Land use

55. The land use at the Site is largely commercial forestry. There are no formal recreational facilities located within the Site itself, although parts of the Site are used for informal recreational activities such as walking, horse riding, and cycling.

14.3.3.2 Formal tourism and recreation assets

56. Formal tourism and recreational assets are generally businesses and/or attractions that charge an entry fee for admission or have a significant commercial element. There are limited numbers of such receptors within the LAI, with the majority of businesses that serve the tourism and recreational market such as shops, public houses and accommodation also providing a service to local residents and other businesses. Other than the village stores in Barrhill, the majority of formal tourism and recreation receptors within the LAI are accommodation businesses. Their locations are shown on **Figure 14.1 Socio Economic Receptors**.

57. Within or close to the LAI there are 18 accommodation businesses, summarised below. Full details are provided in **Technical Appendix 14.2**.

- 3 camping/caravan sites, including two large camping;
- 3 hotels;
- 6 self catering;
- 2 guest houses; and

- 4 bed & breakfast (B&B).

58. Other than two large camping and caravan off the A714 near Bents, none of the accommodation businesses identified are considered to be of more than local value and their sensitivity of is therefore low. The Queensland and Barrhill Holiday Parks near Bents are larger facilities that have a regional tourism value. Their sensitivity is therefore medium.

14.3.3.2.1 Local centres

59. Barrhill and Colmonell provide a (small) range of community services including a shop (Barrhill only), public houses, village halls, church/chapels, and playground and bowls facility. Barrhill has some historic interest for visitors as an historic 'martyrs' village and there is a railway station on the Girvan to Stranraer line. Although both villages are small and offer only a limited range of services, due to their position as service centres for a wider area they are considered to be receptors of medium sensitivity.

14.3.3.3 Informal tourism and recreational receptors

60. These receptors include routes and other land used for walking, cycling, horseriding and other informal recreation, together with visitor attractions that have no commercial element.

14.3.3.3.1 Galloway Forest Park and Dark Skies Park

61. Galloway Forest Park is a nationally important recreational and visitor area with visitor centres and forest trails accommodating a range of uses. The part of the Forest Park within the LAI is the Glentool Forest, which includes one of the three visitor centres, although the Glentool Visitor Centre itself falls outwith the LAI.

62. The Galloway Forest Park was designated the UK's first Dark Skies Park and there are viewpoints throughout the Park, including at the Glentool Visitor Centre.

63. The Galloway Forest Park is considered to be a receptor of high sensitivity due to its national importance.

14.3.3.3.2 Walking

64. Three long distance trails pass through the LAI: the Southern Upland Way, the Whithorn Way, and E-Route 2. E-Route 2 is a 492 km long distance footpath, from Middleton in Teesdale to Stranraer, that follows the Southern Upland Way within the LAI and so is not considered as a separate path.

65. The Southern Upland Way is a 228 km footpath, one of the original four officially designated Long Distance Routes in Scotland, and now one of the family of Scotland's Great Trails. It is a coast to coast trail from Portpatrick in Dumfries & Galloway to Cockburnspath in Borders. It crosses the south east section of the LAI, 2.4 km from the Site boundary. It is closest to the Site as it runs between Balmurrie and Polbae (LDWA, 2019). As a national route promoted by Scottish Natural Heritage (SNH) the Southern Upland Way is considered to be a receptor of high sensitivity.

66. Whithorn Way is a 229 km long distance footpath between Glasgow and Whithorn Priory in Dumfries and Galloway. It crosses into the LAI and through the Site boundary. The section of the route from Girvan passes through Colmonell to the north of Pinwherry Hill before entering Barrhill, passing first the Martyr's Tomb, then passing Barrhill Station and heading south over moorland and forest to New Luce. The section from Barrhill Station to New Luce crosses the Site access track (LDWA, 2019). The website for the Whithorn Way explains that there are aspirations for the route to be awarded Great Trail status. Although not currently a Great Trail, the route is promoted nationally and is therefore considered a high sensitivity receptor.

67. The South Ayrshire website states that Core Paths, as the most important outdoor access routes in the area, provide a basic framework for public access which meets community needs, and minimises any potential conflict with land management operations. They provide opportunities for walking, cycling, horse riding and other activities, for people of all abilities, though each core path is not necessarily suitable for all types of access or ability of user.

68. In general terms the Site and surrounding area are deficient in Core Paths. Core Path SA61 passes through the northern edge of the LAI, connecting Sixpence on the A714 with Colmonell from where it continues west as Core Path 63. Core Path 62 runs to the north of Core Path 61 and is followed by the Whithorn Way within the LAI, passing through the Site. Core Path 65 runs

³ The definition of 'sustainable tourism' represents the SIC07 industry classifications for tourism used by Scottish Government.

along the western boundary of the LAI in the vicinity of Beneraird. SA67 is a short (506 m long) core path that leads from the centre of Barrhill along Cross Water past the Martyr's Tomb approximately 1 km east of the Site. Core Paths are considered to be medium sensitivity receptors.

69. There is one Heritage route in the LAI promoted by the Heritage Paths Project (Heritage Paths, 2019) for its historic interest. The route is known as the Old Road to Stranraer and follows Core path 65 within the LAI. Heritage paths are medium sensitivity receptors due to their historic importance.

70. The Land Reform (Scotland) Act 2003 conferred general access rights over much of rural Scotland. The lack of any designated or recorded paths in parts of the LAI, including within the Site, does not necessarily preclude the right of the public to use the area for recreational purposes including for walking, cycling and horse riding.

14.3.3.3.3 Cycling

71. Whilst certain long distance routes and Core Paths may be used for cycling, there are no official cycle routes that fall within the LAI.

14.3.3.3.4 Mountain biking

72. The Glentool Forest within the Galloway Forest Park is home to one of the '7stanes' mountain biking trail centres which are across southern Scotland. Whilst the Glentool Visitor Centre sits just outside the LAI to the south east a section of the Glentool Forest falls within the LAI including the designated biking trails (Forestry Commission Scotland, 2019).

14.3.3.3.5 Horse riding

73. There are no designated horse riding tracks or trekking stables within the LAI but it is evident from the British Horse Society's response to the Scoping consultation (**Technical Appendix 6.1: Scoping Response Table**) that horseriders use the tracks in the forests.

14.4 Assessment of effects

74. This Chapter considers both construction phase and operational phase effects. The proposed Development is explained in **Chapter 3: Description of the Development**.

14.4.1 Potential construction effects

14.4.1.1 Potential effects on the WSA

75. During the 18 month construction phase of the proposed Development there would be economic effects resulting from expenditure on items such as Site preparation (including forestry services), access roads, purchase and delivery of materials, plant, equipment and components. Information provided by SPR, based on experience at other windfarms in Scotland, indicates that there is expected to be a peak on-site workforce of 120 workers. Some of these workers would be sourced from the local labour market within the WSA and many more would be sourced from Scotland as a whole. The remainder of this section sets out to quantify the likely benefits to local and national jobs and the economy based on the proportion of construction expenditure that would take place within the local and national economy.

76. Based on SPR's experience on eight existing windfarms in south west Scotland, as detailed in the BVG Report (September 2017) 'Economic Benefits from Onshore Wind' (BVG Associates, 2017), the assumptions set out in **Table 14.7** have been made about the breakdown of the total development and capital expenditure required to develop and install the proposed windfarm extension. The total amounts to approximately £97 million, including turbines, civil engineering works, electrical plant and grid connection.

Item	Description	Cost (£millions)
Development expenditure	The processes up to the point of financial close or placing firm orders to proceed with windfarm construction, and project management costs incurred by SPR	5.0
Turbines	The activity by wind turbine manufacturers and their suppliers, covering nacelle component manufacture and assembly and blade and tower manufacture. It includes transport, installation and commissioning. It excludes the turbine service agreement	66.7
Civil works	The activity by civil contractors and their suppliers; covering roads and drainage, crane pads, turbine foundation, meteorological mast foundations, cable trenches and buildings for electrical switch gear, SCADA equipment and its installation, and a maintenance and spare part facility	17.8
Electrical works	The activity by electrical contractors and their suppliers, covering cables, electrical switch gear, protection and control system, maintenance facilities and grid connection.	7.6
Total		97.1

Table 14.7: Breakdown of average construction expenditure

14.4.1.2 Gross employment and GVA estimates

77. In estimating the amount of construction expenditure that is spent within: (1) the WSA (i.e. South Ayrshire and Dumfries & Galloway) and (2) Scotland, the assumptions set out in **Table 14.7** have been used as the basis for modelling. The assumptions shown in **Table 14.8** are based on experience on the existing projects in south west Scotland analysed in the BVG report (BVG Associates, 2017).

Item	WSA		Scotland	
	Estimated costs	%	Estimated costs	%
Development expenditure	£0.58m	11.6 %	£3.72m	74.4 %
Turbines	£0.4m	0.6 %	£1.27m	1.9 %
Civil works	£0.94m	5.3 %	£11.68m	65.6 %
Electrical works	£0.14m	1.8 %	£1.38m	18.1 %
Total	£2.06m		£18.05m	

Table 14.8: Location of expenditure

78. Applying the above assumptions to the breakdown of expected expenditure from SPR set out in **Table 14.7**, it is expected that construction phase expenditure of approximately £2.1 million (approximately 2.2 % of the overall total) would be spent in the WSA. An estimated £18.0 million (18.6 %) would be expected to be spent in Scotland as a whole.

79. Estimates of the expected direct construction phase employment implications of the project have been derived using the information on anticipated project expenditure set out in **Table 14.8**, as well as assumptions obtained from the following sources:

- employment and GVA multipliers for Scotland, obtained from Input-Output tables for Scotland published by the Scottish Government;
- employment and GVA multipliers for the UK obtained from Input-Output tables published by the UK Government (BEIS); and

- ratios of turnover per unit of GVA and GVA per employee have been derived from Scottish and UK Government data.

80. Using all of the sources summarised above, **Table 14.9** shows estimates of direct gross employment that have been derived for the WSA and Scotland as a whole.

Area	Person-years
WSA	16.3
Scotland (including WSA)	174.4

Table 14.9: Estimates of gross construction phase employment (person-years)

81. It is estimated that 16.3 gross person-years of employment could be generated in the WSA economy during construction. The equivalent total for Scotland as a whole is 174.4 person-years.

82. Turning now to Gross Value Added (GVA), a total of £1.17 million of GVA additional value is expected to be generated during construction in the WSA economy. The equivalent total for Scotland it is £12.26 million. These figures represent the value created in the economy resulting from expenditure in construction of the windfarm.

83. These estimates are summarised in **Table 14.10**.

Area	GVA (£ million)
WSA	£1.17m
Scotland (including WSA)	£12.26m

Table 14.10: Estimates of construction phase gross value added (£ millions)

14.4.1.3 Net employment and GVA estimates

84. The focus in the assessment set out above has been on gross effects at two spatial levels (WSA and Scotland as a whole). In order to understand the potential net effects, it is necessary to take into account a number of 'additionality' concepts. Additionality takes account of the fact that the full range of goods and services required for a development may not be available within a certain area or, if available, there may be capacity constraints that result in displacement of availability for other businesses. The net effects of the proposed Development on employment and GVA would be lower than the gross effects as a result of applying the additionality factors.

85. The calculation of net additional effects for the construction phase is based on a widely used methodology rooted in the most recent edition of the HCA 'Additionality Guide'. Basically, the estimation of net effects takes into account the following additionality factors:

- Leakage:** is the proportion of project outcomes that benefit individuals or organisations located beyond the relevant area of impact. Leakage is generally higher at a local level, although it also varies by the nature of development type; and
- Displacement:** is an estimate of the economic activity hosted by the Site that would be diverted from other businesses in the spatial impact area (e.g. South Ayrshire). This again varies by the nature of development type. However, construction projects of relatively limited duration are usually regarded as having very little if any displacement impact.

86. With respect to leakage, the specific assumption used here is derived from local commuting data obtained from the 2011 Census (NOMIS, 2011). The Census found that 66.5 % of workers whose workplace was located in South Ayrshire were either residents of the district or of Dumfries & Galloway. The residual 33.5 % or so workers were resident of other parts of the UK, almost all of whom reside elsewhere in Scotland.

87. These data have been used to calculate the following estimates for leakage:

- WSA 33.5 %; and

⁴ Note: both estimates exclude the Financial services sector and parts of the Agriculture sector.

- Scotland: 0.8 %.

88. The assumption used with regard to displacement is that displacement would be 5.0 %. Higher levels of displacement are assumed at national level (15 %).

89. In addition to considering the effects of leakage and displacement, which act to reduce the value of the project within the local economy, consideration must be given to estimating the additional jobs and economic value that would be created in the local economy through the (positive) indirect and induced effects of subsequent rounds of direct expenditure in the economy. Values for multipliers vary according to the size and complexity of the economy under consideration and are generally lower at a more localised level. The assumptions used in this assessment with respect to multiplier values are consistent with values found in the latest Scottish Input-Output tables.

90. The additionality assumptions used in this assessment are summarised in **Table 14.11**

Additionality factor	WSA	Scotland
Leakage	33.5 %	0.8 %
Displacement	5.0 %	15.0 %
Multipliers	0.29	0.44

Table 14.11: Additionality assumptions

Source: Leakage assumption based on 2011 Census data

91. The use of these additionality assumptions, taking account of both negative factors (leakage and displacement) together with positive multiplier factors, to estimate the **net** additional effects of the construction of the proposed Development results in the net employment and GVA set out in **Table 14.12**.

Area	Net person years of employment (and FTE)	Net GVA (£millions)
WSA	13.3 (8.8)	£0.95m
Scotland (including WSA)	211.8 (141.2)	£14.89m

Table 14.12: Estimates of net additional construction phase effects

92. In net terms, the proposed Development is expected to support 13.3 person-years of employment benefiting residents of South Ayrshire and Dumfries & Galloway. Assuming an 18-month construction period, this is equivalent to 8.8 temporary FTE jobs for residents of the WSA.

93. As of September 2018, there were approximately 46,900 residents of South Ayrshire and 66,100 residents of Dumfries & Galloway in employment (NOMIS, 2018). The addition of employment opportunities equivalent to 9 FTE jobs to this total would increase the total number in employment by approximately 0.01 %. The effect on the total local employment base is therefore considered to be negligible (but positive) and so not significant.

94. The impact on the construction sector would be larger, representing an overall increase in demand for construction workers in the local economy of just over 0.2 % over the current baseline for up to 18 months. However, a change of this magnitude is still considered to be negligible (but positive) and therefore not significant.

95. The local economy would also be expected to be boosted by a total of £0.95 million of net additional GVA during the construction period. In annual terms this is equivalent to a boost to local output of £0.63 million per annum.

96. In 2018 (based on data sourced from ONS GVA reference tables for 2016 updated using GDP price deflators published quarterly by HM Treasury), the value of economic output (GVA) for South Ayrshire was approximately £1,376 million, and for Dumfries & Galloway was £1,790 million.⁴ The addition of approximately £0.63 million of GVA per annum to this total would

increase the size of the local economy in output terms by approximately 0.03 % for an 18-month period during the construction phase. This effect on local GVA is considered to be negligible (but positive) and not significant.

97. At the national level, the proposed Development would be expected to support 211.8 person-years of employment benefiting residents of Scotland and would generate £14.9 million net GVA. Assuming an 18-month construction period, this is equivalent to 141.2 temporary FTE jobs for residents of Scotland and £9.2 million net GVA per annum. This effect on national employment and GVA is considered to be negligible (but positive) and not significant.

98. **Table 14.13** provides a summary of the above estimates for net employment and GVA created as a result of the proposed Development.

14.4.1.4 Summary – total net FTE employment and GVA during the construction phase

Area	Net employment		Net GVA	
	Person years	FTE (based on 18-month construction period)	Total net GVA (£ millions)	Annual net GVA (£ millions)
WSA	13.3	8.8	£0.95m	£0.63m
Scotland (including WSA)	211.8	141.2	£14.89m	£9.2m

Table 14.13: Summary of construction benefits

14.4.1.5 Supply chain and procurement

99. Procurement of goods and services can have an important effect on the local economy. The potential level of expenditure calculated above shows that, for the proposed Development, local civils contract spend (within the WSA) could be approximately £0.94 million over the 18 month construction period. This estimated level of local expenditure is based on recent experience on projects undertaken by SPR.

100. The types of supply chain companies that could benefit from this expenditure is wide ranging, and is likely to include the following:

- haulage and transport services;
- traffic management;
- materials supply, e.g. aggregates;
- plant and equipment hire;
- vehicle servicing / tyres;
- forestry services;
- fencing;
- fuel;
- security;
- waste management;
- building construction, electrical, plumbing, roofing, flooring, plastering, decorating and joinery services;
- signing and lighting;
- telecommunications;
- drainage;
- planting and seeding;
- cleaning;
- catering; and
- accommodation.

14.4.1.5.1 Embedded measures

101. SPR is committed to employing good practice measures with regard to maximising local procurement and would adopt established good practice measures such as those set out in the Renewables UK Good Practice Guidance 2014: 'Local Supply Chain Opportunities in Onshore Wind' (RenewablesUK, 2014). SPR has a strong track record of developing onshore

windfarms in Scotland, and experience from previous windfarm construction projects is that expenditure in local goods and services is widely spread and makes a difference to existing businesses.

102. SPR works with a variety of Tier 1 / Tier 2 contractors who are actively encouraged to develop local supply chains throughout the local area, and work with subcontractors to invest in training and skills development. SPR runs 'Meet the Developer / Contractor Days'. Local companies (especially Small and Medium Enterprises (SMEs)) are invited to attend these days, which are held locally, to meet with representatives across the SPR development, construction and operational teams, as well as SPR's Principal Contractors. This provides SPR and contractors with the opportunity to brief local businesses on the types of contracts being let during the lifetime of the proposed Development.

103. In terms of a quantitative assessment of effects, the provision of goods and services by local businesses (within the WSA) has been taken into account in the assessment of employment and GVA estimates reported in the previous section. At this stage in the development process it is not possible to quantify economic benefits in respect of individual supply chain companies, as contracts would not be let until consent is granted. However, it is evident from recent SPR experience in Scotland (including the eight windfarms in south west Scotland subject of the BVGA report on economic benefits (BVG Associates, 2017) that suppliers of a wide range of goods and services within South Ayrshire, Dumfries & Galloway and Scotland as a whole would obtain benefit from the proposed Development.

14.4.1.6 Effects on tourism economy

104. The construction period is expected to last approximately 18 months and would benefit the local economy through expenditure on purchases of accommodation, food, drink, fuel, etc. that are needed to sustain the construction workforce. These beneficial effects would be experienced mainly by businesses within the tourism sector, or those that are partly dependent on tourism for their income e.g. the retail sector. These likely effects are included within the quantification of the indirect employment effects that are reported in **Table 14.12**.

105. Anecdotal evidence received by SPR on other windfarm construction projects shows that local businesses such as accommodation providers welcome the enhanced level of occupancy that is achieved due to construction contractors using their accommodation on a year round basis, including periods of the year that are traditionally considered 'low season'. The benefits of increased business, although temporary, can allow businesses to invest in improvements that would not otherwise be affordable, leading to a long term enhancement.

106. The positive effects arising during the construction period are expected to more than offset any possible temporary losses to the tourism economy that may occur in the event that tourist visitors were deterred (for example, if holiday accommodation was in use by construction workers) during this phase.

107. Whilst overall effects on the tourism economy are considered to be negligible and not significant, the benefits to individual businesses may be substantial and may indeed be significant. However, until such time as contracts are let it is not possible to identify the level of benefit to individual businesses.

14.4.2 Potential effects on the LAI

14.4.2.1 Land use

108. The Site forms part of a commercial forest area owned by Forestry and Land Scotland. Whilst commercial forestry is not regarded as a receptor for EIA purposes, effects of the proposed Development for felling, restocking and forest management practices are described in **Technical Appendix 3.2: Forestry**.

109. Commercial forests are dynamic and their structure continually undergoes change due to normal felling and restocking by the landowner; natural events, such as windblow, pests or diseases; and external factors, such as a windfarm development. The species composition of the forest would change as a result of the proposed Development forestry proposals and there would be a 60.1ha net loss of woodland area. The Applicant is committed to providing appropriate compensatory planting to mitigate the loss of woodland area, as described in **Technical Appendix 3.2**. In addition to the compensatory planting requirement, the development will bring forward enhancement in terms of the baseline Forest Plan, with around 30 ha of additional broadleaf forest with associated environmental benefits.

110. Effects on informal recreation uses within the Site are assessed below with regard to recreational assets and activities.

14.4.2.2 Tourism and recreation assets

14.4.2.2.1 Formal tourism and recreation receptors

111. Of the estimated 18 accommodation businesses in the LAI, only businesses located along the access route to the Site are expected to be adversely affected during construction, as a result of construction traffic passing the property.
112. All turbines and 80 % of HGVs accessing the Site would use the Site Access road at Wheeb Bridge and approach from the south along the A714.
113. The Site entrance at Bents Farm to the north of Barrhill would be used for the remaining approximately 20 % of HGV construction traffic and approximately 80 % of Light Goods Vehicle (LGV) during construction and operation. All HGV traffic using this access would travel from the south, through Barrhill, passing two large caravan sites, whereas LGV traffic would be distributed across the road network including a proportion using the A714 through Pinwherry. The unclassified Barrhill to New Luce road may be used for some LGV traffic during construction and operation, contributing around 5 % of traffic movements.
114. Receptors that would primarily be affected by construction traffic passing the property are therefore those to the south of Wheeb Bridge. With regards to identified socio-economic receptors within the LAI, the only one on this stretch of the A714 is a self-catering property known as Old School House & Annexe (Airbnb, 2019). A lesser degree of impact would be experienced by receptors along the route to the Bents Farm access, which includes a number of accommodation businesses including two large caravan sites and the community of Barrhill.
115. An assessment of effects on road users and other sensitive receptors has been undertaken in **Chapter 12: Access, Traffic and Transport**. The assessment takes account of embedded measures to minimise impacts of construction traffic on other highway users, including users of these properties. Prior to construction, a Traffic Management Plan (TMP) will be prepared to manage traffic during the construction phase. For both Site accesses, the assessment concludes that construction traffic would not have a significant effect on community severance, road safety and vulnerable road users including walkers and cyclists.
116. None of the other accommodation businesses are located along the access routes to the Site, and therefore they are not expected to experience any direct adverse effect arising from construction traffic.
117. It is expected that some of the accommodation businesses may benefit from the windfarm construction if workers seek accommodation in the local area. Similarly, shops, pubs and other service providers would be expected to benefit from workers using these businesses during the construction period.
118. As the sensitivity of the accommodation sector within the LAI is low, and the magnitude of adverse effects would also be low due to the proposed traffic management measures described in TMP, the level of effect on businesses along the construction traffic route would be negligible (adverse) and not significant. This effect would be further reduced if these receptors attract business from construction staff staying in the area. The impact on other businesses unaffected by construction traffic would be beneficial although as the sensitivity is low the level of beneficial effect is not expected to be more than negligible. Effects on individual businesses may be higher especially where they are regularly used by construction staff, as this affords them regular income that is not seasonally dependent, but until contracts are let and construction commences it is not known which businesses would benefit.
- ##### 14.4.2.2.2 Informal tourism and recreational receptors
119. The landmark recreational receptor within the LAI is the Galloway Forest Park, including the Galloway Dark Sky Park, which is generally more than 5 km from the Site boundary other than in the vicinity of the access route; all construction HGV traffic would use the A714 past the Glentool Forest of which 80 % would enter the Site access road at Wheeb Bridge, adjacent to the western boundary of the Forest Park. Measures to minimise impacts of construction traffic on other highway users, including people visiting the Forest Park, are assessed in **Chapter 12: Access, Traffic and Transport** which concludes there would be no significant effects on other road users.
120. Although the boundary of the Forest Park is adjacent to the Site access on the A714, this is not a part of the Forest that is generally used by visitors and no direct effects due to construction activities are considered likely on Park users within the Park.

121. Construction traffic within the Site has the potential to have a direct effect on users of the Whithorn Way, which is crossed by the Site access road approximately 6km west of Wheeb Bridge. Good practice measures would be put in place to ensure that there is safe and convenient access for users of the Whithorn Way; such measures would include provision of a clearly defined crossing point with appropriate signage warning both recreational users and construction traffic. During times of heavy construction traffic activity, or when SPR have been notified of an event taking place on the Whithorn Way, it may be appropriate to put in place additional measures such as provision of a banksman. Details would be provided in the Construction Environmental Management Plan (CEMP) which would be put in place before construction commences. An outline of the CEMP is provided in **Technical Appendix 3.1**.
122. The Whithorn Way is a receptor of high sensitivity. Following application of the proposed environmental measures and taking account of the relatively short distance of the route that would be affected and the short term nature of any effects, the magnitude of impact would be negligible so the resultant effect would be minor and not significant.
123. There are no other designated routes within the Site. As noted in the baseline section above, there is a general right of access over most rural areas in Scotland and it may therefore be expected that members of the public may use parts of the Site for walking, cycling and horse riding. The CEMP would therefore set out measures to ensure that recreational users of the Site are informed of the construction work and directed into safe areas where there would be no conflict with plant and machinery. Given the temporary nature of the construction works, the measures that would be put in place and the low sensitivity of the receptors, the effect would be negligible and not significant.
124. The Southern Upland Way is one of Scotland's Great Trails and is considered to a receptor of high sensitivity as it is not only a recreational asset but also has a value to the tourism economy. However, the Southern Upland way runs along the extreme southern edge of the LAI and it is not expected to be affected by construction activities.

14.4.2.3 Embedded mitigation

125. The proposed Development, as described in **Chapter 3: Description of the proposed Development**, incorporates good practice measures for limiting the adverse effects of the construction works. The principal potential effects arising from construction tend to relate to construction traffic affecting use of the local highway network and onsite tracks and forestry roads for recreational users. Measures are set out in **Chapter 3** and also in **Chapter 12: Access, Traffic and Transport** relating to how delivery of goods and services would be managed during construction so as to minimise impacts on sensitive receptors. The proposed management measures would be further developed in the CEMP that would be adopted prior to construction commencing. An outline CEMP is provided in **Technical Appendix 3.1**.

14.4.2.4 Proposed mitigation

126. Allowing for the implementation of embedded mitigation, no significant effects have been identified in respect of socio-economic receptors arising from construction of the windfarm and therefore no mitigation measures are required to reduce or remedy any adverse effect.

14.4.2.5 Residual construction effects

127. No residual adverse construction effects are expected.

14.4.2.6 Cumulative effects

128. There is potential for cumulative effects to arise in relation to the construction of a number of prospective or consented projects as described in Chapter 5 should the construction phases overlap with the proposed development. Effects could be experienced on local roads used by tourists if construction traffic were to use the route proposed for the proposed Development. However, **Chapter 12: Access, Traffic and Transport** has assessed the proposed routes for construction traffic accessing these windfarms and has found that they would not utilise any of the local road network identified for the proposed development, and therefore there would be no cumulative effects. No other constructive cumulative effects are expected.

14.4.3 Potential operational effects

129. Arecleoch Windfarm currently employs 5 full time operational staff. When the proposed Development is operational, the project would require a team of personnel to provide servicing, maintenance, repairs and other operational support. Based on information obtained from SPR and through experience of this type of work on similar projects, it is estimated that between 3 and 5 additional engineers and technicians (full time equivalent) would be needed to provide operational support to the

project: this is in addition to the 5 staff that are already employed in running the existing Arcleoch Windfarm. All of these staff are expected to be based within the study area.

130. In addition, a further 2-3 jobs are expected to be supported directly elsewhere in Scotland during the operational phase.

131. Using all of the sources summarised above, **Table 14.14** shows estimates of direct gross employment that have been derived for the WSA and Scotland as a whole, on an annual FTE basis.

132. As well as the direct impacts on employment during the construction phase there would also be indirect effects generated throughout the operational phase. Indirect effects arise from the placing of contracts with other businesses – both in the local area and elsewhere in Scotland – supplying services and materials to the project during its operational phase. Examples of such supply chain activity would include the procurement of:

- site and building maintenance and cleaning (e.g. electricians, painters, roofing and flooring contractors, etc);
- waste management and recycling to provide services for hazardous and non hazardous materials;
- on-site forestry management;
- civil engineering contractors for road maintenance, ditching, crane pad repairs, grass cutting, weed control, road furniture and gate repair etc;
- maintenance of fencing;
- fuel supplies;
- plant and equipment hire;
- crane companies to provide lifting services;
- snow clearing;
- supply of consumable items (e.g. lubricants and oils, spare parts, office supplies, etc.);
- statutory turbine inspections;
- catering for meetings and visits; and
- in addition, local shops, cafes, accommodation providers and hotels often experience an increase in business during the operational phase (e.g. extra technicians onsite for during windfarm maintenance and servicing).

133. In order to convert gross direct and indirect jobs into net additional jobs, assumptions are needed for leakage and for the potential value of induced effects. For this project the following assumptions are used:

- Leakage: it is assumed that 33.5 % of jobs benefit non-WSA residents. This assumption is based on Census 2011 commuting data for the district.
- Displacement: it is assumed that displacement effects (e.g. jobs lost in other local businesses as a result of the project) are zero
- Induced effects: it is assumed that the value of the induced multiplier at the spatial level of the WSA is 9 %. This is a standard assumption for assessments of this kind.

134. Based on normal assumptions for leakage and the potential knock-on effects of expenditure multipliers (induced effects only), it is estimated that between 10 and 14 net additional (FTE) jobs would be created at the spatial level of the WSA during the lifetime of the operational phase of the project and a similar number to the Scottish economy as a whole.

135. As at September 2018, there were 113,000 residents of the WSA in employment (NOMIS, 2018). The addition of 10 to 14 permanent jobs to this total would be positive but negligible. The effect on the local employment base is therefore considered to be negligible and so not significant.

Area	FTE employment created (gross)	Net FTE including leakage, displacement and expenditure multipliers
WSA	3 – 5	10 – 14
Elsewhere in Scotland	2 – 3	10 – 14
Total	5 – 8	20 – 28

Table 14.14: Estimates of gross and net operational phase employment

136. The annual effects on economic output (measured by Gross Value Added) during the operational phase of the project have been estimated based on the average performance of other onshore windfarms developed by SPR. The assessment has been undertaken at two spatial levels: the WSA and for Scotland as a whole.

137. It is estimated that the overall operational impacts of the proposed Development during a nominal 40-year operational period would generate local GVA worth a cumulative total of £42.2 million (undiscounted). This total is comprised of:

- £21.7 million of direct GVA (51 % of the total);
- £14.5 million of indirect (local supply chain) GVA (34 %); and
- £6.0 million of additional GVA attributable to downstream multiplier effects in the local economy (14 % of the total).

138. **Table 14.15** below sets out the operational results and also the average annual effects over an assumed 40 year operational period for the purposes of analysis.

Local area results	Direct	Indirect	Induced	Total
'Lifetime' GVA	21.7	14.5	6.0	42.2
Annual GVA	0.54	0.36	0.15	1.06

Table 14.15: GVA £m (undiscounted)

139. **Table 14.16** below sets out similar results, but this time at the spatial level of Scotland as a whole. Here, the (undiscounted) total operational period effects are estimated to amount to just over £116 million, comprising:

- £57.2 million of direct GVA (49 % of the total);
- £38.1 million of indirect GVA (33 %); and
- £21.2 million of additional GVA attributable to downstream multiplier effects across the Scottish economy (18 % of the total).

Scotland results	Direct	Indirect	Induced	Total
'Lifetime' GVA	57.2	38.1	21.2	116.4
Annual GVA	1.43	0.95	0.53	2.91

Table 14.16: GVA £m (undiscounted)

140. The level of effects on both the local (WSA) economy and Scotland as a whole would be negligible (but positive) and not significant.

14.4.3.1 Embedded mitigation

141. SPR would seek to secure positive benefits for the local economy by encouraging the use of local labour, manufacturers and suppliers where possible during the operational phase. The majority of jobs during the operational phase are related to turbine maintenance and civils maintenance works. ScottishPower runs a graduate trainee scheme which lasts for two years and involves on the job training and placements in various parts of the ScottishPower business including Renewables.

14.4.3.2 Community Benefit Payment and Community Investment

142. SPR is committed to offering a package of community benefits to local communities that could include the opportunity for community benefit and to invest in the operational windfarm. SPR has already shared initial information with the community about an opportunity to invest and has provided an introductory leaflet which outlines a potential investment structure. See **Technical Appendix 14.3** for further details.
143. SPR will discuss with local stakeholders and Forestry and Land Scotland which communities would be the appropriate 'Community Organisations' to participate. The criteria to define the appropriate Community Organisation come from the community right to buy under Land Reform legislation.
144. Interested Community Organisations would combine to form a single Community Vehicle that would administer the community benefit fund and under the proposed investment structure would also have the opportunity to invest in the operational windfarm, on behalf of all the interested Community Organisations.
145. SPR is committed to keeping local communities informed as the project progresses and, in line with Scottish Government guidance, will provide information in a timely manner so the communities are able to fully assess the opportunity.
146. It is expected that any proposed income streams would provide a long term, flexible revenue which could be used to support community projects within South Ayrshire and Dumfries & Galloway. A range of options would be available to local communities who would have the flexibility to be able to choose how the money is spent and prioritise it on the things which matter most to them. The Barrhill Community Action Plan 2017-2022⁵ gives an indication as to the type of initiatives that might be considered important within the Barrhill Community Council area, including the following:
- energy efficiency measures for residential properties;
 - improve broadband and mobile phone services;
 - IT, social media and communications training;
 - more health education and activities; and
 - improved visitor information and services.
147. To date, SPR has voluntarily awarded over £5.7 million in community benefit funding to South Ayrshire communities (with nearly £5.5 million to communities in Dumfries and Galloway). A wide range of local projects and community initiatives have been supported by the funds including:
- **224** community facilities and services projects totalling £602,237
 - **74** community or local event projects totalling £218,490
 - **27** environmental projects totalling £219, 861
 - **15** heritage projects totalling £87,441
 - **25** skills and employment projects totalling £183,067
 - **143** sport and recreation projects totalling £561,503
 - **158** youth and education projects totalling £602,237.
148. A further community benefit allocation of more than £600,000 is expected to have been paid by the end of the calendar year in 2019⁶ bringing the total figure paid out to South Ayrshire communities to over £6 million.
149. Examples of jobs and training opportunities that have been funded by SPR community benefit packages include:
- 2014 Ailsa Horizons Ltd – Extend Carrick Rural Opportunities Project – to tackle local unemployment and underemployment;
 - 2017 Newton Stewart initiative – Project Officer – to improve the appearance and facilities in the town;
 - 2018 Girvan Community Sport Hub – to fund a six-month employability pilot project seeking to identify, recruit, train and support six young people into employment in the South Carrick area; and
 - 2018 Barrhill Community Interest Company – employment of village handyman.

⁵ Barrhill Community Council: Barrhill Community Action Plan 2017-2022

⁶ Not including indexation or top ups. Anticipated amount of remaining funds awarded to South Ayrshire by the end of the calendar year 2019 is c. £627,000.

150. Benefits would accrue from the scale and nature of the proposed income streams and, depending on the choices made, could have a positive effect on the physical and mental well-being of local residents as well as economic benefits. The long term nature of the income would allow the community to plan ahead, to draw in other sources of match funding to maximise the benefits and investment projects could be designed to match local priorities.

151. Whilst these effects cannot be quantified at this stage due to uncertainty as to the quantum of funding that would be available to the Community Vehicle and its choice of investment priorities, it is clear that the proposed community investment measures could offer real socio-economic benefits to the local community and do have the potential to be significant.

14.4.3.3 Effects on tourism and visitor economy

152. A review was undertaken of relevant literature published on the impact of windfarms on tourism and the tourism economy. This provides context to the assessment of the effects of the proposed Development on specific tourism and recreation receptors.
153. This section provides a summary of the review findings, which is undertaken in the context of the acknowledged importance of tourism to the Scottish economy, and the recognition that the character and visual amenity value of Scotland's landscapes is a key driver of tourism in Scotland. The VisitScotland Visitor Experience Survey 2015/167 confirms the basis of this argument with its ranking of the key factors influencing visitors when choosing Scotland as a holiday location. In this study, over half of visitors rated scenery and the natural environment as the main reason for visiting Scotland: a majority of visitors to Scotland were found to come because of the landscape, scenery and the wider environment, which supports important visitor activities such as walking, cycling wildlife watching and visiting historic sites.
154. A key source of data on the economic impact of windfarms on tourism in Scotland is the 2008 Moffat Report (Moffat Centre, 2008), commissioned by the Scottish Government. This study considered whether there would be any reduction in tourism employment and income for Scotland as a whole as a result of the impact of windfarms on tourism, and concluded that the negative impact of windfarms on tourism at national level is small and any reduction in employment in tourism would be far less than the numbers directly employed in the wind power industry. Even using a worst-case scenario the impact of windfarm applications would be very small, and would be more than balanced by the economic benefits of windfarm development.
155. The study also found that large single developments are preferable to a number of smaller developments as it is the basic intrusion into the landscape that generates the initial loss, rather than subsequent developments on the same site.
156. ClimateXChange was asked by the Scottish Government in 2012 to review evidence published since the Moffat Report and to examine what more recent research has to say about the impact of windfarms on tourism in Scotland. The report (ClimateXchange, 2012) concluded that there is no new evidence to contradict the earlier findings that windfarms have little or no adverse impact on tourism in Scotland.
157. Subsequent studies have reported similar findings. One of the most recent is the report by BiGGAR Economics on Wind Farms and Tourism Trends in Scotland, published in July 2016 (BiGGAR Economics, 2016), at which time installed onshore capacity had risen from 2.0 gigawatts (GW) in 2009 to 4.9GW in 2014. During this time employment in the tourism sector also rose by over 10 % in Scotland as a whole.
158. The BiGGAR study specifically addressed the expectation that any impacts associated with a windfarm development are most likely to be felt strongest in the immediate vicinity of the proposed Development. An analysis of the levels of employment in the sustainable tourism sector in the immediate vicinity of onshore windfarm developments did not find any evidence of these areas being adversely affected. On the contrary it was found that the tourism sector in the majority of areas surrounding windfarms grew faster than in the local authorities where they were situated.
159. This evidence was drawn out specifically in relation to the area around the Arcleloch windfarm which was one of the sample study areas selected by the BiGGAR report for more detailed assessment. In South Ayrshire as a whole, tourism-related employment grew by 24.5 % in the period 2009 – 2013, the seventh fastest growth rate of all local authorities in Scotland

⁷ JUMP Research on behalf of VisitScotland March 2017: Visitor Experience Survey 2015/16.

during a period when 306 MW onshore wind capacity was installed. In relation to the specific area around the Arcleloch windfarm, the study found that tourism-related employment grew by 28.9 % during the same period.

160. Although the BiGGAR study did not suggest that there is any direct relationship between tourism sector growth and windfarm development, it does show that windfarms do not cause a decrease in tourism employment either at a local or a national level.

161. The overall conclusion of this review is that published national statistics on employment in sustainable tourism demonstrate that there is no relationship between the development of onshore windfarms and tourism employment at the level of the Scottish economy, either at local authority level or in the areas immediately surrounding windfarm development. Therefore the likely effect of the proposed Development when operational on the tourism and visitor economy is assessed as negligible and not significant.

14.4.3.4 Potential effects on the LAI

162. During the operational phase there are expected to be both adverse effects due to visual impacts on recreational and tourism receptors, and beneficial effects arising from the legacy of recreational paths and trails within the Site. Based on a review of the findings of the assessment in **Chapter 12: Access, Traffic and Transport**, no significant effects are expected due to maintenance vehicles using the access road and Site as this would be on an occasional basis only and would be similar in nature to that experienced in respect of the existing Arcleloch Windfarm.

163. There would also be some minor beneficial effects on local businesses within the LAI arising from expenditure on goods and services by staff and suppliers visiting the proposed Development. This is expected to benefit local shops, food and drink businesses, and accommodation providers. Although the expenditure would be intermittent and is difficult to quantify, the benefit would be enhanced by the fact that workers visiting the proposed Development would do so all year round, unlike tourism expenditure which tends to be seasonal.

164. Visual effects on recreational receptors are assessed in **Chapter 7: Landscape and Visual**, and the findings have been taken into account in the assessment below, although it is important to note that a significant landscape and visual effect does not necessarily result in a significant socio-economic effect. In assessing recreational effects, there is not a straight forward relationship between users experiencing views of turbines along sections of a route and impacts on usage. Some people may be discouraged from using the route due to the presence of turbines, but for others there may be no impact.

165. Studies undertaken in respect of other windfarm projects where users have been asked if the presence of turbines would discourage them from using a route have found that the majority would not be deterred. For example, an independent survey of tourists and day-trippers in the area around the proposed Clashindarroch Wind Farm in Aberdeenshire (Gilmorton Rural Development, 2009) found that 84 % of respondents did not feel that the proposed windfarm would have an impact on their willingness to revisit the area. The survey also found that there was no difference in the attitude of walkers to other visitors in relation to their willingness to revisit.

166. Assessment of the socio-economic effects resulting from the findings of the landscape and visual assessment takes account of the fact that the visual experience forms only part of the experience for recreational users. The magnitude of impact for cyclists and horse riders may be less than for walkers as the speed of travel is likely to be faster and individual views are experienced for a shorter period of time. Even for users who find the presence of a windfarm detracts from their experience, this may simply manifest itself in users choosing not to linger in those sections of the route that have clear views of the windfarm.

167. The assessment of landscape and visual effects finds that the significant effects of the proposed Development would be contained within a relatively moderate area around the Site when compared with other windfarm developments of this scale. Significant landscape character effects are assessed to occur within a maximum of 3 km from the nearest turbine to the north and north west, increasing to 5km to the north and east. Significant visual effects have been identified as occurring out to 7 km. The overall conclusions are that whilst these localised effects extend to the nearby Duisk Valley and parts of Glen Tig, the proposed Development would appear set back from the edges of this upland area when viewed from the surrounding valleys and glens and would add to an existing pattern of development (namely the Arcleloch, Kilgallioch and Mark Hill windfarms) experienced from the immediately surrounding landscape and visual resource. Whilst the proposed Development would extend the overall footprint of windfarm development in this area it would not in itself contribute to the coalescence of the existing or consented windfarms in the area. The assessment concludes that the landscape is capable of accommodating the

proposed Development, and that significant effects on the existing landscape character or visual amenity are relatively contained.

168. The principal socio-economic receptors within the LAI that have potential to be experience visual effects due to the proposed Development would be recreational routes (Whithorn Way, Southern Upland Way, Core Paths, Ayrshire Coastal Path, Burns and Robert Bruce Heritage Trails and the National Cycle Route NCN7), the Galloway Forest Park and Dark Sky Park, and the community of Barrhill, **Chapter 7** focusses on the Southern Upland Way for detailed assessment due to limited and/or distant visibility of the proposed Development for the other recreational receptors. Other communities such as Colmonell, Girvan, New Luce, Cairnryan, Glentool Village and Kirkcolm have no potential for views of the proposed Development, and neither do the two Holiday Parks. Although Viewpoint 8 (Fardenreoch Farm) on the outskirts of Pinwherry is part of the scope of the LVIA assessment, most of the settlement is unlikely to have views of the proposed Development due to the orientation and location of properties, local landform and vegetation along the river.

169. Views from the Galloway Forest Park and Dark Sky Park have been assessed from Merrick, which is a regionally important position for viewing the landscape, being the highest point within the Southern Uplands of Scotland. Merrick lies outside the LAI, and views from within the LAI are at a lower elevation where intervening topography and forest limit views towards the Site. The assessment of landscape and visual effects as assessed from Merrick finds that the Galloway Forest Park and Dark Sky Park have no potential for significant effects.

170. Views from the Whithorn Way would be variable as the route passes across moorland and through forest. There would be intermittent views from higher parts of the route towards the proposed Development. The landscape and visual assessment does not consider the route as such, but a nearby cairn at Chirmorie and a section west of Barrhill are considered to have significant visual effects. As the majority of the route is at a lower level than the cairn the turbines would not be visible for large sections of the route within the LAI, and the level of effect for users of the route is considered to be low. As the sensitivity of the receptor is high, the level of effect would be moderate. In certain circumstances a moderate level of effect can be significant, but in this instance as the landscape is already considered to be characterised by windfarm development, the effect is assessed as not significant.

171. The Southern Upland Way only passes through the extreme southern edge of the LAI. Along this part of the route the Southern Upland Way passes through the Chirmorie Windfarm, and the Chirmorie turbines are seen in close proximity. **Chapter 7** therefore concludes that there would be no significant effects arising from the introduction of the proposed Development into views from this part of the route.

172. Core Path SA61 to the north of the Site provides walkers with relatively close, elevated views south towards the Site, although the existing Arcleloch and other windfarms are visible in the landscape and consequently windfarm development is not an unfamiliar characteristic of the view. The landscape and visual assessment considers the visual effect from the selected viewpoint to be significant. The view of the proposed Development would be screened for part of the route of Core Path 61 by topography, resulting in a medium magnitude of change. As the sensitivity of the receptor is medium, the level of effect would be moderate. As the landscape is considered to be characterised by windfarm development, the effect is assessed as not significant.

173. Views from Barrhill would be limited to the southern part of the settlement due to intervening topography and would not affect receptors in the centre of the village. No significant effects are identified in Barrhill in the landscape and visual assessment.

174. Once construction is completed, the existing network of paths and trails within the Site would be extended through the presence of new and upgraded windfarm tracks, which would increase opportunities for informal recreation (walking / biking / horseriding). Within the total 40 km of tracks to be used there would be approximately 5.1 km of entirely new tracks and approximately 14.3 km of existing tracks would be upgraded as a result of the works necessary for construction of the windfarm.

175. The provision of new tracks within the Site as a result of the proposed Development would have a beneficial effect for users, although within the context of being managed as a commercial forest. There is not expected to be any change from the baseline position whereby the level of recreational use is relatively low key and not formally promoted; the recreational value of the resource is not presented as a tourism attraction. It is considered likely that even with additional forest tracks, the level of use would remain low and the impact on the local visitor economy would be negligible.

14.4.3.5 Embedded measures

176. No specific measures have been identified as being required to reduce or remedy an adverse effect.

14.4.3.6 Proposed mitigation

177. No significant effects have been identified in respect of socio-economic receptors arising from operation of the windfarm and therefore no mitigation measures are required to reduce or remedy any adverse effect.

14.4.3.7 Residual operational effects

178. As no significant effects have been identified, and no mitigation is required, residual effects would remain as no greater than moderate (adverse) and are considered to be not significant.

14.4.3.7 Cumulative effects

179. There is potential for cumulative visual effects to arise with regard to a number of prospective or consented projects including Arcleloch Windfarm and Kilgallioch Windfarm. Effects could be experienced by tourists and recreational users of long distance routes, in particular if sequential effect arise from the fact that users would see several windfarms from viewpoints along the route. The landscape and visual assessment has considered this potential effect in detail with regard to the Southern Upland Way, as this one of the longer routes affected. It concludes that windfarms are common features both in the foreground and in distant views along the route, but experienced intermittently. Overall, **Chapter 7: Landscape and Visual** has assessed the potential for cumulative effects and no significant effects have been identified within the LAI. No other operational cumulative effects are expected.

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14.5 Summary and statement of significance

180. This assessment has considered data from a diverse range of sources to determine the likely effects of the proposed Development on the local economy and land use, together with local effects on tourism and recreation assets. The potential effects on the economy and identified assets take account of good practice embedded measures to be adopted. No specific mitigation has been identified to be required and therefore residual effects of the proposed development are effectively the same as the predicted effects. Predicted adverse and beneficial effects have been assessed as not significant during both the construction and operational phases.

14.6 References

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