

# Chapter 13: Socio-Economics, Recreation and Tourism

Creag Riabhach Wind Farm Extension

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## 13 Socio-Economics, Recreation and Tourism

### 13.1 Introduction

This Chapter assesses the socio-economic, recreation and tourism effects potentially arising from the proposed development during construction, operation and decommissioning.

### 13.2 Statutory and Planning Context

Currently, there is no specific legislation relevant to socio-economics, recreation or tourism. Therefore, this assessment is informed by applicable planning context and guidance on best practice, as well as professional experience and industry standards. This assessment also utilises information provided by the applicant regarding the socio-economic impacts of the existing Creag Riabhach Wind Farm (CRWF).

#### 13.2.1 Planning Context

Scotland's renewable energy and climate change targets, energy policies and planning policies are all material considerations when determining a S36 Application. Generally, the current policy context is supportive of renewable energy that achieves a balance between environmental considerations and contributing to the Net Zero journey, including a just transition. The suitability of the proposed development, including consideration of socio-economic, recreation and tourism factors, in relation to local and national policies, has been considered in a standalone Planning Statement submitted in support of the S36 Application. This Section identifies the planning policy documents that have been used to inform the methodology and assessment.

National Planning Framework 4 (NPF4) was approved on 11 January 2023, superseding NPF3 (2014) and Scottish Planning Policy (SPP) (2014). The Energy policy within NPF4 states that:

*“Development proposals will only be supported where they maximise net economic impact, including local and community socio-economic benefits such as employment, associated business and supply chain opportunities.”*

In addition, project design and mitigation should consider *“public access, including impact on long distance walking and cycling routes and scenic routes”*.

The following local and national policy documents have also been considered in the assessment of effects and have been referenced where applicable in the sections below:

National:

- Onshore Wind Policy Statement 2022 (OWPS);
- Tourism Scotland 2020;
- Scotland Outlook 2030;
- Scotland's National Strategy for Economic Transformation;

- Scotland’s Economic Action Plan 2019-20; and
- Scottish Energy Strategy.

Local:

- The Highland-wide Local Development Plan (LDP) (adopted April 2012);
- The Caithness and Sutherland Local Development Plan (adopted 2019); and
- Highlands and Islands Enterprise (2019), 2019-2022 Strategy.

The LDP was adopted by the Highland Council (THC) in 2012 and relevant 'policy criteria' are taken forward in the LDP's Policy 67 Renewable Energy Developments and supporting supplementary guidance Onshore Wind Energy Supplementary Guidance (2017). In addition to the requirements outlined in the national planning documents described above, the guidance states that wind energy proposals within the Highlands should:

- Research into the potential effects of wind farms on tourism and recreation;
- Illustrate the potential for socio-economic benefits to be derived from development proposals. A key aspect of this will be engaging with local communities to better understand local needs and issues;
- Identify the potential for effects on industries for which Highland's landscape is important - for example tourism and recreation; and
- Highlight the potential for secondary effects for tourism and recreation, such as a change in land use that causes adverse effects, for example, a change from forestry to a wind farm, or where there are potential benefits like improved public access in the area. It is important to consider the impact of proposed wind energy development not only on existing land uses, but also those permitted, or which are included as specific proposals in the LDP.

### 13.3 Consultation Undertaken

Consultation with stakeholders has been conducted by the request for a formal Scoping Opinion. The Scoping Opinion and additional responses relevant to socio-economic, recreation and tourism issues, is summarised in **Table 13.1**. The table also shows how and where Scoping responses have been addressed in this chapter.

**Table 13.1: Scoping Responses Regarding Socio-Economic, Recreation and Tourism Considerations**

Consultee	Scoping Response	Section of Chapter
The Highland Council (THC)	<p>THC consider that socioeconomics, recreation and tourism should be included within the Environmental Impact Assessment (EIA) Report under its own chapter and not be scoped out of the assessment.</p> <p>The EIA report should estimate who may be affected by the development, in all or in part, which may require individual households to be identified, local communities or a wider socio-economic groupings such as tourists and tourist related businesses, recreational groups, economically active, etc. The application should include relevant economic information connected with the project, including the potential number of jobs, and economic activity associated with the procurement,</p>	<p>Noted and applied.</p> <p><b>Section 13.5</b> of the report identifies the socioeconomic baseline and local, regional and national study areas. <b>Section 13.6</b> assesses the impact of the proposed development on this baseline, at each scale.</p>

Consultee	Scoping Response	Section of Chapter
	<p>construction, operation and decommissioning of the development.</p> <p>In this regard wind farm development experience in this location should be used to help set the basis of likely impact. This should set out the impact on the regional and local economy, not just the national economy. Any mitigation proposed should also address impacts on the regional and local economy.</p> <p>The site is on land with access rights provided by the Land Reform Scotland Act. The potential impact on and mitigation for public access should be assessed incorporating core paths, public rights of way, long distance routes, other paths and wider access rights across the site. There are core paths and public rights of way in this area which are likely to be affected during construction and operation phases.</p> <p>In line with the policies and provisions of the Highland-wide Local Development Plan (HwLDP), an Access Management Plan is required to be submitted part of the EIA Report:</p> <ul style="list-style-type: none"> <li>• existing public non-motorised public access footpaths, bridleways and cycleways on the site and any proposed access route from the public road infrastructure;</li> <li>• proposed public access provision both during construction and after completion of the development, including links to existing path networks (where appropriate) and to the surrounding area, and access points to water; and</li> <li>• impacts of the proposed development on the core paths and proposed mitigation if any.</li> </ul> <p>Specifically, the EIA Report requires to assessment the development's potential impact on the Affric-Kintail Way long distance route and other improvements to public access on or near the site must be considered.</p>	<p>See above and note <b>Section 13.2</b> which details how the assessment is informed by socioeconomic analysis from other developments within the Highlands. The applicant's experience constructing the existing CRWF outlined in section 13.5 below demonstrates that there is capacity within the local and regional economy to benefit from the proposed development.</p> <p><b>Section 13.6.2</b> assesses the impact on recreational receptors during construction and operation, including all the public access paths identified by THC.</p> <p>It is not considered that an Access Management Plan is required as part of the S36 Application and this could be controlled through a planning condition as required.</p> <p>The Affric-Kintail Way is approximately 95 km from the site at its nearest point so it is not considered that impacts on this receptor</p>

Consultee	Scoping Response	Section of Chapter
		requires consideration within the EIA.
The British Horse Society (Scotland)	Under the Land Reform (Scotland) Act 2003 gives horse riders the same rights of responsible access as walkers and cyclists. Therefore, it is vital that any off-road tracks or non-motorised user's tracks or paths are multi-use catering for all including horse riders and carriage drivers.	<b>Section 13.6.2</b> identifies potential impacts on public access pathways, including bridleways.
Lairg Community Council (LCC)	<p>LCC cannot support this extension to Creag Riabhach Wind farm. The community of Lairg receives no direct benefit from this wind farm yet has had to endure all the disruption caused by the construction works, the disruption that will be caused by transport of the turbine components when they are delivered later this month.</p> <p>There are a very limited number of local businesses and people who have benefited from the construction phase, but this has been by chance or by their own initiative rather than by design of the developer.</p> <p>There have been far more local people who have commented negatively about the quality of the work and disruptions caused and indeed the visual impact of the site itself before turbine installation.</p>	<p>The applicant has committed £462,000 to community benefit per year for the existing CRWF. Five local community councils benefit from this trust; however, as Lairg is approximately 33.5km south of the proposed development, it was not included.</p> <p>The number of jobs the proposed development could provide during construction and operation, at a local level, is identified in <b>Table 13.15</b>. The applicant has proactively engaged with local suppliers and would consolidate and extend these existing contracts should the proposed development be consented.</p>

## 13.4 Scope and Methodology

The assessment is informed by established best practice, using Government and industry reports, as well as professional experience and knowledge. In particular, predicted impacts refer to guidance provided within 'A Handbook on Environmental Impact Assessment', published by NatureScot (version 5) (2018). The chapter also draws on other technical assessments relevant to the proposed development within this EIA Report.

### 13.4.1 Guidance

The following documents have been considered within this assessment:

- BiGGAR Economics (2017), Wind Farms and Tourism Trends in Scotland;
- BiGGAR Economics (2021), Wind Farms and Tourism Trends in Scotland: Evidence from 44 Wind Farms;
- BVG Associates (2017), Economic benefits from onshore wind farms;

- ClimateXChange (2012), The Impact of Wind Farms on Scottish Tourism;
- Department for Business, Energy & Industrial Strategy (2019), BEIS Public Attitudes Tracker;
- Glasgow Caledonian University/Moffat Centre (2008), Economic impacts of wind farms on Scottish tourism;
- Highlands and Islands Enterprise (2019), 2019-2022 Strategy;
- Highlands and Islands Area Profiles 2020 Caithness and Sutherland (2020);
- Institute of Environmental Management and Assessment (IEMA) (2011), The State of Environmental Impact Assessment in the UK;
- NatureScot (2018), Environmental Impact Assessment Handbook V5;
- RenewableUK (2015), Onshore Wind: Economic Impacts in 2014;
- RenewableUK (2021), The Onshore Wind Energy Prospectus;
- Scottish Government (2016), Draft Advice on Net Economic Benefit and Planning;
- Scottish Government (2020), Towards a Robust, Resilient Wellbeing Economy for Scotland: Report of the Advisory Group on Economic Recovery;
- Scottish Renewables, Scottish National Heritage, SEPA, Forestry Commission Scotland, Historic Environment Scotland, Marine Scotland Science and Association of Environmental Clerks of Works (2019), Good Practice During Windfarm Construction; and
- Visit Scotland (2020), Key Facts: Tourism in Scotland 2019.

#### 13.4.2 Study Area

The socio-economic, recreation and tourism effects are assessed across local, regional and national scales to identify the areas which are most significantly impacted by the proposed development. The proposed development is in the North, West and Central Sutherland ward; however, reliable economic and employment data is not available at this scale. Therefore, the local study area is Caithness and Sutherland, which comprises the electoral wards of East Sutherland and Edderton; North, West and Central Sutherland; Thurso and Northwest Caithness; and Wick and East Caithness. The regional study area is the THC administrative area and the national study area is Scotland as a whole.

The assessment of tourism impacts focuses on impacts in a 20km study area from the proposed development, which was the same study area used in same assessment for CRWF. Some receptors have been considered outwith this study area where they are borderline.

Direct recreational effects are assessed for receptors within the site, while recreational impacts occurring outside the site are deemed indirect and are considered within a 6km study area for local level receptors and 35km for mountain summits and their associated access routes from the proposed development. This is consistent with **Chapter 5: Landscape and Visual Impact Assessment**.

#### 13.4.3 Baseline Determination

Baseline conditions have been determined by desk-based studying that use publicly available statistics and information, which are referenced fully in **Section 13.11**. In addition, relevant information has been gathered from other technical chapters within this EIA Report, from the socio-economic assessment included in the EIA Report for the existing CRWF, as well as data from the landscape and visual impact assessment, and socio-



economic assessments undertaken for other wind farm developments, deemed similar in location and scope (including CRWF).

Zone of Theoretical Visibility (ZTV) mapping has been used to identify tourism and recreational receptors potentially subject to indirect visual impacts within the respective study areas. ZTV mapping indicates areas of potential visibility and, for the purposes of this assessment, is based on a bare-earth surface model that does not include trees and buildings to provide a worst-case indication of potential visibility. This assessment uses the ZTV presented in **Figure 5.13 (Volume 3a)** to assess the amenity impact of the proposed development on tourism and recreation receptors.

Error! Reference source not found. of **Chapter 5: Landscape and Visual Impact Assessment** lists the relevant cumulative sites within 35km of the proposed development.

#### *13.4.4 Scope of the Assessment*

##### *Effects Scoped into the Assessment*

The assessment considers the potential net employment and economic effects (direct, indirect and induced) during construction and operation of the proposed development.

Initiatives such as community benefit funding do not form part of the formal appraisal process within the planning system; however, this is considered within the assessment (**Section 13.6**) to present a fuller picture of the economic and social impacts that the proposed development could have.

##### *Effects Scoped out of the Assessment*

###### *Decommissioning Effects*

As decommissioning is likely to constitute a reversal of the activities undertaken during the construction phase, it is considered that the likely effects on recreation and tourism would be the same or less. In relation to employment and economic effects, while there have been recent studies, including Zero Waste Scotland's (2021) *'The future of onshore wind decommissioning in Scotland'*, there is still an absence of data regarding the likely decommissioning expenditure involved.

###### *Wider Economic Effects*

Wider economic benefits have not been considered in the assessment, as they are more speculative and reliant upon local businesses responding to the opportunities available. For example, there would be opportunities for those employed during the construction phase to develop skills that would be of benefit to the local economy and local businesses in the longer term. Further, employment generated through the proposed development would contribute to diversifying the local economy and help support the retention in the area of the working age population. This would benefit local businesses and increase the economic impact in the Highlands but would not be expected to result in a substantial increase in economic impact, which changes baseline conditions. The impact is likely to be negligible, and therefore the effect has been scoped out.

### Cumulative Economic and Employment Effects

There may be cumulative effects on employment and economics if the proposed development supports the development of a local supply chain, which other wind farm developments in the area may benefit from. The proposed development provides opportunities for the involvement of suppliers from the Highlands and Islands, and wider Scotland. The range of activities that suppliers can be involved in include; research and development, design, project management, civil engineering, component fabrication and/or manufacture, installation and maintenance. There is expertise in all of these areas in the wider region, although a full wind energy supply chain covering all aspects of wind turbine component manufacture has not yet been developed within the region or indeed within Scotland as a whole.

A key contextual consideration has been, with an increasing number of wind farm schemes either operational, under development or having gained consent in Scotland, the commercial viability and job prospects amongst Scottish supply chain firms has improved. Cluster benefits in the industry increase where firms are supported by the spending of other firms within the renewables sector. The net effect is to increase business and employment opportunities within Scotland's renewable energy sector, boosting the performance of regional and national economies.

However, this would not be expected to result in a substantial increase in economic impact, which changes baseline conditions. The impact is likely to be negligible, and therefore the effect has been scoped out.

### Tourist Effects

A literature of the impact of wind farms on tourism in general was undertaken that found no evidence wind farms negatively affect the tourism economy in Scotland. In addition, consideration was given to individual tourism receptors within the relevant study areas.

### Public Attitude Towards Renewable Energy Development

The potential for impact on tourism is closely linked to the public perception of those visiting an area; thus, this Section provides an overview of studies undertaken to assess public perception of wind farm development across the UK.

In 2011, as part of their policy update, VisitScotland investigated the attitudes of UK consumer towards wind farms<sup>1</sup>. The survey was largely attitudinal based and according to the results, wind farms do not have any significant impacts on the levels of tourism with evidence. For example, 52% of the study respondents disagreed that wind farms spoil the look of the UK/Scottish countryside.

Based on this research, VisitScotland published a Position Statement in 2014<sup>2</sup>, which stated: *"VisitScotland understands and supports the drive for renewable energy and recognises the economic potential of Scotland's vast resource, including the opportunities for wind farm development... There is a mutually supportive relationship between renewable energy developments and sustainable tourism."*

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<sup>1</sup> Visit Scotland (2011). Available at: <https://ascogfarm.com/wp-content/uploads/2020/07/RES-CD-TOU-006.pdf> (accessed April 2023).

<sup>2</sup> Visit Scotland (2014), Visit Scotland (2014), Position Statement – Wind Farms.

A Department of Energy and Climate Change (DECC) survey<sup>3</sup> on public attitudes showed that in March 2014, 89% of the British public said they supported the use of renewable energy for electricity, heat and fuel in the UK. Furthermore, the BEIS Public Attitudes Tracker: Energy Infrastructure and Energy Sources (2022), published by the Department for Business, showed that 79% of people support the development of onshore wind, in comparison to 74% at the start of 2017.

Visit Scotland (2020)<sup>4</sup> research indicates that visitors aspire to be more responsible, both in terms of their personal and environmental impact. VisitScotland identified that travellers are now seeking to consciously off-set the carbon impact of their travel. The use of sustainable energy by local businesses may, therefore, appeal to this type of traveller and promote Scotland as an environmentally friendly and climate conscious country to visit.

Furthermore, the Scottish Government is aware that some communities in Scotland are concerned that the deployment of onshore wind can have a negative effect on tourism. Current evidence suggests that whilst there may be discrete impacts in some cases, this is not the general rule. For example, the Scottish Government's Onshore Wind Policy Statement (2022)<sup>5</sup> considers the potential effect of onshore wind farms on local and national tourism as a significant opportunity to cultivate a 'people and place' approach, by providing economic opportunities in areas that may otherwise be overlooked. The Policy Statement references details many examples of where renewable energy schemes have boosted tourism and recreation across Scotland. For example, Whitelee Wind Farm on the outskirts of Glasgow has provides additional outdoor recreational activities on over 130 km of tracks.

In the case of the proposed development, the applicant has sought to raise awareness of the proposed development within the local community, and actively encouraged engagement from members of the public. The Pre-Application Consultation (PAC) Report supports the S36 Application and details the engagement with, and responses to, the public consultation.

#### Research on the Impact of Onshore Wind Farms on Tourism in Scotland

The most comprehensive study of the potential effects of wind farms on tourism was undertaken by the Moffat Centre at Glasgow Caledonian University in 2008<sup>6</sup>. The study found that, even though there may be minor effects on tourism providers and a small number of visitors may not visit Scotland in the future, the overall impact on tourism expenditure and employment would be very limited. Although the study was conducted over ten years ago, a Scottish Government Report (2012)<sup>7</sup> has confirmed the findings. In subsequent years, wind farms have become increasingly prevalent in Scotland; however, no evidence has emerged to suggest there are any negative effects on the tourism economy.

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<sup>3</sup> Department for Business, Energy & Industrial Strategy (2022), BEIS Public Attitudes Tracker.

<sup>4</sup> Visit Scotland, Research and Insights. Available at: <https://www.visitscotland.org/research-insights> (accessed April 2023).

<sup>5</sup> Scottish Government (20202). Onshore Wind Policy Statement.

<sup>6</sup> Glasgow Caledonian University/Moffat Centre (2008), Economic impacts of wind farms on Scottish tourism: report.

<sup>7</sup> Scottish Government ClimateXChange (2012), The Impact of Wind Farms on Scottish Tourism.

In 2017, BiGGAR Economics<sup>8</sup> undertook a study into the effects of constructed wind farms on tourism at the national, regional and local level. The report considered tourism employment from 2009 to 2015, a six-year period over which Scotland, and almost all local authority areas, increased the number of wind farms, alongside significant growth in employment in sustainable tourism. The analysis found no correlation between tourism employment and the number of turbines at the national, or local authority level. Overall, research completed to date suggests that the tourism sector is not adversely impacted by wind farm development.

Additionally, the research considered the impact on tourism employment at a smaller level, in data zones up to 15km from wind farm developments. The wind farms considered had been constructed between 2009 and 2015. The study compared tourism employment in 2009, when the wind farms did not exist, and 2015, when they have been constructed, to measure the effect of wind farms on local tourism employment. This excluded construction impacts, such as wind farm related employees staying in local accommodation.

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

Overall, the study concluded that published national statistics on employment in sustainable tourism demonstrate there is no relationship between the development of onshore wind farms and tourism employment in the areas immediately surrounding wind farm development, at the local authority level, nor at the level of the Scottish economy as a whole.

Furthermore, over the period of 2010-2019, GVA in the Highlands increased by 87%, compared to 42% expansion of the sector, in the same time period, at a Scottish level. Notably, over this time period, there was a significant increase in the number of wind farm developments, with onshore wind capacity in the Highlands increasing by 1609% from 2009-19<sup>9</sup>.

The research findings agree with the conclusions made by the Scottish Parliament's Economy, Energy and Tourism Committee in 2012, when they found no robust, empirical evidence of a negative link between wind farm development and tourism.

#### Individual Tourism Receptors

The CRWF Socio-Economics and Tourism assessment found that there were no tourist attractions within the study area. Six tourist accommodation providers were identified at that time: Altnaharra Hotel, the bed and breakfast in Altnaharra, the Crask Inn, Overscraig Hotel (which has since permanently closed and no longer provides accommodation so this has not been considered as a receptor for the proposed development), Shinness Lodge and Ben Armine self-catering. In that assessment, no significant effects were predicted on the accommodation providers, either on amenity from the accommodation provider or on the main drivers

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<sup>8</sup> BiGGAR Economics (2017). Wind Farms and Tourism Trends in Scotland.

<sup>9</sup> BiGGAR Economics (2021), Wind Farms and Tourism Trends in Scotland.

of their trade. An online search (using VisitScotland, Heart of Sutherland Tourism<sup>10</sup> and TripAdvisor) was conducted to update the tourism baseline since the CRWF assessment and to reconsider potential impacts on the previous accommodation providers based on the theoretical visibility of the proposed development.

It was found that there are no new formal tourist attractions within 20km of the site. Additional accommodation providers were identified within 20km and with theoretical visibility according to **Figure 5.2**, including: Altnaharra Caravan and Motorhome Club Campsite (north east of Altnaharra), Old Grumbeg Cottage (north east of Altnaharra), Davar (north of Lairg), Loch Shin Luxury Pods (north of Lairg), and Pondsides Camping and Accommodation (north of Lairg). Of the previous accommodation providers considered within the CRWF Socio-Economics and Tourism assessment, it was found that there was no change in potential impacts; the accommodation providers either do not have theoretical visibility of the proposed development or their key views do not face the proposed development. Viewpoints 3 (for Altnaharra Caravan and Motorhome Club Campsite and Old Grumbeg Cottage) and 19 (for Davar, Loch Shin Luxury Pods, and Pondsides Camping and Accommodation) were used as representative viewpoints to determine whether significant effects are likely on the new accommodation providers. **Chapter 5: Landscape and Visual Impact Assessment** indicates that there would be no view of the proposed development from viewpoints 19 and negligible visual impacts on viewpoint 3. It is considered that the findings of the CRWF assessment i.e. that there would be no potential for significant effects on the main drivers of trade for the accommodation providers, remains valid so it would not affect the decision of tourists to visit. The main drivers of trade are people visiting the area for country sports and passing trade from tourists travelling around the north of Scotland by car and cyclists. The proposed development would not reduce the availability of fish and game; the volume of traffic passing these businesses is likely to increase rather than diminish as a result of the proposed development so the value of tourism from visitors passing through the local area is likely to increase, and there is no evidence to suggest that cyclists would be deterred from using the A836 (i.e. Sustrans Cycle Route 1) because of the proposed development.

Studies considering the potential impacts on the wider recreational experience have found that, in respect of other wind farm projects, where users have been asked if the presence of turbines would discourage them from using a route, 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)<sup>11</sup> found that 84% of respondents did not feel that the proposed wind farm would have an impact on their willingness to revisit the area. The survey also evaluated there was no difference in the attitude of walkers and other visitors in relation to their willingness to revisit. Furthermore, 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 wind farm 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 wind farm.

Therefore, it is not considered that there is any potential for significant tourism effects to occur as a result of the construction, operation or decommissioning of the proposed development.

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<sup>10</sup> Locally run tourism website developed by SSE and the Kyle of Sutherland Development Trust. Available at <https://www.heartofsutherland.co.uk/see-do/visitor-attractions> (accessed March 2023).

<sup>11</sup> Gilmorton Rural Development (2009), Environmental Statement for Clashindarroch Wind Farm.

### Recreational Effects

While there are no recreation receptors at the site, there are general access rights under the Land Reform Act (2003). During construction, there could be temporary direct impacts affecting accessibility on the recreational routes within the site. There is also the potential for impacts on recreation within the surrounding area resulting from construction traffic, which could affect community severance, road safety and vulnerable road users, including walkers, horse riders and cyclists. An assessment of effects on road users and other sensitive receptors has been undertaken in **Chapter 10: Transport and Access**, which has been considered in this assessment.

In accordance with the Construction (Design and Management) Regulations 2015, notices would be placed in prominent locations around the site to outline areas of restricted access. Measures for ensuring public safety during construction would be secured by the Construction Environmental Management Plan (CEMP) (see **Technical Appendix 3.1** for the Outline CEMP), and periods of exclusion would be kept to the minimum necessary for safe working. The CEMP would set out measures to ensure that recreational users are informed of the construction work and directed into safe areas where there would be no conflict with plant and machinery. While there could be indirect visual effects from the construction works, it is considered that these would be temporary and the magnitude of impact would be less than or equal to the visual impacts once the proposed development is operational, which have been scoped out as explained below. Therefore, it is not considered that there is potential for significant effects on recreational receptors during construction.

During operation, there is no potential for direct impacts on recreational receptors as there are none within the site. Indirect recreational effects on receptors within the wider 6km study area have not been considered in detail as significant effects are considered unlikely. Based on summary of visual effects included in **Chapter 5: Landscape and Visual Impact Assessment**, the only recreational receptor that would be potentially significantly affected by the operation of the proposed development would be Sustrans Cycle Route 1. The effect would be limited to a 4.4km stretch of the A836 as the route approaches and passes the proposed turbines between the summit of The Crask and Druim Allt na h-Aire. However, the views along this section of the route are already affected by the existing CRWF and it is not considered that any change caused by the proposed development would materially impact the recreational amenity further. In fact, it could be argued that because cycling is a particularly environmentally friendly mode of transport, cyclists are likely to be more sympathetic toward the development of wind farms than the public in general. It is also important to note that many of the cyclists using this route will be doing so as part of a Lands' End to John O'Groats challenge. These visitors come to the area for the specific purpose of completing the challenge. As the presence of a wind farm along the route will have no impact on their ability to complete the challenge, it is therefore considered highly unlikely that the proposed development would affect their enjoyment of it.

Mountain summits and their associated access routes have been considered up to 35km from the proposed development; although the findings of **Chapter 5: Landscape and Visual Impact Assessment** indicate that while there may be significant visual effects on some hill summits (Ben More Assynt, Ben Hee and Ben Klibeck), this does not however necessarily imply that visitors would choose not to climb the mountain, particularly as research suggests that hill walkers may be somewhat more sympathetic toward wind farms than other types of tourists (Glasgow Caledonian University, 2008). Significant cumulative visual effects are predicted for Ben More Assynt and Ben Hee, but the magnitude of change from the proposed development

itself would be very low and it is not considered that any change caused by the proposed development would materially impact the tourism amenity further. There is the potential for significant visual effects from the proposed development itself from Ben Klibreck; however, the existing CRWF are prominent from Ben Klibreck in views towards the site and it is not considered that any change caused by the proposed development would materially impact the recreational amenity further. Furthermore, Ben Klibreck is one of the more isolated Munros in Scotland and is therefore likely to appeal mainly to a relatively small number of dedicated walkers prepared to venture beyond the main ranges. It is likely that a significant proportion of these visitors will be 'Munro Baggers', enthusiasts with a personal target of climbing all of Scotland's highest peaks. As the construction of a wind farm at the proposed site will not affect the Munro status of these mountains, it is highly unlikely to affect the decision of such visitors to climb them.

#### Effects on Community Services

Given the relative size of the construction work force and duration of the construction programme, it is considered unlikely that there would be the potential for significant effects on community services. The workforce during operation would be very small and so operational impacts have also been scoped out.

### 13.4.5 Approach to the Assessment of Effects

#### *Economic and Employment Effects*

To evaluate the economic impact from project expenditure during construction and operation, an input-output model is used to calculate the direct, indirect and induced impacts of localised economic activity on the overall economy. The model generates the Gross Value Added (GVA) to the economy and the years of employment supported within the economy as economic indicators of impact. Additionality factors, including leakages and displacement, have been considered to provide net GVA and years of employment. The sum of direct, indirect and induced impacts equals the total GVA and employment supported. This is consistent with Scottish Government advice on net economic benefit<sup>12</sup>.

Direct, indirect and induced effects are defined as follows:

- **direct:** the employment and other economic outputs which are directly attributable to the delivery of the proposed development. Includes any new jobs created to manage and supervise the construction and operational phases of the proposed development that are filled by employees of the applicant, or the appointed contractor (or subcontracted employees);
- **indirect:** the employment and other outputs created in other companies and organisations that provide services in relation to the proposed development (i.e., procurement and other supply chain effects); and
- **induced:** additional jobs and other economic outputs created in the wider economy as a result of the spending of employee incomes on locally produced goods and services (i.e., personal vehicle maintenance, food and drink etc.) and other derived multiplier effects occurring from direct and indirect effects of the proposed development.

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<sup>12</sup> Scottish Government (2016), Net Economic Benefit and Planning.

The job years and GVA values calculated in **Table 13.14** represents the gross employment and economic impacts; however, to understand the potential net impacts, a number of ‘additionality’ concepts, including leakages and displacement, must be considered. Leakage is the proportion of project outcomes that benefit individuals or organisations located beyond the relevant area of impact. Displacement is an estimate of the economic activity, that would be diverted from other businesses as a result of the proposed development.

#### 13.4.6 Assessment Methodology and Significance

The significance of the socio-economic, recreation and tourism effects resulting from the construction and/or operation of the proposed development have been assessed by combining the magnitude of impact with the sensitivity of receptor.

##### *Sensitivity of Receptor*

Although no published standards define receptor sensitivity relating to socio-economic, recreation and tourism assessments; as a general standard, the sensitivity of each receptor, or receptor group, is based on its importance or scale, and ability of the baseline to absorb or be influenced by the identified effects. For example, a receptor (such as a public path or a supply chain business) is considered less sensitive when 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 and national;
- 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).

Based upon professional judgement and experience on other large-scale projects, including the existing CRWF, four levels of sensitivity are used and defined in **Table 13.2**: high; medium; low; and, negligible. In the case of socio-economics, recreation and tourism, the sensitivity of a receptor is often subjective. Different receptors have differing sensitivities, dependent on factors such as the economic profile of the local area, the perception of the type of development and public attitudes towards the potential benefits of a development. Therefore, this assessment is based on a worst-case assumption that there is a negative perception of the proposed development.

**Table 13.2: Socio-Economic, Recreation and Tourism Sensitivity Criteria**

Sensitivity	Description
High	<p>The receptor:</p> <ul style="list-style-type: none"> <li>• has little or no capacity to absorb change without fundamentally altering its present character; or</li> <li>• is of high socio-economic, recreational, or tourism value; or</li> <li>• is of national or international importance; or</li> <li>• is accorded priority in national policy; or</li> <li>• has no alternatives with available capacity within its study area; or</li> <li>• is a destination in its own right (as regards tourism and visitor attractions).</li> </ul>
Medium	The receptor:



Sensitivity	Description
	<ul style="list-style-type: none"> <li>has moderate capacity to absorb change without fundamentally altering its present character; or</li> <li>has a moderate socio-economic, recreational or tourism value; or</li> <li>is of regional importance; or</li> <li>is accorded priority in local policy; or</li> <li>has some alternatives with available capacity within its study area; or</li> <li>is a destination for people already visiting the area (as regards tourism and visitor attractions); or</li> <li>forms a cluster of low sensitivity receptors.</li> </ul>
Low	<p>The receptor:</p> <ul style="list-style-type: none"> <li>is tolerant of change without detriment to its character; or</li> <li>is of low socio-economic, land use, recreational or tourism value; or</li> <li>is of local importance; or</li> <li>is accorded low priority in policy; or</li> <li>has a choice of alternatives with available capacity within its study area; or</li> <li>is an incidental destination for people already visiting the area (as regards tourism and visitor attractions).</li> </ul>
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 study area.

### *Magnitude of Impact*

There are no published standards defining thresholds of impact magnitude for socio-economic, land use, recreation or tourism impacts; however, to clearly identify significant effects, specific and targeted criteria for defining the magnitude of impacts have been developed, based on experience of other similar projects.

Therefore, the following four levels of impact magnitude have been adopted using professional judgement: high; medium; low and negligible. These impacts can be beneficial or adverse. Criteria for each of these levels of impact magnitude for each receptor group are set out in **Table 13.3**.

**Table 13.3: Magnitude of Impact Criteria**

Receptor Group	High	Medium	Low	Negligible
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.
Employment	An impact that would dominate over baseline labour market conditions and/or would affect a large proportion	An impact that would be expected to result in a moderate change to baseline labour market conditions and/or would affect a	An impact that would be expected to result in a perceptible difference from baseline labour market conditions and/or would affect a	An impact that would not be expected to result in a measurable variation from baseline labour market conditions.

Receptor Group	High	Medium	Low	Negligible
	(>10%) of the existing resident	moderate proportion (>5%) of the existing resident workforce.	small proportion (>0.5%) of the existing resident workforce.	

#### 13.4.7 Significance of Effects

The significance of effects matrix presented in **Table 13.4** illustrates how magnitude of impact and sensitivity of receptor are combined to determine the significance of effects (classed as major, moderate, minor or negligible), derived from professional judgement.

**Table 13.4: Significance of Effects Matrix**

Sensitivity of 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

Effects may be positive (beneficial) or negative (adverse) and this is specified where applicable. When an effect is classified as major, it is considered to represent a 'significant effect'. When an effect is classified as moderate, this can also be considered to represent a 'significant effect'. However, this should be subject to professional judgement and interpretation, particularly where the sensitivity or impact magnitude levels are not clear, borders between categories, or is an intermittent impact. In addition, significant effects need not be unacceptable, nor irreversible.

#### 13.4.8 Mitigation

The assessment accounts for any embedded mitigation included in the design of the proposed development and good practice measures as outlined in **Chapter 3: Description of Development** and **Technical Appendix 3.1: Outline Construction Environmental Management Plan**. Any additional mitigation measures that are required to avoid, prevent, reduce or, if possible, offset any identified significant adverse are set out and considered prior to assessing residual effects in **Section 13.9**.

#### 13.4.9 Difficulties and Uncertainties

The Highlands and Islands Enterprise Statistics for Caithness and Sutherland (2019) is the most recent and accurate comparison of the economic baselines across the different study areas. However, in the context of the negative impact of the Covid-19 pandemic on the economy and employment post March-2020, it could be considered that pre-pandemic figures are more representative of a typical economic baseline. These figures are supplemented, where possible, by employment and economic data collected by the applicant during the construction of the existing CRWF.

The applicant has endeavoured to ensure that key tourism and recreation facilities in the area are identified; nevertheless, it is possible that a number of small attractions may not have been identified through the data

collection process. To mitigate this, the desk-based assessment of tourism receptors utilises several data sources, previous socio-economic assessments at this location, as well as evaluating receptors which have been identified through public consultation and Scoping for the proposed development, together with previous consultation on the consented application for the existing CRWF.

## 13.5 Existing Environment

### 13.5.1 Local Economic and Employment Baseline

#### Population

Based on the mid-year population estimates by the National Records of Scotland (2022)<sup>13</sup>, as of 2021, the total population for Caithness, Sutherland and Ross was 70,246. The total population for the Highlands was 238,060 and the total population of Scotland was 5,479,900. The total population for each area has been disaggregated into different age groups in **Table 13.5**, with those aged 16-64 considered to be of working age.

**Table 13.5: Population Estimates 2021\***

Age Groups	Caithness, Sutherland and Ross		Highland		Scotland	
0-15	10,896	15.5%	38,130	16.0%	911,522	16.6%
16-64	41,347	58.9%	144,706	60.8%	3,494,517	63.8%
65+	18,003	25.6%	55,224	23.2%	1,073,861	19.6%
Total Population	70,246	100%	238,060	100%	5,479,900	100%

\*totals may not add up, due to rounding.

Regarding regional and national population change, over the period of 2018-2043, the Highland population is anticipated to decrease by 1.0% to 233,250, compared with 2.5% population growth in Scotland, to 5,574,819 in 2043 (National Records of Scotland, 2020). **Table 13.6** compares the changes in regional and national population across each age group.

**Table 13.6: Highland and Scotland Population Projections: 2018-2043\***

Age Groups	Highland		Scotland	
	% of 2043 population	% change in proportion of population	% of 2043 population	% change in proportion of population
0-15	14.3%	-15.4%	14.8%	-10.5%
16-64	56%	-5.4%	60.3%	-0.2%
65+	64.2%	+22.1%	24.9%	+23.2%
Total Population	233,250	100%	5,574,819	100%

\*totals may not add up due to rounding

Source: National Records of Scotland (2020), Sub-National Population Projections (2018-2043).

As **Table 13.6** illustrates at both scales, the proportion of the population who are 65+ is expected to increase; whereas the proportion of all other population groups is anticipated to decrease. However, compared with

<sup>13</sup> National Records of Scotland (2022), Mid-Year Population Estimates.

Scotland as a whole, the Highlands are predicted to experience a substantially larger relative decrease in the percentage of the population who are in the 0-15 and 16-64 age groups.

Although data on population projections is not readily available at the local level, projections commissioned by THC suggests that different areas of the Highlands will see different population changes over time. According to the Highlands and Islands Area Profile, the population of Caithness is expected to decline by 21% and the population of Sutherland is expected to decrease by 12%, both by 2041<sup>14</sup> (HIE, 2020). Furthermore, **Table 13.7** shows the estimates in population projections for Caithness and Sutherland, as estimate by the CaSPlan (2015)<sup>15</sup> from the period of 2015-2035, across each age group. This data shows an even greater trend towards an ageing population and suggests that there could be a reduction in working age people living within the local area (assuming no intervention).

**Table 13.7: Population Projections for Caithness and Sutherland, by Age Band, from 2015-2035**

Age Band	2015	2035	% change
0-14	5,718	4,757	-16.8
15-64	24,435	19,227	-21.3
65+	9,828	13,965	+42.1

#### *Economic Activity*

**Table 13.8** illustrates the proportion of the population who are economically active, rates for employment and unemployment, and gross weekly earnings for the local, regional and national study areas.

**Table 13.8: Economic Activity and Unemployment (2020)**

	Caithness and Sutherland	Highland	Scotland
Economic Activity Rate (Aged 16-64)	77.4%	79.4%	76.5%
Unemployment Rate	5.3%	4.9%	5.9%

Source: HIE's Highlands and Islands Area Profiles 2020: Caithness and Sutherland.

Furthermore, as indicated by **Table 13.9** below, compared with the Highlands and Scotland, Caithness and Sutherland has a higher share of employment in accommodation and food services; arts, entertainment, recreation; construction; human health and social work activities and professional, scientific and technical activities and other services in 2019. Employment in the accommodation and food services sector in Caithness and Sutherland (15.6%) is almost double that of the Scotland (8.3%), highlighting the importance of the tourism sector in the area.

**Table 13.9: Employment by Sector (2019)**

Sector	Caithness and Sutherland	Highland	Scotland
Accommodation and Food Service Activities	15.6%	13.3%	8.3%
Administrative and Support Service Activities	2.5%	5.3%	8.2%
Agriculture, Forestry and Fishing	2.8%	N/A	N/A
Arts, Entertainment and Recreation	5.0%	3.5%	2.8%

<sup>14</sup> Highland and Island Enterprise (2020), Local Area Profile: Caithness and Sutherland.

<sup>15</sup>The Highland Council (2015). CaSPlan Monitoring Statement Housing Background Paper, available at [https://www.highland.gov.uk/info/178/development\\_plans/283/caithness\\_and\\_sutherland\\_local\\_development\\_plan](https://www.highland.gov.uk/info/178/development_plans/283/caithness_and_sutherland_local_development_plan), (accessed March 2023).

Sector	Caithness and Sutherland	Highland	Scotland
Construction	6.3%	6.2%	5.5%
Education	7.8%	8.0%	8.3%
Electricity, Gas, Steam and Air Conditioning Supply	N/A	0.8%	0.7%
Financial and Insurance Activities	2.0%	0.9%	3.4%
Human Health and Social Work Activities	18.8%	18.6%	16%
Information and Communication	1.9%	2.0%	3.4%
Manufacturing	3.8%	5.3%	6.8%
Mining and Quarrying	N/A	0.4%	1.1%
Other Service Activities	N/A	1.1%	1.7%
Professional, Scientific and Technical Activities	6.3%	5.3%	7.2%
Public Administration and Defence; Compulsory Social Security	5.0%	5.3%	6.3%
Real Estate Activities	N/A	1.3%	1.5%
Transportation and Storage	N/A	4.4%	4.2%
Water Supply; Sewerage, Waste Management and Remediation Activities	N/A	1.8%	0.8%
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	12.5%	14.2%	13.5%

Source: HIE Highlands and Islands Area Profiles 2020 Caithness and Sutherland, ONS, Labour Market Profile Highland (both (2019).

### Supply Chain

Recent and robust baseline data relating to the local supply chain is unavailable; however, HIE (2020) noted that Caithness and Sutherland had a similar share (88.4%) of private sector registered businesses that are micro (0-9 employees) compared to 86.4% regionally and 87.1% nationally. This illustrates potential capacity for businesses operating within the local area to contribute to the proposed development, in terms of work force and supply chain. **Table 13.10** below identifies the business counts in the Highlands and Scotland.

**Table 13.10: Business Counts (2021)**

Enterprises	Highland (Numbers)	Highland (%)	Scotland (Numbers)	Scotland (%)
Micro	9,590	88.8	152470	87.8
Small	1,060	9.8	17775	10.2
Medium	130	1.2	2730	1.6
Large	25	0.2	675	0.4

Source: ONS, Labour Market Profile Highland (2023).

Furthermore, for the Highlands and Scotland, current employment by occupational group is outlined in **Table 13.11**, giving an indication of the wider supply chain. Occupational groups which are relevant to the development, construction and operation of the proposed development include:

- Professional occupations (19.7%), which is lower than the Scottish average (25.3%);
- Associate professional and technical (14.0%), which is higher than the Scottish average (14.8%);
- Skilled trades occupations (11.1%), which is lower than the Scottish average (8.7%); and
- Process plant and machine operatives (7.4%), which is also higher than the Scottish average (6.0%).

**Table 13.11: Employment by Occupational Group (2021)**

Sector	Highland (Numbers)	Highland (%)	Scotland (%)
Managers, Directors and Senior Officials	8,000	7.4	8.2
Professional Occupations	21,400	19.7	25.3
Associate Professional & Technical	15,200	14.0	14.8
Administrative & Secretarial	10,200	9.4	9.8
Skilled Trades Occupations	12,100	11.1	8.7
Caring, Leisure and Other Service Occupations	9,900	9.1	8.4
Sales And Customer Service Occupations	10,600	9.8	8.6
Process Plant & Machine Operatives	8,000	7.4	6.0
Elementary Occupations	13,100	12.1	10.0

Source: ONS, Labour Market Profile Highland (2023).

During the construction of CRWF, the applicant used many businesses that are based in the surrounding area and the Highlands as well as Scotland. Expenditure across the local, regional and national study areas has totalled £46 million to date.

#### *Future Baseline*

The Scottish Government's Onshore Wind Policy Statement (2022)<sup>16</sup> identifies that Scotland has a well-established energy supply chain, with onshore wind supporting over 1900 FTE Scottish jobs (figures from 2019). The Policy Statement also emphasises the need to develop a skilled workforce, which means:

*'ensuring that Scotland has the skills needed to drive economic transformation by embedding access to entrepreneurial learning in schools and colleges focusing on the transition to net zero, the digital revolution, and lifelong training...The strategy will also help ensure new and current businesses are supported in investing in innovative ideas that could lead to new industries and quality jobs across the country.'*

The Policy Statement indicates that national and local supply chain capacity would improve irrespective of the proposed development, which would increase the likelihood that labour and materials could be supplied for the proposed development within the study areas.

#### *Study Area Sensitivities*

It is considered that the local and regional study areas are of moderate socio-economic value and are considered to have **Medium** (Regional) sensitivity. The national study area is considered to have high socio-economic value, so is considered to have **High** (National) sensitivity.

#### *Community Benefit*

The applicant has committed to £5,000 of community benefit funding per megawatt (MW) for the existing CRWF. This amounts to £462,000<sup>17</sup> of community funding per annum, which would be more than £9 million (plus uplifts for inflation) over the consented 25 year operational life. If the S36C application for an extension to the operational life of CRWF (**Chapter 1: Introduction**) is consented then overall the community funding

<sup>16</sup> Scottish Government (2022), Onshore Wind Policy Statement.

<sup>17</sup> 22 turbines with an installed capacity of 4.2MW have been constructed onsite, which gives a total installed capacity of 92.4MW. Multiplied by £5,000 this equated to annual community benefit funding of £462,000.

could exceed £14.5 million over the 40-year operational life. The applicant has an established format of contribution through two charitable community trusts; half the funding is allocated to the local Altnaharra Trust, and the other half is allocated to a wider North and West Sutherland Trust. Bettyhill, Strathnavar and Altnaharra Community Council, Tongue, Melness & Skerray Community Council, Durness Community Council, Kinlochbervie Community Council and Scourie & District Community Council each get a direct contribution from CRWF with the money deducted from the North and West Sutherland Trust.

In addition, a cumulative community benefit estimate has been calculated considering existing and consented wind farms. This calculation is based on the values provided in planning documents, or by multiplying the installed capacity by the industry standard amount per MW at time of consent. In total, it is estimated that the current community benefit to the local area (within 35km), excluding the proposed development and the existing CRWF, could amount to £2.68 million per annum.

The local communities are considered to be of local Importance and therefore, have **Low** sensitivity.

## 13.6 Predicted Impacts

### 13.6.1 Socio-Economic Impacts

#### *Construction Phase Impacts*

There would be beneficial economic impacts arising from the construction of the proposed development, resulting from expenditure on such items as site preparation, access roads, purchase and delivery of materials, plant, equipment and components. Some workers would be sourced from the local and regional labour force, as well as from Scotland as a whole.

The remainder of this section quantifies the likely benefits to jobs in the local area, the Highlands, as well as broader benefits to employment in Scotland as a whole. The section also quantifies the predicted impacts to the economy; based on the proportion of construction expenditure that would take place as a result of the construction of the proposed development.

#### *Capital Expenditure*

An analysis of the supply chain has not been conducted but given the similar labour market profile for the local, regional and national economies, it was considered that assumptions relating to project expenditure can be made based on the findings of national studies.

The Capital Expenditure (CAPEX) for the construction and development of the proposed development has been estimated using research undertaken by BiGGAR Economics, on behalf of RenewableUK (2015)<sup>18</sup>, which was then adjusted by removing costs associated with the grid connection as these would be minimal for the proposed development as the intention is to use the existing grid connection for CRWF. Applying this methodology, for the proposed development with three turbines and a combined generating capacity of

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<sup>18</sup> RenewableUK (2015), Onshore Wind: Economic Impacts in 2014.

12.6MW, the construction and development costs are expected to reach £17,566,509<sup>19</sup>. The proposed development also comprises a battery storage component with a storage capacity of 37.3MW, the construction and development costs per MW is estimated at £500,000<sup>20</sup>. Therefore, the total construction and development costs are expected to reach £33.5 million.

CAPEX was divided into four primary categories of contract; development and planning, turbines, balance of plant (construction costs, excluding turbine supply) and grid connection. CAPEX for the battery component has not been divided into contract types, given the lack of reliable data in this regard.

A study by Renewables UK (2015), formerly the British Wind Energy Association a trade association for wind power and other renewable energies, evaluated that 10% of CAPEX was development and planning, whereas 64% was on the turbines; however, developments in the sector and the transition towards larger turbines has altered this composition. BVG Associates (2017) estimated that turbine related contracts accounted for the majority of CAPEX, followed by balance of plant, development and planning and grid connection.

The values shown by **Table 13.12** exceed those used in the RenewableUK (2015) and the BVG Associates (2017)<sup>21</sup> reports, to take into account a larger proportion of CAPEX expenditure on turbine related contracts (70%), followed by balance of plant (20.5%), development and planning (4.4%) and discounts grid connection entirely.

**Table 13.12: Estimated Development and Construction Expenditure by Type for the Proposed Development**

Item	Description	Cost (£millions)	% of Expenditure
Development and Planning	The processes up to the point of financial close or placing firm orders to proceed with construction, and project management costs incurred by the applicant. Includes project design, environmental studies, legal agreements, project funding and planning permissions.	0.8	4.5
Turbines	The activity by wind turbine manufacturers and their suppliers, covering nacelle component manufacture and assembly and blade and tower manufacture.	13.0	73.9
Balance of Plant	Includes civil and project management, roads, substation buildings, turbine foundations and hardstandings, landscaping/ forestry/ fencing, and mechanical and electrical installation.	3.8	21.6
<b>Total</b>		<b>17.6</b>	<b>100%</b>

The economic impact of the construction and development phase has been estimated for Caithness and Sutherland, the Highlands and Scotland as a whole. To do this, it was necessary to estimate the proportion of each type of contract that might be secured in each study area. An analysis of the supply chain has not been conducted but assumptions were made about how much of each component contract could be secured

<sup>19</sup> Calculation based on (adjusted (no grid connection costs) development + construction costs per MW) \* capacity of wind turbine element of proposed development.

<sup>20</sup> RegenSW (2019), Energy Storage – Towards a Commercial Model – 2<sup>nd</sup> Edition.

<sup>21</sup> BVG Associates (2017), Economic benefits from onshore wind farms.



in each study area based on the findings of the RenewableUK research (2015) and BiGGAR Economics' assessment of Strathy North Wind Farm which is also based in Caithness and Sutherland (2020)<sup>22</sup>. The percentage of spend by contract type within each study area is shown in **Table 13.13**.

There is limited evidence on the impacts associated with battery installation, but a significant proportion of the contract value would be the battery itself, and the installation is likely to involve specialist skills. Therefore, the share of the spend in the Highlands is assumed to be 2% of the total, and the share of the spend in Scotland is assumed as 18% of the total.

To estimate the expenditure for each contract in each study area, these percentages have been applied to the estimated size of each component contract. The estimated value of contract type is shown in **Table 13.13**.

**Table 13.13: Estimated Development and Construction Expenditure in Caithness and Sutherland, the Highlands and Scotland by Contract Type\***

Item	Caithness and Sutherland		The Highlands		Scotland	
	Cost (£millions)	% of item total	Cost (£millions)	% of item total	Cost (£millions)	% of item total
Development	0	0	0.1	13	0.5	59
Turbines	0	0	1.6	12	4.7	36
Balance of plant	0.4	10	0.5	12	1.4	36
BESS	0.0	0	0.3	2	2.7	18
<b>Total</b>	<b>0.38</b>		<b>2.4</b>		<b>9.3</b>	

\*totals may not add up due to rounding.

### Gross Employment and Economic Impacts

The contract values potentially awarded in each area represents an increase in turnover of businesses in these areas. Estimates of the expected direct construction phase employment and economic implications of the proposed development have been calculated. Estimates have been calculated by applying ratios of turnover per unit of GVA and GVA, per employee, from the Scottish Annual Business Statistics (SABS) 2019<sup>23</sup> (GVA and employment ratios are not available for the local area, therefore, regional values have been used for the local study area) to the predicted CAPEX. Although SABS 2020 is the most recent available data set, 2019 was assessed to be more representative, because of the national lockdown during the 2020 Covid-19 pandemic.

Turnover per unit of GVA and GVA per employee ratios have been calculated, as shown in **Table 13.14**. The construction ratios have been weighted using the relevant economic sector data for each sub-component (development, turbines, and balance of plant).

**Table 13.14: GVA and Turnover per Employee**

Item	The Highlands		Scotland	
	Turnover Per Employee	GVA/Turnover	Turnover Per Employee	GVA/Turnover
Development	76,828	0.65	123,173	0.54

<sup>22</sup> Strathy South Wind Farm EIA Report: SSE: 2020.

<sup>23</sup> Scottish Annual Business Statistics (2019), Available at <https://www.gov.scot/publications/scottish-annual-business-statistics-2019/documents/> (accessed April 2023).

Item	The Highlands		Scotland	
	Turnover Per Employee	GVA/Turnover	Turnover Per Employee	GVA/Turnover
Turbines	203,214	0.42	186,958	0.35
Balance of plant	160,400	0.38	174,277	0.35
BESS	141,010	0.53	147,466	0.44

Applying the above ratios to the capital expenditure provides an estimate of the likely level of job years and GVA by study area (**Table 13.15**). The Caithness and Sutherland study area is part of the Highlands study area, which is part of the Scotland study area; therefore, jobs or GVA generated within smaller study areas would count towards jobs and GVA within the larger study areas. The regional and national multipliers outlined in **Table 13.14** above have only been applied to the difference in local and regional turnover and regional and national turnover.

**Table 13.15: Estimated Construction Phase Direct Economic Impact of the Proposed Development\***

Item	Caithness and Sutherland		The Highlands		Scotland	
	Job Years	GVA (£million)	Job Years	GVA (£million)	Job Years	GVA (£million)
Development	0	0	1.4	0.1	4.4	0.3
Turbines	0	0	7.7	0.7	24.3	1.7
Balance of plant	2.4	0.1	2.8	0.2	8.1	0.5
BESS	0	0	2.1	0.2	20.4	1.3
<b>Total</b>	2.4	0.15	14	1	57.2	3.8

\*totals may not add up, due to rounding.

### Net Employment and Economic Impacts

To account for leakages, commuting data were reviewed to determine the proportion of workers likely to be involved in the construction of the proposed development based outside of the Highlands and Scotland. It is assumed that 4.3% of jobs benefit non-Caithness and Highlands residents and 1.1% would benefit non-Scottish residents. This assumption is based on Census 2011 commuting data for the Highlands, which was used instead of the more recent 2021 census data as this was recorded during the Covid-19 pandemic, which could have affected the results.

Regarding displacement, analysis assumed that displacement would be 5% for the local study area, with similar levels of displacement (5%) assumed at a regional level. At a national level, higher levels of displacements were assumed (15%).

The effects of leakage and displacement can act to reduce the value of the project within the economy; however, an estimate of the additional jobs and economic value created in the economy, through the (positive) indirect and induced effects of project expenditure in the economy, should also be considered. Indirect and induced impacts on employment and GVA has been calculated using Type II (indirect and induced) GVA and employment multiplier values published in the Scottish Government 2019 Input-Output tables. To reflect the lower multiplier effects at local levels, GVA and employment multipliers in Caithness and Sutherland was set at 50% of the Scottish level and the Highlands was set at 65% of the Scottish level. The indirect and induced multipliers are shown in **Table 13.16**.

**Table 13.16: Indirect and Induced Multipliers in Caithness and Sutherland, The Highlands and Scotland by Contract Type**

Item	Caithness and Sutherland		The Highlands		Scotland	
	Type II Employment Multiplier	Type II GVA Multiplier	Type II Employment Multiplier	Type II GVA Multiplier	Type II Employment Multiplier	Type II GVA Multiplier
Development	1.3	1.3	1.3	1.3	1.5	1.5
Turbines	1.3	1.3	1.4	1.4	1.6	1.6
Balance of plant	1.4	1.5	1.5	1.6	1.8	1.9
BESS	1.3	1.4	1.4	1.5	1.7	1.7

Applying the above assumptions to the gross employment and economic impacts provides an estimate of the likely level of net employment and economic impacts (**Table 13.17**). As stated above, the Caithness and Sutherland study area is within the Highlands study area, which is part of the Scotland study area; therefore, jobs or GVA generated within smaller study areas would count towards jobs and GVA within the larger study areas. The regional and national multipliers outlined in **Table 13.16** above have only been applied to the difference in local and regional, and regional and national turnover.

**Table 13.17: Estimated Net Construction Phase Employment and Economic Impact of the Proposed Development\***

Item	Indirect/Induced Jobs			Indirect/Induced GVA (£millions)		
	Caithness and Sutherland	The Highlands	Scotland	Caithness and Sutherland	The Highlands	Scotland
Development	0	1.7	5.8	0	0.1	0.4
Turbines	0	9.6	33.8	0	0.8	2.4
Balance of plant	3.6	7.5	12.4	0.2	0.5	0.8
BESS	0	3.2	23.3	0	0.2	1.6
<b>Total</b>	<b>3.6</b>	<b>22</b>	<b>75.3</b>	<b>0.2</b>	<b>1.7</b>	<b>5.1</b>

\*Totals may not add, due to rounding.

During the construction phase, the proposed development could generate GVA worth a total of £229,847 in Caithness and Sutherland, £1.7 million in the Highlands and £5.1 million for Scotland. Over the construction phase, the proposed development could provide 3.9 jobs in Caithness and Sutherland, 23.6 jobs in the Highlands and up to 80.1 jobs in Scotland as a whole. This is in addition to the predicted contribution of CRWF<sup>24</sup>, which was £20.7 million and 168 job years in the Highlands and £44.8 million and 422 job years for Scotland.

However, given the scale of the potential economic and employment impacts in comparison with the economy in each study area, it is not likely that any impact would be expected to result in a measurable variation from baseline economic conditions. Therefore, the magnitude of the net socio-economic impacts during construction is considered to be **Negligible** (Beneficial).

<sup>24</sup> Site works are not yet complete so a detailed breakdown of expenditure during development and construction is not available

### Operational Phase Impacts

When the proposed development is operational, a team of personnel would be required to provide servicing, maintenance, repairs and other operational support. The operation and maintenance impact of the proposed development has been estimated as the impact that would persist throughout the lifespan of the proposed development. The long-term assessments of the operations and maintenance impacts have been assessed over the 40-year period. This would include the battery component, which is not expected to require substantial operation and maintenance expenditure.

Annual expenditure on operations (OPEX) and maintenance was estimated based on analysis undertaken in the 2015 RenewableUK report<sup>25</sup>, which stated the weighted average cost was £59,867 per MW per annum. Therefore, it is estimated that annual operations and maintenance expenditure associated with the proposed development could be up to £754,000 (excluding community benefit funding and non-domestic rates). Over the operational life of the proposed development (40-years), with a generating capacity of 12.6MW, this could amount to approximately £27.9 million. These figures are solely based on the wind generation element of the proposed development, excluding the battery storage element, because no current analysis of battery storage is available. Thus, actual OPEX would likely be higher and the OPEX estimates assessed below represent the conservative scenario.

To estimate the economic impact of the operation and maintenance expenditure in each study area, it was first necessary to estimate the proportion of operation and maintenance contracts that could be secured in each of these areas, as shown in **Table 13.18**. These assumptions have been based the contract proportions reported in the 2015 RenewableUK report and the BiGGAR Economics supply chain analysis presented in the Strathy South Wind Farm EIA Report.

**Table 13.18: Estimated Annual Operation and Maintenance Expenditure in Caithness and Sutherland, The Highlands and Scotland**

Item	Caithness and Sutherland		The Highlands		Scotland	
	Cost (£millions)	% of item total	Cost (£millions)	% of item total	Cost (£millions)	% of item total
Operation and Maintenance	0.1	16	0.3	42	0.4	58

As with the construction phase, the contract values awarded in each of the study areas represent an increase in turnover in those areas. The economic impact of the increase in turnover on GVA and employment in the operational phase was estimated similarly to construction phase impacts. Turnover per unit of GVA and GVA per employee ratios have been calculated and are illustrated below, in **Table 13.19**.

**Table 13.19: Estimated GVA and Turnover per Employee (Operations and Maintenance)**

Item	The Highlands		Scotland	
	Turnover Per Employee	GVA/Turnover	Turnover Per Employee	GVA/Turnover
Operation and Maintenance	153,259	0.5	161,600	0.5

<sup>25</sup> RenewableUK (2015), Onshore Wind: Economic Impacts in 2014.

Applying the above assumptions to the proposed development provides an estimate of the likely level of employment in Caithness and Sutherland, The Highlands and Scotland as a whole. This is shown by below in **Table 13.20**. As stated above, the Caithness and Sutherland study area is part of the Highlands study area, which is part of the Scotland study area; therefore, jobs or GVA generated within smaller study areas would count towards jobs and GVA within the larger study areas. The regional and national multipliers outlined in **Table 13.21** have only been applied to the difference in local and regional, and regional and national turnover.

**Table 13.20: Estimated Operations and Maintenance Direct Economic Impact of the Proposed Development**

Area	Jobs	GVA (£millions)
Caithness and Sutherland	0.8	0.1
The Highlands	1.2	0.1
Scotland	2.0	0.2

#### Net Employment and Economic Impacts

As in the construction phase, net impacts on employment and GVA for operation and maintenance has been calculated using additionality factors. This includes leakages and displacement (both the same as in the construction phase) and GVA and Type II (indirect and induced) employment multiplier values for the relevant industry sectors published on the Scottish Government 2019 Input-Output tables<sup>26</sup> (as identified in **Table 13.21**). Similarly, to reflect the lower multiplier effects at local levels, GVA and employment multipliers in Caithness and Sutherland was set at 50% of the Scottish level and the Highlands was set at 65% of the Scottish level.

**Table 13.21: Type II Employment and GVA Multipliers in the Highlands and Scotland**

Item	Type II Employment Multipliers			Type II GVA Multipliers		
	Caithness and Sutherland	The Highlands	Scotland	Caithness and Sutherland	The Highlands	Scotland
Operation and Maintenance	1.3	1.4	1.6	1.3	1.3	1.5

Applying the above assumptions to the gross employment and economic impacts provides an estimate of the likely level of net employment and economic impacts (**Table 13.22**). As stated above, the Caithness and Sutherland study area is part of the Highlands study area, which is part of the Scotland study area; therefore, jobs or GVA generated within smaller study areas would count towards jobs and GVA within the larger study areas. Therefore, the regional and national multipliers outlined in **Table 13.21** have only been applied to the difference in local and regional, and regional and national impacts.

**Table 13.22: Estimated Annual Operation and Maintenance Net Economic Impact of the Proposed Development**

Area	Jobs	Estimated GVA (£millions)
Caithness and Sutherland	0.8	0.1
The Highlands	1.5	0.1
Scotland	2.4	0.2

<sup>26</sup> Scottish Government (2018), Supply, Use and Input-Output Tables: 1998-2018.

Over the 40-year operational period, the proposed development could generate GVA worth a cumulative total of £2.2 million in Caithness and Sutherland, £4.7 million in the Highlands and £6.9 million for Scotland. Over the operational phase, the proposed development could provide 0.8 jobs in Caithness and Sutherland, 1.5 jobs in the Highlands and up to 2.4 jobs in Scotland as a whole. This is in addition to the predicted annual contribution of CRWF, which was £2 million and 20 job years in the Highlands and £3.8 million and 41 job years for Scotland. Over the consented 25 years GVA from CRWF could total £50 million in the Highlands (£80 million over 40 years if the S36C application is consented) and £94 million for Scotland as a whole (£152 million over 40 years if the S36C application is consented)<sup>27</sup>.

Given the scale of the potential economic and employment impacts in comparison with the economy in each study area, it is not likely that any impact that would not be expected to result in a measurable variation from baseline economic conditions. Therefore, the magnitude of the net socio-economic impacts during operation is considered to be **Negligible** (Beneficial).

#### Community Benefit

As a result of the community funding provided by the applicant, the proposed development would generate a beneficial effect on the local economy. Aligned with standard industry practice<sup>28</sup>, the applicant would provide £5,000 or equivalent per MW (index linked) during the operation life of the proposed development. As the total installed turbine capacity of the proposed development would be 12.6MW, benefits would total over £63,000 per year, which equates to £2.52 million over the 40-year operational life. Following the Good Practice Principles for Community Benefit the applicant is committed to the community benefit staying in the immediate area.

Considering the change to baseline condition for both the existing CRWF community benefit fund and the cumulative community benefit fund, the community benefit fund contribution from the proposed development would represent an impact that would be expected to result in a perceptible difference from baseline economic conditions by >0.5% and <5%. Therefore, the magnitude of impact of the community benefit funding would be **Low** (beneficial).

### 13.7 Assessment of Effects

Based on the discussion of predicted impacts in **Section 13.6**, this section comments on the sensitivity of each receptor, the predicted magnitude of impact and subsequent significance of effect.

#### *Economic and Employment Effects*

##### Construction Phase Effects

During the construction phase of the proposed development, it is expected the net economic and employment impacts would be **Negligible** (Beneficial) on a receptor of **Medium** (Regional) sensitivity in the local and regional study areas. The baseline GVA is not expected to noticeably increase and thus, the overall level of effect is **Negligible** (Beneficial). This is **Not Significant**.

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<sup>27</sup> This is based on the per annum operational impacts predicted in the original CRWF Environmental Statement.

<sup>28</sup> Scottish Government (2019), Community Benefits from Onshore Renewable Energy Developments.

For Scotland as a whole, a **Negligible** (Beneficial) impact is predicted on a receptor of **High** (National) sensitivity, as the baseline GVA is not expected to be noticeably increased, leading to a level of effect of **Minor** (Beneficial). This is **Not Significant**.

#### Operational Phase Effects

In terms of the magnitude of net economic and employment impacts, it is expected that during the operational phase, in Caithness and Sutherland, and the Highlands, a **Negligible** (Beneficial) impact would arise on a receptor of **Medium** (Regional) sensitivity, leading to a level of effect of **Negligible** (Beneficial). This is **Not Significant**.

In Scotland as a whole, the predicted magnitude of impact is **Negligible** (Beneficial) on a receptor of **High** (National) sensitivity, leading to a level of effect of **Minor** (Beneficial). This is **Not Significant**.

In terms of community funding, a **Low** (Beneficial) impact is predicted for the proposed development community benefit fund, which is a **Low** (Local) sensitivity receptor, which would result in a **Moderate** effect, which is considered **Significant**.

### 13.8 Additional Mitigation

There are no additional mitigation measures proposed in terms of socio-economics, recreation and tourism effects as the effects have been predicted to be minor/negligible and would be not significant.

### 13.9 Residual Effects

As no additional mitigation is proposed, the residual effects are the same as those reported in **Section 13.7**.

### 13.10 Summary

Based on the installed capacity, the assessment of the proposed development's socio-economic, recreation and tourism impact has found that:

- During the construction phase, the proposed development could generate GVA worth a total of £229,847 in Caithness and Sutherland, £1.7 million in the Highlands and £5.1 million for Scotland. Over the construction phase, the proposed development could provide 3.9 jobs in Caithness and Sutherland, 23.6 jobs in the Highlands and up to 80.1 jobs in Scotland as a whole. This is in addition to the predicted contribution of CRWF, which was £20.7 million and 168 job years in the Highlands and £44.8 million and 422 job years for Scotland.
- Over the 40-year operational period, the proposed development could generate GVA worth a cumulative total of £2.2 million in Caithness and Sutherland, £4.7 million in the Highlands and £6.9 million for Scotland. Over the operational phase, the proposed development could provide 0.8 jobs in Caithness and Sutherland, 1.5 jobs in the Highlands and up to 2.4 jobs in Scotland as a whole. This is in addition to the predicted annual contribution of CRWF, which was £2 million and 20 job years in the Highlands and £3.8 million and 41 job years for Scotland. Over the consented 25 years GVA from

CRWF could total £50 million in the Highlands (£80 million over 40 years if the S36C application is consented) and £94 million for Scotland as a whole (£152 million over 40 years if the S36C application is consented)<sup>29</sup>.

- The applicant has committed to £462,000 of community funding per annum for the existing CRWF, which would be more than £9 million (plus uplifts for inflation) over the consented 25 year operational life. If the S36C application is consented then overall the community funding could exceed £14.5 million over the 40-year operational life. The proposed development, as a 12.6MW extension to the existing CRWF would add a further £63,000 per annum to this amount, which would be an additional £2.52 million over the 40-year operational life.;
- No significant effects of the proposed development on recreational and tourism receptors are predicted.

### 13.11 References

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<sup>29</sup> This is based on the per annum operational impacts predicted in the original CRWF Environmental Statement.



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