

Pentland floating offshore wind farm

Volume 2: Offshore EIAR

Chapter 19: Socio-economics, Recreation
and Tourism



OFFSHORE EIAR (VOLUME 2): MAIN REPORT

CHAPTER 19: SOCIO-ECONOMICS, RECREATION, AND TOURISM

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GLOSSARY OF PROJECT TERMS

Key Terms	Definition
Dounreay Tri Floating Wind Demonstration Project (the 'Dounreay Tri Project')	The 2017 consented project that was previously owned by Dounreay Tri Limited (in administration) and acquired by Highland Wind Limited (HWL) in 2020. The Dounreay Tri Project consent was for two demonstrator floating Wind Turbine Generators (WTGs) with a marine licence that overlaps with the Offshore Development, as defined. The offshore components of the Dounreay Tri Project consent are no longer being implemented.
Highland Wind Limited	The Developer of the Project (defined below) and the Applicant for the associated consents and licences.
Landfall	The point where the Offshore Export Cable(s) from the PFOWF Array Area, as defined, will be brought ashore.
Offshore Export Cable(s)	The cable(s) that transmits electricity produced by the WTGs to landfall.
Offshore Export Cable Corridor (OECC)	The area within which the Offshore Export Cable(s) will be located.
Offshore Site	The area encompassing the PFOWF Array Area and OECC, as defined.
Onshore Site	The area encompassing the PFOWF Onshore Transmission Infrastructure, as defined.
Pentland Floating Offshore Wind Farm (PFOWF) Array and Offshore Export Cable(s) (the 'Offshore Development')	All offshore components of the Project (WTGs, inter-array and offshore export cables, floating substructures, and all other associated offshore infrastructure) required during operation of the Project, for which HWL are seeking consent. The Offshore Development is the focus of this Environmental Impact Assessment Report.
PFOWF Array	All WTGs, inter-array cables, mooring lines, floating sub-structures and supporting subsea infrastructure within the PFOWF Array Area, as defined, excluding the Offshore Export Cable(s).
PFOWF Array Area	The area where the WTGs will be located within the Offshore Site, as defined.
PFOWF Onshore Transmission Infrastructure (the 'Onshore Development')	All onshore components of the Project, including horizontal directional drilling, onshore cables (i.e. those above mean low water springs), transition joint bay, cable joint bays, substation, construction compound, and access (and all other associated infrastructure) across all project phases from development to decommissioning, for which HWL are seeking consent from The Highland Council.
PFOWF Project (the 'Project')	The combined Offshore Development and Onshore Development, as defined.

ACRONYMS AND ABBREVIATIONS

BRES	Business Register and Employment Survey
CaSPlan	Caithness and Sutherland Local Development Plan
CES	Crown Estate Scotland
CIP	Copenhagen Infrastructure Partners
CLO	Community Liaison Officer
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ESG	Environmental, Social and Governance
FTE	Full-time Equivalent
GB	Great Britain
GP	General Practitioner
GVA	Gross Value Added
HNDA	Housing Need and Demand Assessment
HWL	Highland Wind Limited
km	kilometre
LQ	Location Quotient
MS	Marine Scotland
NMP	National Marine Plan
NPF3	Scotland's Third National Planning Framework
NPF4	Scotland 2045: Fourth National Planning Framework (draft)
NVQ	National Vocational Qualification
O&M	Operation and Maintenance
OECC	Offshore Export Cable Corridor
ONS	Office for National Statistics
PFOWF	Pentland Floating Offshore Wind Farm
RSPB	Royal Society for the Protection of Birds
SIC	Standard Industrial Classification
SPP	Scottish Planning Policy
STEAM	Scarborough Tourism Economic Activity Monitor
STEM	Science, Technology, Engineering and Mathematics
THC	The Highland Council
UHI	University of Highlands and Islands
UNESCO	United Nations Educational, Scientific and Cultural Organization
WTG	Wind Turbine Generators

19 SOCIO-ECONOMICS, RECREATION, AND TOURISM

19.1 Introduction

The potential effects of the Project during construction, operation and maintenance, and decommissioning on Socio-economics, Recreation, and Tourism are assessed in this chapter. This chapter also includes a review of the potential cumulative impacts with other relevant projects.

This chapter has been produced by economists employed by Development Economics Limited, with specialist economic impact modelling inputs provided by the Economics Intelligence Unit of the University of the Highlands and Islands (UHI). Further competency details of the Project Team, including lead authors for each chapter, are provided in Volume 3: Appendix 1.1: Details of the Project Team of this Offshore Environmental Impact Assessment Report (Offshore EIAR).

The Socio-economics, Recreation, and Tourism chapter includes consideration of effects that occur from both the Offshore Development and Onshore Development. This is principally for two reasons:

- > Separating important aspects of expected project expenditures (such as project design, development, management, and various aspects of project construction and installation) into onshore and offshore categories is not meaningful as any attempt to split out and separately assess the impacts on Socio-economics, Recreation, and Tourism would present an unclear outcome as these aspects are intrinsically linked. Therefore, the assessment in this chapter has been conducted on a 'whole project' basis; and
- > The receptors that have the potential to experience effects relevant to this topic – such as businesses, workers, and other members of the workforce, households, and visitors – are either largely or wholly based onshore. Consideration of the scale and duration of potential effects, therefore, needs to account for, *inter alia*, the onshore spatial location of these receptors in connection to the Offshore Site and the onshore places where business and socio-economic activities relating to the Project are likely to occur. This approach also justifies the use of a hierarchy of spatial areas for the assessment, as explained in Section 19.3.

Table 19.1 below provides a list of all the supporting studies which relate to Socio-economics, Recreation, and Tourism impact assessment. All supporting studies are appended to this report.

Table 19.1 Supporting studies – Socio-economics, Recreation, and Tourism

Details of Study	Location of Supporting Studies
Socio-economics, Recreation and Tourism – Supply Chain Study Assessment (quantification) Methodology	Offshore EIAR (Volume 3): Appendix 19.1: Socio-economics Assessment (Quantification) Methodology

19.2 Legislation, Policy, and Guidance

The relevant legislation, policy, and guidance relating to Socio-economic, Recreation, and Tourism consulted in preparing this chapter are summarised below.

19.2.1 United Kingdom Government Policy

Support for the offshore renewables sector was a component of the original Industrial Strategy published by the United Kingdom (UK) Government in 2017, and it is also prominent in the successor strategy Build Back Better: The Plan for Growth published in 2021. The Plan for Growth identifies opportunities for up to 60,000 jobs across the UK in the offshore renewables sector, thereby building upon the targets set out in the Government's Ten Point Plan for a Green Industrial Revolution announced in 2020.

Also in 2020, the UK Government launched the Offshore Wind Sector Deal, which included several initiatives and targets that sought to support and stimulate additional investment in the offshore renewable energy sector, such as:

- > Providing developers and investors with greater certainty over the scale and timing of future Contracts for Difference allocation rounds;

- > Measures to support additional investment in expanding and strengthening the UK supply chain for renewables;
- > Support for additional R&D and other sources of innovation, including the adoption of floating wind farm technologies;
- > Measures to increase the supply of an appropriately skilled workforce;
- > Targets for increased representation of women and other under-represented groups in the offshore renewable industry workforce; and
- > A target of 60% UK content in offshore schemes to be achieved by 2030.

The Offshore Wind Sector Deal includes several references to the opportunities offered by floating offshore wind farm technology and states that Government will work with industry and stakeholders to consider the best way to bring forward this technology to contribute to sector-wide targets.

19.2.2 Scottish Government Policy

The Scottish Planning Policy (SPP) (Scottish Government, 2014) and Scotland's Third National Planning Framework (NPF3) (Scottish Government, 2014) both share a single vision for Scotland to achieve sustainable, distributable, and fair growth without comprising the quality of the environment, place, and life.

A core value of SPP is for it to play a role in facilitating sustainable economic growth, particularly the creation of new jobs and the strengthening of economic capacity and resilience of communities. Within SPP there are four planning outcomes which support the vision, of which two have a direct bearing on the Socio-economics, Recreation, and Tourism assessment topic:

- > **Outcome 1:** A successful, sustainable place – supporting sustainable economic growth and regeneration, and the creation of well-designed and sustainable places; and
- > **Outcome 2:** A low-carbon place – reducing carbon emissions and adapting to climate change.

NPF3 recognises opportunities for the Scottish economy to become a world leader in low carbon energy generation, with important potential benefits in terms of economic growth and support for local communities and services. Moreover, NPF3 identifies Pentland Firth as one of six 'Energy hubs' (i.e. areas for coordinated action) in Scotland.

Scotland's National Marine Plan (NMP) (Scottish Government, 2015) recognises that sustainable development and use of the marine environment can provide multiple economic benefits, including growth opportunities, employment, skills development, investment, and trade. Social benefits associated with sustainable development of the marine environment include opportunities for wealth generation and prosperity and improved quality of life.

The NMP identifies that Scotland's offshore waters provide an opportunity for the further development of an internationally important renewable energy industry. However, the NMP also recognises that the growth of the sector will require consideration of potential interactions with other industries, including Commercial Fisheries, Shipping, and Oil & Gas extraction. There is also recognition of potential interactions with Recreation & Tourism, although the NMP does state that the majority of these activities occur within 5 kilometres (km) (3 nautical miles) of the coastline.

Current economic development strategies, policies and statements produced by the Scottish Government that are most relevant to the development of the renewable energy sector in Scotland include the following:

- > **Energy Strategy (2017):** Emphasizes the development of the renewable energy sector to generate socio-economic benefits for Scotland. The Strategy includes a specific commitment to growing and supporting the further development of the offshore wind sector in Scotland, emphasising both the development of a stronger industrial supply chain and a highly skilled and competitive workforce;

- > Climate Change Plan Update (2020): Further emphasises the important role that Ministers place on offshore renewable energy as a source of high-quality green jobs, with additional emphasis on the role that the sector can play in harnessing the industrial and workforce skills already available in the declining offshore oil and gas sector;
- > Climate Emergency Skills Action Plan (2020): Identifies renewable energy as being key to the future creation of additional high quality, green jobs for Scotland and sets out priorities for public policy actions and investment to assist people to access these employment opportunities;
- > Sectoral Marine Plan for Offshore Wind Energy in Scotland (2020) and the Scotland Offshore Wind Policy Statement (2020). These two documents, published simultaneously in October 2020, provide a strategic spatial framework for the development of the offshore renewables sector in Scotland. They also set out indicative targets and ambitions for the development of the sector. The documents also identify the emergence of the floating offshore wind sector and recognise the likely future importance of this segment of the offshore renewables industry in terms of growth potential, including exporting opportunities for Scotland's future supply chain capabilities relevant to this sector;
- > Scotland's Energy Strategy Position Statement (2021): Provided an update and reinforcement of the objectives set out in the 2017 Energy Strategy. The Statement indicates that there is frustration amongst the Scottish Government and key stakeholders that the renewable energy supply chain in Scotland has been missing out on offshore wind manufacturing contracts and identifies several actions being taken by the Scottish Government and industry to help address this issue; and
- > Scotland's National Strategy for Economic Transformation (March 2022): Emphasises the role that the offshore renewables sector is expected to play in helping drive future prosperity and sustainability for the Scottish economy. The strategy highlights in particular the potential for substantial supply chain benefits and opportunities for new high-value jobs, as well as replacing jobs expected to be lost in the fossil fuels sector. The strategy also highlights the role that the offshore renewables sector is expected to play in supporting the objectives of the Regional Economic Partnership operating in the Highland and Islands region.

In addition, recent statements published by the Scottish Government, such as its response to the Just Transition Commission report (2021), further emphasise that the growth of the offshore renewable energy supply chain and workforce is seen as an important part of the strategy to replace thousands of jobs that have already been lost (and are expected to continue to be lost) due to the decline of the offshore oil and gas sector in Scotland.

The offshore renewables sector is also prominent in Scotland 2045: The Fourth National Planning Framework (NPF4), a consultation draft of which was published in November 2021. In particular, NPF4 highlights:

- > The opportunity that the development of offshore renewables provides for coastal and island communities to strengthen local economies, successfully regenerate, and secure long-term sustainability;
- > That greener energy choices such as offshore renewables have a natural home in coastal Scotland and will be at the heart of the future well-being of the economy; and
- > That offshore renewables are an important part of Scotland's energy transition, and there will be a need to align terrestrial and marine development to maximise the potential of this sector.

19.2.3 Local Policy

The Adopted Caithness and Sutherland Local Development Plan (2018) identifies the positive employment and economic growth potential offered by the expansion of the offshore renewables sector. For example, the Local Development Plan (CaSPlan) seeks to maximise these opportunities by supporting the development of ports and harbours and other infrastructure. It is also stated that CaSPlan seeks to support and enable the Energy Hub Area for Co-ordinated Action as identified in NPF3 for Pentland Firth and Orkney Waters.

Furthermore, CaSPlan seeks to maximise opportunities from the offshore renewables sector by promoting an Area for Energy Business Expansion in the north-east. According to CaSPlan:

“This includes employment-generating uses to service the sector, through support for harbours, allocation of business and industrial land and a flexible approach to considering the needs of emergent sectors and strategic infrastructure proposals.” (Page 8).

The Project has the potential to contribute to delivering the vision and objectives set out in the SPP, NPF3, draft NPF4, and the other economic strategy and policy statements set out above. If consented and developed as envisaged by Highland Wind Limited (HWL), the Project may generate both economic growth and resilience benefits, and support climate change mitigation and transition directly.

The Project may contribute to further progress toward technological innovation in offshore renewables that could assist future offshore developments at other sites in Scottish waters. This is because the Project offers the following:

- > The opportunity to test and implement various innovations and introduce new technologies in various areas, including floating substructure technologies, mooring technologies, anchoring technologies, and technologies for dynamic inter-array cables; and
- > The opportunity for the establishment or strengthening of the Scottish and UK supply chains for floating wind farm technologies, thereby helping to realise the economic, sustainability and other goals set for offshore renewables by both the Scottish Government and the UK Government.

Innovation and further development of floating offshore wind farm technology are relevant as larger-scale floating wind farms are expected to comprise an important component of Scotland's portfolio of offshore electricity generating assets. For example, in the ScotWind 1 leasing round, several projects are envisaged to utilise floating wind farm technologies, including sites with a capacity of up to almost 3,000 megawatts. The prospect of successful implementation of such projects and the capturing of a high proportion of the supply chain opportunities for Scotland would be increased via delivery of smaller projects such as the Project, which may be a 'stepping stone' towards larger floating wind farm projects located further offshore.

19.3 Scoping and Consultation

Scoping and consultation have been ongoing throughout the Environmental Impact Assessment (EIA) process and have played an important part in ensuring the scope of the baseline characterisation and impact assessment are appropriate with respect to the Offshore Development and the requirements of the regulators and their advisors.

Relevant comments from the EIA Scoping Opinion and the Scoping Opinion Addendum specific to Socio-economics, Recreation, and Tourism provided by Marine Scotland Licensing Operations Team (MS-LOT), Marine Scotland (MS) – Marine Analytical Unit and The Highland Council (THC) are summarised in Table 19.2 below, which also provides a high-level response on how these comments have been addressed within the EIAR.

Table 19.2 Summary of consultation responses specific to Socio-economics, Recreation, and Tourism

Consultee	Comment / Issue Raised	Project Approach and Section ID
Scoping Opinion		
MS-LOT	<i>It is unclear in the Scoping Report how the Onshore Study Area has been considered as there is only reference to the Offshore Study Area within section 9.8. The Scottish Ministers agree that the socio-economic impacts from onshore and offshore activities should be considered together however, highlight that this must be clear in the EIA Report.</i>	The response was noted, accepted, and has been incorporated into the assessment.
	<i>The Scottish Ministers advise that the assessment of potential social and economic impacts is too narrow and must be widened.</i>	The assessment included a detailed quantified assessment for indicators

Consultee	Comment / Issue Raised	Project Approach and Section ID
	<i>MAU are in agreement and expect to see a comprehensive assessment of the impacts included within the EIA Report. MAU further provide specific considerations for potential economic impacts such as supply chain impacts, employment, gross value added, displacement, substitution and additionality. The Scottish Ministers advise that a full socio-economic assessment must be included in the EIA Report and direct the Developer to the MAU advice for guidance on this. In addition, the Scottish Ministers advise that impacts at local, regional and national levels must be clearly identified in the EIA Report. Both potential positive and negative impacts must also be assessed and there must be sufficient evidence provided if the Proposed Development is assessed to only have a positive impact on the economy. The Scottish Ministers also direct the Developer to the SFF representation which highlights that Table 9.7 in the Scoping Report is very positive regarding tourism and socio-economic and requests this is assessed in the future to verify the assumptions.</i>	such as employment and GVA for a hierarchy of spatial levels, including Caithness and Highland. It has also covered aspects such as tourism, recreation and social issues such as housing, healthcare, education and local amenities, including outdoor recreation. Negative aspects such as potential for displacement and other types of negative effects on other industries (such as tourism) were also included in the assessment.
	<i>With regards to section 9.8.8 of the Scoping Report, the Developer references other sections in the Scoping Report which address certain impacts identified. The Scottish Ministers recommend that these matters should be addressed within the socio-economics, recreation and tourism chapter to ensure they are appropriately considered.</i>	Interactions with other topics such as SLVIA and Commercial Fisheries were considered within the socio-economics chapter, as presented in Section 19.10.
	<i>The Scottish Ministers recommend that consideration and identification of potential mitigation measures are addressed through the socio-economic assessment process within the EIA Report. The Scottish Ministers advise that stakeholders and impacted communities are involved in the process of identifying impacts and agreeing on mitigation measures. The Scottish Ministers recommend a description of any proposed efforts to monitor social and economic impacts and to mitigate any negative impacts must be included in the EIA Report. The Scottish Ministers further direct the Developer to the Highland Council advice that any mitigation proposed must also address impacts on the regional and local economy.</i>	Approaches to mitigating potential negative effects are described at various places in the chapter (e.g. in Table 19.18 and Table 19.21 and in Section 19.9.1). As described in Section 19.5.5, progress towards expected beneficial projects effects (such as direct and indirect employment, local procurement, etc.) will be monitored as part of the information sharing arrangements agreed with Crown Estate Scotland (CES). A Community Liaison Officer (CLO) will be appointed ahead of construction commencing: the CLO will be the interface between the project with the local community. Monitoring and reporting on any concerns raised will be part of the CLO's role which will be carried out in line with the applicant's internal Environmental, Social and Governance (ESG) Standards.
	<i>The Scottish Ministers recommend further discussion and agreement with the MAU on the description of methods, data collection and the overall approach to the socio-economic impact assessment including how stakeholder engagement will be carried out and how relevant groups will be represented.</i>	An attempt was made to commence dialogue with MAU after the receipt of the response from this consultee. MAU was contacted directly but the topic author was informed by email that a meeting or consultation could not be arranged due to resource constraints.

Consultee	Comment / Issue Raised	Project Approach and Section ID
MS – Marine Analytical Unit	<i>Overall, the assessment of potential social impacts is quite narrow, and in the description of the methods that will be used for assessing these impacts there is an overreliance on existing datasets, some of which are quite old. For potential economic impacts, it is recommended that the scope is widened to include economic considerations such as supply chain impacts, employment, GVA, and other considerations such as displacement, substitution and additionality. In the following paragraphs specific issues are described before making the recommendation that a full Socio-Economic Impact Assessment be scoped into the EIA, and describing what this should include.</i>	The approach to the assessment was expanded to provide quantification of employment & GVA. The potential for impacts on social and community indicators such as demand for housing, healthcare, education, and other services, and outdoor recreation were also factored into the assessment.
	Range of social and economic impacts considered <i>The range of social and economic impacts considered in this report is very narrow. We would expect to see a comprehensive assessment of the potential social and economic impacts that might occur as a result of a development. An example of potential impacts can be seen in Table 1.</i>	The approach to the assessment was expanded to provide quantification of employment & GVA. The potential for impacts on social and community indicators such as demand for housing, healthcare, education, and other services, and outdoor recreation were also factored into the assessment.
	<i>The impact on the local economy is assumed to be positive. Both potential positive and negative impacts should be assessed. If the development is expected to have a purely positive impact on the local economy, we would expect more evidence to support such a claim.</i>	The approach to the assessment was expanded to provide quantification of employment & GVA, including potential negative effects caused by displacement, competition for labour supplies and other resources, etc.
	<i>In section 9.8.8 'Identification of potential impacts', there is a description of the social impacts which might be included in other sections. The report states "Section 8.6: Other Users of the Marine Environment where specific recreation pursuits are discussed out with this section." There is, however, no mention of specific recreation pursuits in this section.</i> <i>Although direct impacts on tourism and recreation are scoped in, there is no mention in this section, or the section on cultural heritage, of the potential impact on local people and the way they enjoy the outdoors.</i>	The assessment was designed to consider the potential effects of the Project on demand for recreational assets and other local services. Stakeholder consultations and the community engagement process was used to identify the extent to which local communities perceive the implementation of the Project may create or exacerbate social problems, create additional community stress, or generate positive or negative distributional effects.
	Description of methods and data to be used in EIA <i>Chapter 6, outlines the approach to scoping and EIA but does not really describe the proposed approach to carry out the EIA. Chapter 9, specifically section 9.8 includes brief descriptions of the data that may be used to assess social and economic impacts. There are no plans to collect any primary data and the socio-economic impact assessment will rely entirely on desk-based assessment of literature and existing datasets. Many of the sources cited are 5+ years old. We would recommend the collection of primary data through fieldwork using methods such as workshops, surveys or interviews. These methods will allow for a more accurate assessment of the potential social and economic impacts, and their magnitude/local importance. We</i>	The approach to the assessment was modified to include up-to-date baseline data from a wide range of sources. The assessment of potential impacts on communities utilised evidence generated from workshop events and other types of consultation, including surveys. The baseline section of this Chapter (Section 19.4) includes a comprehensive assessment of up-to-date data across a range of indicators. However, in some cases (such as tourism) it was considered

Consultee	Comment / Issue Raised	Project Approach and Section ID
	<i>would expect to see descriptions of methods, data collection, and the overall approach.</i>	more appropriate to use slightly older data (from 2019) to provide a more accurate assessment of pre-COVID 19 baseline conditions. Evidence of potential effects on communities and local businesses incorporate evidence was gathered through stakeholder consultations and during the community engagement process.
	<p>Mitigation and monitoring</p> <p><i>Very little, if any mention is made of mitigating or monitoring impacts. While we understand that this is a scoping report, and not an impact assessment, we would appreciate some description of efforts to monitor social and economic impacts and to mitigate any negative impacts. We recommend that stakeholders and impacted communities are involved in the process of identifying impacts and agreeing upon mitigation measures.</i></p>	The assessment included information regarding the approach to mitigation measures and monitoring proposals. With respect to mitigation measures, in some cases dialogue with industry networks, training bodies and other collaborators is still underway, but the assessment in this Chapter outlines agreements that have been reached so far. As described in Section 19.5.5 progress towards expected beneficial projects effects (such as direct and indirect employment, local procurement, etc.) will be monitored as part of the information sharing arrangements agreed with CES. A CLO will be appointed ahead of construction commencing: the CLO will be interface between the project with the local community. Monitoring and reporting on any concerns raised will be part of the CLO's role and will also be carried out in line with the applicant's internal ESG Standards.
	<p>Stakeholder and community engagement</p> <p><i>Chapter 4 also describes stakeholder engagement. This appears to be limited to the preapplication engagement efforts. There is very little detail about plans to engage with stakeholders in the future, and no description of participatory engagement with communities. We would recommend continuous engagement with stakeholders and local communities. We would also like more detail about how this engagement will be carried out, who will be included, and how the applicants will ensure that all relevant groups are represented.</i></p>	As well as Pre-application Consultation, the applicant is committed to appointing a CLO for the Project and is committed to establishing governance structures to provide mechanisms for ongoing dialogue and feedback. Details of these measures will be set out in the Construction Environmental Management Plan (CEMP) for the Project.
	<p>Recommendation for full Socio-Economic Impact Assessment to be scoped in</p> <p><i>We recommend that a full Socio-Economic Impact Assessment be scoped into the Environmental Impact Assessment. Marine Scotland is producing guidance on how to carry out SIA for offshore wind farms and, as this is not yet complete, in this section we will outline the main principles that should underpin the SIA for this development. In the absence of Marine Scotland's</i></p>	A full socio-economic impact assessment has been provided as part of the assessment (i.e., Chapter 19).

Consultee	Comment / Issue Raised	Project Approach and Section ID
	<p>guidance, John Glasson and his team at Impact Assessment Unit (IAU), Oxford Brookes University have produced Guidance on assessing the socio-economic impacts of offshore wind farms (OWFs). This guidance aligns with the forthcoming work from Marine Scotland and will provide suitable detail to accompany the points set out below.</p>	
	<p>Participatory approach</p> <p>Creating participatory processes and a deliberative space to facilitate community discussions about desired futures, the acceptability of likely negative impacts and proposed benefits, and community input into the SIA process.</p> <ul style="list-style-type: none"> - Assess community capacity to engage – capacity building may be necessary - Appoint Community Liaison Officer(s) for each affected community - Set up governance structures so that communities feel they can voice opinions and be listened to - Begin community engagement as soon as possible, brief communities on project with as much detail as possible so that they can prepare 	<p>Details of mechanisms to facilitate ongoing engagement with, and feedback from, communities during implementation will be set out in the CEMP for the Project, rather than in this Chapter.</p>
	<p>Baseline</p> <p>Gain a good understanding of the communities and stakeholders likely to be affected by the project (i.e. profiling) including their needs and aspirations and any key social issues that may arise as a result of the project.</p> <ul style="list-style-type: none"> - Develop social and economic profile of the area including history, culture and context - Engage with community to learn of any other important features/indicators to include in baseline. There may be useful local datasets - Analysis may draw on a combination of existing datasets and primary data 	<p>Various information was gathered during the stakeholder and community engagement process that augmented information available from top-down sources of data and statistics. This included information on healthcare and education provision, recreation and tourism assets and facilities, public transportation and other local services.</p>
	<p>Prediction</p> <p>Forecasting the social changes that may result from the project and the impacts these are likely to have on different groups of people. A list of potential socio-economic impacts can be seen in Table 1. Many of these impacts can be considered from a social and economic perspective. In the following sections we describe in more detail how this could be done.</p> <ul style="list-style-type: none"> - Identify potential/anticipated social impacts - Identify suitable method for predicting impacts - Collect necessary evidence to conduct analysis - Engage with community to check predictions and assign significance to predicted impacts - Impact prediction should include 	<p>The community engagement and consultation process did not identify any concerns about social effects, other than responses linked to impacts on visual impact and tourism. These aspects have been considered within the Chapter. Aspects of the potential interaction between the Project and cultural heritage have been assessed in Chapter 17: Marine Archaeology and Cultural Heritage.</p> <p>The Glasson guidance has been used to develop the approach to assessment set out in Section 19.5.</p>

Consultee	Comment / Issue Raised	Project Approach and Section ID
	<p>... Assessment of different phases of the project (development, construction, operation & maintenance, decommissioning) and phases within phases (early construction, peak construction)</p> <p>... Consideration of transition between phases</p> <p>Glasson J (2017a) "Socio-economic impacts 2: Overview and economic impacts" in Therivel R and Wood G (eds.), <i>Methods of Environmental and Social Impact Assessment</i>, Abingdon: Routledge</p>	
	<p>Mitigation and enhancement</p> <p>Identifying ways of mitigating potential negative impacts and maximising positive opportunities.</p> <ul style="list-style-type: none"> - Engage with community to develop strategy for enhancing benefits and mitigating against impacts - This may involve Community Benefit Agreement (CBA) - Care should be taken to ensure that CBA and any associated funds should have accessible application procedures so that allocated funds can be used 	<p>Consultation regarding a Community Benefit Agreement is currently ongoing, with details of the approach and feedback received provided within the Pre-application Consultation Report for the Project, submitted as part of this application. However, these aspects are not included within the assessment in the Socio-economics, Recreation, and Tourism Chapter.</p>
	<p>Monitoring</p> <p>Developing a monitoring plan to track implementation, variations from mitigation actions, and unanticipated social changes, especially negative impacts.</p> <ul style="list-style-type: none"> - Develop management plan and monitoring strategy - Engage with community – especially with regard to both <ul style="list-style-type: none"> ... Community may have concerns that they particularly want to be monitored ... There may be local considerations regarding timing of monitoring and methods used e.g. access to internet for particular groups - Link management plan to governance structures so that community can continue to engage with the project 	<p>Approaches to mitigating potential negative effects were considered at various places in the chapter (e.g. in Tables 19.18 and 19.21 and in Section 19.9.1). As described in Section 19.5.5, progress towards expected beneficial projects effects (such as direct and indirect employment, local procurement, etc.) will be monitored as part of the information sharing arrangements agreed with CES. A CLO will be appointed ahead of construction commencing: the CLO will be the interface between the project with the local community. Monitoring and reporting on any concerns raised will be part of the CLO's role and will also be carried out in line with the applicant's internal ESG Standards.</p>
	<p>Specific considerations for economic impact assessment</p> <p>The detailed analysis of economic impacts should be followed by conclusions on the current supply chain and supply chain development trends in Scotland and the impact area. Impact areas assessed should include local, national (Scottish) and UK wide impact areas. While national and UK wide are defined boundaries, defining the immediate area will need to be clearly communicated in the impact assessment report. The <i>Additionality Guide</i> by Homes and Communities Agency (HCA) sets out the common geographical levels used in economic and social impact assessments. Further economic considerations that should be included in the socio-economic impact assessment report are:</p> <p>Displacement</p>	<p>A thorough assessment of supply chain effects has been included in the assessment for local, regional and national areas under both a Low and High case scenario.</p>

Consultee	Comment / Issue Raised	Project Approach and Section ID
	<i>Displacement effects arise when some of the project's benefits produce dis-benefits elsewhere in the local economy, i.e. jobs being moved from one location to another within the UK. Developers are expected to assess the impacts on affected livelihoods in the local project area, such as impacts on fisheries and tourism business as a result of the development.</i>	
	<p>Substitution</p> <p><i>Substitution impact can be viewed as within firm displacement and refers to the impact of businesses substituting one form of activity for a similar one. For instance, recruiting a jobless person to replace a current employee in order to take advantage of public sector assistance. These affects need to be considered before presenting the total economic impacts.</i></p>	A thorough assessment of potential substitution effects has been included in the assessment for local, regional and national areas under both a Low and High case scenario.
	<p>Additionality</p> <p><i>Defined as additional benefits of a development that would not have occurred had the development not taken place. The benefits are often expressed in terms of the increase in GVA and employment generated by the development. Primary factors to be considered in the calculation of Additionality include:</i></p> <p><i>Gross impacts, Leakages, Displacement, Deadweight loss, and Substitution. Please refer to HCA Additionality guide for detailed information.</i></p>	A thorough assessment of project additionality has been included in the quantified assessment for local, regional and national areas under both a Low and High case scenario.
	<p>Optimism bias, Risk Bias and Sensitivity Analysis</p> <p><i>Refer to Green Book for detailed definitions.</i></p> <p><i>(Green Book https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf)</i></p>	The approach to assessing risks has been handled through the development of alternative scenarios. The low case scenario assessed the minimum realistic level of impact, whilst the high case scenario is a more optimistic assessment that factors in the potential for further augmentation of supply chain capacity in the different spatial areas used in the assessment.
	<i>Where applicable any impacts related to the use of natural resources (depletion risks, resource use considerations, etc.) should be considered.</i>	Wind power is considered to be a renewable resource so this comment was not considered to be relevant to the assessment.
	<p><i>The EIA should be clear on the assumptions and methodologies applied at each stage of the assessment. The developers should be explicit in stating the following:</i></p> <ul style="list-style-type: none"> - Development's impact area - Low, medium and high scenario definitions - Assumed appraisal period and price base - Applied SIC codes, GVA to turnover and employment to GVA multipliers - Assumed Additionality factors - Applied economic multipliers (Type I and Type II) 	The approach and assumptions used in the assessment are outlined in Section 19.5, with further details set out in EIAR (Volume 3): Appendix 19.1 - Supply Chain Study (Quantification) Methodology.

Consultee	Comment / Issue Raised	Project Approach and Section ID
	<p><i>The following datasets/reports can be considered to inform the socio-economic impact assessment:</i></p> <p>1. Scotland's Marine Economic Statistics 2018 - https://www.gov.scot/publications/scotlands-marine-economic-statistics-2018/</p> <p>2. Scottish Marine Recreation & Tourism Survey 2015- http://marine.gov.scot/information/scottish-marine-recreation-tourism-survey-2015</p> <p>3. Annual Business Survey, ONS; http://www.ons.gov.uk/ons/rel/abs/annual-businesssurvey/index.html</p> <p>4. Additionality Guide Fourth Edition 2013, HCA; https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/378177/additionality_guide_2014_full.pdf</p>	<p>All the sources were considered, and the most up to date available data incorporated into the baseline in Section 19.4. The baseline incorporates ONS BRES data (rather than ONS ABS data) given that BRES data is available for local authorities and user defined areas (such as Caithness). The Additionality Guide was used to inform the assessment approach to aspects such as displacement.</p>
THC	<p><i>We consider that this should have its own chapter in the EIAR to ensure that these matters are appropriately addressed and not lost in other assessments. The EIAR should estimate who may be affected by the development, in all or in part, which may required individual households to be identified, local communities or a wider socio economic groupings such as tourists & 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, construction, operation and decommissioning of the development.</i></p> <p><i>Estimations of who may be affected by the development, in all or in part, which may required individual households to be identified, local communities or a wider socio economic groupings such as tourists & tourist related businesses, recreational groups, economically active, etc. should be included. The application should include relevant economic information connected with the project, including the potential number of jobs, and economic activity associated with the procurement, construction, operation and decommissioning of the development. 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.</i></p>	<p>A separate and thorough socio-economic assessment for the Project has been carried out as part of the EIA (Chapter 19). The quantified estimates of impacts on jobs, GVA etc. have been provided for local, regional, and national spatial areas for each phase of the Project in Section 19.6.</p> <p>The approach to assessing the extent of any necessary mitigation is described in Section 19.5.</p>
Scoping Addendum Responses		
MS – Marine Analytical Unit	<p><i>MAU has reviewed the Highland Wind Limited – Pentland Floating Offshore Wind Farm – Dounreay, Caithness – Scoping "Addendum. We do not have any comments regarding potential socio-economic impacts associated with the changes outlined in the addendum. We are, therefore, sending a "nil return" response.</i></p>	<p>Noted, no response required.</p>

Consultee	Comment / Issue Raised	Project Approach and Section ID
Cumulative Projects List		
THC	<p><i>Having reviewed the submitted document, I would suggest the following projects are also included in the cumulative assessment:</i></p> <ul style="list-style-type: none"> > Spacehub Sutherland (in all chapters of the EIAR not just the SLVIA section) > Slickly Wind Farm (at appeal stage therefore is technically "in planning") > Hollandmey Wind Farm (application) > Cairnmorehill Wind Farm (previously refused but a revised proposal will be submitted prior to submission of the PFOWF) > Coglemoss Wind Farm (consented) > Wathegar Wind Farm 1 > Wathegar Wind Farm 2 > Camster Wind Farm > Camster Wind Farm 2 > Burn of Whilk Wind Farm > Golticlay Wind Farm > Boulfruich Wind Farm > Ackron Wind Farm (recently withdrawn) > Armadale Wind Farm (recently submitted) <p><i>I would also like to ensure that Strathy South Wind Farm listed in the table is the version submitted to Scottish Ministers in 2020 and granted consent in 2021.</i></p> <p><i>I would also suggest that all of the projects listed in table 3-7 are included in the Socio-economics assessment. The effects will likely vary depending on what stage the proposals are at.</i></p>	<p>All the projects listed have been taken into account within the cumulative effects assessment in Section 19.7, except for the withdrawal of Ackron Wind Farm and the submission of Armadale Wind Farm, which were made after the six-month cut-off date prior to submission for the inclusion of new cumulative projects.</p>

19.4 Baseline Characterisation

The baseline assessment for Socio-economics, Recreation, and Tourism focuses on the following indicators:

- > Demographic characteristics – size and structure of the population of the Study Area (defined in Section 19.4.1);
- > Labour supply potential within the Study Area;
- > Size and structure of the business base within the Study Area;
- > The relative importance of industries that have the potential for either positive or negative interactions with the Project, such as construction and tourism;
- > Economic output performance as measured by GVA;
- > Measures of community vitality (such as demand for housing and public services);
- > The volume and value of tourism activity in the Study Area; and
- > Availability and use of recreation activities within the Study Area.

19.4.1 Study Area

The selection of a Study Area for the impact assessment takes account of the spatial scale at which impacts on different receptors are likely to occur. This is likely to vary across different receptors and therefore requires a hierarchy of areas.

Firstly, given the importance of the offshore renewables sector to the UK and Scottish Government economic policies (see Section 19.2) it is relevant to consider the potential effects of the Project at the spatial level of both the UK and Scotland. Therefore, for certain indicators, it is relevant to present baseline information for the UK and Scotland. This information helps benchmark local baseline data.

Apart from the UK and Scotland, a more localised area is required for baselining purposes and for presenting estimates of the potential impact of the Project.

The principal Study Area for the assessment of Socio-economics, Recreation, and Tourism is THC local authority area. This area is linked to the likely selection of ports and harbours for use during the construction, operation and maintenance, and decommissioning phases of the Offshore Development, and the supply of content and services required for the Project. This area is also the intended location for the onshore electricity sub-station for the Project. It is therefore an area appropriate for consideration of potential socio-economic impacts – such as jobs and GVA – associated with the various phases of the Project.

As the spatial area covered by THC is very extensive, for some socio-economic indicators – such as labour market indicators, and also for tourism activity – it is also useful to consider socio-economic baseline data for smaller, more localised spatial areas.

Wherever possible, Caithness has been used in the baseline as the preferred spatial area for local data. However, different sources of information are used in the baseline assessment to provide a wider set of local indicators relevant to socio-economics, tourism, and recreation. These different sources use slightly different definitions of the local area: for example, some sources provide data for the Caithness area only, whilst others provide data for an area that includes both Caithness and Sutherland. The assessment utilises the most relevant and current local baseline data, even if the geographical area covered for a particular indicator is not identical to other indicators.

It is also the case that for some economic indicators – such as earnings and business start-ups – there are no data available for areas that are below local authority areas. Therefore, for such datasets, there are no available data that can be reported for Caithness.

For clarity, the hierarchy of areas is shown in Figure 19.1 in relation to the Offshore Site.

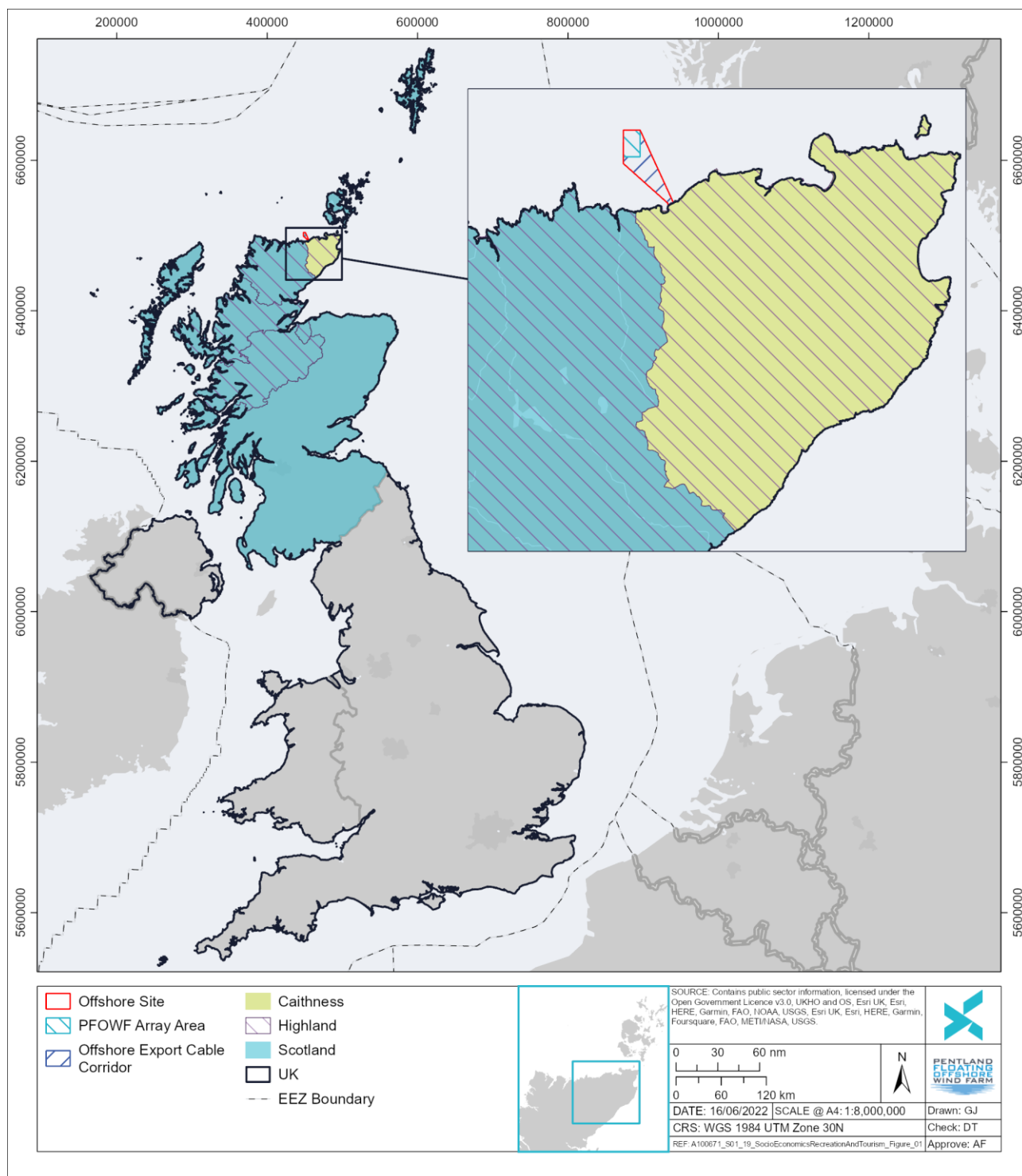


Figure 19.1 Study Area for Socio-economic, Recreation, and Tourism assessment

19.4.2 Sources of Information

The baseline assessment for the Socio-economics, Recreation, and Tourism assessment topic has been undertaken by a desk-based review of data and information from a range of sources. The primary data sources used in the preparation of the baseline characterisation include the Office for National Statistics (ONS) and are listed below in Table 19.3.

Table 19.3 Summary of key sources of information pertaining to Socio-economics, Recreation, and Tourism

Indicator	Source	Year	Author
Population size and structure	Mid-year population estimates	2020	ONS
Employment and economic activity	Annual population survey	2019	ONS
Economic output (GVA)	Regional Gross Value Added (balanced) by industry: local authorities	2019	ONS
Business demography	UK Business Counts: local authorities	2019	ONS
Employee jobs by industry	Business Register and Employment Survey	2019	ONS
Qualifications of resident population	Annual population survey	2020/21	ONS
Earnings	Annual Survey of Hours and Earnings	2019	ONS
Housing	Highland Housing Need and Demand Assessment	2021	THC
Education	School Rolls data	2021/22	THC
Healthcare	Number of patients per General Practitioner (GP)	2021	NHS Highland; GP websites
Tourism	Caithness & Sutherland STEAM data ⁱ Highland STEAM data	2019	THC

In addition to the indicators listed above, additional insights on local receptors have been obtained from engagement with stakeholders and from feedback received from the community consultation process established for the Project.

Consultation with stakeholders and the local communities has occurred with respect to the Project in accordance with the requirements of the Marine (Scotland) Act, 2010. Details of the approach to community consultation process and the associated findings from consultation are set out in the Pre-Application Consultation Report which accompanies this application.

Engagement with stakeholder organisations yielded useful information on current and likely future levels of demand for and provision for local services, such as schooling and healthcare. Feedback from community consultation events also yielded information, such as identification of concerns regarding the potential interaction of the project with economic activities such as tourism, and with local outdoor recreation assets such as coastal walks and beaches.

19.4.3 Site-specific Surveys

As is standard practice for assessments of this type, no site-specific surveys have been undertaken for the assessment of the Socio-economics, Recreation, and Tourism topic.

ⁱ STEAM is an acronym for the Scarborough Tourism Economic Activity Monitor. STEAM is a tourism impact monitoring and evaluation tool used by many Destination Management Organisations across the UK, including THC.

19.4.4 Baseline Description

19.4.4.1 Population

Based on the ONS mid-year population estimates data series, the estimated population of the Highland area (i.e. the area covered by THC local authority area) at the midpoint of 2020 was just over 235,400. Of these, just under 26,500 (11.3%) resided in Caithness.

Compared to the population of Scotland as a whole, the population of both the Highland area and Caithness areas is, on average, older: for example, 24.2% of the Caithness population is aged 65 years or older, compared to 19.3% for Scotland. The proportion of the population that is defined by the ONS as being of working age (16 to 64 years) is also lower in both Caithness (59.8%) and the Highland area (60.7%) compared to Scotland (63.9%).

The population of Caithness has declined by an estimated 11.3% since 2010. Across the Highland area as a whole over the same time period, the population has grown by 2.0%, but the age structure of the population has changed, with the proportion of the overall population that is of working age declining from 63.7% to 60.7% over this period. The equivalent change for Scotland was a fall from 65.8% to 63.9%.

Recent (2018-based) population projection scenarios for the Highland area for the period up to 2040 are presented in a draft *Housing Need and Demand Assessment 2020* report (HNDA) produced by THC in November 2021. The 'high migration' scenario developed in the report suggests little or no overall change in population from the 2020 to 2040 period, with other scenarios suggesting various levels of decline in the population of the area over the same period. The implication of this is that achieving a stable population in the Highland area over the next few decades requires high levels of migration into the area.

Demographic trends that underlie the population projections contained in the HNDA include the following:

- > A falling average birth rate;
- > Rising average life expectancy;
- > Out-migration from the area by younger people, either for the purpose of higher education or employment, or both; and
- > In-migration into the area by older age groups.

19.4.4.2 Labour market indicators

Labour market indicators are used to provide a measure of the potential spare capacity of labour markets at a national and local level. Table 19.4 provides current estimates of local labour market activity compared to benchmarks for Scotland and the UK using two widely used indicators:

- > Employment rate: The proportion of the working age population (16 to 64 years) that is in employment; and
- > Economic activity rate: The proportion of the working-age population that is either in employment or is not employed but is actively seeking and available for work.

Table 19.4 Key labour market indicators: employment rate and economic activity rate

Area	In Employment ('000s)	Employment rate (%)	Economically active ('000s)	Economic activity rate (%)
Caithness	9.8	73.7	10.0	75.2
Highland	110.1	78.7	113.6	81.2
Scotland	2,574.8	74.8	2,669.4	77.5
UK	31,266.4	75.6	32,556.7	78.8

Source: ONS (Jan 2019- Dec 2019) Annual population survey.

The employment rate in the Highland area (78.7%) is higher than for Scotland (74.8%), but this is not the case more locally in Caithness, where the employment rate is slightly lower (73.7%). A local employment rate that is significantly below the national average may be indicative of a deficit of employment opportunities in that local labour market.

The ONS Annual Population Survey provides information on the workplace qualifications held by working age populations. The data in Table 19.5 indicate that the proportion of the workforce with qualifications equivalent to National Vocational Qualification Level 4/4+ (i.e. National Vocational Qualification [NVQ] 4 or higher, which equates to degree level or higher) is just under 32% in Caithness and nearly 44% across the Highland area. The corresponding rate for Scotland is 45.3%.

Table 19.5 Qualifications of the working age population

Area	NVQ4/4+	NVQ 3	NVQ 2	NVQ1	Other qualifications	No qualifications
Caithness	31.6%	25.3%	10.7%	6.6%	10.6%	15.1%
Highland	43.7%	17.1%	18.1%	7.4%	6.8%	6.9%
Scotland	45.3%	15.5%	14.8%	7.9%	6.7%	9.8%
UK	40.2%	18.2%	17.2%	9.9%	6.6%	7.9%

Source: ONS (Jan 2019 – Dec 2019) Annual population survey.

19.4.4.3 Employment by industry

The structure of employment by industry can be used to assess the potential ability of businesses and workforces in an area to supply goods, business services, and labour supply services to a development or project.

The ONS Business Register and Employment Survey (BRES) (BRES, 2019) found that there were 104,000 employee jobs located in the Highland area, of which 64,000 (61.5%) were full-time. The proportion of employee jobs that are full-time in the Highland area is slightly lower than for Scotland (66.8%) and the UK (67.9%).

Table 19.6 below provides information on the principal sectoral sources of employee jobs in each Study Area (i.e. the sectors that individually contribute around 5% or more of the total in any of the areas). Note that the BRES survey data from ONS does not cover Northern Ireland, so the benchmark area used in this table is Great Britain (GB).

Table 19.6 Employees in employment by sector

Sector	Caithness (%)	Highland (%)	Scotland (%)	GB (%)
Manufacturing	4.5	5.3	6.7	8.0
Utilities	13.9	2.5	1.4	1.1
Wholesale & retail distribution	13.6	14.0	13.4	15.0
Transportation	3.6	4.4	4.2	4.9
Accommodation & food/drink services	11.4	14.0	8.2	7.6
Professional services	9.1	5.3	7.0	8.7
Business support services	2.3	5.3	8.1	8.8
Public administration	4.1	5.3	6.2	4.4
Education	8.2	7.9	8.2	8.6

Sector	Caithness (%)	Highland (%)	Scotland (%)	GB (%)
Health & social care	15.9	16.7	15.7	13.0
All other sectors	15.5	19.7	21.0	19.8

Source: ONS (2019) Business Register and Employment Survey

In the Caithness area, the Utilities sector (Energy production, Water and Waste) is much more important as a source of employment (nearly 14%) compared to the other areas included in the baseline assessment.

It is also noteworthy that the Accommodation & food/drink services sector in Caithness provides over 11% of employee jobs, which whilst being higher than the Scotland average (8.2%) is lower than the Highland area (14.0%): this is relevant because this broad sector can be used as a proxy to assess the relative importance of tourism activity in different areas. These data suggest that Accommodation & food/drink services in the Highland area is around 84% more important in relative terms compared to the GB average, whilst in the Caithness area it is around 50% more important.

19.4.4.3.1 Earnings

The ONS publish two alternative measures of average workforce earnings: one that is workplace-based, and one that is residence-based. Table 19.7 provides data for the two measures, benchmarked against the UK average. The data indicate that average weekly earnings for full-time working residents in Caithness are over 5% higher than the UK average, whereas average earnings for resident workers across the Highland area are more than 3% lower than for the UK as a whole.

Table 19.7 Average weekly earnings – full-time workers

Area	Workplace-based (£)	% of UK average	Residence-based (£)	% of UK average
Caithness	730.1	103.8%	742.2	105.5%
Highland	647.5	92.1%	512.6	89.7%
Scotland	668.9	95.1%	675.1	96.0%

Source: ONS (2019) Annual Survey of Hours and Earnings.

19.4.4.4 Businesses and entrepreneurship

Business density and business start-up rates can be used as a measure of the relative dynamism of regions and local areas.

According to the ONS Inter Departmental Business Register, in 2021 there were 10,775 business enterprises operating in the Highland area. To compare with other areas, a standard approach is to divide the number of enterprises by the working age population of the area. On this basis, in 2021 there were 75.4 enterprises per 1,000 working-age population in the Highland area, compared to 50.2 in Scotland and 66.1 across the UK.

Unfortunately, there are no equivalent data available for Caithness as the lowest spatial unit used by the ONS for these data is the local authority area.

The annual number of new businesses started in an area is an indicator of entrepreneurship. According to ONS data (ONS Business Demography data series), in 2020, there were 730 new enterprises started in the Highland area that were large enough to register for Value Added Tax and/or Pay As You Earn purposes. This represents 5.1 new start businesses per 1,000 working-age population, which was the same level as Scotland as a whole. The equivalent statistic for the UK was 8.5.

19.4.4.5 Economic output

The contribution of individual companies, specific industries, and sub-national areas to national economic output (Gross Domestic Product) is measured by GVA. The contribution of the Project to GVA is a key metric of the potential contribution of the Project to economic growth that is assessed later in this chapter.

According to the most recent data published by the ONS, Scotland contributed £144.25 billion in GVA to the UK economy in 2019, representing 7.4% of the UK totalⁱⁱ.

ONS also provide GVA data at a local authority level. According to the most recent data, the Highland area contributed £6.27 billion in GVA in 2019, accounting for 4.3% of Scotland's total.

The ONS does not publish GVA estimates for sub-local authority areas such as Caithness. However, an approximate estimate for GVA generated in Caithness can be inferred based on the proportionate contribution that Caithness makes to the overall Highlands employment base. Using this approach, the annual value of GVA contributed in 2019 is estimated to be worth £610 million.

In 2019, GVA per capita in the Highland area was about 92.3% of the UK average. This is slightly higher than the equivalent statistic for Scotland, where GVA per capita was 91.4% of the UK average. This statistic suggests that the Highland area hosts a higher proportion of high-value-added business activity than is the case across Scotland as a whole.

19.4.4.6 Supply chain representation

The potential responsiveness of an area's economy to a proposed major investment in renewable energy infrastructure can be gauged through an analysis of the relative importance of industries that have the potential to contribute to the supply chain. The relative representation of industries that are relevant to the supply chain for offshore renewables developments can be assessed through interrogation of ONS employment data (via the annual BRES data series) at a detailed sector-based level based on the Standard Industrial Classification categories used by the ONS.

Table 19.8 presents data on 2019 levels of employment in sub-sectors that are considered to be most relevant to the supply chain for offshore renewables developments. The sector definitions are based on the Standard Industrial Classifications (SIC) used by the ONS. Note: figures are given to the nearest 100 employees, so zeroes in Table 19.8 may not be real zeroes. It should be noted that GB data are used (rather than UK data) because comparable BRES data for Northern Ireland is not available from the ONS.

Table 19.8 Employment in sectors most relevant to the supply chain for offshore renewables developments

Sector (Standard Industrial Classifications, SIC code)	Highland employees ('000s)	Highland Location Quotient (vs GB)	Scotland employment ('000s)	Scotland Location Quotient (vs GB)
Fabricated metal products (25)	1	0.94	17	0.73
Electrical distribution & control apparatus (27.1)	<0.1	0.17	1	0.65
Wiring & wiring devices (27.3)	0	0.00	1	1.00
General purpose machinery (28.1)	<0.1	0.15	3.5	0.81
Electrical power generation & transmission (35.1)	0.9	2.54	13	1.68
Construction of utility projects (42.2)	<0.1	0.69	1	0.79
Other civil engineering projects (42.9)	0.7	1.55	13	1.31
Electrical and plumbing installation (43.2)	2	1.22	35	0.98

ⁱⁱ Regional gross value added (balanced) by industry; all Nomenclature of Territorial Unit for Statistics level regions, Table 1b (ONS, June 2021).

Sector (Standard Industrial Classifications, SIC code)	Highland employees ('000s)	Highland Location Quotient (vs GB)	Scotland employment ('000s)	Scotland Location Quotient (vs GB)
Accommodation services (55)	10	5.31	69	1.68
Food & beverage services (56)	6	0.87	137	0.91
Management consultancy (70.2)	0.4	0.22	23	0.57
Architectural & engineering activities (71)	2.5	1.15	66	1.39
Other professional & scientific services (74)	0.4	0.53	10	0.61

Source: ONS (2019) Business Register and Employment Survey

A sector with a Location Quotient (LQ) greater than 1.00 has an above-average level of representation compared to a benchmark area. For example, the LQ for Architectural and engineering activities in the Highland area compared to GB is 1.15, indicating that this sector has a level of representation 15% greater than the average across GB as a whole.

The data in Table 19.8 suggest that there are a number of sub-sectors that could potentially provide content to the Project and have a significantly higher level of representation in the Highland area compared to the situation across GB as a whole.

19.4.4.7 Tourism

The potential interaction between the Project and the local tourism activity is an important consideration for this assessment. The employment data presented earlier in this section suggests that accommodation and food & drink servicesⁱⁱⁱ activity is of greater relative importance as a source of employment for the local area compared to both Scotland and Great Britain.

Analysis from the 2019 STEAM economic impact report for Caithness (commissioned by THC) highlights that the area:

- > Receives over 917,000 visitors annually, of which 499,000 are staying visitors and 418,000 are day visitors; and
- > Generates annual visitor spending of just over £143 million.

Tourism activity in the area is estimated to provide over 2,820 full-time equivalent (FTE) direct jobs. When indirect and multiplier effects are accounted for, tourism activity is estimated to support total employment amounting to just over 3,300 FTE jobs in the area.

Caithness provides a range of tourist accommodations, ranging from 3-star and 4-star hotels and bed and breakfast establishments, self-catering accommodations of different types, and a number of caravan and camping sites. The 2019 STEAM report for Caithness commissioned by THC identifies that there is a total tourism accommodation capacity in Caithness amounting to 3,478 bedspaces, with 37% of this total being serviced accommodation and 63% non-serviced. The equivalent report for the Highland area (2020) identifies 75,211 bedspaces, with 34% serviced and 66% non-serviced.

Formal (i.e. admission charging) Tourism receptors in the area include the Castle and Gardens of Mey and Wolfburn and Old Pulteney distilleries.

Prominent historic landmarks in the area include Castle Sinclair Girnigoe, Caithness Brock Centre, and the Castle of Old Wick. Caithness also possesses a rich archaeological heritage with well-known sites including the Cnoc Freicedain chambered cairns, the Achavanich stones, the Grey Cairns of Camster, the Cairn of Get, and the Hill o' Many Stanes.

ⁱⁱⁱ Accommodation & food/accommodation and food & drink services is used here and throughout this chapter to be consistent with ONS terminology.

Caithness is included as part of the route of the increasingly popular North Coast 500, an 830-km (516-mile) circular route covering the north Highlands. This route extends along the north coast, and from parts of the route, elements of the Project (i.e. Wind Turbine Generators [WTGs] and substation) will be visible.

Informal tourism and recreation activities in the area include routes and other land used for walking, cycling, birdwatching, and other nature-based activities. The area hosts one long-distance path in the form of the North Highland Way, an approximately 241-km (150-mile) trail from Duncansby Head to Cape Wrath. There is also a network of adopted core paths that are utilised by both tourists and local residents, as follows:

- > Reay, Crosskirk and Westfield;
- > Thurso;
- > Castletown, Dunnet & Brough;
- > Dunnet Head, Barrock, Hill of Orlig & Bower;
- > Mey & Canisbay;
- > John O'Groats & Stroma;
- > Castle Sinclair Girnigoe, Ackergill & Watten; and
- > Wick.

There are several beaches in Caithness popular with both tourists and local residents for swimming, surfing, walking and other beach-based activities: these include Sandside Bay; Dunnet Bay; and Thurso Bay/Thurso East. The latter has been utilised on several occasions for international surfing competition events. Indeed, Thurso has a reputation as one of the best locations for surfing in Scotland and the UK.

Data from the Royal Yachting Association indicates that Pentland Firth is a moderately intensive area for recreational boating. They have one registered club within Caithness: Pentland Firth Yacht Club. There are several harbours used by recreational craft, including Wick Harbour, Keiss Harbour, and John O'Groats Harbour. Recent developments at Wick marina have improved the offer of facilities, and 80 fully serviced berths are offered. These marine recreation assets are utilised by both tourists and local residents.

Caithness is an important location for nature-based tourism, providing opportunities to view important breeding colonies of seabirds as well as other marine life including seals and whales. The area hosts an important Royal Society for the Protection of Birds (RSPB) reserve at Dunnet Head, and several commercial operators offer visitors the opportunity for water-based tours. These nature-based recreation assets are utilised by both tourists and local residents

The Flow Country – Europe's largest expanse of blanket bog – is an internationally important peatland and wetland area for which an application for UNESCO (United Nations Educational, Scientific and Cultural Organization) World Heritage status is currently being processed. The RSPB centre at Forsinard provides facilities and interpretation for tourists and visitors to this part of Caithness.

19.4.4.8 Health services

The Scoping Report response from MS – Marine Analytical Unit indicated that the potential for interaction between the Project and local demand for healthcare services is a potentially relevant consideration for this assessment.

Information regarding healthcare facilities within the local Caithness area has been obtained via engagement with NHS Highland and the websites of individual General Practitioner (GP) practices.

The Caithness area is served by three hospitals. The largest of these (Caithness General) is currently implementing an investment plan with funding from the Scottish Government, which includes the development of a new Outpatient Clinic.

Of the four GP practices operating in Caithness, the three operating in Thurso average between 1,320 and 1,550 patients per GP. A fourth GP practice in Wick is currently operating at 1,930 patients per GP.

19.4.4.9 Education

Guidance from MS indicates that the potential for interaction between the Project and local demand for education services is a potential consideration for this assessment.

A desk-based review has been undertaken of primary and secondary school provision in the local Caithness area, supplemented with a consultation with the Education and Learning Department of THC.

There are nine primary schools serving the Caithness area. The current school roll across the primary schools as a proportion of capacity ranges from 45% to 86%, with an average enrolment at 68% of capacity.

There are secondary schools at Thurso (71% capacity) and Wick (99%). Wick High School is the only school in the local area that is near capacity, with the local education authority expecting capacity to be reached by 2023. However, by 2031/32 the capacity constraint at Wick is expected to have eased, with the school expected to be operating at 90% of capacity by then.

There is also a secondary school at Bettyhill (Farr Secondary school) that potentially draws pupils from the westernmost part of Caithness.

19.4.4.10 Other public services

Guidance from MS indicates that the potential for interaction between the Project and local demand for other local services including childcare and public transport is a potential consideration for this assessment.

Various primary schools in the Caithness area also provide a nursery facility. A total of 18 registered childminders are also understood to provide services in the local area.

The principal bus route serving the area close to the Project is Route 73 – operated by Stagecoach – which in school term time runs three times daily (Mondays to Fridays) between Thurso-Reay. There is also a limited service (Route 273) between Reay and Dounreay, with an outward service on weekday mornings and a return in the evening.

19.4.4.11 Housing

Guidance from MS indicates that the potential for interaction between the Project and local demand for housing, including affordable housing, is a relevant consideration for this assessment.

A draft HNDA for THC's area of responsibility was published in November 2021. The report identifies some housing pressure across the Highland area, driven by population growth and an ageing population. However, housing pressures are recognised as varying considerably across the Highland area, with Caithness specifically identified as exhibiting low housing demand pressure.

The report identifies that over the 10-year period to 2028/29, a total of 9,038 households will require additional housing in the Highland area. Of this figure, the HNDA identifies that 385 (4.3%) are accounted for by the Caithness housing market area.

These figures relate to demand under a high migration scenario that has been selected as the principal scenario for local development planning purposes.

19.4.5 Summary of Baseline Environment

The principal features of the baseline environment that are relevant to the assessment of the potential impact of the Project on Socio-economics, Tourism and Recreation receptors are as follows:

- > The population of Caithness has been falling with the average age of inhabitants rising. The population of the Highland area has been growing slowly, but recent population projects commissioned by the Council indicate a potentially declining population over the period to 2040. This trend is likely to be linked to the lack of available employment opportunities locally, but young people may also be leaving the area to participate in further or higher education opportunities elsewhere in Scotland or the UK;
- > Employment and activity rates in Caithness are lower than for Scotland as a whole, whereas for the Highland area they tend to be higher than benchmark areas;
- > Average earnings levels in Caithness are higher than the averages across the Highland area and Scotland;

- > The energy supply sector is an important component of the Caithness economy. Although the Dounreay Nuclear Facility is undergoing decommissioning, this is a lengthy process that is expected to support employment in the area until at least the 2030s;
- > Accommodation and food & drink services is a comparatively important sector for direct employment for the Highland area economy (compared to Scotland), but this feature is less evident for the Caithness area. Nevertheless, according to STEAM data tourism activity is estimated to account for around 3,300 FTE jobs in Caithness. STEAM data from 2019 indicates that Caithness received around 917,000 visits per annum, and that visitor spending amounted to around £143 million annually;
- > Local outdoor amenities such as core paths, beaches, nature reserves, and marine recreation resources are potentially important tourism assets, as well as being potentially important recreation resources for local residents;
- > GVA per capita for the Highland area is slightly higher than for Scotland. Equivalent data are not available for Caithness;
- > Analysis of business and employment data indicates that there are various sub-sectors present in Caithness and the wider Highland area that have the potential to supply content to the Project;
- > Health and education services in the Caithness area appear to be operating within capacity. Population trends for the area indicate that demand pressures for these services are not likely to increase over the next two decades; and
- > Caithness has been identified as an area of low housing pressure by THC's draft HNDA (November 2021).

Potential receptors and impacts scoped into the assessment and impacts scoped out are provided in Section 19.5 along with justification.

19.4.6 Baseline Data Gaps and Uncertainties

The baseline data presented in this chapter is based on a review of evidence from national and local data sources. Consideration has been given to the potential impacts of the COVID-19 pandemic on the values of some socio-economic indicators, such as levels of employment and labour market performance. Where indicators are judged to be potentially affected by the disruptive effects of the COVID-19 pandemic, a decision has been taken to utilise pre-pandemic (e.g., 2019) levels for these indicators rather than the most up-to-date data that may be available. The indicators affected by this decision are as follows:

- > Labour market capacity indicators – Employment rate and Economic activity rate;
- > Qualifications of the working age population (NVQs);
- > Employment by industry;
- > Earnings levels; and
- > Location quotients.

19.5 Impact Assessment Methodology

This section describes the approach to the assessment of potential socio-economic effects associated with the construction, operation and maintenance, and decommissioning phases of the Project on Socio-economic, Recreation, and Tourism receptors.

19.5.1 Impacts Requiring Assessment

This assessment covers all impacts identified through the scoping process, as well as any further potential impacts that have been highlighted as the EIA has progressed. It should be noted that impacts are not necessarily relevant to all stages of the Project.

Table 19.9 below indicates all of the impacts assessed with regard to Socio-economics, Recreation, and Tourism and indicates the project development stages to which they relate. The potential cumulative impacts are discussed in Section 19.7.

Table 19.9 Impacts requiring assessment

Impact	Description
Construction	
Construction activities leading to an effect on employment	<p>The Project would be expected to require a workforce to construct and install infrastructure and apparatus associated with the wind farm. A proportion of the workforce that would need to be recruited to undertake the construction phase of the Project would be expected to be drawn from local, regional, and national labour markets, including employees of small- and medium-sized enterprises.</p> <p>There would also be a variety of skills and expertise needed, including engineering and other professional positions that require degree-level qualifications, positions requiring various trades qualifications, and other roles requiring semi-skilled or unskilled labour.</p>
Construction activities leading to an effect on economic output (GVA)	<p>The construction of the Project would be expected to generate additional economic output (GVA) both directly (i.e. by the developer of the Project) and indirectly (i.e. through the provision of services to the Project on the part of supplying businesses).</p> <p>A portion of the additional GVA that would be generated during the construction phase of the Project is expected to accrue to business units located in the local area, as well as those located elsewhere in the Highland area or Scotland.</p>
Construction activities leading to an effect on demand for housing, recreation resources, and other local services	<p>A portion of the workforce recruited to work on the construction phase is likely to move into the Caithness or Highland area from elsewhere in Scotland (or from elsewhere in the UK or from outside the UK). The need to accommodate specialists and other skills as part of a temporary workforce moving to the local area during the construction phase could, in turn, create additional demand for housing locally. It also has the potential to generate additional demand for access to local services, such as healthcare and recreational services.</p>
Construction activities leading to an effect on the volume and/or value of tourism	<p>The need to accommodate a temporary workforce may also generate additional demand for visitor accommodation, such as hotels and/or bed & breakfast bedspaces. This could be especially the case for visiting specialists whose inputs to the Project may be either sporadic or of limited duration.</p> <p>Additional demand for temporary accommodation could generate benefits for local accommodation providing businesses, especially that portion of demand that occurs outside of the main tourist season when accommodation may not otherwise be fully occupied.</p> <p>The visiting workforce would also be expected to spend a portion of their earnings locally, such as on purchases of food and drink. Such spending has the potential to provide a boost to the local visitor economy.</p> <p>On the other hand, there may be a risk that during the peak tourism season that construction activities could lead to the displacement of visitors and visitor spending that would normally be expected to occur. Such displacement could potentially occur if construction workers are occupying tourist accommodation at peak periods (i.e. when visitor accommodation is usually fully occupied), or if there are concerns by visitors regarding the potential for disruption during the construction phase, or if there are concerns by some would-be visitors of the effect of construction activity on the appeal of the area as a destination.</p>

Impact	Description
Operation and Maintenance	
As per construction	
Decommissioning	
As per construction	Assessed but not quantified.

19.5.2 Impacts Scoped Out of the Assessment

There were no categories of Socio-economic, Recreation, and Tourism impact proposed to be scoped out at the Scoping Report stage.

As the EIA has progressed the potential for socio-economic impacts to result from the effects of the Offshore Development on Commercial Fisheries receptors has also been considered. Loss of access to fishing grounds, displacement, obstruction of regular fishing vessel transit routes, and potential safety issues (e.g. damage or loss of gear associated with gear snagging or entanglement) all have the potential to result in a loss of earnings to the vessels affected. Any loss of landings may also affect onshore fish processing facilities.

Seafish and UKFEN (2012) and Scottish Government (2019) provide methodologies for the quantitative assessment of economic impacts on the commercial fishing industry. The loss of access to fishing grounds and displacement of fishing effort may result in socio-economic impacts, such as changes in landings, increased steaming times to alternative fishing grounds, or increased potential for gear conflict. Vessels may also have to invest in adaptations to their gear.

However, the assessment of potential effects in Chapter 13: Commercial Fisheries has concluded that the impact of the Offshore Development on Commercial Fisheries receptors is not significant: this includes the loss of access to fishing grounds and displacement of fishing effort, in addition to all other impacts with the potential to give rise to socio-economic impacts on the sector. Consequently, no significant socio-economic impacts on Commercial Fisheries receptors are expected as a result of the Project; therefore, no further assessment of the potential socio-economic impacts on Commercial Fisheries receptors is included in this chapter.

19.5.3 Approach to the Assessment

19.5.3.1 Overarching approach

The assessment of impacts on Socio-economics, Recreation, and Tourism was a desk-based exercise making use of project-specific information. In particular, the scale of potential quantifiable effects on socio-economic indicators such as direct, indirect, and induced jobs and GVA has been estimated using a bespoke economic model that is grounded in best practice. The model is based on expected levels of the Project expenditure during each phase of the Project. Within this model, estimates for job and GVA generation in each phase have been developed using a combination of:

- > Assumptions drawn from published national datasets, including multiplier coefficients from Input-Output tables published for Scotland and the UK as well as data that permit estimation of average numbers of jobs and value of GVA per £1 million of project expenditure across various categories; and
- > Ex-ante and ex-post research drawing on the experience of other offshore wind farms elsewhere in Scotland and the UK.

The quantified estimates of employment and GVA impacts during the construction and operation and maintenance phases are based on expected levels of project expenditure during each phase, using estimated information supplied by HWL. However, the geographical distribution of project expenditure is subject to uncertainty, primarily because the out-turn spatial distribution of expenditure to Tier-1 suppliers would be driven by the results of a procurement process involving competitive tendering which has not yet commenced. In addition, there is further uncertainty associated with the location of sub-contractors who successfully bid for contracts to supply services to the main contractors of the Project.

The approach taken to address these uncertainties is to develop two assessment scenarios, reflecting an assessment undertaken on the current and expected future capabilities and capacity of local companies to potentially supply the required goods and services to the Project at each stage.

A full explanation of the approach taken to the development of scenarios and the specific assumptions used in the estimation of impacts for indicators such as employment and GVA are described in this Offshore EIAR (Volume 3): Appendix 19.1: Socio-economics Assessment (Quantification) Methodology.

To summarise the approach taken, two scenarios were developed, designated as 'Low' and 'High', respectively, whereby:

- > **Low scenario:** Reflects an informed judgement concerning the minimum realistic level of the Project expenditure that could reasonably be expected to accrue to suppliers located in defined spatial areas during successive Project stages; and
- > **High scenario:** Reflects an informed judgement concerning the maximum realistic level of the Project expenditure that could reasonably be expected to accrue to suppliers located in defined spatial areas during successive Project stages.

The specification of both scenarios reflects information concerning current and likely future levels of investment in relevant infrastructure, production capacity, and workforce development. The scenarios also account for what is currently known – and may be reasonably expected – in terms of competing demands of the local, national, and international supply chain from other offshore renewables projects in Scotland, the UK, and northern Europe.

The quantification of the potential demand for workers located in various spatial areas (such as Caithness and the Highland area) has also been used to assess the potential effects of the Project on additional demand for local services, such as healthcare, housing (such as rented accommodation) and also potential demand for temporary accommodation (such as hotel bedspaces that may be needed to accommodate visiting specialists). This aspect of the assessment has also been informed by evidence and insight gained from engagement with local service providers and other stakeholders, as well as insights gained from local community consultation events.

The potential for other forms of interaction with tourism and local recreation assets has been undertaken drawing from background research, evidence provided by stakeholders and interested parties, feedback from consultation events, and knowledge of effects associated with other offshore wind farms located elsewhere in Scotland and the UK.

19.5.3.2 Assessment criteria

The assessment of effects on Socio-economic, Recreation, and Tourism receptors is a two-stage process involving the application of specific criteria in defining the sensitivity of the receptors and the magnitude of the potential impacts, as described below.

19.5.3.2.1 Sensitivity criteria

The sensitivities of the receptors are defined by their potential to be vulnerable to – or to benefit from – an impact of the development; their ability to recover from an impact; and the value or importance of the receptor.

The method used to determine the sensitivity of each receptor factors in the stated priorities of national and local economic development strategy and policy, in combination with professional judgement regarding the potential scale of current and future national and local economic challenges.

The definitions of sensitivity used in the assessment for the Socio-economics, Recreation, and Tourism topic are set out in Table 19.10.

Table 19.10 Receptor sensitivity (ability to recover and adaptability)

Receptor Sensitivity	Definition
Very high	The receptor is identified as a strategy or policy priority. There is evidence of a major socio-economic challenge or under-performance and vulnerability for the receptor in the Study Area. The receptor has no ability to recover or adapt to change.
High	The receptor is identified as a strategy or policy priority. There is evidence of considerable socio-economic challenge or under-performance and vulnerability for the receptor in the Study Area. The receptor has little ability to recover or adapt to change.
Medium	The receptor is not identified as a strategy or policy priority. There is evidence of moderate socio-economic challenge or under-performance and vulnerability for the receptor in the Study Area. The receptor either has a limited or delayed ability to recover or adapt to change.
Low	The receptor is not identified as a strategy or policy priority. There is evidence that the receptor is resilient and/or there is no particular challenge or under-performance and vulnerability for the receptor in the Study Area. The receptor has a well-developed ability to recover or adapt to change
Negligible	The receptor is not identified as a strategy or policy priority. There is evidence of good levels of performance and no particular weaknesses for the receptor in the Study Area. The receptor is able to recover or adapt to change strongly.

19.5.3.2.2 Magnitude of impact

The magnitude of impact is defined by factors including the spatial extent of potential interaction with the Project, as well as the potential duration, frequency, and reversibility of a potential impact. The definitions of magnitude used in the assessment are set out in Table 19.11.

Table 19.11 Impact magnitude criteria

Magnitude of Impact	Definition
High	A large (greater than 1.0%) change in baseline conditions in terms of absolute and/or proportionate change.
Moderate	A moderate (greater than 0.5% and up to 1.0%) change in baseline conditions in terms of absolute and/or proportionate change
Low	A minor (greater than 0.1% and up to 0.5%) change from baseline conditions in terms of absolute and/or proportionate change
Negligible	A very slight (up to 0.1%) change from baseline condition in terms of absolute and/or proportionate change
No Change	No change from the baseline condition

19.5.3.2.3 Significance criteria

Significance of an effect is determined by correlating the magnitude of the impact and the sensitivity of the receptor whilst utilising professional judgement and industry best practice guidance, science, and accepted approaches.

To ensure a transparent and consistent approach throughout this Offshore EIAR, a matrix approach has been adopted to guide the assessment of significance of effects (see Table 19.12). Importantly, latitude for professional judgement in the application of this matrix is permitted where deemed appropriate.

Table 19.12 Significance of effects matrix

Significance of Effects Matrix					
Sensitivity of Receptor	Magnitude of Impact				
	No Change	Negligible	Low	Moderate	High
Negligible	Negligible	Negligible	Negligible	Negligible	Minor
Low	Negligible	Negligible	Minor	Minor	Moderate
Moderate	Negligible	Minor	Minor	Moderate	Major
High	Negligible	Minor	Moderate	Major	Major
Very High	Negligible	Minor	Major	Major	Major

Definitions of significance of effect are described in Table 19.13. For this Offshore EIAR, any effect with a significance of moderate or greater is generally considered 'significant' in EIA terms and additional mitigations may be required. Effects identified as minor or negligible are generally considered to be 'not significant' in EIA terms.

Table 19.13 Assessment of consequence

Assessment Consequence	Description (consideration of receptor sensitivity and value and impact magnitude)	Significance of Effect
Major Effects	Effects (beneficial or adverse) are likely to be highly noticeable and long-term, or permanently alter the character of the baseline and are likely to disrupt the function and/or status / value of the receptor. They may have broader systemic consequences. Such adverse effects are a priority for mitigation in order to avoid or reduce the anticipated significance of the effect.	Significant
Moderate Effects	Effects (beneficial or adverse) are likely to be noticeable and result in lasting changes to the character of the baseline and may cause hardship to, or degradation of, the receptor population, although the overall function and value of the baseline / receptor population are not disrupted. Such adverse effects are a priority for mitigation in order to avoid or reduce the anticipated significance of the effects.	Significant
Minor Effects	Effects (beneficial or adverse) are expected to comprise noticeable changes to baseline conditions, beyond natural variation, but are not expected to cause long-term degradation or hardship or impair the function and value of the receptor. Such adverse effects are typically not contentious and generally will not require additional mitigation but may be of interest to stakeholders.	Not Significant
Negligible	Effects are expected to be either indistinguishable from the baseline or within the natural level of variation. Such effects do not require mitigation and are not anticipated to be a stakeholder concern and/or a potentially contentious issue in the decision-making process.	Not Significant

19.5.4 Design Envelope Parameters

As detailed in Chapter 5: Project Description, this assessment considers the Project parameters which are predicted to result in the greatest environmental impact, known as the 'realistic worst case scenario'. The realistic worst case scenario represents, for any given receptor and potential impact on that receptor, various options in the Design Envelope that would result in the greatest potential for adverse change (or, alternatively, the least potential for beneficial change) to the receptor in question.

Given that the realistic worst case scenario is based on the design option (or combination of options) that represents the greatest potential for change, confidence can be held that development of any alternative options within the design parameters will give rise to no effects greater or worse than those assessed in this impact assessment.

For example, in the case of the employment receptor, the expected effects of the Project are beneficial, and therefore the worst case scenario with respect to this receptor during the construction phase is the Low scenario, because this scenario would be expected to deliver the smallest number of construction phase jobs.

Conversely, in the case of the Housing, Recreation, and Other Local Services receptor, the expected effects are adverse, and the worst case scenario with respect to this receptor during the construction phase is the High scenario, because this scenario would be expected to deliver the largest potential for additional pressure and local services during the construction phase.

Table 19.14 presents the key features of the Design Envelope scenario assessed for the Socio-economics, Recreation, and Tourism topic.

Table 19.14 Design parameters specific to Socio-economics, Recreation, and Tourism receptor impact assessment

Potential Impact	Design Envelope Scenario Assessed
Construction Phase	
Effects on employment and GVA	<p>Construction expenditures are based on up to seven WTGs, floating structures and associated moorings, anchors and inter-array cables, Offshore Export Cable(s), and onshore infrastructure (including a substation) as detailed in Chapter 5: Project Description. Approximately three-year duration of fabrication and installation. It is anticipated that:^{iv}</p> <ul style="list-style-type: none"> > Between 0.3% and 0.5% of construction phase expenditure occurs in Caithness; > Between 19% and 32% of construction phase expenditure occurs in Highland; and > Between 24% and 36% of construction phase expenditure occurs in Scotland.
Effects on demand for housing and other local services	As for employment and GVA (construction phase)
Effects on tourism	<p>Up to seven WTGs, floating structures, and associated moorings, anchors and inter-array cables, offshore; export cable(s), and; onshore infrastructure (including a substation) as). As detailed in Chapter 5: Project Description.</p> <ul style="list-style-type: none"> > Potential offshore area of exclusion (for marine and water-based tourism and recreational activities); > OECC; and > Landfall and grid connection at or near the existing Dounreay substation.

^{iv} The lower bound percentage figures set out here are the assumptions used in the modelling of the economic impacts associated with the Low Case, whereas the higher bound figures are those used in modelling the High Case. Further detail is found in Appendix 19.1: Socio-economics Assessment (Quantification) Methodology.

Potential Impact	Design Envelope Scenario Assessed
Operation and Maintenance Phase	
Effects on employment and GVA	Annual operation and maintenance phase (O&M) expenditures are based on: up to seven WTGs, floating structures, and associated moorings, anchors and inter-array cables, offshore; export cable(s), and; onshore infrastructure (including a substation) as). As detailed in Chapter 5: Project Description. Up to 30-year operational life. It is anticipated that: ^v <ul style="list-style-type: none"> > Between 17% and 18% of O&M phase expenditure occurs in Caithness; > Between 22% and 31% of O&M phase expenditure occurs in Highland; and > Between 45% and 54% of O&M phase expenditure occurs in Scotland.
Effects on demand for housing and other local services	As for employment and GVA (O&M phase).
Effects on tourism	As for the construction phase, other than for OECC and landfall, with which there is no associated activity during the O&M phase.
Decommissioning Phase	
Effects on employment and GVA	As for the construction phase.
Effects on demand for housing and other local services	As for the construction phase.
Effects on tourism	As for the construction phase.

19.5.5 Embedded Mitigation and Engagement Measures

As part of the Project design process, a number of designed-in measures engagement measures have been proposed to reduce the potential for impacts (and maximise the potential for beneficial impacts) on Socio-economics, Recreation, and Tourism receptors (see Table 19.15). As there is a commitment to implementing these measures, they are considered inherently part of the design of the Offshore Development and have therefore been considered in the assessment presented below (i.e. the determination of the magnitude of impact and therefore the significance of effects assumes implementation of these measures). These measures are considered standard industry practice for this type of development.

Table 19.15 Embedded mitigation and engagement measures specific to Socio-economics, Recreation, and Tourism for the Project

Embedded Mitigation Measures and Engagement Measures	Justification
Embedded Mitigations/ Engagement Measures	
Crown Estate Scotland (CES) Commitments	As part of CES's programme of activity to maximise the value of Supply Chain Development Statement arrangements and support the development of the supply chain, the Project has provided supply chain information to CES. These arrangements mean the Project has disclosed the level and location of supply chain expenditure anticipated by the Project. Reporting and monitoring on these form part of the commitment and will be provided

^v The lower bound percentage figures set out here are the assumptions used in the modelling of the economic impacts associated with the Low Case, whereas the higher bound figures are those used in modelling the High Case. Further detail is found in Appendix 19.1: Socio-economics Assessment (Quantification) Methodology.

Embedded Mitigation Measures and Engagement Measures	Justification
	<p>annually to the CES. In the future a summary of the information will also be made publicly available.</p> <p>In providing these details it allows for supply chain objectives and project ambition to maximise the opportunity for the offshore wind sector in Scotland.</p>
Supply Chain Engagement	<p>Initiatives have been created to alert potential regional and local suppliers to the type, scale, and timing of services that are likely to be needed to develop and install the Project. An example of this is a series of 'meet the buyer' events scheduled for the second half of 2022.</p> <p>Such engagement seeks to ensure that economic benefits associated with the Project are realised regionally and locally. 'Meet the buyer' events are expected to help achieve this by providing would-be local suppliers information in advance of the launch of formal tendering processes on aspects such as procurement procedures; types of services required; service specifications; and other information that can help local suppliers to develop competitive bids to supply content to the Project.</p>
Scrabster Harbour Memorandum of Understanding	<p>A memorandum of understanding has been signed with Scrabster Harbour covering the provision of support services during both construction and operational phases. Scrabster Harbour has already provided support services throughout the early development stages of the Project, including vessel mobilisation and demobilisation for geophysical and geotechnical surveys, as well as the commissioning and deployment of wind measuring equipment.</p> <p>The memorandum of understanding seeks to ensure that economic benefits associated with the Project are realised locally.</p>
Secondary School Engagement	<p>Initiatives have been created to support education and training for students from local secondary schools (Thurso and Farr) on Science, Technology, Engineering and Mathematics (STEM) subjects. The intention is to encourage local school leavers to consider a career in the offshore renewables industry.</p> <p>The initiatives seek to ensure the potential future local workforce is adequately skilled and engaged.</p>
Community Benefits Fund	<p>A funded mechanism supporting local skills and training is expected to be included as a key element of the community benefits fund currently being developed for the Project by HWL working with Foundation Scotland and local stakeholders.</p> <p>The fund seeks to ensure the local workforce is adequately skilled and trained.</p>
Environmental, Social and Governance (ESG) Standards	<p>Copenhagen Infrastructure Partners (CIP), manages the fund that is the majority owner of HWL. CIP has set a number of corporate governance procedures including ESG Standards. Within these standards monitoring and reporting on a number of elements, including social, environmental impacts, are undertaken. Whilst reporting of these are for internal purposes it ensures projects are delivered in a responsible manner.</p>
Community Liaison Officer (CLO)	<p>A CLO will be appointed ahead of construction commencing. The CLO will be the face of the project with the local community. Monitoring and reporting on any concerns raised will be part of the CLO's role and will also be carried out in line with the applicant's ESG Standards.</p>

Progress towards expected levels of direct employment, supply chain activity, and other aspects of Project performance will be monitored as part of the information sharing arrangements agreed with CES. Monitoring activities will be carried out in line with the applicant's internal ESG Standards. The intended approach to monitoring activity is proportionate to the scale of the Project, and is fully aligned with agreements made with CES and discussions held with local stakeholders.

The appointed CLO will be the interface between the Project and the local community. An important part of the CLO job role will be to report to the Project team any emerging concerns on the part of the local community and/or local stakeholders regarding slow or insufficient progress towards levels of beneficial effects that are expected to be delivered by the Project during either the construction or operational stages so that, if possible, corrective actions can be developed and implemented.

19.5.6 Data Gaps and Uncertainties

A principal area of uncertainty in assessing likely socio-economic effects is the uncertainty regarding the amount and the spatial distribution of expenditure during the construction and decommissioning phases of the Project.

This is because expenditure decisions would necessarily be made through a process of competitive tendering in a future period only after (and if) the Project is consented. The value of the contracts to deliver the major component parts of the construction process – and the spatial location of successful bidders and their respective supply chains – therefore cannot be known with any certitude at the pre-consent stage of the Project procurement process.

Uncertainty regarding the spatial location of supply chains is also linked to the extent of available supply chain capacity over any specific future period. The extent of future available supply capacity will be influenced by future procurement decisions made by other offshore renewables projects elsewhere in the UK and Europe.

The method used to factor in the various uncertainties regarding Project procurement expenditure has been to develop a scenario-based approach described previously (Section 19.5.3) to illustrate the potential range of impacts on socio-economic receptors.

19.6 Assessment of Potential Effects

19.6.1 Effects During Construction

19.6.1.1 Construction activity effects on employment

19.6.1.1.1 Magnitude

The worst case scenario from the perspective of the employment receptor relates to the number of jobs expected to be created during the construction phase that is associated with the Low scenario. Project effects associated with the employment receptor are beneficial.

Table 19.16 presents estimates for the annual average number of FTE jobs expected to be created across each of the Study Areas during the construction phase. The figures in the table are provided for (1) Direct and Indirect jobs, and (2) Induced jobs, where:

- > Direct jobs are the people employed by the main contractors working on the construction of the Project;
- > Indirect jobs are the people working on the Project employed by sub-contractors, and also jobs elsewhere in the supply chain for the Project that are attributable to Project expenditure; and.
- > Induced jobs are additional jobs supported by the expenditure of incomes earned by the Project workforce (including Direct and Indirect jobs).

UHI have taken the view that for complex construction projects it is difficult to predict precisely which jobs will be undertaken by main contractors compared to sub-contractors, so the Direct and Indirect jobs have been combined into a single figure.

Depending on the outcome of project procurement processes and future investment in additional supply chain capacity, the out-turn for construction jobs in areas such as Caithness and Highland could be considerably higher than the figures associated with the worst case scenario.

Table 19.16 Magnitude of employment effects during construction

Indicator	Caithness Low	Caithness High	Highland Low	Highland High	Scotland Low	Scotland High	UK Low	UK High
Annual Direct + Indirect FTE jobs	5	11	327	521	511	715	726	1,003
Annual Induced FTE jobs	1	2	74	117	128	179	218	301
Annual Total FTE jobs	6	13	401	639	639	894	944	1,304

Source: UHI, December 2021.

At the spatial level of Caithness, the Project would be expected to generate a total of between 6 and 13 annual FTE jobs during construction. The 2019 baseline total of employment in the potential supply chain industries located in Caithness was approximately 2,540 jobs. The addition of between 6 and 13 jobs to this total would represent a temporary increase of between 0.24% and 0.52% to the baseline total.

That is, for Caithness, the addition of 6 FTE roles during the construction phase is equivalent to 0.24% of the baseline total.

The magnitude of impact for construction phase employment is therefore concluded to be Low for Caithness under the worst case scenario.

For the Highland area, the predicted increase in annual FTE jobs under the Low scenario is 401 annual FTEs. The 2019 baseline total of jobs in the potential Highland supply chain is about 25,550 jobs. The addition of 401 jobs to this total would represent a temporary increase of 1.57% to the baseline total for potential supply chain industries across the Highland area. The magnitude of impact for construction phase employment is therefore concluded to be High for the Highland area under the worst case scenario.

For Scotland, the potential increase in construction phase employment under the Low scenario is 639 annual FTEs. This would represent a temporary increase of 0.16% in employment for potential supply chain industries in Scotland. The magnitude of impact for construction phase employment is therefore concluded to be Low for Scotland under the worst case scenario.

For the UK, the potential increase in construction phase employment under the Low scenario is 944 annual FTEs. This would represent a temporary increase of 0.02% in employment for potential supply chain industries in the UK. The magnitude of impact for construction phase employment is therefore concluded to be Negligible for the UK under the worst case scenario.

19.6.1.1.2 Sensitivity

Job creation is a strategic priority for the Scottish Government (and also for the UK Government) and for THC. At a national level, the labour market has a very high level of adaptability given the long-term trend for job growth. At a more local level, labour market evidence suggests a moderate level of resilience and adaptability for the Highland area, but for Caithness there is a higher level of sensitivity due to the lower rates of employment and economic activity evident there compared to benchmark areas. An additional factor for Caithness is the potential reduction in the number of high-quality jobs related to the decommissioning of the Dounreay Nuclear Facility.

Given the policy priorities and available evidence on resilience, the sensitivity of the receptors is assessed to vary by spatial area, as follows:

- > Caithness: The receptor has a **High** level of sensitivity;
- > Highland: The receptor has a **Moderate** level of sensitivity; and
- > Scotland and UK: The receptors have a **Low** level of sensitivity.

19.6.1.1.3 Significance

The significance of the effect on construction employment varies for each area under assessment under the worst case scenario (as per Table 19.12):

- > Caithness: The combination of a **High** sensitivity receptor and a **Low** magnitude of impact produces a **Moderate** effect that is **beneficial** and **significant**;
- > Highland: The combination of a **Moderate** sensitivity receptor and a **High** magnitude of impact produces a **Major** effect that is **beneficial** and **significant**;
- > Scotland: The combination of a **Low** sensitivity receptor and a **Low** magnitude of impact produces a **Minor** effect that is **beneficial** but **not significant**; and
- > UK: the combination of a **Low** sensitivity receptor and a **Negligible** magnitude of impact produces a **Negligible** effect that is **beneficial** but **not significant**.

19.6.1.2 Construction activity effects on GVA

19.6.1.2.1 Magnitude

The worst case scenario from the perspective of the GVA receptor relates to the estimated value of GVA expected to be created during the construction phase that is associated with the Low scenario. Project effects associated with the GVA receptor are beneficial.

Table 19.17 presents estimates for the estimated aggregate and average annual levels of GVA (£ million, 2021 prices) that are expected to be generated across the Study Areas during the Project construction phase. As with employment, estimated levels for GVA are presented as a range (i.e. for a Low scenario and for a High scenario). Note that values are rounded to the nearest £0.1 million, so values stated as £0.0 million may not be zero.

As with employment estimates, UHI have taken the view that for complex construction projects it is difficult to predict precisely which supply chain activities will be undertaken by main contractors compared to sub-contractors, so the estimates for Direct and Indirect GVA have been combined into a single figure.

For example, at the spatial level of Caithness, the Project would be expected to generate an average total of between £0.3 million and £0.8 million of GVA per annum during the construction phase.

Table 19.17 Magnitude of GVA effects during the construction phase (£ million)

Indicator	Caithness Low	Caithness High	Highland Low	Highland High	Scotland Low	Scotland High	UK Low	UK High
Average annual Direct + Indirect GVA	0.3	0.7	21.0	32.9	32.0	44.6	44.7	62.0
Average annual Induced GVA	0.0	0.1	2.7	4.2	4.6	6.4	7.9	10.7
Average annual Total GVA	0.3	0.8	23.7	37.2	36.6	51.0	52.6	72.8

Source: UHI, December 2021.

To ascertain the significance of the anticipated results for the GVA receptor, the most adverse effects are the anticipated value of additional GVA associated with the Low scenario.

The estimated value of GVA in Caithness in 2019 was £610 million. The addition of £0.3 million per year of GVA in Caithness (i.e. the Low scenario) during the construction stage would represent a temporary increase of 0.05% to the baseline total. The magnitude of impact for construction phase GVA is therefore concluded to be **Negligible** for Caithness under the worst case scenario.

For the Highland area, the expected increase in annual GVA lies between a range of £23.7 million and £37.2 million per year during the construction phase. The 2019 baseline value for overall GVA generated across the Highland region is over £6.4 million. The addition of £23.7 million to this regional GVA total under the Low scenario would represent a temporary increase of 0.37% to the annual value of economic output across the Highland region. The magnitude of impact for construction phase GVA is therefore concluded to be **Low** for the Highland region under the worst case scenario.

For Scotland, the potential increase in annual GVA during the construction phase lies in a range of £36.6 million to £51.0 million per year. Under the Low scenario, this would represent a temporary increase of around 0.03% in annual economic output in Scotland. The magnitude of impact for construction phase GVA is therefore concluded to be **Negligible** for Scotland under the worst case scenario.

For the UK, the potential increase in construction phase GVA lies in a range of £52.6 million to £72.8 million per year. This would represent a temporary increase of 0.003% per annum in GVA for the UK under the Low scenario. The magnitude of impact is concluded to be **Negligible** for the UK under the worst case scenario.

19.6.1.2.2 Sensitivity

The production of additional economic output and rising average amounts of GVA per worker are strategic priorities for both the Scottish and UK Governments.

At a national level, the business base and labour market both possess a high level of adaptability, evidenced by strong levels of business formation, consistent levels of growth of GVA per worker, as well as a strong long-term trend for job growth.

At a more local level, evidence concerning business formation, business structure and the available labour market evidence suggests a moderate level of resilience and adaptability for the Highland area, but that the Caithness area potentially has a more limited ability to adapt to change.

Given the policy priorities but variable evidence on resilience, the sensitivity of the receptors is assessed to vary by spatial area as follows:

- > Caithness: The receptor has a **High** level of sensitivity;
- > Highland: The receptor has a **Moderate** level of sensitivity; and
- > Scotland and UK: The receptors have a **Low** level of sensitivity.

19.6.1.2.3 Significance

The significance of the effect on construction phase GVA varies by spatial area under the worst case scenario:

- > Caithness: The combination of a **High** sensitivity receptor and a **Negligible** magnitude of impact produces a **Minor** effect that is **beneficial** but **not significant**;
- > Highland: The combination of a **Moderate** sensitivity receptor and a **Low** magnitude of impact produces a **Minor** effect that is **beneficial** but **not significant**;
- > Scotland: the combination of a **Low** sensitivity receptor and a **Negligible** magnitude of impact produces a **Negligible** effect that is **beneficial** but **not significant**; and
- > UK: the combination of a **Low** sensitivity receptor and a **Negligible** magnitude of impact produces a **Negligible** effect that is **beneficial** but **not significant**.

19.6.1.3 Construction activity effects on Housing, Recreation, and Other Local Services

19.6.1.3.1 Magnitude

The worst case scenario from the perspective of the Housing, Recreation, and Other Local Services receptor is associated with the estimated number of jobs expected to be created during the construction phase that is associated with the High scenario. In addition, the Project has the potential to affect recreation receptors in the Caithness and Highland areas by changing the perception of the local area as a place to undertake outdoor activities such as walking, cycling, nature-based activities, boating, and offshore recreational fishing, etc.

Project effects associated with the Housing, Recreation, and Other Local Services receptor are adverse.

The impact of the construction of the Project on demand for housing as well as health services, education services, recreation services and other services in the Study Area is linked to:

- > The number of direct and other jobs expected to be created during the construction phase; and
- > The proportion of these jobs that are taken up by workers who will reside within the area.

Temporary employment opportunities created in both Caithness and the Highland region during construction are likely to be shared between workers who are already resident within these areas and workers from outside the area who move into the area during construction. Additional demand for housing and other local services is likely to be driven by the latter group (i.e. workers who were not previously resident in the local area but who move into the area to take up a new job role created by the construction of the Project).

For Caithness, the worst case scenario from the perspective of demand for housing and local services is that 100% of the job roles created during the Construction phase 'High case' are filled by workers recruited from outside the Caithness or Highland areas but who choose to move into these areas during the construction phase of the Project.

The worst case scenario from the perspective of demand for housing and local services relates to the number of local jobs created during the construction phase associated with the High scenario for the Caithness and Highland areas. That is, up to 13 jobs per year in Caithness, and up to 639 jobs per year in the Highland region.

However, the majority of the workers needed to supply labour services to the Project will have specialist roles and their services would be required either for relatively short periods (i.e. months rather than years) or they may need to visit the Project intermittently. For non-locally resident workers, HWL considers that it is more likely that they are likely to generate demand for services or non-serviced accommodation (such as hotels, bed & breakfast accommodation, or self-catering accommodation) rather than private rented housing.

For this assessment, the realistic worst case scenario is assumed to be that 10% of accommodation demand is for private rented housing, with the remainder supplied by different types of tourist accommodation.

According to the recent draft HNDA, there is expected to be a need for 385 additional dwellings in the Caithness local housing market area over the 10-year period to 2028/29. Adding extra demand for up to 1.3 dwellings to this total would represent a temporary increase of 0.3% to the baseline demand total. The magnitude of impact for housing demand during the construction phase is therefore concluded to be Low for Caithness under the worst case scenario.

The draft HNDA forecasts a need for 9,038 additional dwellings across the Highland region over the 10-year period to 2028/29. Adding extra demand for up to 90 dwellings to this total would represent a temporary increase of up to 0.7% to the baseline demand total. The magnitude of impact for housing demand during the construction phase is therefore concluded to be Moderate for the Highland region under the worst case scenario.

The magnitude of impact on housing demand and other services at the spatial level of Scotland is assessed to be Low under the worst case scenario. In the case of Scotland, a recent estimate of the demand for housing is approximately 25,000 per year, which over 10 years amounts to around 250,000 dwellings^{vi}. The addition of an extra 89 homes to this total would increase demand by 0.04%.

^{vi} Homes for Scotland (2019) based on research undertaken by the Fraser of Allander Institute.

In the case of the UK as a whole, the estimated demand for housing over the next 10 years is estimated to amount to around 350,000 per annum. The addition of an extra 130 or so dwellings to this total would increase demand by just 0.004%. The magnitude of impact on housing demand during the construction phase is therefore concluded to be Negligible for the UK under the worst case scenario.

With respect to outdoor recreation undertaken by residents, it is not considered likely that the Project in isolation will generate significant levels of deterrence or generate a significant reduction in the quality of experience of people participating in outdoor recreation activities locally during the Construction phase. This is for the following reasons:

- > The onshore area affected by construction activity is adjacent to the Dounreay Nuclear Facility, so the area potentially affected by construction activities already possesses a similar character to that which might be bestowed by the development of new infrastructure (such as an electricity sub-station) associated with the Project.
- > There are local substitutes available for the types of outdoor recreation activities (such as paths) that have the potential to be displaced or otherwise affected by onshore construction activity.
- > Recreational fishing within a section of the OECC is already not permitted due to the extant fisheries exclusion zone within 2 km of Dounreay.
- > Feedback received during the community engagement process identified that a small number of residents were concerned about the visual impact of the Project, which could in turn have a potentially detrimental effect on the quality of experience during outdoor recreation activities. In response to this feedback, the Array area has been reduced by 50%, and the number of WTGs has also been reduced, from ten down to seven.

19.6.1.3.2 Sensitivity

The delivery of an adequate supply of housing and local services are strategic priorities for both the Scottish Government and THC. However, evidence from the draft HNDA report commissioned by the Council and published in November 2021 identifies the likelihood of a falling population across the Highland area between the early 2020s and 2040 (other than under a high migration scenario). Moreover, Caithness is specifically identified within the HNDA as currently being an area of low housing pressure. There is also local evidence of available capacity regarding services such as Education and Healthcare.

The HNDA also indicates that the working-age population in all housing market areas of Highlands is falling and that the region is dependent on in-migration for population growth.

Given the available evidence regarding resilience, the sensitivity of the receptors is assessed to vary by spatial area as follows:

- > Caithness and Highland: The receptor has a **Low** level of sensitivity;
- > Scotland: The receptor has a **Moderate** level of sensitivity; and
- > UK: The receptor has a **High** level of sensitivity.

19.6.1.3.3 Significance

The significance results for the Study Areas under the worst case scenario are as follows:

- > Caithness: The combination of a **Low** sensitivity receptor and a **Low** magnitude of impact produces a **Minor** effect that is **adverse** but **not significant**;
- > Highland: the combination of a **Low** sensitivity receptor and a **Moderate** magnitude of impact produces a **Minor** effect that is **adverse** but **not significant**;
- > Scotland: the combination of a **Moderate** sensitivity receptor and a **Low** magnitude of impact produces a **Minor** effect that is **adverse** but **not significant**; and
- > UK: the combination of a **High** sensitivity receptor and a **Negligible** magnitude of impact produces a **Minor** effect that is **adverse** but **not significant**.

19.6.1.4 Construction activity effects on tourism

19.6.1.4.1 Magnitude

There are considered to be two mechanisms through which the construction phase of the Project has the potential to affect Tourism receptors in the Study Areas:

- > By affecting the visitor perceptions of the Caithness and Highland area as a destination for outdoor activities, such as walking, cycling, nature-based tourism, boating, offshore recreational fishing, etc.; and
- > By creating competition for tourism accommodation (i.e. if the Project generates a need to accommodate a construction workforce in accommodation that would otherwise be used by visitors to the area).

Visitor perceptions can be affected by on-site and offshore construction activity, and by additional traffic that may be required to bring construction materials, equipment, and parts to the construction site(s).

However, it is not considered likely that the Project in isolation will generate significant levels of deterrence for tourist numbers or aggregate visitor expenditure to the area. This conclusion is based on the following assumptions and evidence:

- > The onshore area affected by construction activity is adjacent to the site of the Dounreay Nuclear Facility, so the onshore area already possesses a similar character to that that might be bestowed by an electricity sub-station in isolation;
- > There are local substitutes available for some types of visitor activity that have the potential to be temporarily displaced by construction-related activity that may take place in or nearby onshore areas where Project activity might take place (such as the sub-station site). This could include activities such as walking and birdwatching;
- > Activities such as boating and offshore recreational fishing that might otherwise occur in the Offshore Site are niche activities that are not participated in by the vast majority of visitors to the area. It is also relevant to note that recreational fishing is not permitted within a section of the OECC due to the extant fisheries exclusion zone within 2 km of Dounreay; and
- > Finally, it is the case that there is an increasing number of onshore wind power developments occurring across Caithness and the wider Highlands region. In the case of the Highland region, there is also a small but growing number of offshore wind power developments that are already being developed in marine waters. However, the available evidence on the volume of tourism visits to Caithness and the Highlands, as well as evidence on the financial value generated by these visits (i.e. aggregate tourism expenditure) is that up until 2019 tourism activity has been increasing on an annual basis notwithstanding the increasing level of renewable energy development activity occurring in the area (Note that tourism data for 2020 cannot be compared to earlier years because of the disruptive effect caused by the COVID-19 pandemic). The evidence for the trends for the volume and value of tourism activity are the annual tourism activity reports produced by THC using STEAM data and analysis, which were referred to in Section 19.4 above.

The second type of potential effect on tourism activity is the potential for displacement of localised activity due to competition for tourism bedspaces by visiting construction workers.

Similar to the situation for housing discussed above, the Project has the potential to generate extra demand for local bedspaces to accommodate the construction workforce. For example, visiting contractors, specialists, and other workers whose labour services to the Project are of limited duration or are episodic are likely to be accommodated in serviced or un-serviced tourist accommodation. This in turn could generate:

- > Positive impacts on the accommodation component of the local tourism economy, for example by driving additional demand at times of the year (such as October-March) when demand for accommodation by tourists is relatively low. There is also the potential for additional demand by the construction workforce for other services provided by businesses operating in the visitor economy, such as shops, and businesses offering food & drink services (such as restaurants, take-away food, pubs, cafes, etc.); and
- > However, if large numbers of tourist bedspaces are taken by construction workers, this could negatively impact other parts of the local tourism economy by decreasing the number of tourist visitors available to visit local visitor attractions, shops, food and drink service providers, etc.

In terms of the potential for negative effects, the worst case scenario from the perspective of the local tourism economy could occur if all the temporary construction workforce that could arise in the Caithness and Highland local areas are required to be accommodated in tourist accommodation bedspaces in those areas. That is up to 13 jobs per year in Caithness, and up to 639 jobs per year in the Highland region.

According to the 2019 STEAM report commissioned by Highland Council, there are 3,478 tourist bedspaces in the Caithness area. Removal of up to 13 bedspaces from this total would represent a temporary decrease of 0.40% for the tourist accommodation baseline total for Caithness. The magnitude of the potential reduction in tourism visits and spending during the construction phase is therefore concluded to be **Low** for Caithness under the worst case scenario.

It is also likely that the reduction in the potential for tourism spending in the peak period would be offset to some extent by year-round demand for accommodation and services (such as food and drink) by the visiting construction workforce in Caithness.

According to the 2020 STEAM report commissioned by THC, there are around 75,200 tourist bedspaces in the Highland region. Removal of up to 639 bedspaces from this total would represent a temporary decrease of 0.85% in the accommodation available for tourist visitors to the Highland region.

However, the reduction in the potential for tourism spending in the peak period would be offset to some extent by the year-round demand for accommodation and services (such as food and drink) by the visiting construction workforce that would need to be accommodated in the Highland area. It is also the case that – according to the 2020 STEAM report for the Highlands area – the accommodation sector accounts for nearly half (47%) of all tourism expenditure in the Highland region. Taking this into account, the potential for the overall reduction in income for tourism businesses across the Highlands during the construction phase – under the worst case scenario – would be a temporary reduction of around 0.40%.

The magnitude of the potential reduction in tourism visits and spending during the construction phase is therefore concluded to be **Low** for the Highland region under the worst case scenario.

The magnitude of impact on tourism activity at the spatial level of Scotland and the UK is concluded to be **Negligible** for both areas under the worst case scenario.

19.6.1.4.2 Sensitivity

The vitality and growth of a visitor economy is a strategic priority for both the Scottish Government and THC. Given the available evidence regarding the volume and value of tourism to the respective areas, the sensitivity of the receptors is assessed to vary by spatial area as follows:

- > Caithness and Highland: The receptors have a **Moderate** level of sensitivity; and
- > Scotland and the UK: The receptors have a **Low** level of sensitivity.

The basis for these sensitivities is the STEAM report for the Highlands commissioned by THC. It is reported that the annual number of visitors to the Highlands increased from 5.22 million in 2009, to 7.49 million in 2019. This is the most recent data unaffected by the advent of the Covid-19 pandemic and associated restrictions on travel within Scotland and to/from the UK. The annual growth rate for visitors implied by these figures averages 3.7% per annum. According to the same source, over the same period, the growth in tourism employment in the Highlands has increased from around 21,700 to around 25,100, which represents annual growth of around 1.5% per year. These growth figures have been realised over a period in which there has also been an increasing number of onshore wind farms.

19.6.1.4.3 Significance

The significance results for the Study Areas under the worst case scenario are as follows:

- > Caithness: The combination of a **Moderate** sensitivity receptor and a **Low** magnitude of impact produces a **Minor** effect that is **adverse** but **not significant**;
- > Highland: the combination of a **Moderate** sensitivity receptor and a **Low** magnitude of impact produces a **Minor** effect that is **adverse** but **not significant**; and
- > Scotland and UK: for both areas, the combination of a **Low** sensitivity receptor and a **Negligible** magnitude of impact produces a **Negligible** effect that is **adverse** but **not significant**.

19.6.1.5 Summary of construction activity effects

Table 19.18 below summarises the findings of the assessment undertaken for the construction phase effects.

Table 19.18 Summary of significance of effects from construction impacts (worst case scenario)

Receptor	Study Area	Sensitivity	Magnitude of Impact	Rationale	Consequence	Significance of Effect	Additional Mitigation Requirements	Residual Effects
Construction employment	Caithness	High	Low	Although the impacts are beneficial, they are not expected to be large or of long duration at this spatial level.	Moderate effects (beneficial)	Significant	Effects are expected to be positive and no additional mitigation measures are required.	Significant
	Highland	Moderate	High	Impacts on construction industry business and workforce are expected to be noticeable.	Major effects (beneficial)	Significant	Effects are expected to be positive and no additional mitigation measures are required.	Significant
	Scotland	Low	Low	Although the impacts are beneficial, they are not expected to be large or of long duration at this spatial level.	Minor effects (beneficial)	Not Significant	n/a	Not Significant
	UK	Low	Negligible	Although the impacts are beneficial, they are not expected to be large enough to be noticeable at this spatial level.	Negligible effects (beneficial)	Not Significant	n/a	Not Significant
Construction GVA	Caithness	High	Negligible	Although the impacts are beneficial, they are not expected to be large enough to be noticeable.	Minor effects (beneficial)	Not Significant	n/a	Not Significant
	Highland	Moderate	Low	Impacts on GVA are expected to be large enough to be noticeable. Longer-term effects on productivity may also be generated at this regional level.	Minor effects (beneficial)	Not Significant	n/a	Not Significant
	Scotland	Low	Negligible	Although the impacts are beneficial, they are not expected to be large enough to be noticeable at this spatial level.	Negligible effects (beneficial)	Not Significant	n/a	Not Significant
	UK	Low	Negligible	Although the impacts are beneficial, they are not expected to be large enough to be noticeable at this spatial level.	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
Demand for Housing and Other Services	Caithness	Low	Low	Potential for negative impacts on the local housing market through increased demand for private rented residential property to accommodate the construction workforce.	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Highland	Low	Moderate	Potential for negative impacts on the local housing market through increased demand for private rented residential property to accommodate the construction workforce.	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Moderate	Low	Although the impacts are adverse, they are not expected to be large enough to be noticeable at this spatial level.	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	High	Negligible	Although the impacts are adverse, they are not expected to be large enough to be noticeable at this spatial level.	Minor effects (adverse)	Not significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant

Receptor	Study Area	Sensitivity	Magnitude of Impact	Rationale	Consequence	Significance of Effect	Additional Mitigation Requirements	Residual Effects
Tourism	Caithness	Moderate	Low	Beneficial impacts on demand for local accommodation may be offset by reduced demand for tourism attraction businesses; however, the net effect is unlikely to be large enough to be noticeable.	Minor effects (adverse)	Not significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Highland	Moderate	Low	Beneficial impacts on demand for local accommodation may be offset by reduced revenues for other businesses dependent on visitor expenditure. The net effect may be noticeable during the peak tourism season.	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Low	Negligible	Although the impacts may be adverse, they are not expected to be large enough to be noticeable at this spatial level.	Negligible effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	Low	Negligible	Although the impacts may be adverse, they are not expected to be large enough to be noticeable at this spatial level.	Negligible effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant

19.6.2 Effects During Operation and Maintenance

19.6.2.1 Operation and Maintenance activity effects on employment

19.6.2.1.1 Magnitude

The worst case scenario from the perspective of the employment receptor is associated with the estimated number of jobs expected to be created during the operation and maintenance phase associated with the Low scenario. Project effects associated with the employment receptor are beneficial.

Table 19.19 presents estimates for the annual average FTE employment expected to be created during the operation and maintenance phase. As with the construction phase, the operation and maintenance phase results in Table 19.19 are presented as a range (i.e. for a low scenario and a high scenario). Note that column totals in Table 19.19 may not sum exactly due to the rounding of decimals.

Table 19.19 Magnitude of employment effects during operation and maintenance

Indicator	Caithness Low	Caithness High	Highland Low	Highland High	Scotland Low	Scotland High	UK Low	UK High
Annual Direct + Indirect FTE jobs	21.2	21.2	24.7	28.2	31.7	38.8	60.0	67.0
Annual Induced FTE jobs	4.2	4.2	5.6	6.3	7.9	9.7	18.0	20.1
Annual Total FTE jobs	25.4	25.4	30.2	34.6	39.7	48.5	77.9	87.1

Source: UHI, December 2021.

For example, at the spatial level of Caithness, the magnitude of estimated operation and maintenance phase employment effects are the same under both scenarios: the Project would be expected to generate a total of 25.4 FTE jobs annually.

As was the case for the assessment of construction phase impacts, to ascertain the significance of results for the operation and maintenance phase for the employment receptor, the most adverse results are those associated with the Low scenario.

The 2019 baseline total of employment in the potential supply chain industries located in Caithness was approximately 2,540 jobs. The addition of 25.4 jobs to this total would represent an increase of 1% to the baseline total. The magnitude of impact for operation and maintenance phase employment is therefore concluded to be High for Caithness under the worst case scenario.

For the Highland area, the equivalent increase in operation and maintenance phase employment lies between 30.2 and 34.6 FTEs annually. The 2019 baseline total of jobs in the potential Highland supply chain is around 25,550 jobs. The addition of up to 34.6 jobs to this total would represent an increase of up to 0.12% to the baseline total for potential supply chain industries across the Highland region. The magnitude of impact for operation and maintenance phase employment is therefore concluded to be Low for the Highland region under the worst case scenario.

For Scotland, the potential increase in operation and maintenance phase employment is up to 48.5 annual FTEs. This would represent a temporary increase of around 0.01% in employment across potential supply chain industries in Scotland. The magnitude of impact for operation and maintenance phase employment is therefore concluded to be Negligible for Scotland under the worst case scenario.

For the UK, the potential increase in operation and maintenance phase employment lies in a range up to 87.1 FTEs annually. This would represent a temporary increase of around 0.002% employment for potential supply chain industries in the UK. The magnitude of impact for construction phase employment is therefore concluded to be Negligible for the UK under the worst case scenario.

19.6.2.1.2 Sensitivity

The assessment of sensitivity of receptors for the operation and maintenance phase is the same as per the construction phase. This is assessed to be as follows:

- > Caithness: The receptor has a **High** level of sensitivity;
- > Highland: The receptor has a **Moderate** level of sensitivity; and
- > Scotland and UK: The receptors have a **Low** level of sensitivity.

19.6.2.1.3 Significance

The significance of the effect on operation and maintenance phase employment under the worst case scenario varies by spatial area:

- > Caithness: The combination of a **High** sensitivity receptor and a **High** magnitude of impact produces a **Major** effect that is **beneficial** and **significant**;
 - > Highland: The combination of a **Moderate** sensitivity receptor and a **Low** magnitude of impact produces a **Minor** effect that is **beneficial** but **not significant**;
 - > Scotland: The combination of a **Low** sensitivity receptor and a **Negligible** magnitude of impact produces a **Negligible** effect that is **beneficial** but **not significant**; and
- UK: The combination of a **Low** sensitivity receptor and a **Negligible** magnitude of impact produces a **Negligible** effect that is **beneficial** but **not significant**.

19.6.2.2 Operation and maintenance activity effects on GVA

19.6.2.2.1 Magnitude

The worst case scenario from the perspective of the GVA receptor is associated with the estimated value of GVA expected to be created during the operation and maintenance phase associated with the Low scenario. Project effects associated with the GVA receptor are beneficial.

Table 19.20 presents estimates for the estimated aggregate and average annual levels of GVA (£ million, 2021 prices) that are expected to be generated across the Study Areas by the Project during the operation and maintenance phase. Estimated levels for GVA are presented as a range (i.e. for a low scenario and for a high scenario). Note that column totals may not sum exactly due to rounding of decimals.

Table 19.20 Magnitude of GVA effects during operation and maintenance (£ million)

Indicator	Caithness Low	Caithness High	Highland Low	Highland High	Scotland Low	Scotland High	UK Low	UK High
Average annual Direct + Indirect GVA	1.4	1.4	1.7	1.9	2.2	2.6	4.1	4.6
Average annual Induced GVA	0.2	0.2	0.2	0.3	0.3	0.4	0.8	0.9
Average annual Total GVA	1.6	1.6	1.9	2.2	2.5	3.1	4.9	5.4

Source: UHI, December 2021.

To ascertain the significance of results for the operation and maintenance phase for the GVA receptor, the most adverse results are those associated with the Low scenario.

At the spatial level of Caithness, the Project would be expected to generate an average total of £1.6 million of GVA per annum during the operation and maintenance phase. The estimated value of GVA in Caithness in 2019 was £610 million. The addition of £1.6 million per year would represent an increase of 0.26% over the baseline total. The magnitude of impact for construction phase GVA is therefore concluded to be Low for Caithness under the worst case scenario.

For the Highland area, the expected increase in annual GVA lies between a range of £1.9 million and £2.2 million per year during the operation and maintenance phase. The 2019 baseline value for overall GVA generated across the Highland region is over £6.4 million. The addition of £1.9 million to this total would represent an increase of around 0.03% to the annual value of economic output across the Highland region. The magnitude of impact for operation and maintenance phase GVA is therefore concluded to be Negligible for the Highland region under the worst case scenario.

For Scotland, the potential increase in annual GVA during the operation and maintenance phase lies in the range of £2.5 million to £3.1 million per year. For the Low scenario, this would represent an increase of around 0.002% in annual economic output in Scotland. The magnitude of impact for operation and maintenance phase GVA is therefore concluded to be Negligible for Scotland under the worst case scenario.

For the UK, the potential increase in construction phase GVA lies in a range of £4.9 million to £5.4 million per year. For the Low scenario, this would represent a temporary increase of around 0.0003% in GVA for the UK. The magnitude of impact is concluded to be Negligible for the UK under the worst case scenario.

19.6.2.2.2 Sensitivity

The assessment of sensitivity of GVA receptors for the operation and maintenance phase is the same as per the construction phase. This is assessed to be as follows:

- > Caithness: The receptor has a **High** level of sensitivity;
- > Highland: The receptor has a **Moderate** level of sensitivity; and
- > Scotland and UK: The receptors have a **Low** level of sensitivity.

19.6.2.2.3 Significance

The significance of the effect on operation and maintenance phase GVA varies by spatial area:

- > Caithness: The combination of a **High** sensitivity receptor and a **Low** magnitude of impact produces a **Moderate** effect that is **beneficial** and **significant**;
- > Highland: The combination of a **Moderate** sensitivity receptor and a **Negligible** magnitude of impact produces a **Minor** effect that is **beneficial** but **not significant**; and
- > Scotland and UK: For both areas, the combination of a **Low** sensitivity receptor and a **Negligible** magnitude of impact produces a **Negligible** effect that is **beneficial** but **not significant**.

19.6.2.3 Operations and maintenance activity effects on Housing, Recreation, and Other Local Services

19.6.2.3.1 Magnitude

The worst case scenario from the perspective of the Housing, Recreation, and Other Local Services receptor is associated with the estimated number of jobs expected to be created during the operation and maintenance phase that is associated with the High scenario.

The impact of the operation and maintenance phase of the Project on demand for housing as well as health services, education services, recreation services, and other services in the Study Areas is linked to:

-
- > The number of direct and other jobs expected to be created during the operation and maintenance phase; and
 - > The proportion of these jobs that are taken up by workers who will reside within each area.

The Project also has the potential to affect recreation receptors by changing community perceptions of the local area as a place to undertake outdoor activities (such as walking, cycling, nature-based activities, boating, and offshore recreational fishing, etc).

Permanent employment opportunities created in both Caithness and the Highland region during the operation and maintenance phase are likely to be shared between workers who are already resident within these areas and workers from outside the area who are recruited as the operation and maintenance workforce for the Project. Additional demand for housing and other local services would be primarily driven by the latter group (i.e. workers who were not previously resident in the local area but who move into the area to take up new permanent job roles created during the operational phase of the Project).

For Caithness, the worst case scenario from the perspective of demand for housing and local services is that 100% of the job roles created during the operation and maintenance phase are filled by workers recruited from outside the Caithness areas, as set out in Table 19.19. That is, all 25.4 job roles are filled by workers who are not previously resident within the Caithness.

According to the recent draft HNDA there is expected to be a need for 385 additional dwellings in the Caithness local housing market area over the 10-year period to 2028/29. Adding extra demand for up to 26 dwellings to this total would represent an increase of around 6.6% to the baseline demand total. The magnitude of impact for housing demand during the construction phase is therefore concluded to be High for Caithness for the worst case scenario.

For the Highland region, the worst case scenario from the perspective of demand for housing and local services is that 100% of the job roles created during the operation and maintenance phase are filled by workers recruited from outside the Highland area, as set out in Table 19.19. That is, the 34.6 job roles expected to be created under the High scenario are all filled by workers who are not previously resident within the Highland region.

The draft HNDA forecasts a need for 9,038 additional dwellings across the Highland region over the 10-year period to 2028/29. Adding extra demand for up to 35 dwellings to this total would represent a temporary increase of up to 0.4% to the baseline demand total. The magnitude of impact for housing demand during the operation and maintenance phase is therefore concluded to be Low for the Highland region under the worst case scenario.

The magnitude of impact for housing demand and other services at the spatial level of Scotland and the UK are concluded to be Negligible under both the Low and High scenarios.

With respect to outdoor recreation undertaken by residents of local communities, it is not considered likely that the Project is isolation will generate significant levels of deterrence or generate a significant reduction in the quality of experience of people participating in outdoor recreation activities locally during the Operational phase. This is for the following reasons:

- > The onshore area affected by O&M activity is adjacent to the Dounreay Nuclear Facility, so the area potentially affected by operational activities already possesses a similar character to that which might be bestowed by the development of new infrastructure (such as an electricity sub-station) associated with the Project.
- > There are local substitutes available for the types of outdoor recreation activities (such as recreational use of walking paths or beaches) that have the potential to be affected by onshore and offshore operational activities associated with the Project.
- > Recreational fishing within a section of the OECC is already not permitted due to the extant fisheries exclusion zone within 2 km of Dounreay.

19.6.2.3.2 Sensitivity

The assessment of sensitivity of Housing and Local Service receptors for the operation and maintenance phase is the same as per the construction phase. This is assessed to be as follows:

- > Caithness and Highland: The receptors have a **Low** level of sensitivity;
- > Scotland: The receptor has a **Moderate** level of sensitivity; and
- > UK: The receptor has a **High** level of sensitivity.

19.6.2.3.3 Significance

The significance results for the Study Areas are as follows:

- > Caithness: The combination of a **Low** sensitivity receptor and a **High** magnitude of impact produces a **Moderate** effect that is **adverse** and **significant**;
- > Highland: The combination of a **Low** sensitivity receptor and a **Low** magnitude of impact produces a **Minor** effect that is **adverse** but **not significant**;
- > Scotland: The combination of a **Moderate** sensitivity receptor and a **Negligible** magnitude of impact produces a **Minor** effect that is **adverse** but **not significant**; and
- > UK: The combination of a **High** sensitivity receptor and a **Negligible** magnitude of impact produces a **Minor** effect that is **adverse** but **not significant**.

19.6.2.4 Operation and maintenance activity effects on tourism

19.6.2.4.1 Magnitude

The operation and maintenance phase of the Project in isolation is not considered to have potential to deter significant numbers of visitors and visitor spending to the area. The rationale for this is similar to that described in Section 19.6.1 for the construction phase. In short:

- > The onshore area affected by operational activity is adjacent to the site of the Dounreay Nuclear Facility, so the onshore area already possessed a similar character to that that might be bestowed by an electricity sub-station in isolation;
- > There are local substitutes available for the types of tourism activity that have the potential to be displaced by operational activities that may take place in onshore areas (such as the substation site);
- > Activities such as boating and offshore recreational fishing that might otherwise occur in areas such as the array site are niche activities that are not participated in by the vast majority of tourist visitors to the area; and
- > Trend data for tourism volume and value in Caithness and the Highland region has been increasing in recent years (prior to the COVID-19 pandemic) despite the increasing numbers of onshore and offshore developments occurring in the areas over the past decade. The marginal effect of an offshore wind farm project of this type and scale is not considered likely to generate a significant deterrent effect on visitors to the area.

It is also the case that in some areas where offshore wind farms are relatively accessible, new forms of tourism activity can arise, such as boat tours taking visitors close to operational WTGs. For example, in Aberdeen Bay, several boat tour operators market their services to visitors highlighting opportunities to view working offshore wind farms.

The operation and maintenance phase also has the potential to generate extra demand for local bedspaces to accommodate visiting contractors, specialists, and other workers whose labour services to the Project are of limited duration or are episodic and are likely to be accommodated in serviced or un-serviced tourist accommodation. This in turn could generate positive impacts on the local tourism economy, such as additional demand for serviced accommodation, food and drink services, etc. However, if large numbers of tourist bedspaces are taken by visiting workers, this could negatively impact other parts of the local tourism economy, by decreasing the number of tourist visitors available to visit local visitor attractions, shops, food & drink service providers, etc.

Setting aside the possibility of positive effects, from the perspective of the Tourism receptor, the worst case scenario is that linked to Low scenario employment effects at the spatial level of the Caithness and Highland areas, coupled with an assumption that a proportion of these workers would be visitors to the area and therefore in need of temporary accommodation.

An assumption has been made that up to 10% of the non-locally resident UK operation and maintenance workforce may need to visit the Project area at any point in time. That is, up to 10% of the operation and maintenance operation and maintenance workforce normally based outside Caithness might need to visit the Offshore Site to undertake specialist maintenance and other functions at any one time. This assumption is based on a recent (unpublished) review of the evidence of 16 UK offshore wind farm projects undertaken by the author of this chapter on behalf of National Grid ESO.

The implication of this assumption is that the potential magnitude of the effect on demand for tourism accommodation would be driven by the need to accommodate an average of five visiting workers at any one time at the spatial level of Caithness.

The equivalent figure for the Highland area is the need to accommodate up to four visiting workers at any one time at the spatial level of the Highland region.

According to the 2019 STEAM report commissioned by THC, the Caithness area has 3,478 tourist bedspaces. Removal of up to five bedspaces from this total would represent a decrease of around 0.16% for the tourist accommodation baseline total for Caithness. The magnitude of the potential reduction in tourism visits and spending during the operation and maintenance phase is therefore concluded to be Low for Caithness under the worst case scenario.

According to the 2019 STEAM report commissioned by THC, the Highland region has around 75,200 tourist bedspaces. Removal of up to four bedspaces from this total would represent a temporary decrease of around 0.005% of the tourist accommodation baseline total for the Highland region. The magnitude of the potential reduction in tourism visits and spending during the construction phase is therefore concluded to be Negligible for the Highland region under the worst case scenario.

The magnitude of impact on tourism activity at the spatial level of Scotland and the UK are concluded to be Negligible under both the Low and High scenarios.

19.6.2.4.2 Sensitivity

The assessment of sensitivity of Tourism receptors for the operation and maintenance phase is the same as per the construction phase. This is assessed to be as follows:

- > Caithness and Highland: The receptors have a **Moderate** level of sensitivity; and
- > Scotland and the UK: The receptors have a **Low** level of sensitivity.

19.6.2.4.3 Significance

The significance results for the Study Areas are as follows:

- > Caithness: The combination of a **Moderate** sensitivity receptor and a **Low** magnitude of impact produces a **Minor** effect that is adverse but **not significant**;
- > Highland: The combination of a **Moderate** sensitivity receptor and a **Negligible** magnitude of impact produces a **Minor** effect that is adverse but **not significant**;

- > Scotland: The combination of a **Low** sensitivity receptor and a **Negligible** magnitude of impact produces a **Negligible** effect that is adverse but **not significant**; and
- > UK: The combination of a **Low** sensitivity receptor and a **Negligible** magnitude of impact produces a **Negligible** effect that is adverse but **not significant**.

19.6.2.5 Summary of operation and maintenance activity effects

Table 19.21 summarises the findings of the assessment undertaken for the operation and maintenance phase effects.

Table 19.21 Summary of significance of effects from operation and maintenance impacts (worst case scenario)

Receptor	Study Area	Sensitivity	Magnitude of Impact	Rationale	Consequence	Significance of Effect	Additional Mitigation Requirements	Residual Effect
O&M employment	Caithness	High	High	A high proportion of the O&M workforce would be expected to be based (and reside) locally.	Major effects (beneficial)	Significant	Effects are expected to be positive and no additional mitigation measures are required.	Significant
	Highland	Moderate	Low	The majority of the O&M workforce would be expected to be based in the Highland area.	Minor effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Low	Negligible	Although the impacts are beneficial, they are not expected to be large enough to be noticeable at this spatial level.	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	Low	Negligible	Although the impacts are beneficial, they are not expected to be large enough to be noticeable at this spatial level.	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
O&M GVA	Caithness	High	Low	The workforce earnings component of GVA would be expected to largely accrue locally. However, a proportion of the retained profits component of GVA is likely to be repatriated to locations outside of Caithness.	Moderate effects (beneficial)	Significant	Effects are expected to be positive and no additional mitigation measures are required.	Significant
	Highland	Moderate	Negligible	Although the impacts are beneficial, they are not expected to be large enough to be noticeable at this spatial level.	Minor effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Low	Negligible	Although the impacts are beneficial, they are not expected to be large enough to be noticeable at this spatial level.	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	Low	Negligible	Although the impacts are beneficial, they are not expected to be large enough to be noticeable at this spatial level.	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
Demand for Housing and Other Services	Caithness	Low	High	There is potential for negative effects on the local housing market through increased demand for private rented residential property to accommodate the O&M workforce.	Moderate effects (adverse)	Significant	<p>HWL will review the Project Construction Management Plan to identify periods of peak demand for accommodation and implement additional measures to mitigate the significance of the impact. This will be secured via the provision of a Project Accommodation Plan. Example measures may include:</p> <ul style="list-style-type: none"> > Additional measures to facilitate increased levels of local recruitment of workers during the O&M stage, including school and college leavers and local residents who are currently economically inactive; and > Working with the private sector to provide housing for workers recruited to the Project who move into the area to fill permanent O&M phase project roles. 	Not Significant

Receptor	Study Area	Sensitivity	Magnitude of Impact	Rationale	Consequence	Significance of Effect	Additional Mitigation Requirements	Residual Effect
	Highland	Low	Low	There may be some additional demand for housing and other local services, but this is likely to be concentrated in areas with otherwise a declining working-age population.	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Moderate	Negligible	Impacts on the overall demand for housing and public services are not expected to be noticeable at a national level.	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	High	Negligible	Impacts on the overall demand for housing and public services are not expected to be noticeable at a UK level.	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
Tourism – O&M	Caithness	Moderate	Low	Beneficial impacts on demand for local accommodation for visiting O&M workforce may be offset by reduced demand for tourism attraction businesses. However, the net effect is unlikely to be large enough to be noticeable across Caithness.	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Highland	Moderate	Negligible	Medium to long term impacts on the tourism industry are not expected to be noticeable at a regional level.	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Low	Negligible	Impacts on the tourism industry are not expected to be noticeable at a national level.	Negligible effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	Low	Negligible	Impacts on the tourism industry are not expected to be noticeable at a UK level.	Negligible effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant

19.6.3 Effects During Decommissioning

19.6.3.1 Effects on employment, GVA, and tourism

In general, the scale and type of effects expected during the decommissioning phase could be expected to be similar to those anticipated to occur during the construction phase.

However, the considerable potential for future technological innovation and progress relating to decommissioning activities over the next 30 years or so years means that it is not currently possible to predict the scale and duration of expenditure that would be required to decommission the Project.

Another principal source of uncertainty concerns the potential future locations of a decommissioning supply chain that would have the equipment, skills, expertise, and workforce to undertake large-scale offshore decommissioning activities.

The consequence of these types of uncertainty means that it is not possible to produce meaningful quantified estimates of the employment and GVA consequences of a decommissioning phase of the Project in the same way that has been done for the construction and operation and maintenance phases.

19.7 Assessment of Cumulative Effects

19.7.1 Introduction

The consideration of which projects could result in potential cumulative effects is based on the results of the Socio-economic, Recreation, and Tourism specific impact assessment together with the expert judgement of the specialist consultant.

The assessment of potential cumulative effects for Socio-economics, Recreation, and Tourism receptors takes into account the following:

- > **Effects on supply chain (offshore projects):** There is the potential for interactions with other developments, such as offshore wind farms, oil & gas projects, and other offshore pipe-laying and cable-laying projects, which could result in increased competition for access to ports/harbours, offshore vessels, workers etc. The spatial area of relevance to the assessment of cumulative effects for these receptors is defined:
 - All the offshore wind farm projects that have been included within the ScotWind 1 leasing round, announced on 17th January 2022; and
 - For the other types of offshore projects, the relevant ones are projects that would be located within Scottish waters.

All these projects were considered qualitatively.

- > **Effects on supply chain (onshore projects):** There is also some limited potential for supply chain interactions with onshore wind farm developments proposed for the Caithness and Sutherland area. These projects were considered qualitatively; and
- > **Effects on Tourism and Recreation receptors:** The potential for onshore and offshore developments located up to 50 km from the Project are judged to be capable of influencing Caithness as a destination for outdoor, coastal, and marine-based tourism and recreation activities, such as walking, cycling, nature-based activities, boating, recreational fishing, kayaking, surfing, etc.^{vii}.

Other than the ScotWind 1 offshore wind farm projects, the other offshore infrastructure, onshore energy, and other infrastructure projects included in the cumulative assessment are those listed in Table 19.22 below.

^{vii} The 50- km radius was selected to align with the area used in the SLVIA assessment for the Project.

Table 19.22 Projects considered for the Socio-economic, Recreation, and Tourism cumulative impact assessment

Development Type	Project Name	Status	Phase	Location (Distance to Project) (km)	Data Confidence	Relevant Receptors
Onshore Energy Infrastructure	Decommissioning of Dounreay Nuclear Facility and Vulcan Naval Reactor Test Establishment	Consented	Decommissioning expected to begin in 2024.	7.4	Medium	All
Onshore Energy Infrastructure	SHE Transmission Onshore Substation	Consented	Open with intermittent activity taking place.	7.5	Medium	All
Satellite Launch Facility	Sutherland Space Hub	Consented	Construction expected to begin in 2023	37.9	Medium	All
Onshore wind farm	Forss	Operational	Operational (construction commenced in 2007)	9.99	High	All
Onshore wind farm	Forss III	Application	Appealed (ongoing). Construction dates unknown.	88.3	Low	All
Onshore wind farm	Drum Hollistan 2	Application	Appealed (ongoing). Construction dates unknown.	10.3	Low	All
Onshore wind farm	Baillie Hill	Operational	Operational (construction commenced in 2013)	12.4	High	All
Onshore wind farm	Ackron (Resubmission)	Application	Re-submitted at application stage (construction dates unknown)	10.6	Low	All
Onshore wind farm	Limekiln Resubmission	Application	Construction expected to begin in 2021	12.3	Low	All
Onshore wind farm	Limekiln Extension	Application	Construction dates unknown.	13.7	Low	All
Onshore wind farm	Strathy North	Operational	Operational (construction commenced in 2015)	17.4	High	All
Onshore wind farm	Strathy Wood	Consented	Construction expected to	18.9	Low	All

Development Type	Project Name	Status	Phase	Location (Distance to Project) (km)	Data Confidence	Relevant Receptors
			commence in 2024.			
Onshore wind farm	Bettyhill	Operational	Operational (construction commenced in 2013)	21.1	High	All
Onshore wind farm	Strathy South	Consented	Construction expected to begin in 2023	23.0	Medium	All
Onshore wind farm	Achlachan	Operational	Operational (construction commenced in 2019)	31.1	High	All
Onshore wind farm	Achlachan 2	Consented	Construction dates unknown.	31.7	Medium	All
Onshore wind farm	Tormsdale	Application	Construction dates unknown.	31.6	Low	All
Onshore wind farm	Causeymire	Operational	Operational (construction commenced in 2003)	32.4	High	All
Onshore wind farm	Halsary	Operational	Operational (construction commenced in 2019)	33.7	High	All
Onshore wind farm	Bad a Cheo	Operational	Operational (construction commenced in 2019)	33.8	High	All
Onshore wind farm	Lochend Farm	Operational	Operational (construction commenced in 2017)	35.5	High	All
Onshore wind farm	Hoy	Consented	Construction dates unknown.	38.77	Medium	All
Onshore wind farm	Stroupster	Operational	Operational (construction commenced in 2015)	4141.1	High	All
Onshore wind farm	Slickly Wind Farm	Appeal	Appeal (ongoing) Construction dates unknown.	39.6	Low	All
Onshore wind farm	Hollandmey Wind Farm	Application	Construction expected to begin in 2024.	36.0	Low	All

Development Type	Project Name	Status	Phase	Location (Distance to Project) (km)	Data Confidence	Relevant Receptors
Onshore wind farm	Cairnmorehill Wind Farm	Resubmission (at Scoping stage)	Scoping Construction dates unknown.	14.6	Low	All
Onshore wind farm	Coglemoss Wind Farm	Consented	Construction dates unknown.	38.7	Medium	All
Onshore wind farm	Wathegar Wind Farm 1	Operational	Operational (construction commenced in 2012)	41.6	High	All
Onshore wind farm	Wathegar Wind Farm 2	Operational	Operational (construction dates not known)	42.6	High	All
Onshore wind farm	Camster Wind Farm	Operational	Operational (construction commenced in 2011)	41.0	High	All
Onshore wind farm	Camster Wind Farm 2	Consented	Construction expected to begin in 2024.	42.3	High	All
Onshore wind farm	Burn of Whilk Wind Farm	Operational	Operational (fully commissioned in 2015)	48.2	High	All
Onshore wind farm	Golticlay Wind Farm	Consented	Construction dates not known.	43.2	Medium	All
Onshore wind farm	Boulfruich Wind Farm	Operational	Operational (construction dates not known)	44.6	High	All

The following sections summarise the nature of the potential cumulative effects for each potential Project stage.

Construction/Decommissioning and Operation and Maintenance have been taken forward for the cumulative assessment along with a consideration of the following factors:

- > Effect on employment and economic output (GVA);
- > Effect on demand for housing, recreation resources, and other local services; and
- > Effect on the volume and/or value of tourism activities.

19.7.2 Cumulative Construction Effects

19.7.2.1 Effects on employment and economic output GVA

The potential cumulative effects for supply chain and workforce receptors during the construction phase depends on the extent to which the Project may need to compete for resources, inputs, supply chain capacity and workforce sourced from within the area with demand for similar resources associated with other offshore wind farm projects (for example, those successful in the ScotWind1 leasing process), as well as the onshore wind farms listed in Table 19.21.

For example, there is potential for competition for project resources – such as access to ports/harbours, supply chain capacity, and skilled workers – between the Project and other offshore wind farm projects, in particular those whose respective construction phases have the potential to overlap with that for the Project.

Competition for resources of these types has the potential to create an additional local supply-side constraint. If this occurs, then a greater proportion of resources required by the Project may need to be sourced from elsewhere. This in turn could mean that the estimates for job and GVA creation in Caithness, Highland, and/or Scotland during the construction phase presented in Section 19.6.1 may not be realised in full.

It is also possible that there may be elements of competition between the Project and proposed onshore wind farm developments elsewhere in Caithness and adjacent parts of Sutherland. However, potential competition from onshore developments is considered to be relevant to only a small proportion of anticipated overall Project development expenditure (i.e. the construction of the onshore sub-station and the onshore cable infrastructure). This is because the relevant elements of the Project's construction phase that could interact with onshore wind farm developments account for only around 6% of the total estimated CAPEX for the Project.

The scale of expected construction phase GVA and employment effects expected to be generated at the spatial level of the Highlands, Scotland, and the UK are not considered to be vulnerable to competition from onshore developments that could be constructed over a similar timeframe to the Project.

Where construction phase GVA and employment effects are expected to be generated at the spatial level of Caithness, there is potential for a level of competition that could reduce the local results for GVA and employment (see Section 19.6.1). In the absence of any further development of the local supply chain in Caithness, the scale of potential positive effects for the employment and GVA receptors in Caithness may be reduced. However, the potential scale of this reduction is highly uncertain.

The potential cumulative effects from other onshore and offshore projects include the potential for a stimulus to (i.e. encouragement for the expansion of) the domestic supply chain relevant to the Project. The potential for this stimulatory effect on the supply chain is highlighted as a rationale for UK and Scottish Government policy support for the offshore wind power sector, as mentioned in the policy review in Section 19.1. For example, the availability of a sufficiently strong pipeline of proposed offshore renewable energy developments has the potential to encourage the private sector to commit to additional investment in national, regional, and local supply chain capacity. Such investment could include investment in production facilities and equipment, and/or investment in local workforce recruitment, training, and capacity.

The strengthening and expansion of the offshore wind renewables sector is an important policy and strategic objective for the Scottish Government. Policy statements and strategies (Section 19.2) such as the Energy Strategy (2017), the Scotland Offshore Wind Policy Statement (2020), and the National Strategy for Economic Transformation (March 2022) make it clear that the Scottish Government recognises that the development of the offshore renewables sector provides a large opportunity for a substantial expansion of high-value business chain activity and associated employment.

The Scottish Government and its enterprise agencies have backed up policies in this area by contributing to the development of offshore renewables supply chain clusters such as DeepWind, and by providing support for the work undertaken by the Offshore Renewable Energy Catapult and the Floating Wind Centre of Excellence.

The Scottish Government's response to the Just Transition Commission report (2021) highlights how the expansion of the offshore renewables sector is expected to contribute to the replacement of the many highly skilled and well-paid jobs in the offshore oil and gas sector and associated supply chain that are expected to be lost.

The expected decline of the Scottish offshore oil and gas industry has the potential to release industrial and workforce capacity given that there are substantial areas of overlap between the technologies, materials, and skills required for offshore oil and gas extraction and those relevant to offshore renewable energy exploitation. Some of this existing offshore oil and gas industry supply chain already exists in the Highlands, but there is also scope for further expansion of this capacity.

To summarise the principal considerations pertaining to the cumulative assessment for employment and GVA receptors:

- > There are inherent uncertainties in predicting in quantitative terms the likely scale and spatial pattern of procurement that would be associated with the potential offshore developments included in the ScotWind 1 leasing process as well as the onshore projects listed in Table 19.21;
- > There is also a large amount of uncertainty concerning the potential timing of construction of the cumulative assessment developments – especially for those that are not yet consented – and therefore in estimating the potential for overlap (i.e. competition for resources) with the Project;
- > Additionally, there is also uncertainty regarding the potential future expansion and development of the locally based supply chain relevant to the Project's construction phase, especially given that a substantial augmentation of the existing Scottish supply chain is an important and consistently stated priority for the Scottish Government; and
- > HWL is currently undertaking measures to develop relationships with local suppliers who have the potential to provide content to the Project, such as through the hosting of 'Meet the Buyer' events. HWL has also signed a memorandum of understanding with Scrabster Harbour to facilitate the provision of support services during both the construction and operation and maintenance phases.

These uncertainties prevent precise quantification of the scale of the potential cumulative impacts during the construction stage. Competition from other types of development has the potential to diminish the scale of net additional impacts on receptors such as employment and GVA within the various spatial areas. Conversely, efforts by the private sector and/or Scottish Government to enhance supply chain capacity could be reasonably expected to increase the potential scale of (beneficial) impact.

Given this, the most likely outcome of cumulative effects on employment and GVA receptors during the construction stage is that the results lie within the range of Low/High results set out in Table 19.16 and Table 19.17 respectively. The worst case outcome, however, is that the results tend towards the lower end of this scale for GVA and employment.

The conclusion of the significance of effects for employment and GVA reported in Table 19.18 are therefore unlikely to change as a result of cumulative effects being taken into consideration.

19.7.2.2 Effects on demand for housing and local services (including recreation)

The potential cumulative effects on the employment receptor outlined above also have the potential to influence the results for the Housing, Recreation and Local Services receptor.

Increased competition from other developments could result in lower additional demand for housing and local services in the local Study Areas (i.e. if a greater proportion of Project content is required to be sourced from suppliers located outside of the Caithness and/or Highland areas).

However, a reduced level of demand for these types of services from cumulative effects are unlikely to affect the conclusion of the significance of effects presented in Section 19.6.

The potential for the Project in isolation to adversely affect local recreation receptors was not considered to be significant (see Section 19.6.1). The pipeline of potential additional onshore and offshore developments (including the ScotWind 1 leasing round and the onshore wind farm developments listed in Table 19.21) in combination with the Project has the potential to increase the likelihood of more substantial and sustained levels of construction activity that in turn has the potential to adversely affect local communities experiences when utilising outdoor recreational assets.

However, it is relevant to note that within the area defined for the purpose of the cumulative assessment, there is likely to be a correspondingly large increase in the potential number of substitute recreational assets and resources that could be available for local communities to access. Many of these assets and resources are likely to be located in places that are unlikely to be affected by construction activities associated with the Project.

Given this, it is not considered likely that the additional impacts on housing and local services (including recreation) from cumulative effects will alter the conclusion of the significance of effects presented in Section 19.6.

19.7.2.3 Effects on tourism

The assessment of Project-specific effects on tourism was focused on the potential effects generated by competition for tourist bedspaces from temporary construction workers, which could also have knock-on effects on other tourism businesses (such as visitor attractions) that are dependent on visitor expenditure.

Considerable uncertainties exist (Section 19.7.2.1) in quantification of the scale and timing of additional supply chain stimulus and expansion of workforce hiring requirements within the Study Areas that might result from the simultaneous construction of the Project in combination with some or all of the other developments included in the ScotWind1 leasing round or the developments listed in Table 19.21. The most likely outcome of cumulative effects on employment receptors during the construction stage is that the results lie within the range of Low/High results set out in Table 19.16.

From the perspective of the Tourism receptor, the greatest competition for tourist bedspaces arises is likely to be associated with the 'Low' result for the employment receptor (i.e. a higher proportion of the required workforce is sourced from outside the local Study Areas, with a consequent greater need for some of the visiting workforce to be accommodated in tourist accommodation, thereby potentially displacing tourist visitors).

The potential for the Project in isolation to directly deter visitors and/or visitor expenditure was not considered to be significant (see Section 19.6.1). When assessing cumulative effects, the potential for new onshore and offshore developments, including the ScotWind 1 leasing round and the onshore wind farm developments listed in Table 19.21, may increase the likelihood of more substantial and sustained levels of construction activity in the Study Area.

However, research published by Scottish Government in 2008 (Economic impacts of wind farms of Scottish tourism, 2008) provided survey evidence that indicated around three-quarters of tourists considered that wind farms had either a positive (39%) or neutral (36%) impact on the landscape. The same research also found that although a significant minority (20% to 30%) preferred landscapes without wind farms, of these only a very small group (7% to 10%) of the total sample would change their intentions regarding re-visiting.

This finding is consistent with trend data for tourism industry activity in both the Caithness and Highland areas over the period up to 2019 (as revealed by STEAM data published by THC), which indicates that tourism activity has continued to increase in these areas whilst the development of onshore wind farm projects in these areas has been ongoing.

Given this, it is not considered likely that the additional potential for reduced levels of visitor activity from cumulative effects will alter the conclusion of the significance of effects presented in Section 19.6.

19.7.3 Cumulative Operation and Maintenance Effects

19.7.3.1 Effects on employment and GVA

Compared to construction phase activity, competition for supply chain capacity, ports/harbours, and workforce from other developments is anticipated to be much less of a potential concern during the operation and maintenance phase:

- > The majority of operation and maintenance activities would be undertaken by a dedicated workforce. This differs from the construction phase, when much of the activity would be outsourced to specialist providers of plant, equipment, and materials, and require a specialist and temporary construction workforce;

- > Where specialist inputs for operation and maintenance activities are required, these are likely to be supplied by long-term contractors, including some sourced from the manufacturers of equipment used in the Project, as well as other specialist service providers. The requirement for these inputs can be programmed well in advance, with suppliers able to recruit and train additional staff to fulfil these contracts alongside their other commitments; and
- > The operation and maintenance phase of the Project occurs for up to 30 years. This is sufficient time to enable any necessary supply-side adjustments to supply chain capacity and workforce skills.

Overlapping phases of operation and maintenance activities between the Project and other offshore wind farm developments included in the ScotWind1 leasing round are likely to be mutually beneficial as they serve to encourage both additional investment in supply chain capacity – and also investment in workforce skills and competency – within the Study Area.

The availability of a range of employment and career progression opportunities across a portfolio of renewable energy projects is also likely to lead to the attraction and retention of a skilled renewables industry workforce residing within the Study Area.

Consequently, the potential for competition for operation and maintenance resources between the Project and other developments is predicted to be very low.

It is not considered likely that the potential for cumulative effects on operation and maintenance phase employment and GVA receptors will alter the conclusion of the significance of effects summarised in Table 19.21.

19.7.3.2 Effects on demand for housing and local services (including recreation)

In principle, increased competition from other developments could result in increased additional demand for housing and local services. This would occur if a greater proportion of Project content is required to be sourced from suppliers located outside the local Study Areas.

However, the labour demand required during the operation and maintenance phase is substantially lower than during the construction phase and a high proportion of the permanent operation and maintenance workforce may be recruited from the existing resident workforce of Caithness (and/or the Highland region). It is unlikely that there will be additional demand generated as the result of interactions between the Project and the other offshore developments included in the ScotWind1 leasing round. This means that the cumulative effects on demand for housing and local services would not be any greater than those identified by the Project-specific assessment (and, if anything, the result of cumulative effects would be to reduce the scale of the potential adverse effects).

It is not considered likely that the potential for cumulative effects on the operation and maintenance phase Housing and Local Services receptors will alter the conclusion of the significance of effects summarised in Table 19.21.

The potential for the Project in isolation to adversely affect local recreation receptors during the operation and maintenance phase was not considered to be significant. However, consideration of additional developments listed in Table 19.21) in combination with the Project may increase the levels of operational activity taking place within the area, which has the potential to adversely affect the experiences of local communities when utilising outdoor recreational assets.

Within the area defined for the purpose of identifying other projects and developments relevant to the cumulative assessment, there is likely to be a correspondingly large increase in the potential number of substitute recreational assets and resources that could be available for local communities to access and experience. Many of these assets and resources are likely to be located in places unaffected by operational activities associated with the Project or other developments.

Given this, it is not considered likely that the additional potential for reduced levels of local recreation from cumulative effects will alter the conclusion of the significance of effects presented in Section 19.6.

19.7.3.3 Effects on tourism

Cumulative effects on tourism industry activity within the local area may result from the displacement of tourists from accommodations. This could occur if operation and maintenance activities associated with the Project and other offshore wind farm developments, or onshore developments (see Table 19.21) required substantial numbers of visiting specialists and other workers. These workers may need to be accommodated locally in accommodation that would otherwise be available for tourists.

However, the number of visiting contractors and other workers associated with the Project who may need to be accommodated during the operation and maintenance phase is likely to be low (Section 19.7.3.1). The number of workers associated with the other developments who may need to be accommodated locally is uncertain (i.e. at the spatial level of Caithness and Highland). However, visits by contractors and specialists to developments such as other offshore wind farms are likely to be in low numbers and are also likely to be distributed throughout the year. It is unlikely that the aggregate numbers of visits by specialist workers at any one time would cause significant levels of displacement of tourists and associated expenditure.

It is not considered likely that the potential for cumulative effects of the operation and maintenance phase on Tourism receptors will alter the conclusion of the significance of effects summarised in Table 19.21.

19.7.4 Cumulative Decommissioning Effects

Decommissioning activities are likely to draw upon similar services and skills as per the construction phase. Therefore, it may be expected that cumulative decommissioning phase activities would generate cumulative effects on indicators such as employment, GVA, demand for services and effects on tourism that are similar in type and duration to those assessed for the construction phase.

However, as it is not possible to quantify the scale of potential Project-specific decommissioning effects, neither is it possible to quantify the potential for cumulative decommissioning effects.

19.8 Assessment of Transboundary Effects

The Project has the potential to generate positive economic benefits for businesses and workforces based outside the UK, especially in other European countries. This is because a significant proportion of project expenditure – especially during the construction phase – is expected to accrue to businesses and workforces located outside the UK. For example, WTGs are expected to be sourced from European suppliers. On this basis, the potential transboundary effects on employment and GVA from the Project are expected to be positive.

The potential for transboundary effects on demand for housing, local services, or recreation in the countries that benefit from Project expenditure cannot be quantified but are highly unlikely to be significant.

There are not expected to be any transboundary effects relating to tourism activity.

19.9 Mitigation and Monitoring Requirements

19.9.1 Additional Specific Mitigation

Additional mitigation over and above the measures proposed in Section 19.5.5 and Section 19.6 is summarised in Table 19.23.

Table 19.23 Additional Mitigation Requirements

Description	Secured By
There is potential for Significant adverse effects on demand for housing and local services at the spatial level of Caithness during the O&M phase.	HWL will review the Project Construction Management Plan to identify periods of peak demand for accommodation and implement additional measures to mitigate the significance of the impact. This will be secured via the provision of a Project Accommodation Plan. Example measures may include:
The potential for significant adverse impacts can be offset through additional measures and resources to facilitate recruitment of the O&M workforce from the resident	

Description	Secured By
<p>population of Caithness in addition to the measures already committed to by HWL.</p> <p>It should also be noted that Caithness is identified by THC as an area of low housing pressure, so additional demand for services by the Project workforce (and their families) could help to underpin demand for these services in the longer term.</p>	<ul style="list-style-type: none"> > Additional measures to facilitate increased levels of local recruitment of workers during the O&M stage, including school and college leavers and local residents who are currently economically inactive; and > Working with the private sector to provide housing for workers recruited to the project who move into the area to take permanent O&M phase positions.

19.10 Inter-relationships

Interrelated effects describe the potential interaction of multiple project impacts upon one receptor which may interact to create a more significant impact on a receptor than when considered in isolation. Interrelated effects may have a temporal or spatial element and may be short-term, temporary, or longer-term over the lifetime of the Project.

In line with the Scoping Opinion and Scoping Opinion Addendum received, this chapter has assessed all impacts that are relevant to Socio-economic, Recreation, and Tourism receptors during the construction, operation and maintenance, and decommissioning phases of the Project. Therefore, it is considered that the assessment and conclusions presented in Section 19.6 provide a complete and robust assessment of all potential impacts relevant to Socio-economic, Recreation, and Tourism. The assessment has also considered the potential for inter-related effects in relation to Socio-economic, Recreation, and Tourism, and no additional inter-related effects have been identified.

Where the assessment contained in this chapter is considered within other assessment chapters, a summary of these interrelationships is presented below in Table 19.24.

Table 19.24 Inter-relationships identified with Socio-economics, Recreation, and Tourism and other receptors in this Offshore EIAR

Receptor	Impacts	Description
Commercial Fisheries	Indirect impacts on commercial fishing activity from any fishing exclusion areas and/or potential changes in behaviour on the part of commercial fishers.	The potential effects of the Project on commercial fishing activities are assessed in Chapter 13: Commercial Fisheries.
Shipping and Navigation	Indirect impacts on shipping and navigation activity resulting from exclusion areas.	The potential for supply chain participation in the Project by commercial vessels and harbours within the Study Area is assessed in this chapter. The potential effects on other types of shipping and navigation activity are assessed in Chapter 14: Shipping and Navigation.
Seascape, Landscape and Visual Amenity	Indirect effects on tourism and local residents' recreational behaviour as a result of impacts of seascape, landscape, and/or visual amenity from the Project.	The potential impacts of the Project on tourism and recreational activity from potential changes to landscape and seascape are assessed within this chapter.
Other Sea Users of the Marine Environment	Indirect impacts on activities such as oil and gas extraction, etc.	The potential impacts on other sea users, including the oil & gas sector, are assessed within Chapter 18: Other Users of the Marine Environment.

19.11 Summary of Residual Effects

Table 19.25 summarises the effects for all impacts assessed for Socio-economics, Recreation, and Tourism.

Table 19.25 Summary of residual effects for Socio-economics, Recreation, and Tourism

Predicted Effect	Study Area	Assessment Consequence	Significance	Mitigation Identified	Significance of Residual Effect
Construction and Decommissioning					
Employment effects	Caithness	Moderate effects (beneficial)	Significant	Effects are expected to be positive, and no mitigation is required.	Significant
	Highland	Major effects (beneficial)	Significant	Effects are expected to be positive, and no mitigation is required.	Significant
	Scotland	Minor effects (beneficial)	Not Significant	Effects are expected to be positive, and no mitigation is required.	Not Significant
	UK	Negligible effects (beneficial)	Not Significant	Effects are expected to be positive, and no mitigation is required.	Not Significant
GVA effects	Caithness	Minor effects (beneficial)	Not Significant	Effects are expected to be positive, and no mitigation is required.	Not Significant
	Highland	Minor effects (beneficial)	Not Significant	Effects are expected to be positive, and no mitigation is required.	Not Significant
	Scotland	Negligible effects (beneficial)	Not Significant	Effects are expected to be positive, and no mitigation is required.	Not Significant
	UK	Negligible effects (beneficial)	Not Significant	Effects are expected to be positive, and no mitigation is required.	Not Significant
Demand for Housing and Other Services	Caithness	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Highland	Minor effects (adverse)	Not Significant		Not Significant
	Scotland	Minor effects (adverse)	Not Significant		Not Significant
	UK	Minor effects (adverse)	Not Significant		Not Significant
Tourism	Caithness	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Highland	Minor effects (adverse)	Not Significant		Not Significant
	Scotland	Negligible effects (adverse)	Not Significant		Not Significant
	UK	Negligible effects (adverse)	Not Significant		Not Significant

Predicted Effect	Study Area	Assessment Consequence	Significance	Mitigation Identified	Significance of Residual Effect
Operation and Maintenance					
Employment effects	Caithness	Major effects (beneficial)	Significant	Effects are expected to be positive and no additional mitigation measures are required.	Significant
	Highland	Minor effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
GVA effects	Caithness	Moderate effects (beneficial)	Significant	Effects are expected to be positive and no additional mitigation measures are required.	Significant
	Highland	Minor effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant

Predicted Effect	Study Area	Assessment Consequence	Significance	Mitigation Identified	Significance of Residual Effect
Demand for Housing and Other Services	Caithness	Moderate effects (adverse)	Significant	Additional mitigation to be secured through the development and implementation of a Project Accommodation Strategy.	Not Significant
	Highland	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
Tourism	Caithness	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Highland	Negligible effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Negligible effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant

Predicted Effect	Study Area	Assessment Consequence	Significance	Mitigation Identified	Significance of Residual Effect
Cumulative – Construction and Decommissioning					
Employment effects	Caithness	Moderate effects (beneficial)	Significant	Effects are expected to be positive, and no mitigation is required.	Significant
	Highland	Major effects (beneficial)	Significant	Effects are expected to be positive, and no mitigation is required.	Significant
	Scotland	Minor effects (beneficial)	Not Significant	Effects are expected to be positive, and no mitigation is required.	Not Significant
	UK	Negligible effects (beneficial)	Not Significant	Effects are expected to be positive, and no mitigation is required.	Not Significant
GVA effects	Caithness	Moderate effects (beneficial)	Significant	Effects are expected to be positive and no additional mitigation measures are required.	Significant
	Highland	Minor effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
Demand for Housing and Local Services	Caithness	Moderate effects (adverse)	Significant	Additional mitigation to be secured through the development and implementation of a Project Accommodation Strategy.	Not Significant
	Highland	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant

Predicted Effect	Study Area	Assessment Consequence	Significance	Mitigation Identified	Significance of Residual Effect
	UK	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
Tourism	Caithness	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Highland	Negligible effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Negligible effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
Cumulative – Operation and Maintenance					
Employment effects	Caithness	Major effects (beneficial)	Significant	Effects are expected to be positive and no additional mitigation measures are required.	Significant
	Highland	Minor effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded	Not Significant

Predicted Effect	Study Area	Assessment Consequence	Significance	Mitigation Identified	Significance of Residual Effect
				project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	
GVA effects	Caithness	Moderate effects (beneficial)	Significant	Effects are expected to be positive and no additional mitigation measures are required.	Significant
	Highland	Minor effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	Negligible effects (beneficial)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
Demand for Housing and Local Services	Caithness	Moderate effects (adverse)	Significant	Additional mitigation to be secured through the development and implementation of a Project Accommodation Strategy.	Not Significant
	Highland	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant

Predicted Effect	Study Area	Assessment Consequence	Significance	Mitigation Identified	Significance of Residual Effect
Tourism	Caithness	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Highland	Negligible effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	Scotland	Negligible effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant
	UK	Minor effects (adverse)	Not Significant	No additional mitigation measures have been identified for this effect above and beyond the embedded project mitigation listed in Section 19.5.5 as it was concluded that the effect was not significant.	Not Significant

19.12 References

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