GREEN VOLT

Technical Appendix 19.1

Socio-economic Report

Offshore EIA Report: Volume 2

Revision history

Revision	Date	Description	Prepared	Checked	Approved
1	24/08/2023	First draft	JH, SC (BiGGAR Economics)	EB (Royal HaskoningDHV)	VC (Flotation Energy)
2	08/09/2023	Second draft	JH, SC (BiGGAR Economics)	EB (Royal HaskoningDHV)	VC (Flotation Energy)
3	16/10/2023	Final for submission	JH, SC (BiGGAR Economics)	EB (Royal HaskoningDHV)	VC (Flotation Energy)

Table of Contents

Table of Tables

Table of Figures

Acronym	Acronym description
ABS	Annual Business Survey
aFTEs	Annualised Full Time Equivalents
CAPEX	Capital Expenditure
CFD	Contract for Difference
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
FLO	Fisheries Liaison Officer
FTE	Full time equivalent
GVA	Gross Valued Added
INTOG	Innovation and Targeted Oil & Gas
MAU	Marine Analytical Unit
MD-LOT	Marine Directorate - Licensing Operations Team
MW	Megawatt
O&M	Operations and Maintenance
ONS	Office for National Statistics
OPEX	Operational Expenditure
OWIC	Offshore Wind Industry Council
SVQ	Scottish Vocational Qualifications
TOTEX	Total Expenditure
WTG	Wind Turbine Generator

1 Introduction

1. This document describes the socio-economic impacts associated with the Project during its development and construction and operation. This technical report has been undertaken by BiGGAR Economics, with reference to comments provided by the Marine Directorate's Marine Analytical Unit (MAU) in response to the socio-economics chapter of the Environmental Impact Assessment, as well as relevant guidance from the Marine Analytical Unit.

2 Consultation

2. The Applicant has framed its assessment of potential effects on socio-economics through consultation with key stakeholders.

3. **Table 2.1** details the key issues raised in relation to socio-economics in the **Scoping Opinion** by Marine Analytical Unit (March 2022 - April 2023) and summarises other issues/ concerns that have been raised during additional consultation activities undertaken as part of the Environmental Impact Assessment (EIA) process and how these have been addressed in the preparation of this **Offshore EIA Report.**

Table 2.1 Consultation Responses

Consultee	Date / Document	Comment	Response / where addressed in this Report
Marine Analytical Unit	March 2023, Consultation response to MD-LOT	The methods section in the socio-economic chapter lacks sufficient detail. There is no dedicated technical chapter addressing the receptor in question and the process through which the developers reached their conclusions remains unclear.	Detailed methodology has been included in **Section 3**..
		The developers have chosen a study area, focusing on Aberdeen City, Aberdeenshire and Buchan. This is based on the proximity to the offshore part of the development, and the landfall location. Ports for the construction, operation and maintenance phases have not been determined yet, and the possibility of utilising ports in the Moray Firth is mentioned. The assessment does not include the Moray Firth area, despite the potential for ports in that area to be used.	As the port locations are not known, the economic impact of port-related activity as well as onshore activity in Aberdeenshire have been assessed in **Section 3.1**.
		The presentation of the impact in the report suggests a level of certainty that does not	A minimum and maximum scenario has been presented in **Section 5.1**.

Consultee	Date / Document	Comment	Response / where addressed in this Report
		align with the development's description. The ports for the project have not been selected yet and negotiations with suppliers are ongoing. Despite these uncertainties, the report does not present impacts on employment and GVA (Gross Value Added) as scenarios or provide any indication of the margin of error.	
		The methods section (Chapter 19 Socio-economics, Tourism and Recreation Section 19.5) describes how significance is assigned to socio-economic impacts in the assessment. The method employs a matrix that combines the magnitude of impact and the sensitivity of the receptor. Sensitivity is determined by the geographical area affected, with high sensitivity indicating an impact on an international scale and local scale impacts considered minor or negligible. The matrix defines two levels of local impacts: low local and moderate/high local. However, the definitions of these levels are not clear. Local impacts are generally classified as negligible or minor and only considered "moderate" if the impact magnitude is high. Only moderate or major impacts are deemed significant in this assessment. This method of assigning significance tends to downgrade social impacts automatically, as impacts at a national or international scale are unlikely to have high magnitudes. While local impacts may have greater	Social impacts have been assessed where possible, in particular the logic chain of each social impact identified by the MAU has been developed in **Section 6**. No local areas have been identified due to no port locations being identified.

Consultee	Date / Document	Comment	Response / where addressed in this Report
		magnitudes, they are typically labelled as “minor” or “negligible” due to their inherent local nature. Additionally, No primary data was collected for this assessment, and the developers state that data sets are only available at a local authority level. Consequently, the assessment does not evaluate “local” impacts, making it impossible to determine their significance or lack thereof.	
		Clarification is needed regarding whether some onshore impacts have been included.	A breakdown of onshore and offshore impacts has been provided in **Section 5** and **Section 6**.
		According to the report (section 19.5.3), it is mentioned that certain infrastructure and labour are expected to be outsourced from outside of the UK. While the precise proportions of outsourcing are unknown, it is suggested that providing multiple scenarios outlining the various impacts on the UK would be helpful and feasible.	A minimum and maximum range of values has been provided in **Section 5**.
		The report provides estimates for employment and GVA at the local, regional and UK levels. However, there is no separate section dedicated to GVA impacts, and the methodology for estimating employment impacts is not sufficiently detailed.	A detailed methodology has been included in **Section 3**, as well as a breakdown of employment and GVA, including direct, indirect and induced impacts (**Section 5**).
		The “Supply chain impacts” sections for each phase of the project provide limited information. The assessment lacks quantitative analysis	A detailed methodology has been included, including the different categories of supply chain expenditure, in **Section 3**. While it has not been possible to assess different scenarios for each port

Consultee	Date / Document	Comment	Response / where addressed in this Report
		typically included in such assessments. It is suggested that a range of realistic potential procurement scenarios could have been included if the exact location of expenditure was uncertain. The assessment mentions several potential sites, indicating that his approach could have been feasible (e.g., Aberdeen, Peterhead, etc.).	location, port-related impacts have been quantified in **Section 5.1.6**.
		The report states that contracts will be secured in a local port, but this has not been assessed in the local and regional areas.	An assessment of port-related activities has been undertaken in **Section 5.1.6**..
		The report's definition of potential social impacts is narrow, primarily focusing on economic impacts, while neglecting to explore knock-on effects or broader changes.	A logic chain has been provided, describing how activities related to the Project may generate social impacts in **Section 6**.
		The MAU suggest including a social impact assessment, while acknowledging that a detailed assessment is not possible without a study area.	

2.1 Guidance

4. In December 2022, the Marine Analytical Unit produced guidance[1] setting out its recommended approach to undertaking a socio-economic impact assessment, including a range of economic and social impacts that should be considered. The offshore application for Green Volt Offshore Windfarm was submitted on 20 January 2023, so this guidance was not available to the Applicant whilst undertaking the socio-economic impact assessment for the Project. However, the guidance has been considered in this report.

5. Economic impacts should consider different phases of the development, and include different types of economic impact (direct, indirect and induced). This should also include consideration of impacts in different study areas (i.e. leakage) and displacement of other activities, and what would have

[1] *Marine Analytical Unit (2022), General Advice for Socio-Economic Impact Assessment*

happened anyway (deadweight). The assessment should account for uncertainty and potential changes to the project.

6. In addition, the assessment should consider social impacts. Based on the work of Glasson et. al[2], a number of social impacts have been identified that may be considered. These include demographic, housing, other local services, socio-cultural and distributional effects.

2.2 Stakeholder Engagement

7. Stakeholder engagement will be ongoing throughout all phases of the Project and will be tailored to ensure that appropriate engagement activities occur, particularly around significant project milestones or developments. In addition to updates being provided to stakeholders and local communities, opportunities will be provided for them to give feedback to the Project.

8. At present stakeholders are able to contact the Project via a website general enquiry contact form and the Project e-mail has been shared publicly to enable open contact. A compliments and complaints process is in development and access to this will also be via the website, once available.

9. The Applicant is conscious that that the future identification of port locations for the project will be of interest to many stakeholders, as identified through recent update meetings with local councils. For significant project milestones, such as the identification of ports, the Applicant will use a project newsletter to share the information and consider attendance at community council meetings or other suitable community events to facilitate dialogue with local stakeholders.

10. Engagement will continue with the local council and various representative bodies and their members, with a significant area of engagement for the Project being with the Peterhead fishing community through its Fisheries Liaison Officer (FLO). Although the engagement mostly relates to industry issues and concerns it provides a contact opportunity for other (non-fishing) issues to be raised from a specific sector of the local community.

11. The Applicant will consider supporting local community activities and projects as it progresses. Any specific opportunities in this area will be notified to stakeholders through the Project's website and/or newsletter and direct contact with any relevant community representatives or groups.

3 Methodology

3.1 Economic Impact Assessment

3.1.1 Types of Impact

12. When estimating the economic impact of the Project there are three main phases

- Development and construction, which generates short term impacts;
- Operation, which generates long term impacts; and
- Decommissioning, which generates short term impacts.

13. For each phase of Project there are three types of economic impact (**Figure 3.1**):

- Direct impact: this is associated with the direct activities of the developer (e.g. paying staff), as well as the activities of Tier 1 suppliers in the construction and decommissioning phases;

[2] *Glasson J., Chadwick, A. (2017), Socio-economic impacts 2: Social impacts*

- Indirect impact: this is associated with spending in the supply chain of Tier 1 suppliers and the developer; and
- Induced impact: this is associated with staff spending their wages in the wider economy.

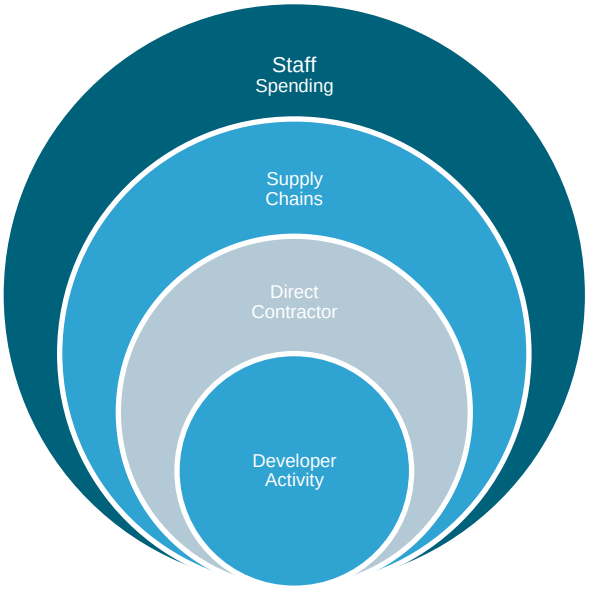

Figure 3.1 Levels of Economic Analysis

3.1.2 Metrics of Assessment

14. The economic impact of the Project has been assessed using three common measures of economic activity:

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

3.1.3 Study Areas

15. The main study areas that have been used for assessing the economic impact of the Project are:

- Scotland; and
- the UK.

16. In addition, for the onshore elements of the Project (facilitating grid connection), the economic impact has been assessed for Aberdeenshire (where the grid connection will take place) and Aberdeen City.

17. At the time of writing, the construction and operation ports are not known and therefore it is not possible to be definitive about where local economic impacts are likely to take place, the port-specific impacts associated with the Project have been presented.

3.1.4 Approach

18. A bespoke input-output economic model has been designed to assess the economic impacts associated with offshore wind farms and applied to the Project (**Figure 3.2**). The principle of this model has been applied to a number of developments and is based on the level of expenditure associated with development, construction and operational expenditure.

19. Expenditure across these categories is broken down into sub-categories and an assumption is made about the level of expenditure in each sub-category that would be secured in each of the study areas considered (also known as leakage), based on the economic capacity of the area. Each sub-category of expenditure is then assigned to one or more sectors of the economy.

20. Using sectoral information on the average ratio of turnover per employee and turnover/GVA[3] [4] the direct economic impact associated with each sub-category of expenditure was estimated, i.e. the direct employment and GVA impact

21. To estimate the indirect and induced impacts input output multipliers for employment and GVA[5] [6], which capture linkages between different sectors of the economy, were applied to the direct economic impact.

[3] *Scottish Government (2022), Scottish Annual Business Statistics 2019*
[4] *ONS (2022), Annual Business Statistics 2019*
[5] *Scottish Government (2022), Scottish Input Output Tables 2018*
[6] *ONS (2022), UK Input Output Multipliers 2017*

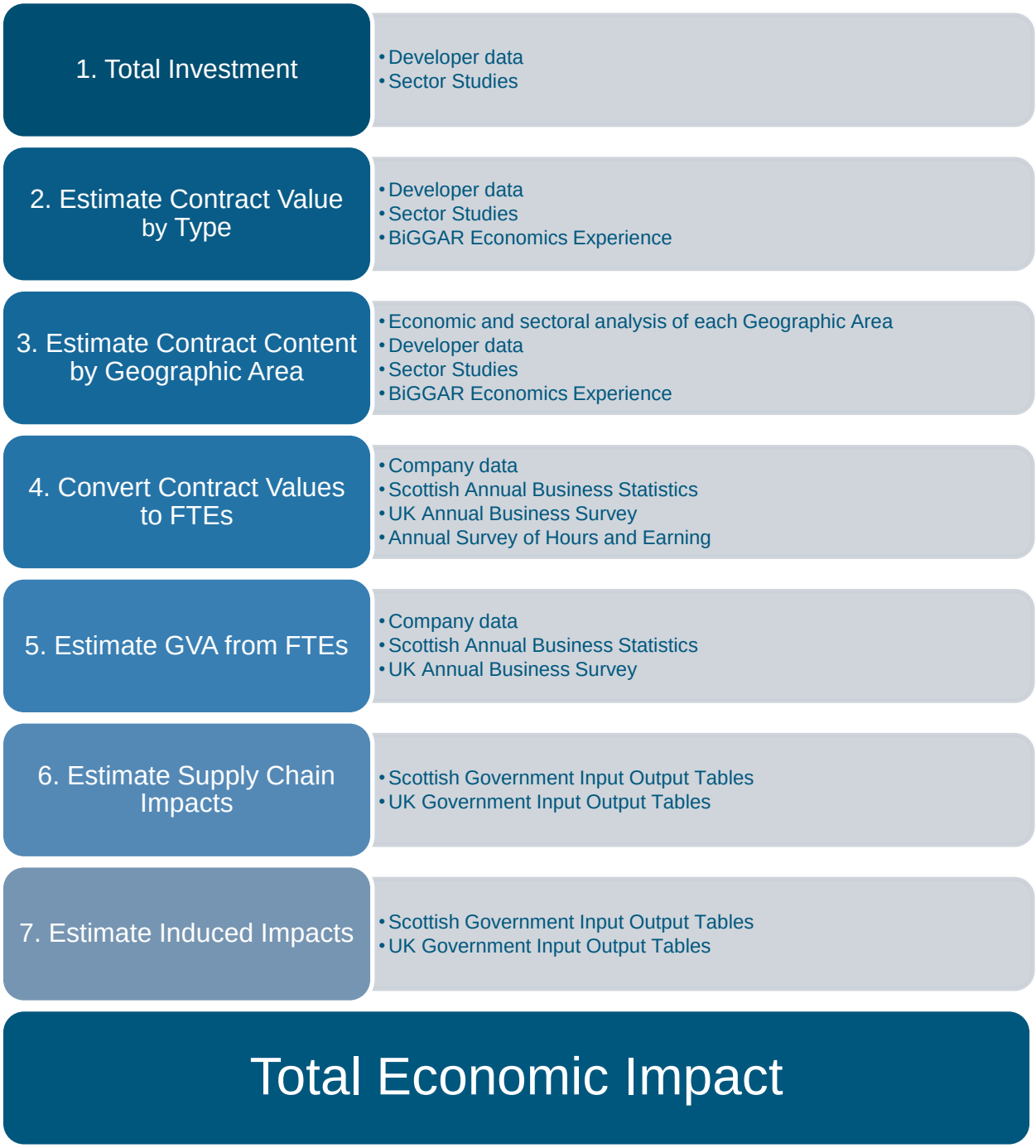

Figure 3.2: Economic Impact Methodology and Data Sources

3.2 Social Impact Assessment

22. As well as generating economic impacts in each of the study areas considered, the Project may have impacts on the communities where economic activity takes place. The magnitude of these social impacts is expected to result from the level of economic impact associated with the Project.

23. There is currently uncertainty about where the construction ports (both manufacturing and marshalling ports) and operation ports will be located. As a result, a logic chain will be developed based on the

potential increase in employment levels in area and how that may affect specific services and local characteristics, including:

- Accommodation;
- Public services, such as GP surgeries and schools, and private services; and
- The character of the community.

24. The focus of the assessment will be on how the communities will be affected by the changes, and how different characteristics (such as the size of the settlement) will inform the types of impacts that are experiences. This is expected to vary depending on the different phases considered, e.g., a temporary increase in workers during construction will have different effects compared to a long-term increase in employment in a given area.

4 Existing Environment

25. The following points present a summary of the socio-economic baseline:

- The population of Aberdeenshire in 2020 was 260,780, representing a 0.5% decrease from 2015. It accounts for 4.8% of the Scottish population;
- Between 2018 and 2040, the population of Aberdeenshire is projected to increase by 2.8% however, population growth rates for Aberdeenshire and Aberdeen City are lower compared to Scotland;
- The median age in Aberdeenshire is 36, and the highest percentage of people falls within the 45-64 age group (29%), which is higher than the national average of 27%;
- Aberdeenshire has a lower population percentage of ages 16-24 and 25-44 compared to the Scottish average (8.6% and 23.6% versus 10.4% and 26.2%, respectively);
- In terms of working-age populations, Aberdeenshire and Aberdeen City have similar absolute numbers, but Aberdeen City has a higher working-age population as a percentage of the total population compared to both Aberdeenshire and Scotland;
- Employment levels in Aberdeenshire and Aberdeen City are higher than the Scottish average, with employment rates of 76% compared to the national rate of 74.1%;
- In terms of gender, Aberdeenshire has a higher male employment rate (80.9%) than the national average (75.3%), while the female employment rate (71.2%) aligns more closely with the national average (70.6%);
- Aberdeen City has a higher unemployment rate (44%) compared to Aberdeenshire (3.2%) and the national average (4.1%);
- Both Aberdeen City and Aberdeenshire have a higher level of education attainment than the national average, with more than half of residents having attained Scottish Vocational Qualifications (SVQ) level four or above;
- The type of occupations in Aberdeenshire does not reflect the higher educational training level, with relatively lower representation in higher managerial and professional occupations compared to the national level and Aberdeen City, which exceeds the national levels in these occupations;
- GVA in Aberdeen City and Aberdeenshire amounts to £20.0 billion, accounting for 14.3% of total GVA in Scotland;
- The region demonstrates higher productivity than the national average, with significantly increased GVA per capita, primarily influenced by the impact of the Oil and Gas (O&G) industry in these areas;
- The Scottish Energy Ports Capability Directory has identified several ports in the local area which have the potential to contribute to the offshore wind construction and operation and maintenance supply chain; and

- There are many companies that have already developed a track record in offshore wind and can contribute to the offshore wind development.

5 Economic Impact Assessment

5.1 Construction

5.1.1 Expenditure Assumptions

26. The first step is considering the total level of investment. This would include both the capital investment during the development and construction phase of the Project and the ongoing investment that would be required during the 35-year operational lifetime.

27. The floating offshore wind market is in its infancy, and therefore there is a degree of uncertainty around the final costs associated with the development and construction of these projects. The floating offshore wind projects that have been built globally have either been test or demonstration sites with an installed capacity of less than 100 MW. The capital expenditure that will be required for full scale floating offshore wind projects, such as the Project, is likely to be lower per MW as the industry develops, innovates and benefits from economies of scale.

28. In 2023, BVG Associates published a Guide to a Floating Offshore Wind Farm. This contained estimates for the majority of costs associated with the development, construction, operation and decommissioning of a floating offshore wind farm. These costs were based on a reference floating project that is commissioned in 2028 and has an installed capacity of 450 MW. While there are some factors specific to the Project that may cause cost variation from this reference example, such as the direct electricity export to oil and gas platforms, it was determined that the costs per MW for the reference project would be a suitable basis for the cost assumptions of all stages of the project.

29. The costs per MW for each of the key contract areas, and the equivalent costs for the Project, are shown in **Table 5.1**. The analysis considers the cost of each contract element in detail.

Table 5.1 Capital Investment Costs for the Project

	Cost per MW (£)	Estimated Green Volt Cost (£m)
Development and Project Management	150,000	84
Turbine	1,300,000	728
Array Cable	71,000	40
Export Cable	200,000	112
Cable Accessories	44,000	25
Floating Substructure	960,000	538
Mooring Systems	180,000	101
Offshore Substation	150,000	84
Onshore Substation	82,000	46
Installation and Commissioning	370,000	207
Total CAPEX	**3,507,000**	**1,964**

Source: BVG Associates (2023) Guide to a Floating Offshore Wind Farm

30. As shown in **Table 5.1** The total capital investment was estimated to be £2.0 billion. This is equivalent to £3.5 million per MW installed. In addition, the average estimated annual expenditure on operations and maintenance would be £40 million. This is equivalent to £1.4 billion over the 35-year lifetime of

the Project. The total estimated investment (TOTEX) is therefore estimated to be £3.4 billion (**Figure 5.1**).

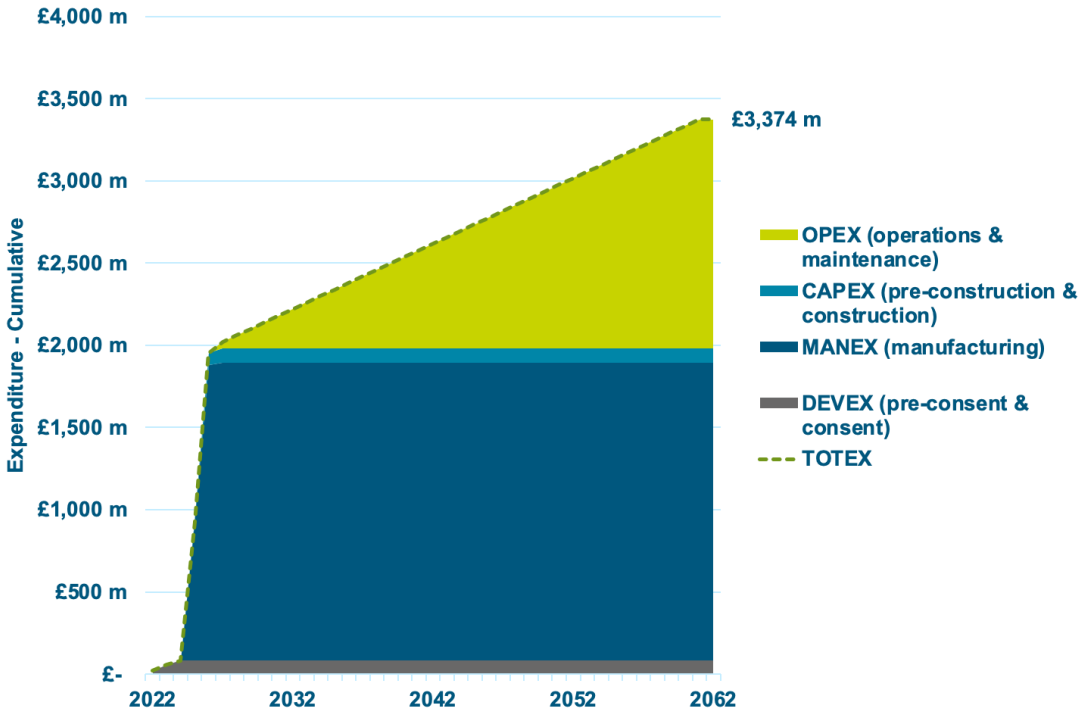

Figure 5.1 Total Project Investment over Time

5.1.2 Contract Elements

31. The contract elements that were used in this analysis are outlined in the **Figure 5.2** below. For each sub product/service a contract value, sector and share of spend in the geographic areas (Scotland, rest of UK, rest of world) were assumed and this was used as the basis for the analysis.

32. The assumptions for the share of spend for the geographic areas ‘Scotland’ and ‘rest of UK’ were determined on the basis of a supply chain database and current proposals for the development of manufacturing and installation facilities both within Scotland and the wider UK.

33. The largest cost component of the CAPEX will be the turbines, which are expected to cost approximately £801 million. This includes the assembly of the turbine which is considered as part of installation and commissioning in **Table 5.1**. This would be followed by the foundations (floating) of which are estimated to total £539 million. The split of total capital investment by component is shown in **Figure 5.2**

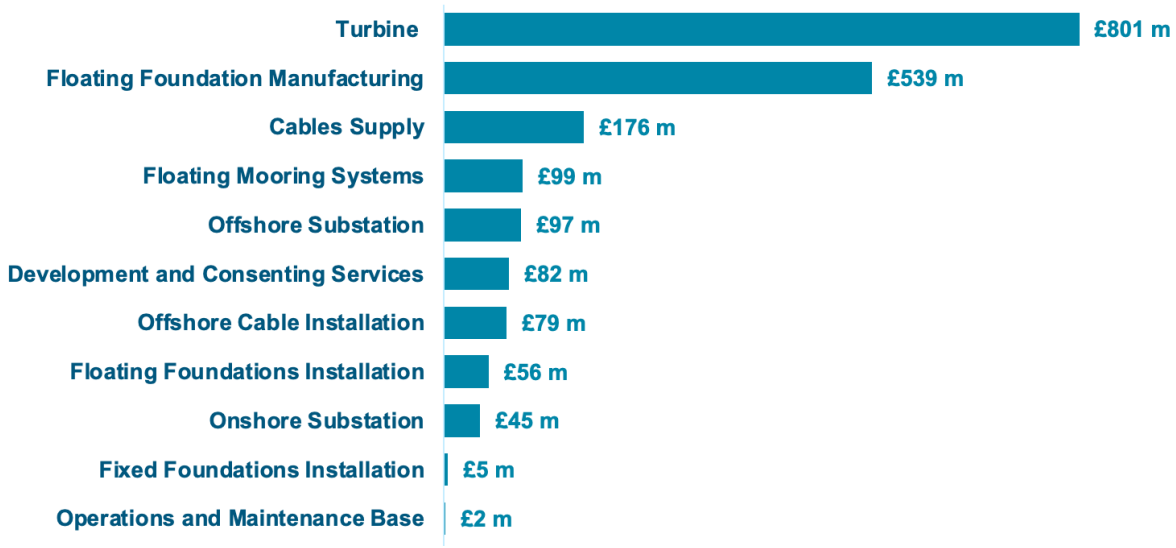

Figure 5.2 Capital Components by Estimated Cost

Source: BiGGAR Economics Analysis

5.1.3 Geographic Split

34. The next stage in estimating the economic impact scenarios associated with this development is to consider the likely location of companies that would be awarded these contracts.

35. The analysis considers two scenarios of contract share for both Scotland and the UK. These are based on analysis by BVG Associates on the current and potential future contract shares of both floating and fixed offshore wind projects across the UK[7]. It is assumed that in the Base Case the Scottish and UK supply chains do not grow from the current baseline and overall Scottish companies secure 40% of the total contract value across the lifetime of the Project and UK companies secure 46% of the content. The High Case scenario assumes that the UK achieves the 60% content share that is outlined as a target in the UK Offshore Wind Sector Deal[8]. In this scenario, Scottish companies secure 51% of the total expenditure and UK companies secure 60% of the expenditure.[9]

36. As shown in **Table 5.2**, the largest difference between the two scenarios is during the construction (CAPEX) phase of the project. This additional contract share would imply that there is a significant growth in the capacity of UK and Scottish firms to provide the manufacturing and fabrication required. In particular the key areas for growth are linked to:

- Cable Manufacture and Supply
- Tower Manufacture and Supply; and
- Blade Manufacture and Supply.

[7] BVG Associates (2021) UK and Scottish Content baseline and Roadmap – a report to the Scottish Offshore Wind Energy Council
[8] UK Government, Department of Business, Energy and Industrial Strategy (2019) UK Offshore Wind Sector Deal. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/790950/BEIS_Offshore_Wind_Single_Pages_web_optimised.pdf
[9] Note that in Chapter 19 – Socio-economics, tourism and Recreation it is estimated that the UK secures 57.89% of the expenditure and Scotland secures 36.26% of the expenditure.

Table 5.2 Split of contracts secured in each area by scenario

	Base Case		High Case	
	Scotland	**UK**	**Scotland**	**UK**
CAPEX	16%	20%	27%	41%
OPEX	75%	82%	84%	87%
TOTEX	**40%**	**46%**	**51%**	**60%**

Source: BiGGAR Economics – note totals may not sum due to rounding

37. In total the capital investment will require £2 billion. For the Base Case scenario was estimated that £316 million (16%) is likely to be secured in Scotland, while for the High Case scenario the figure will reach up to £541 million (27%).

38. The splits of CAPEX for Scotland in both scenarios are shown in **Figure 5.3**. This highlights that the growth in opportunities is not uniform across all contract areas and there are some contract areas where there is a greater degree of certainty regarding the contract share within Scotland. For example, in the Base Case it is assumed that 66% of the development and consenting services will be secured from Scotland and 69% will be secured in the High Case. This reflects the fact that the development and consenting skills in Scotland for fixed offshore wind and offshore oil and gas are already well suited for the floating offshore wind market, and the relatively low cost of entering this market means that there is more certainty about the provision of these services.

39. Some contract areas have a greater difference between the Base and High Cases. For example, the floating foundation manufacturing would require a significant level of port investment to meet the capacity required to construct the majority of the floating foundations.

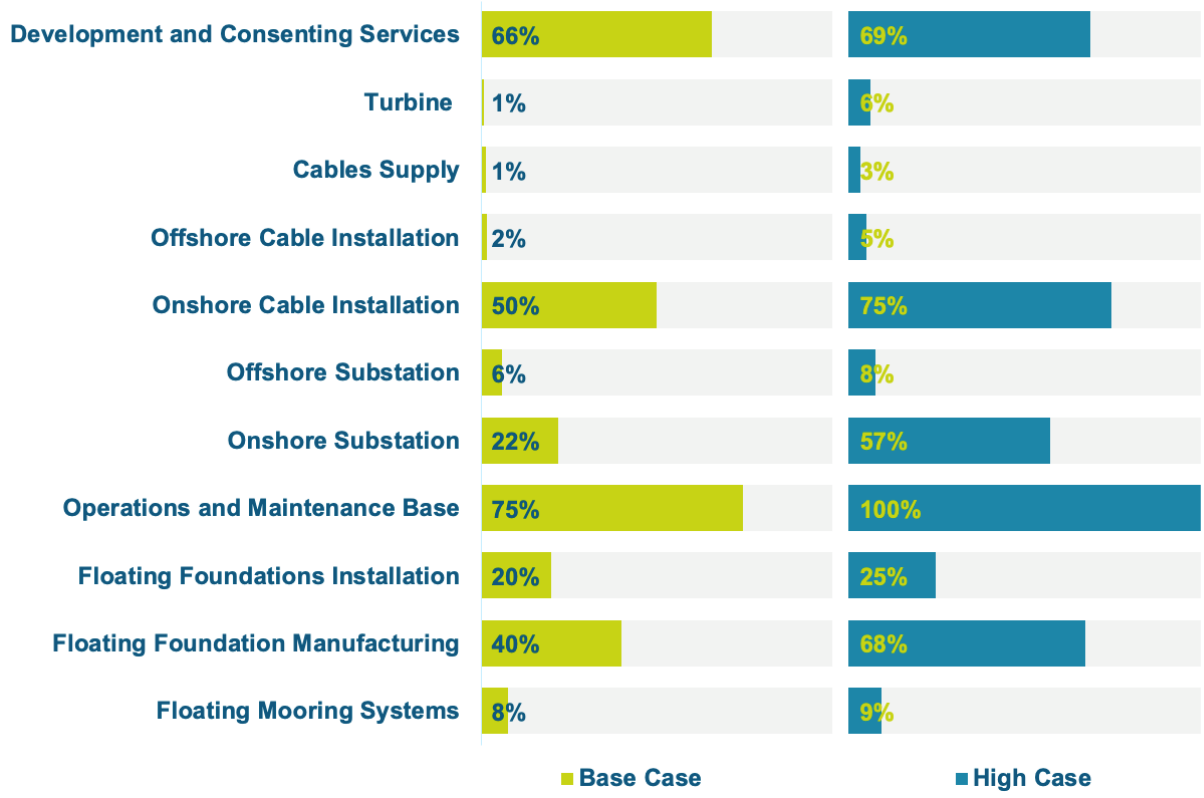

Figure 5.3 Contract Share by Scenario – Scotland

Source: BiGGAR Economics Analysis

40. The Project is expected to be constructed between 2025 and 2027. During this time, it is expected that the Scottish and wider UK supply chain will develop to prepare for the wider ScotWind leasing round projects.

5.1.4 Estimating the economic impact

5.1.4.1 Direct Economic Activities

41. The first round of expenditure and economic impact will occur within the developer organisation and through its directly procured contractors, typically referred to as Tier 1 contractors in the analysis. For the purposes of the assessment, both the developer and its directly procured contractors are considered as one group within the direct impact analysis (**Figure 5.4**).

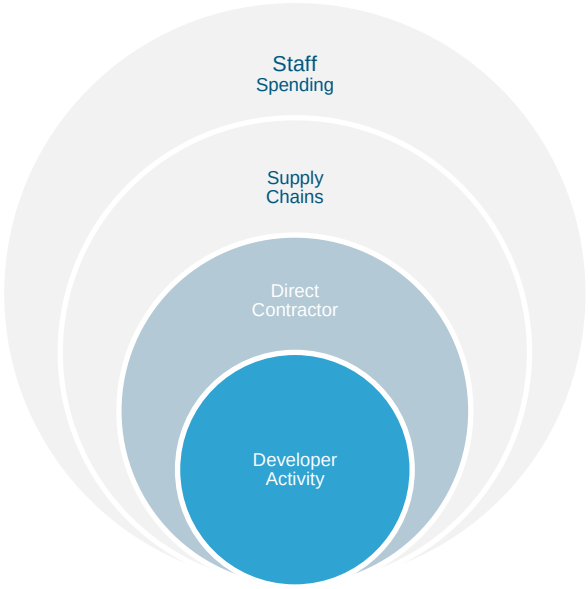

Figure 5.4 Stages of Economic Impact Assessment: Direct Impact

42. The Annual Business Survey (ABS)[10] provides the turnover/ GVA ratio for each section of the economy. This data is used to estimate the direct GVA impact from any increase in turnover from all of the relevant industries. Similarly, the same data source can be used to estimate the employment that this increase in turnover would support (**Figure 5.5**).

[10] *ONS (2023) Annual Business Survey – Non financial economy, UK and regional 2021 results Available at; https://www.ons.gov.uk/businessindustryandtrade/business/businessservices/bulletins/nonfinancialbusinesseconomyukandregionalannualbusinesssurvey/2021results*

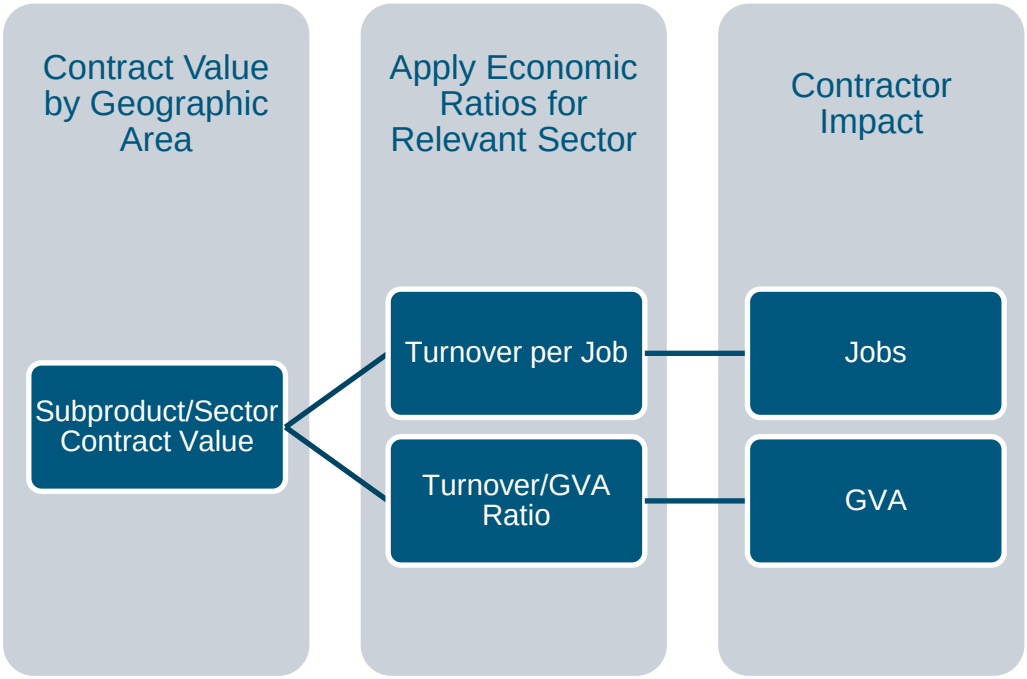

Figure 5.5 Direct Contractor Impact Process

43. On this basis it was estimated that the initial contracts awarded for development and construction of the Project would directly support 2,310 years of employment in UK, including 1,910 in Scotland for the Base Case scenario. While for the High Case scenario was estimated 4,800 years of employment in UK, including 3,110 in Scotland (**Table 5.3**).

Table 5.3 Employment Impacts in Directly Contracted Companies (Years of Employment)

	Base Case		High Case	
	Scotland	**UK**	**Scotland**	**UK**
DEVEX (pre-consent & consent)	460	510	480	610
MANEX (manufacturing)	1,370	1,620	2,530	3,930
CAPEX (pre-construction & construction)	80	180	100	260
Total Construction Impacts	**1,910**	**2,310**	**3,110**	**4,800**

Source: BiGGAR Economics Analysis

44. The GVA from the initial contracts in the Base Case scenario would be £131 million in Scotland. The average GVA per FTE in Scotland would be approximately £68,350 (in current prices). This is 39% higher than the estimated average GVA per employee in Scotland[11]. Therefore, the average job created by the Project would be a rather well-paid 'good' job and contribute to a growth in productivity. The GVA and average GVA per FTE in Scotland for the High Case scenario would be £216 million and £69,470 respectively (**Table 5.4**).

[11] *Fraser of Allander (2021) 2019 Q1 Productivity Trends in Scotland*

Table 5.4 Directly Contracted Impact - GVA (£m)

	Base Case		High Case	
	Scotland	**UK**	**Scotland**	**UK**
DEVEX (pre-consent & consent)	£29 m	£33 m	£31 m	£39 m
MANEX (manufacturing)	£95 m	£114 m	£177 m	£272 m
CAPEX (pre-construction & construction)	£6 m	£14 m	£8 m	£18 m
Total Construction Impacts	**£131 m**	**£160 m**	**£216 m**	**£330 m**

Source: BiGGAR Economics Analysis

5.1.4.2 Estimating the Wider Supply Chain Impacts

45. There would also be knock on effects in the supply chain (**Table 5.6**). This includes the elements of the supply chain that would work closely with the primary direct contractors, such as subcontractors that would also be based on the construction yard, and also elements of the supply chain which are further afield, such as the companies which provide the raw materials, the tools, and professional services that the direct contractors rely on.

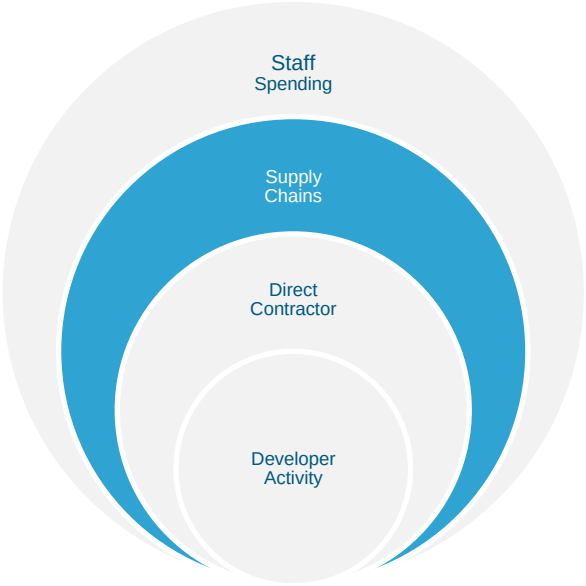

Figure 5.6 Stages of Economic Impact Assessment: Supply Chain

46. This impact is considered part of the 'direct economic impacts' which are to be included in the Commitment tables of a ScotWind Supply Chain Development Statement[12]. To estimate what this supply chain impact would be, it is necessary to use Type 1 multiplier which are calculated based on the Scottish and UK Input Output tables and are specific for each sector. These multipliers calculate which elements of the supply chain of a particular sector are procured from either Scotland or the UK. For example, this process considers the likely share of steel or concrete, used in the manufacturing of the floating structures, that would be made in the UK. In this way it is possible to consider the likely level of value generated out with each study area (leakage) within each supply chain and exclude that from the analysis[13].

[12] *This section is intended to be comparable to projects that have submitted a Supply Chain Development Statement*
[13] *This would include for example, the typical share of imports within an industry's supply chain*

47. An overview of the process for calculating this impact is shown in **Figure 5.7**.This process considers that there can be a significant proportion of the supply chain which is external to each geographic area. Unless data is known for a specific company that could be included in the supply chain, it is assumed that the supply chain of the companies that are involved in these contracts would be similar to the sector they are in. For example, the Scottish Input Output tables find that 49% of the supply chain across all elements of the Scottish manufacturing sector is from Scottish companies. The Scottish manufacturing sector imports 27% of its supplies from the rest of the UK and the remaining 24% is imported from outside the UK. This would be considered leakage when calculating the impact in Scotland.

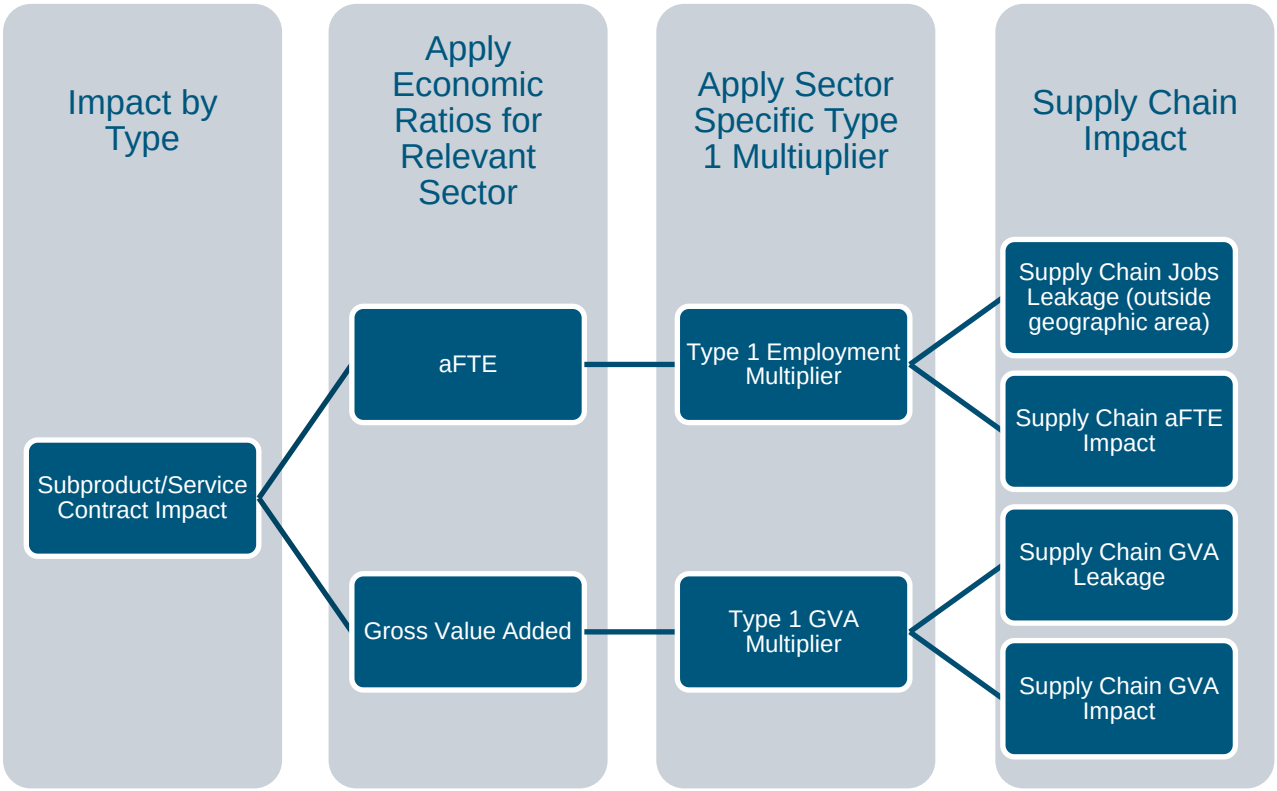

Figure 5.7 Direct Contractor Impact Process

48. This analysis was done for each Subproduct/service and at for each geographic area. The Type 1 multipliers that were used were those of the corresponding relevant sector.

49. On this basis, for the Base Case scenario it was estimated that the supply chain for the initial contracts awarded for development and construction of the Green Volt Offshore Windfarm would directly support a further 1,640 annualised full time equivalents (aFTEs) in the UK, including 730 in Scotland. While for the High Case scenario was estimated 3,520 aFTEs in the UK, including 1,250 in Scotland (**Table 5.5**).

Table 5.5 Supply Chain Employment Impacts by Stage and geographic area (Years of Employment)

	Base Case		High Case	
	Scotland	**UK**	**Scotland**	**UK**
DEVEX (pre-consent & consent)	120	340	130	410
MANEX (manufacturing)	570	1,130	1,070	2,840
CAPEX (pre-construction & construction)	40	170	50	270
Total Construction Impacts	**730**	**1,640**	**1,250**	**3,520**

Source: BiGGAR Economics – note, totals may not sum due to rounding

50. During the construction and development stages the GVA from the supply chain to the initial contracts in the Base Case scenario would be £46 million in Scotland. The supply chain across the UK would generate £124 million GVA. For the High Case scenario, the supply chain across the Scotland would generate £268 million and £79 million GVA in UK (**Table 5.6**).

Table 5.6 Supply Chain GVA Impacts by Stage and Geographic Area (£m)

	Base Case		High Case	
	Scotland	**UK**	**Scotland**	**UK**
DEVEX (pre-consent & consent)	£8 m	£27 m	£8 m	£33 m
MANEX (manufacturing)	£35 m	£85 m	£67 m	£219 m
CAPEX (pre-construction & construction)	£3 m	£12 m	£4 m	£17 m
Total Construction Impacts	**£46 m**	**£124 m**	**£79 m**	**£268 m**

Source: BiGGAR Economics – note, totals may not sum due to rounding

5.1.4.3 Induced Economic Impacts

51. In addition to the impacts associated with the direct contractors and their supply chains, the staff employed in these companies will also have an impact on the economy through the spending of their wages (**Figure 5.8**). This is the induced impact, and although it is not included in the Commitments given in the Supply Chain Development Statement or considered as part of the Supply Chain Plan inputs for the CFD auctions, they are included in this analysis to give a full picture of the economic impacts of the Project. The induced impact can be particularly important in rural communities, where the success of small rural businesses can be heavily dependent on the spending of local workers.

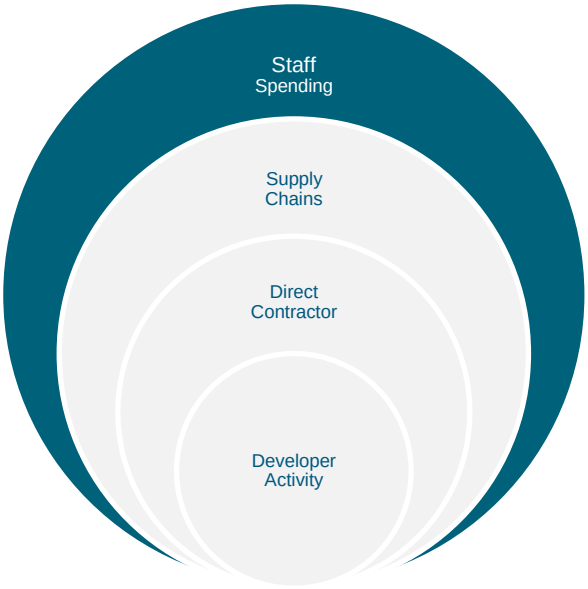

Figure 5.8 Stages of Economic Impact Assessment: Staff Spending Impact

52. In total it is expected that for the Base Case scenario the salaries paid to the directly employed and supply chain staff will be equivalent to £153 million in the UK during the CAPEX phase (figure that could be up to £321 million in a High Case scenario). This includes £101 million paid in salaries in Scotland (up to £79 million).

53. The majority of these salaries will be spent within either Scotland or the wider UK. The impact of this further round of spending is calculated for each sector of direct impact using the appropriate Type 2 multipliers for that sector. As shown in **Table 5.7**, this further round of spending would be expected to support an additional £40 million GVA in Scotland and £128 million GVA across the UK for the Base Case scenario.

Table 5.7 Induced Impacts by Geographic Area

	Base Case		High Case	
	Scotland	**UK**	**Scotland**	**UK**
Salaries Paid	£101 m	£153 m	£167 m	£321 m
Induced GVA	£40 m	£128 m	£67 m	£265 m
Jobs (Years of Employment)	520	1,790	860	3,710

Source: BiGGAR Economics – note totals may not sum due to rounding

5.1.5 Total Economic Impacts during Construction

54. Combining the direct, indirect and induced impacts it was estimated that the total impact would be £176-216 million GVA and 2,630-3,150 years of employment in Scotland (**Table 5.8**).

Table 5.8 Total Impact by Geographic Area

	Base Case		High Case	
	Scotland	**UK**	**Scotland**	**UK**
Induced GVA	£176 m	£284 m	£216 m	£411 m
Jobs (Years of Employment)	2,630	3,950	3,150	5,740

Source: BiGGAR Economics – note totals may not sum due to rounding

5.1.6 Port Specific Impacts

55. A significant proportion of the economic activity during the construction phase will occur around the primary construction port. In total it is estimated that £528 million of capital expenditure will occur on contracts that are predominately based around the primary construction port. This is equivalent to 27% of the total expenditure of the project.

56. The largest port side contract is likely to be that linked with the manufacture of the floating foundation. It is estimated that between £199 million and £332 million of work would occur at a Scottish port (**Table 5.9**). This would require a significant workforce and at its peak it is estimated this would be between 650 and 1,080 workers on site. In addition, the turbine installation would require a up to a further 150 workers on the site. While the peaks in employment in each of these contacts may not align it is likely that the peak activity on the primary Scottish construction port will require between 700 and 1,220 workers on site. Note that this does not include the wider supply chain, which would vary depending on the location of the port chosen.

Table 5.9 Induced Impacts by Geographic Area

	Total Investment	Spend in Scotland		Peak Employment	
		Base Case	High Case	Base Case	High Case
Floating Foundation - Substructure	£442 m	£199 m	£332 m	650	1,080
Turbine Installation	£101 m	£6 m	£130 m	20	100
Marshalling Harbour	£17 m	£3 m	£4 m	20	30
Anchor Installation	£38 m	£8 m	£10 m	10	10
Total	**£528 m**	**£216 m**	**£376 m**	**700**	**1,220**

Source: BiGGAR Economics – note totals may not sum due to rounding. Also note peak employment values are indicative as timeframes of each contract may not align.

5.2 Operations and Maintenance

5.2.1 Contract Elements

57. The Operations and Maintenance (O&M) of the Project will generate economic impacts through the expenditure that will be required throughout the lifetime of the project.

58. The activity during the O&M phase of the development is expected to be typical for an offshore Windfarm. It is acknowledged that the maintenance programme for a floating offshore Windfarm is likely to be very similar to a fixed offshore Windfarm. Based on this, it was estimated that around £71,000 per MW installed would be spent on O&M activities and that in an average year, £40 million will be spent on the O&M of the Project (**Table 5.10**).

59. This expenditure will include logistics costs, operational management, grid charges and the maintenance and service for both the wind turbine generators (WTGs) and the wider balance of plant. The largest component of this will be spend on the maintenance of the Project (£913 million) and £479 million will be spent on other operational costs.

60. Some elements of the operational expenditure, such as maintenance of the WTGs and balance of plant, are not expected to be required in the first few years of operations as there will be less “wear and tear” maintenance required in these years. It is expected that this expenditure will ramp up over the first five years of operations. In a typical year, it is estimated that £26 million will be spent on the maintenance of the Project and £14 million will be spent on the operational costs.

61. Over the lifetime of the Project, it is expected that approximately £1.4 billion will be spent on O&M costs.

Table 5.10 Operations and Maintenance Expenditure by Category

	Estimated Spend per MW (£)	Total Annual Spend (£m)	Lifetime Spend (£m)
Operations	24,000	14	479
Maintenance	47,000	26	913
Total O&M	**71,000**	**40**	**1,393**

Source: BiGGAR Economics analysis – note, totals may not sum due to rounding.

5.2.2 Geographic Split

62. The economic impacts from the development and construction of the Project have been estimated for Scotland and the wider UK.

63. The UK Offshore Wind Sector Deal has the target that projects constructed in 2030 will achieve 60% of UK content during their lifetime. The majority of the UK expenditure is expected to occur during the O&M stage.

64. Analysis by BVG Associates has found that on average, 81% of total O&M spending for UK offshore wind projects is sourced domestically. As for the construction and development phase, the Base and the High cases were considered for the calculations. For the Base Case, it is estimated that 82% of the overall operational expenditure will be retained in the UK and 75% in Scotland, whereas for the High case these percentages are 87% and 84%, respectively.

65. The operational expenditure that will be retained in Scotland in both cases is greater than findings in analysis of supply chains for other offshore wind farms in Scotland, notably Beatrice Offshore Wind Farm Ltd, which found that 53% of operational expenditure was retained in Scotland and 73% was retained within the UK (BiGGAR Economics, 2019). However, it should be noted that the supply chain development statements submitted as part of the ScotWind process also expected to procure a greater share of operational activities from Scotland. This reflects the growing operations and maintenance capacity in Scotland. It is therefore expected that INTOG windfarms, including the Project, will secure a greater share of operational expenditure from Scotland than previous developments such as Beatrice.

66. Thus, for the Base Case, it was estimated that the total average annual operational spending would be:

- £30 million in Scotland; and
- £33 million in the UK.

67. For the High case, it was estimated that the total average annual operational spending would be:

- £33 million in Scotland; and
- £35 million in the UK.

68. For the Base Case, the largest area of economic activity stimulated by the operational expenditure of the Project is expected to be associated with the operations in Scotland (78%) and the UK (88%). In contrast, for the High Case, the majority of the operational expenditure is expected to be associated with the maintenance of both turbine and the other balance of plant infrastructure in Scotland (86%).

5.2.3 Estimating Operational Impacts

5.2.3.1 Direct Economic Activities

69. As with the development and construction contracts, the direct expenditure on operations and maintenance will also support employment and generate GVA within the developer and its directly contracted suppliers.

70. It is expected that in a typical year £30 million will be spent in Scotland to operate and maintain the offshore wind farm.

71. For the Base Case, it was estimated that the initial contracts awarded for operational activities of the Project would directly support 170 FTEs in the UK, 150 of which would be located in Scotland. Within Scotland the largest element would be the turbine and balance of plant maintenance, which would support 90 aFTEs. This element would support 110 FTEs in the High Case, with initial contracts awarded that directly support 180 FTEs in the UK and 170 in Scotland (**Table 5.11**).

Table 5.11 Employment Impacts in Directly Contracted Companies (FTEs)

	Base Case		High Case	
	Scotland	**UK**	**Scotland**	**UK**
Operations	60	70	60	70
Maintenance	90	100	110	110
Total O&M Impacts	**150**	**170**	**170**	**180**

Source: BiGGAR Economics Analysis – note, totals may not sum due to rounding.

72. The GVA from the initial contracts associated with operations and maintenance would be £11 million in Scotland for the Base Case. The average GVA per FTE would be approximately £75,247 (in current prices). This implies that the average job created by the Project would be a rather well-paid 'good' job and contribute to a growth in productivity. Similarly for the High Case, the initial contracts would be £13 million in Scotland and the UK, with average GVA per FTE equal to £74,508 (in current prices) in Scotland which is lower than the figure in the Base Case (**Table 5.12**).

Table 5.12 Directly Contracted Impact - GVA (£m)

	Base Case		High Case	
	Scotland	**UK**	**Scotland**	**UK**
Operations	5	5	5	5
Maintenance	7	7	8	8
Total O&M Impacts	**11**	**12**	**13**	**13**

Source: BiGGAR Economics Analysis – note, totals may not sum due to rounding.

5.2.3.2 Estimating the Wider Supply Chain Impacts

73. The wider supply chain impacts during the operations and maintenance phase will occur in a similar way as is described in the analysis for the construction and development phase. It was therefore estimated that in the Base Case, the supply chain for the initial contracts awarded for operations and maintenance of the Project would directly support a further 150 FTEs in the UK, including 60 in Scotland. These figures were estimated to be equal to 160 and 70 FTEs in the High Case for the UK and Scotland, respectively (**Table 5.13**).

Table 5.13 Supply Chain Employment Impacts by Geographic Area (FTEs)

	Base Case		High Case	
	Scotland	**UK**	**Scotland**	**UK**
Operations	20	50	20	50
Maintenance	40	100	50	110
Total O&M Impacts	**60**	**150**	**70**	**160**

Source: BiGGAR Economics Analysis – note, totals may not sum due to rounding.

74. During the operations and maintenance stage of the Base Case, the GVA from the supply chain to the initial contracts would be £4 million in Scotland. This GVA would be £5 million in Scotland in the High Case while the supply chain across the UK would generate £11 million GVA in both cases (**Table 5.14**).

Table 5.14 Supply Chain GVA Impacts by Geographic Area (£m)

	Base Case		High Case	
	Scotland	**UK**	**Scotland**	**UK**
Operations	1	4	2	4
Maintenance	3	7	3	7
Total O&M Impacts	**4**	**11**	**5**	**11**

Source: BiGGAR Economics Analysis – note, totals may not sum due to rounding.

5.2.3.3 Induced Economic Impacts

75. In addition to the impacts associated with the direct contractors and their supply chains, induced impact will be generated by the staff employed in the companies contracted to work in operations and maintenance, who create impact in the economy through the spending of their wages.

76. In total it is expected that the salaries paid to the directly employed and supply chain staff will be equivalent to £14 million in the UK during the OPEX phase of both the Base Case and the High Case. This includes £10 million paid in salaries in Scotland in the Base case and £11 million in the High Case. On average, those working on the project will be paid £45,600 in Scotland in the Base Case[14], equivalent to about 17% more than the average level of pay in Scotland (**Table 5.15**).

77. The majority of these salaries will be spent within either Scotland or the wider UK. The impact of this further round of spending is calculated for each sector of direct impact using the appropriate Type 2 (induced) multipliers for that sector. As shown in the **Table 5.15** below, this further round of spending

[14] *Based on salary data from Annual Survey of Hours and Earnings.*

will support an additional 30 and 40 long term jobs across the Scottish economy in the Base and High Cases, respectively.

Table 5.15 Total Direct Salaries (£m) and Induced Impacts by Geographic Area

	Base Case		High Case	
	Scotland	UK	Scotland	UK
Annual O&M Salaries Paid (£m)	10	14	11	14
Induced GVA (£m)	30	100	4	11
Jobs (aFTES)	30	100	40	110

Source: BiGGAR Economics Analysis.

5.2.3.4 Total Economic Impacts

78. Adding together the direct, indirect and induced impacts it was estimated that the average economic impact associated with operations and maintenance would be £16-19 million GVA and 210-240 jobs in Scotland (**Table 5.16**).

Table 5.16 Total Economic Impact by Geographic Area

	Base Case		High Case	
	Scotland	UK	Scotland	UK
Total GVA (£m)	16	23	19	34
Jobs (aFTES)	210	310	240	410

Source: BiGGAR Economics Analysis.

5.3 Impacts Over Time

79. The capital investment impact is expected to be spent over a 3-year period, from 2025 to 2027.

80. The project plan provided allowed for economic impacts to be mapped across the time period. This timetable suggested that construction activity would begin in 2025 and end in 2027. Based on these timings, it was estimated that the level of employment supported by the development and construction would peak in Q1 of 2026 in the Base Case. It is expected that the Project would support 1,190 jobs across Scotland at this point (**Figure 5.9**).

81. The operational economic impacts will be long term. It is likely that the activity level of operational expenditure will fluctuate between years however, in this analysis it has been assumed that the level of expenditure, and therefore employment impacts will be higher in Q1 of 2027 and remain constant afterwards for each turbine installed.

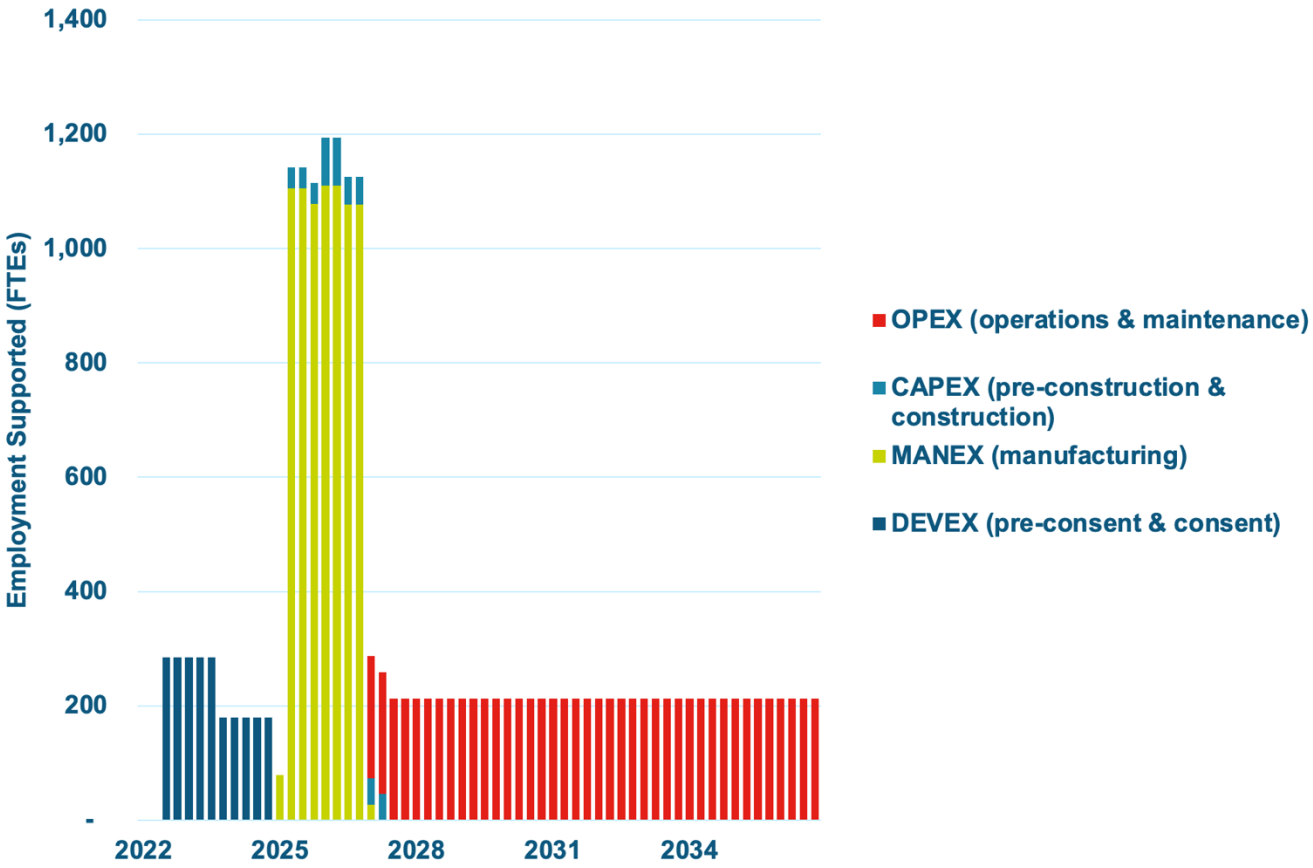

Figure 5.9 Employment Impacts over Time - Base Case
Source: BiGGAR Economics Analysis.

6 Social Impact Assessment

82. At the time of writing, the construction and operation ports, which are expected to be the main epicentres of impact, are not known. As a result, it is not possible to be definitive about the nature and scale of the impacts affecting communities. This is because the location of these epicentres of impact is crucial in understanding:

- What impacts will occur and at what scale;
- The sensitivity of the communities that these impacts will occur in; and
- How these impacts will be felt across these communities.

83. More details on why location is particularly important in understanding how impacts are felt across communities are provided in this section, particularly around the factors that influence the sensitivity of the communities that will be affected.

84. The potential port locations are unknown at this stage and will depend on the commercial considerations and discussion with ports. In 2020, the Crown Estate Scotland published its review of Scotland's port potential for offshore wind[15]. This found that there were a wide range of potential port locations that could be used during the construction phase of the project, ranging from large urban areas such as Aberdeen, Dundee and Leith ports, to ports in rural locations such as Arnish,

[15] *Crown Estate Scotland (2020) Ports for offshore wind: A review of the net-zero opportunity for ports in Scotland, ARUP*

Invergordon and Sullom Voe. Similarly, in 2023 RenewableUK published a study[16] of the current and potential port capacity for the construction of floating offshore wind projects and also identified similar ports as having potential for the floating offshore wind market in particular. The locations of the potential sites are shown in **Figure 6.1**.

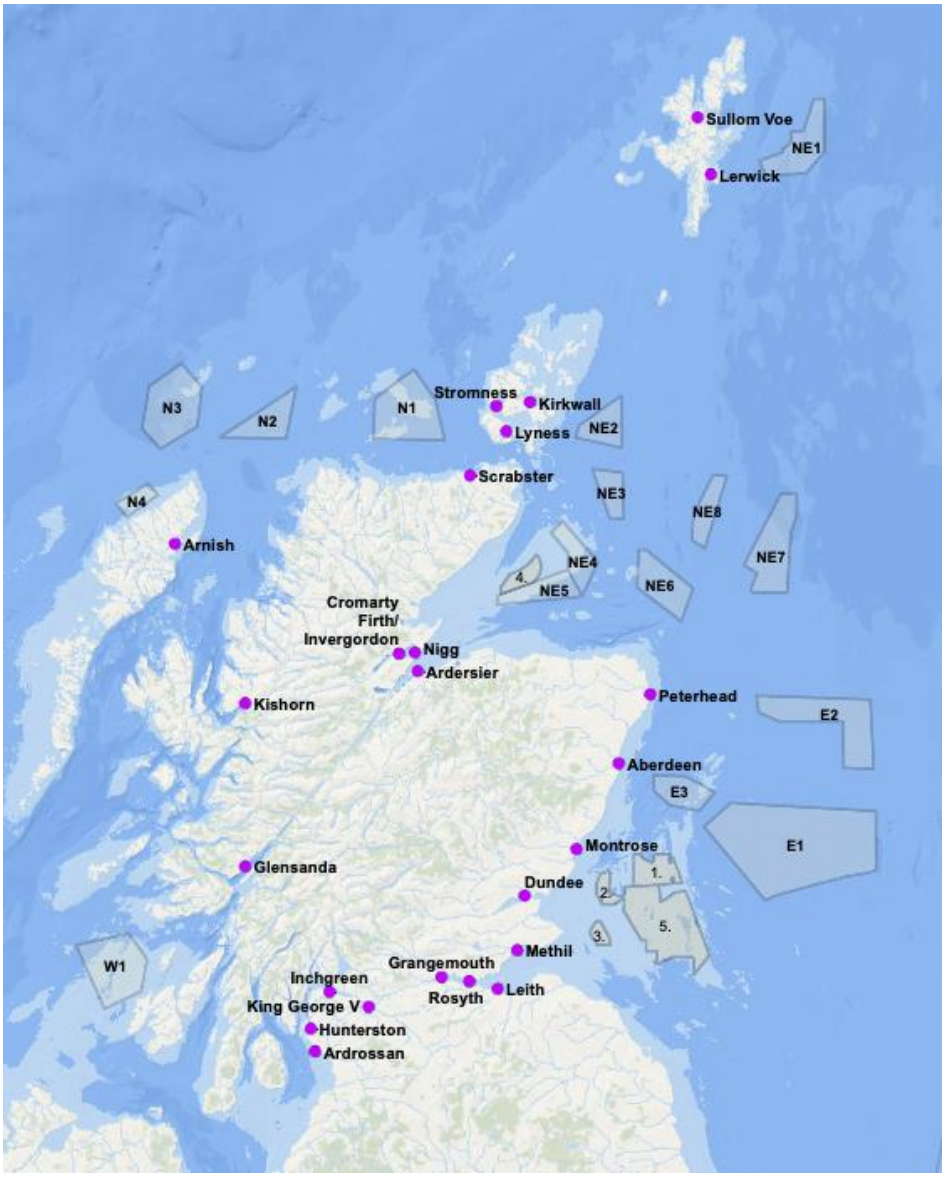

Figure 6.1 Map of potential construction ports in Scotland, with ScotWind Lease locations
Source: Arup/Crown Estate Scotland (2020), Ports for offshore wind: A review of the net-zero opportunity for ports in Scotland.

85. The location of operations and maintenance ports identified in the Crown Estate Scotland study also had a similar geographic spread.

86. The location of port infrastructure is a fundamental consideration in the assessment of social impacts. This is because the social and economic characteristics of each area will vary in ways that will change not only the scale of impacts that will occur but also how they are felt in these communities.

[16] *RenewableUK (2023) Floating Offshore Wind Taskforce: Industry Roadmap 2040 – Building UK Port infrastructure to Unlock the Floating Wind Opportunity, Royal HaskoningDHV*

87. These characteristics include the size of the area affected, for example the area surrounding the port. Larger areas, for example cities or large towns, are expected to be less sensitive to changes because they have more diversified economies, larger housing markets and more flexible public and private sectors. This means that they can respond more easily to changes without effects on the existing baseline. In contrast smaller areas may be more sensitive to change.

88. When considering the potential impact of the Project it can also be useful to think of the wider area (e.g. the Travel To Work Area). While the settlement immediately surrounding an area may be relatively small, if it has good travel links to nearby population centres the social impact is likely to be less concentrated and more diffuse.

89. Another factor that may affect the sensitivity of a study area is the relative size and diversity of its economy. Areas that predominantly have high levels of unemployment or relatively few economic opportunities (e.g. because the economy is heavily reliant on one industry) may be expected to experience changes more positively.

90. In addition, areas that have higher levels of economic diversity or populations with skills that are more suited to the requirements of offshore wind developers are more likely to secure employment locally. As a result, there are likely to be a smaller number of transient workers who come from outside of the local area.

91. Similarly, areas that are experiencing shortages in the provision of goods and services may be more sensitive to a change in levels of demand.

92. As with the economic impacts, the process of assessing social impacts requires an understanding of what the changes will be and how these will be experienced by the communities that are affected (**Figure 6.2**).

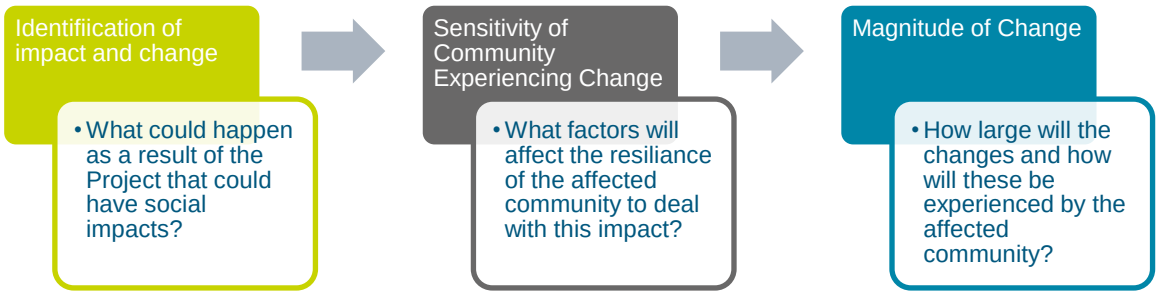

Figure 6.2 Logic chain of impact for social value

93. This section outlines the key routes to social impacts as a result of the development of offshore wind projects, such as the Project. It covers the following topics, in line with the impacts identified in the General Advice[17] provided by the Marine Analytical Unit;

- Demographic;
- Housing;
- Other local services;

[17] *Marine Scotland - Marine Analytical Unit (2022) General Advice for Socio-economic Impact Assessment*

- Socio-cultural; and
- The distribution of these impacts between groups in society.

94. For each impact listed above, this section highlights the route to impact, the factors that could affect the sensitivity of the communities that may be affected and the factors that would influence the potential magnitude of any effect.

6.1 Demographic Impacts

95. The increase in economic activity associated with the development is expected to result in a temporary increase in population.

96. The demographic distribution of this population will be dependent on the employment opportunities that occur in each area. However, analysis by the Offshore Wind Industry Council (OWIC)[18] shows that the workforce sector is predominately male and the majority of workers are aged between 30 – 44. The share of females in the workforce has increased over time and there is a target for 33% of the workforce to be female by 2030 (**Figure 6.3**).

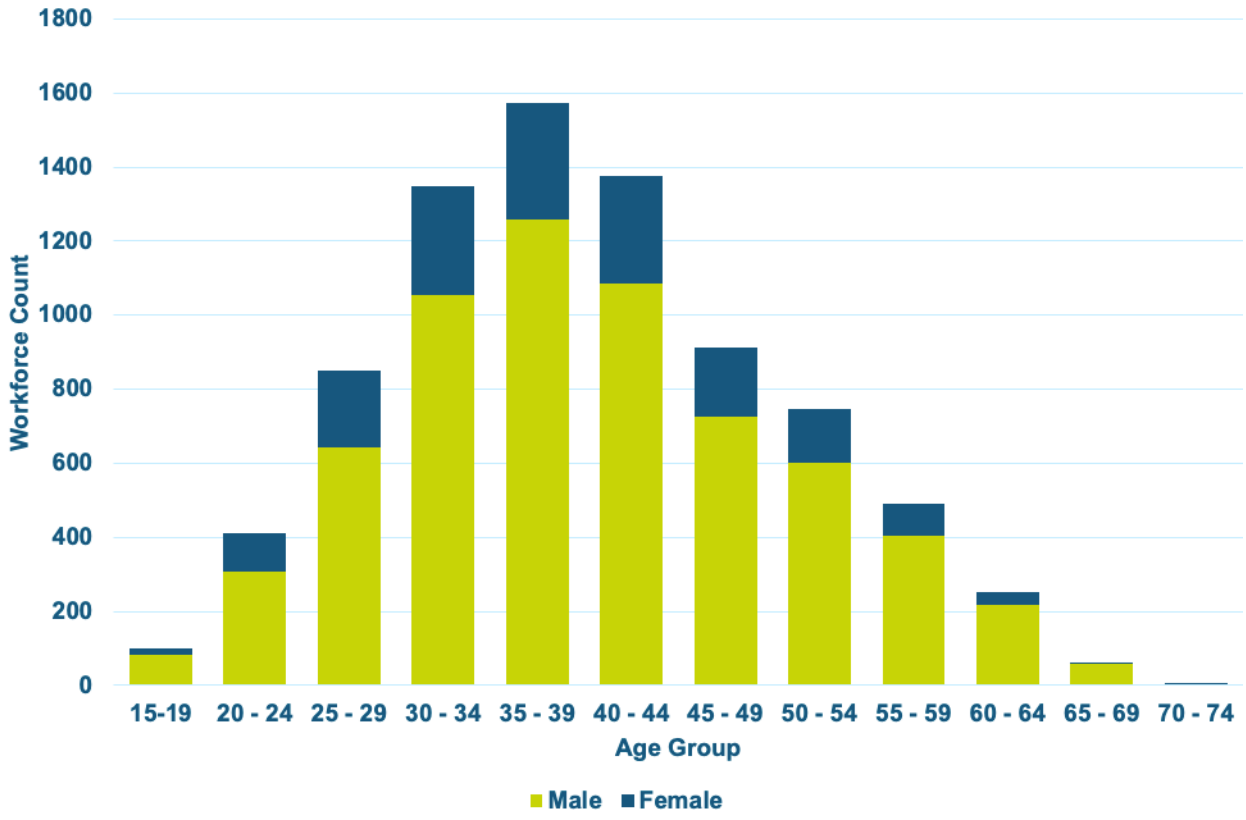

Figure 6.3 Demographics of offshore wind workforce (Age and Gender)

Source: Offshore Wind Industry Council (2023) Offshore Wind Skills Intelligence Report

97. How this increase in population will be experienced will depend on the size and demographics of the population surrounding manufacturing and construction ports. The demographic distribution varies across Scotland including the urban and rural locations where potential key port locations are based. This is shown in **Figure 6.4** which highlights the differences in demographics across Scotland's rural

[18] *Offshore Wind Industry Council (2023) Offshore Wind Skills Intelligence Report*

and urban areas. Remote Rural Areas have an older population[19], with 12% aged 75 and over, compared to large Urban Areas which have a much greater share of people aged under 45. This is likely to influence how demographic changes are felt in each type of area.

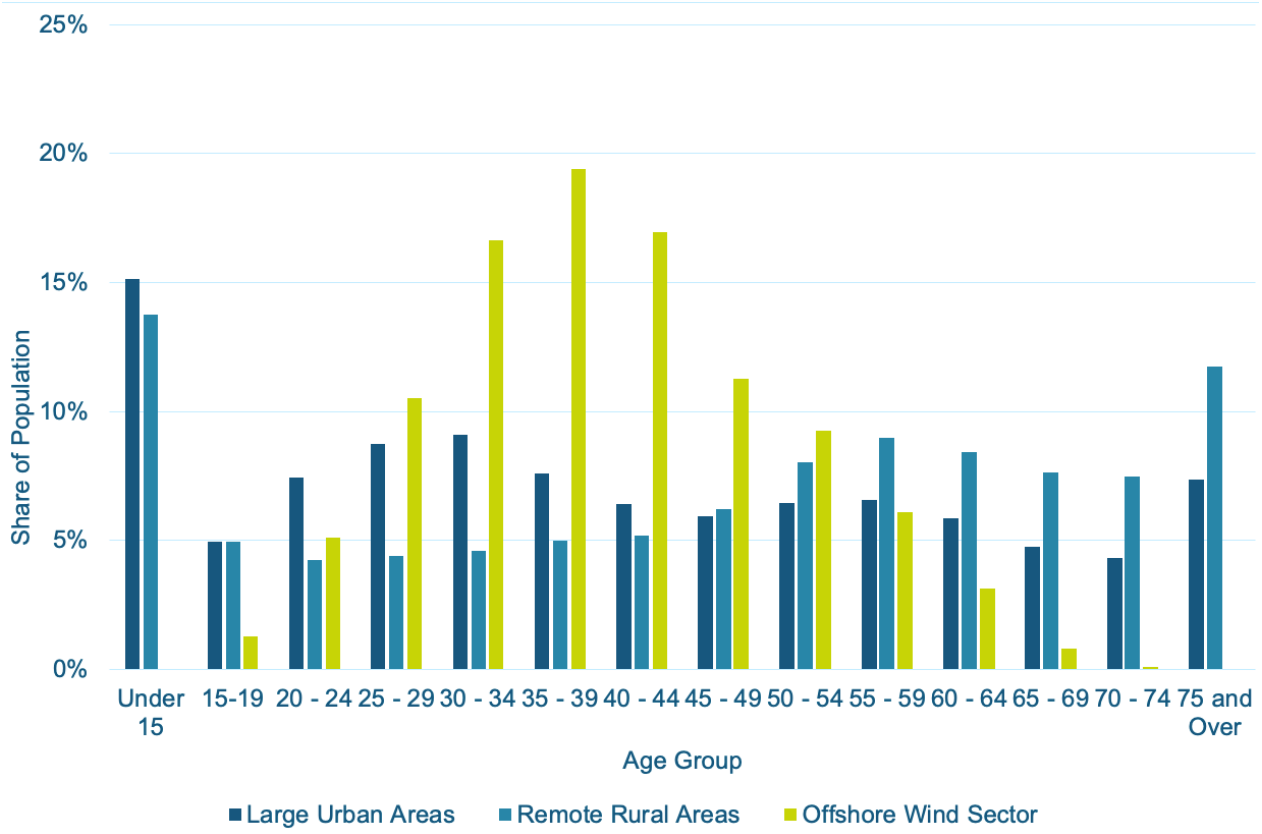

Figure 6.4 Population distribution in Urban and Rural Areas of Scotland compared to Offshore Wind Workforce

Source: Offshore Wind Industry Council (2023) Offshore Wind Skills Intelligence Report/National records of Scotland (2022) Population Estimates by Urban Rural Classification 2011 (Data Zone Based)

98. This will extend beyond the area immediately around the port into the surrounding area that can reasonably commute to the port (sometimes called the Travel To Work Area).

99. The factors affecting the sensitivity of community to any changes in demographics, and other population driven impacts are outlined in **Figure 6.5**.

Population	•Communities with larger populations will have lower sensitivity to demographic changes
Demographic distribution	•Communities with balanced demographics will be less sensitive to changes in population

Figure 6.5 Factors Affecting Sensitivity of Community Populations

[19] *National records of Scotland (2022) Population Estimates by Urban Rural Classification 2011 (Data Zone Based)*

100. The magnitude of any change considers how any change in demographics would be initially felt by the affected community.

101. The size of the increase in population, including transient workers, will depend on the peak employment required to build or operate the Project at each of the key port locations. The level of activity at each location will be dependent on both the activities that occur directly at the site and the ability of the local economy to provide supporting services to support this economic activity. However, some of this activity may be undertaken by people who live in the local area and have relevant skills, which will reduce the number of transient workers in the area. A more detailed picture of specific demographic opportunities and challenges created by transient workers could be created for individual named communities, once these places are identified.

102. There is anecdotal evidence that in rural communities in Scotland, the opportunity to capture high quality local employment may draw people back to the area who have previously left to find work elsewhere. This would be considered an important demographic benefit from increasing the working age population in rural communities, including for short term opportunities like this one.

103. The main factors that will influence the magnitude of any demographic effect are outlined in **Figure 6.6**.

Figure 6.6 Factors Affecting Magnitude of Change to Community Populations

104. A temporary increase in the population can create significant benefits, as well as pose challenges. The Applicant will seek ways to enhance benefits and mitigate challenges through an appropriate range of activities. There will be engagement and discussions with local, regional and national stakeholders, including public bodies and other large employers to help identify relevant activities, with the aim of working in partnership if possible.

6.2 Housing Impacts

105. High quality and affordable accommodation is an important issue for coastal communities[20]. Temporary accommodation may also provide infrastructure for the tourism sector.

106. The Project may have an impact on the accommodation sector as a temporary increase in workers can increase the demand for accommodation. During the peak of construction the direct employment impact around the manufacturing port is expected to be 650-1,080.

107. The sensitivity of communities to housing impacts will be determined by how well the housing provision will be able to respond to both long- and short-term changes in demand. The sensitivity of

[20] *Scottish Government/Diffley Partnership (2022), Public Perceptions of Offshore Wind Farm Developments in Scotland*

local areas will depend on the size of the nearby population (including the Travel To Work Area), the current level of accommodation provision (including local hotels and other types of flexible housing), and the potential for growth in the sector in response to increased demand. The importance of overnight tourism, with visitors staying in the region's temporary accommodation, will also affect the sensitivity of the area (**Figure 6.7**).

Figure 6.7 Factors Affecting Sensitivity of Community Populations

108. The main factor driving demand for temporary accommodation will be the size of the population increase. An increase in demand for temporary accommodation is likely to be experienced by owners of local accommodation businesses, e.g. hotels, bed and breakfast owners and caravan parks, as positive resulting in increased business especially during off-peak times (e.g. winter) when the business may otherwise be closed. This would be reflected in increased occupancy rates and may contribute to the sustainability of these businesses in the off season. For rural businesses, in particular, this may be an important social benefit, creating year-round work for people in the local area.

109. Should the local accommodation sector not have capacity to expand supply in response to increased demand, this may have a negative effect if tourist visitors are unable to access accommodation, particularly during peak times. Some tourism businesses may experience lower levels of activity, though this is likely to be offset by more demand from transient workers (e.g. going to restaurants and cafes) and demand that occurs during off-peak times, including off-peak demand for accommodation (**Figure 6.8**).

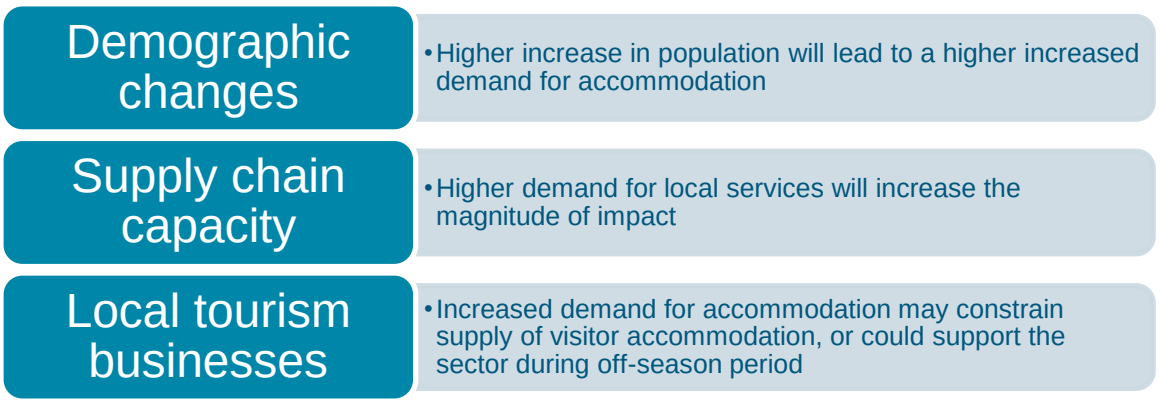

Figure 6.8 Factors Affecting Magnitude of Change to Community Populations

110. The Applicant could mitigate potential impacts on the accommodation sector by working with partner organisations to develop short-term accommodation solutions.

6.2.1 Other Local Services Impacts

111. Access to services, such as education and health is part of the fabric of local life in many places. A temporary increase in population may result in higher demand for these services. Depending on the characteristics of the area, this could contribute to sustaining services that might otherwise be at risk. Alternatively, it may put pressure on services with constrained capacity.

112. The General Advice provided by the Marine Analytical Unit[21] lists the following services that should be considered:

- Public and private sector;
- Educational services;
- Health services: social support;
- Police, fire, recreation, transport; and
- Local authority finances.

113. The sensitivity of the above services will primarily be determined by the level of capacity within each of these services (**Figure 6.9**).

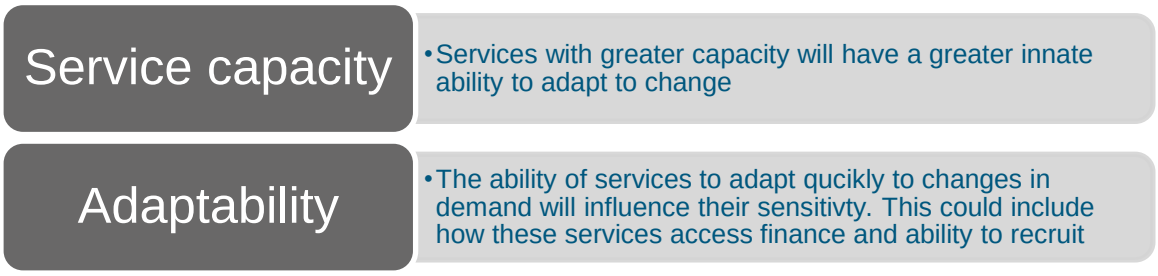

Figure 6.9 Factors Affecting Sensitivity of Local Services

[21] *Marine Analytical Unit (2022), General Advice for Socio-Economic Impact Assessment*

114. The main factor that will affect demand for health care services will be the temporary increase in population and the relative health of that population. Given that the majority of people who will undertake activities at ports will be of working age and in generally good health, they are expected to be less likely to access public health services, such as GPs, hospitals and social care, than the population as a whole (which is likely to include a higher share of older people who are more likely to need health services).

115. Demand for education services, e.g. schools, will be affected by whether there is an increase in the population under the age of 18. This will depend on whether transient workers have children and whether they bring these children with them. Given the length of construction contracts it is considered unlikely that there would be an increase in demand for schools specific to the construction of the Project. However, the O&M activities would require a permanent workforce and the potential cumulative effect of multiple offshore wind farms in Scottish waters, including the Project, would also create long term employment opportunities that could increase the demand for education services.

116. Demand for private services, such as cafes, restaurants and supermarkets, is likely to increase in line with population. This would be experienced positively by these businesses and the people employed within them. Increased footfall in towns and villages is likely to add to a place's vitality (**Figure 6.10**).

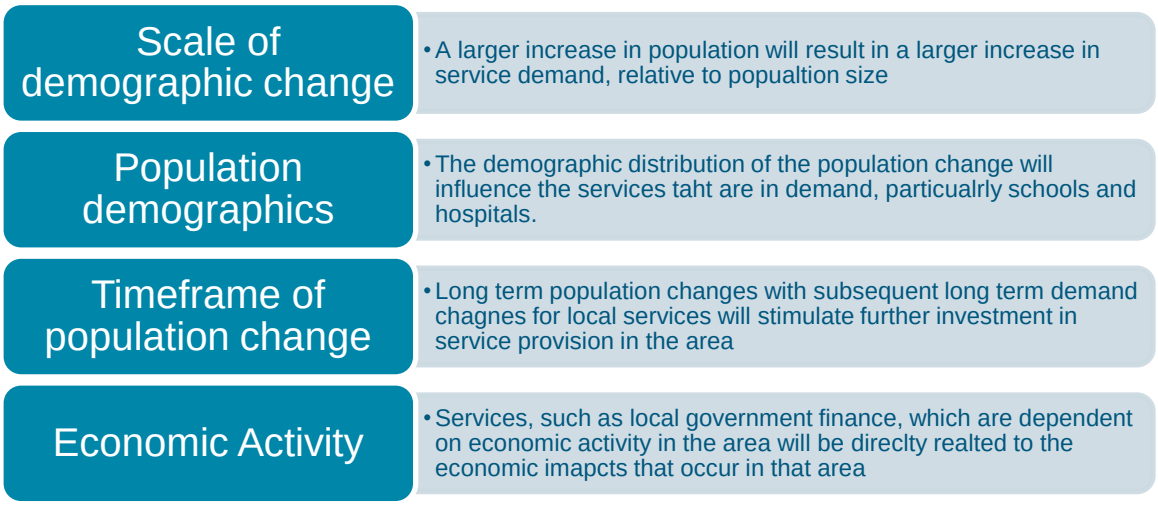

Figure 6.10 Factors Affecting Magnitude of Change to Local Services

6.3 Socio-cultural Impacts

117. The activity surrounding the construction of an offshore wind farm can have impacts on the lives of residents near areas of activity, which can affect the character of a place. The General Advice produced by the Marine Analytical Unit defines Socio-cultural impacts to include:

- Lifestyles/quality of life;
- Gender issues; family structure;
- Social problems (e.g. crime, ill-health, deprivation);
- Human rights;
- Community stress and conflict; integration, cohesion and alienation; and
- Community character or image.

118. The introduction of a temporary economic activity, even though short-lived, can exert social and cultural influences on a community. While the duration might be limited, disruption caused by

construction, noise, and increased traffic can affect residents' daily lives. Transient workforces can alter the social dynamics and interactions within the community, potentially leading to a disconnect between newcomers and long-term residents. However, temporary activities can also provide chances for community engagement, skill development, and cultural showcase, enriching the community's collective experience.

119. Studies of coastal communities with lived experiences of offshore wind projects in Scotland[22] have found that the majority (63%) of residents in these communities experienced no impact to their quality of life from offshore wind projects. For those who did note an impact on quality of life, the share of people who felt the impact had been positive (25%) was much greater than those who felt the impact had been negative (4%) (**Figure 6.11**).

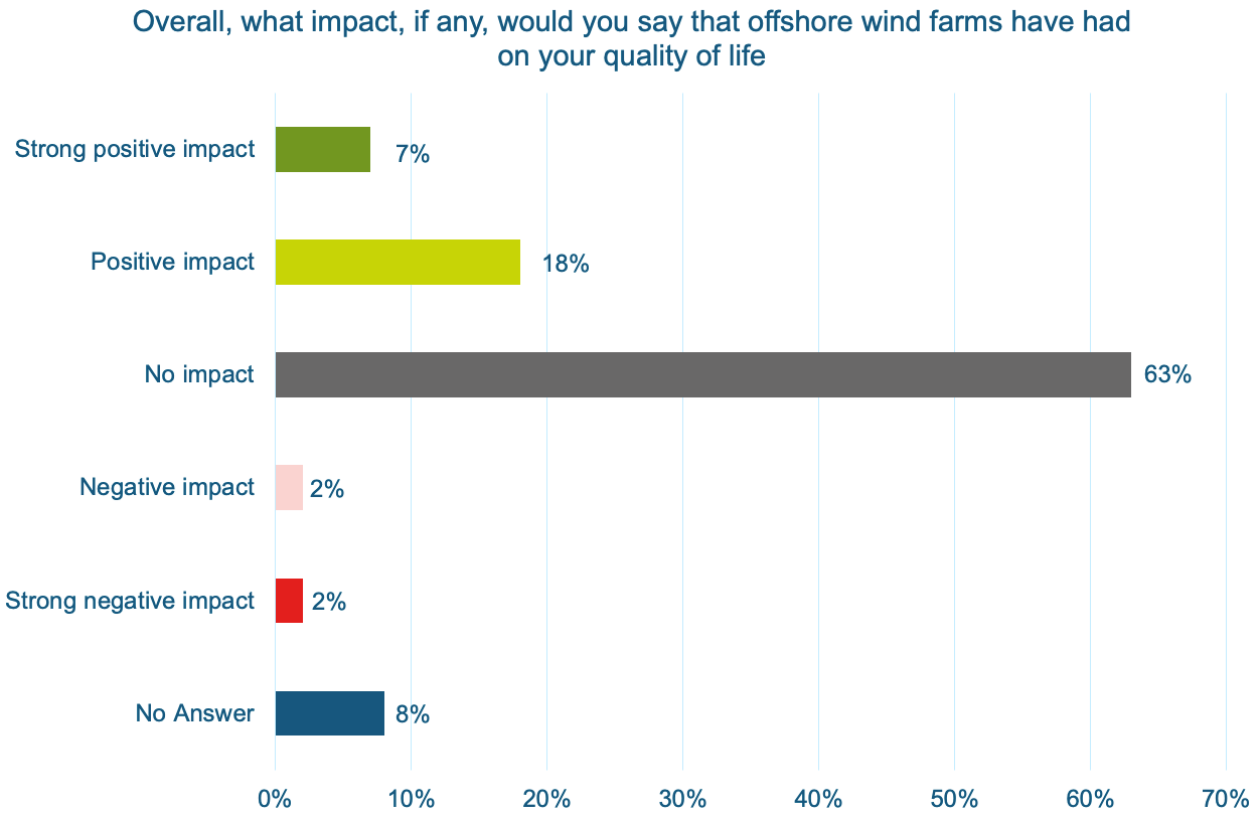

Figure 6.11 Community perceptions of offshore wind impacts on quality of life

120. Similarly, the survey also asked respondents to consider how the offshore wind farms near them had had an impact on community relations. The majority of people (59%) reported there had been no impact as a result of the offshore wind farms and of those who did report an impact a greater share (16%) felt the impact had been positive compared to those who felt it had been negative (7%) (**Figure 6.12**).

[22] *Scottish Government/Diffley Partnership (2022), Public Perceptions of Offshore Wind Farm Developments in Scotland*

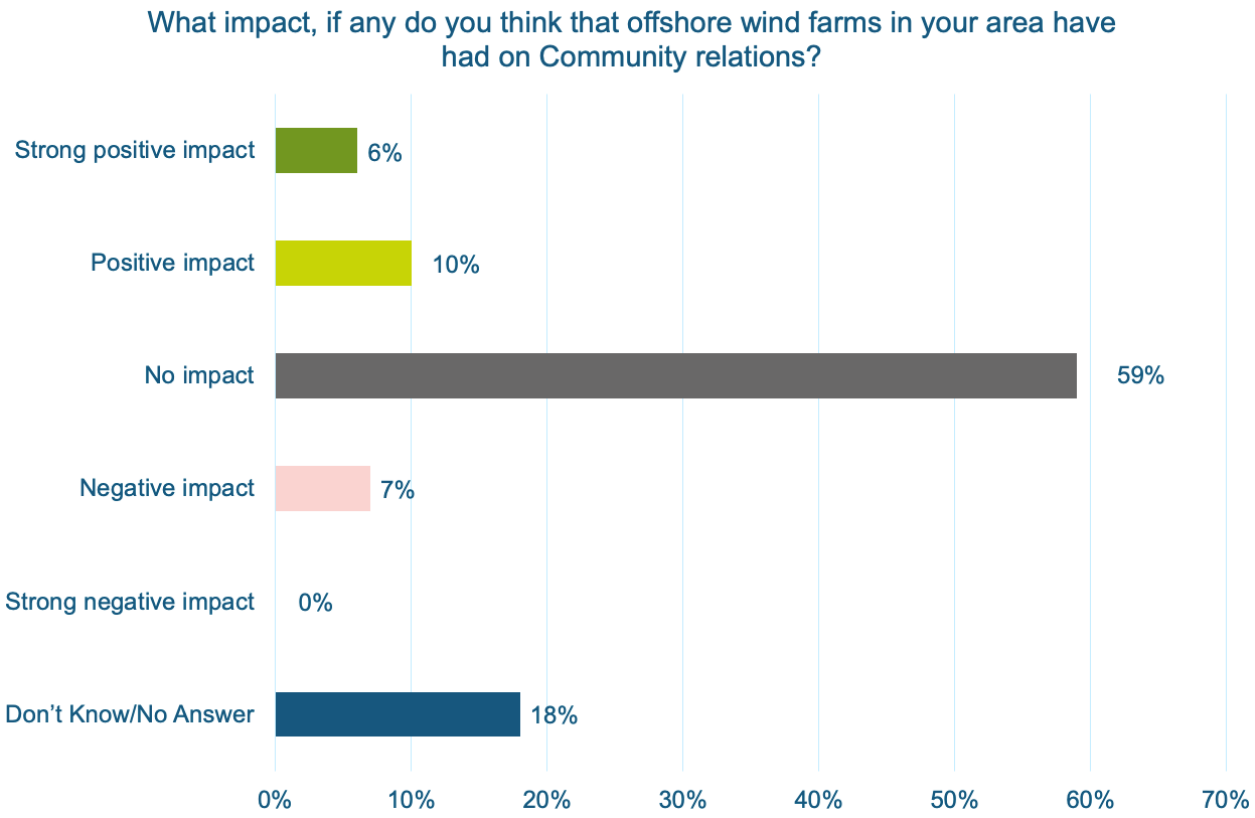

Figure 6.12 Community perceptions of offshore wind impacts on community relations

121. The survey also asked those with lived experiences of offshore wind farms in Scotland to describe how these developments had influenced the character of a community. The majority of respondents reported that there had been no impact and for those who did report an impact, more felt there had been a positive impact (21%) than a negative impact (9%) (**Figure 6.13**).

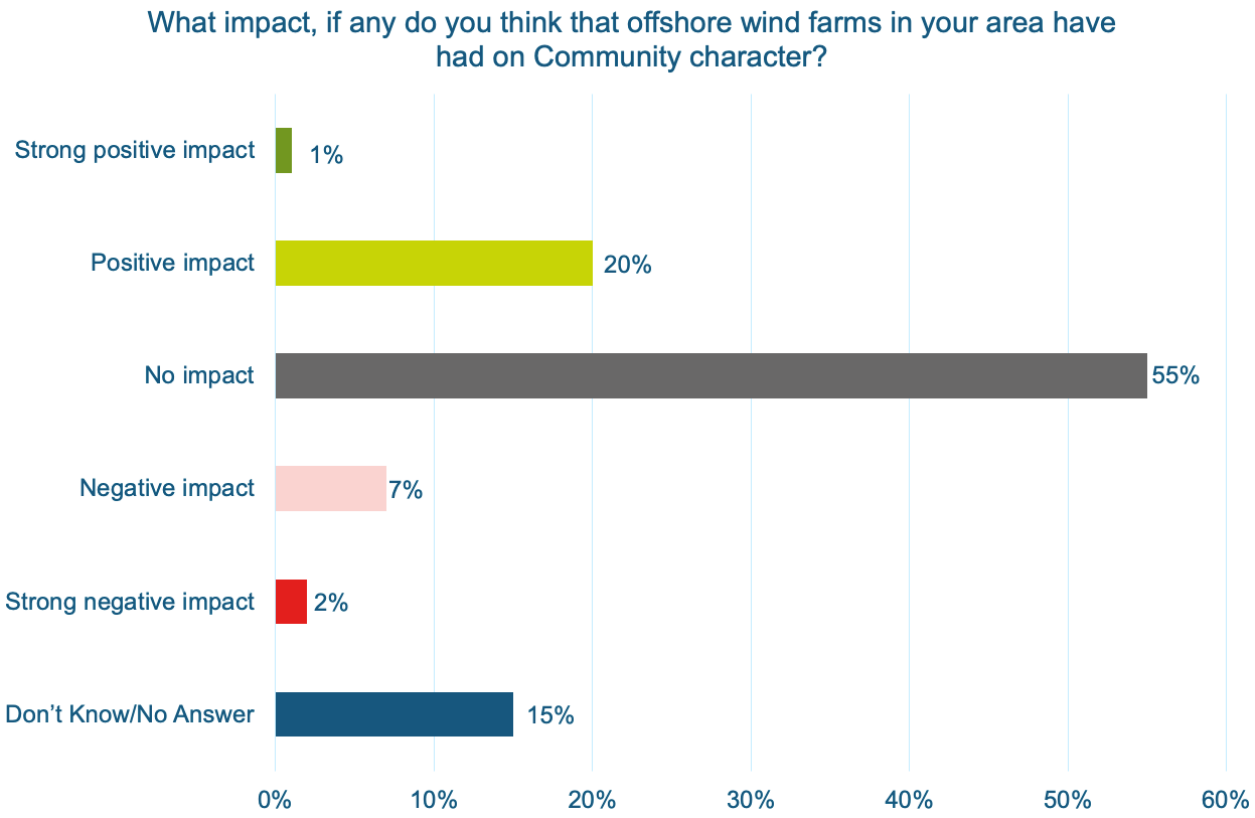

Figure 6.13 Community perceptions of offshore wind impacts on community character

122. The factors which affect how people feel about community or quality of life impacts of offshore wind will depend on a wide variety of existing community characteristics and the personal experiences of individuals. These will be particular to the communities in which the impacts occur.

123. Human rights is one of the outcomes of the Scottish Government's National Performance Framework: "*We recognise and protect the intrinsic value of all people and are a society founded on fairness, dignity, equality and respect. We demonstrate our commitment to these principles through the way we behave with and treat each other, in the rights, freedoms and protections we provide, and in the democratic, institutional and legal frameworks through which we exercise power*".[23]

124. Balancing the positive environmental aspects of offshore wind farms with the protection of communities' well-being and rights is key to achieving sustainable and responsible development. Construction and O&M activities may influence human rights issues by, for example: changes to the local environment affecting community cohesion and impacting on the right to community life; ensuring labour rights and safety for workers involved in construction; involving communities in decision-making processes to uphold the right to participation. This offshore wind farm presents opportunities for positive impact in line with human rights principles. Balancing livelihoods, fostering community unity, ensuring resource access, preserving culture, and prioritising well-being all demonstrate commitment to human rights. Through inclusivity, ensuring safety, and addressing community impacts, this Project can align with the National Performance Framework's outcome on Human Rights.

[23] *Scottish Government (2022) National Performance Framework. Available at (https://nationalperformance.gov.scot/index.php/national-outcomes/human-rights).*

125. The sensitivity of communities on socio-cultural issues will be very specific to the communities themselves and the impacts that could occur in each area. Some of the factors that could contribute to the sensitivity of communities to specific impacts are outlined in **Figure 6.14**.

Figure 6.14 Factors Affecting Sensitivity of Communities to Socio-cultural Impacts

126. The magnitude of any change in socio-cultural impacts will be dependent on the specific impact that is being assessed.

127. Particular care would be needed in assessing those impacts based on an individuals' perception, including impacts around quality of life and community cohesion and character. Net effects could hide considerable splits within communities and therefore the magnitude of change will depend on the gross number of individuals who report a change in perception-based impacts.

128. Perception based impacts are also liable to change over time, particularly as more details of the Project emerge. Public perceptions of offshore wind projects generally improve over time. In communities with lived experiences of offshore windfarms in Scotland, 19% said that the benefits to the local community were better than they had expected compared to 3% who said they were worse. It is therefore crucial to understand what impact is being measured, as there is likely to be a difference between actual and perceived impacts.

129. Many of the socio-cultural impacts are also secondary effects of other impacts identified elsewhere in this assessment as in the EIAR. Therefore, the magnitude of these effects and how they are felt within the communities are important factors that will drive the magnitude of the socio-cultural impacts.

130. Some of the factors which will contribute to the magnitude of socio-cultural impacts are shown in **Figure 6.15**.

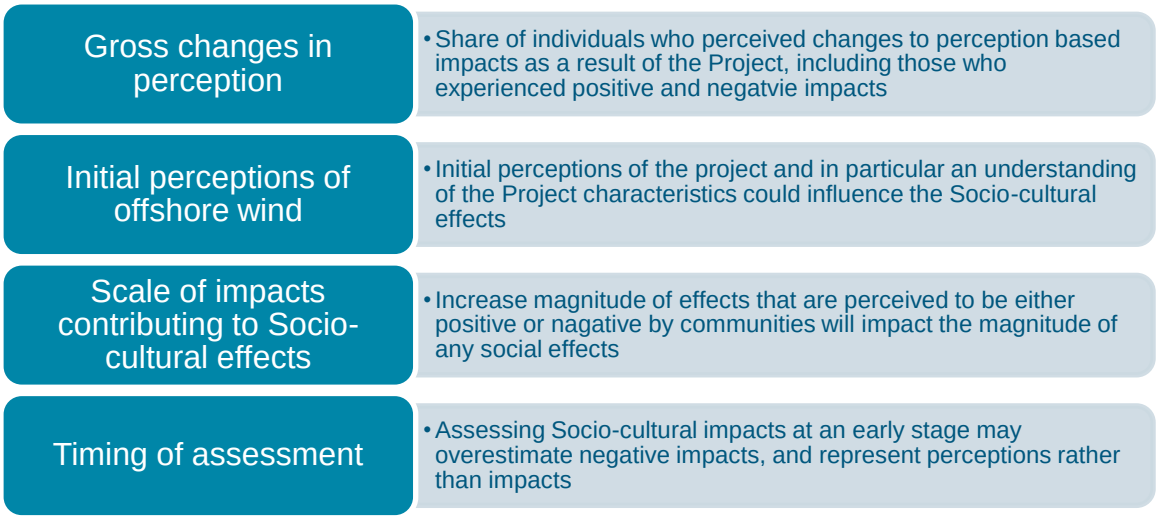

Figure 6.15 Factors Affecting Magnitude of Change of Socio-cultural Impacts

6.4 Distributional Effects

131. The General Advice provided by the Marine Analytical Unit[24] identifies that the social and economic impacts will be felt differently across different groups of society, based on characteristics including:

- Gender;
- Age;
- Religion;
- Language;
- Ethnicity; and
- Location.

132. The sensitivity of the communities, and groups within these communities, will also vary considerably between communities and the impacts that occur in each of these. Some effects may impact communities evenly, regardless of characteristic, while other impacts are likely to be distributed less evenly, regardless of the communities that are affected. For example, the employment opportunities are more likely to directly impact on people of working age, while pressure on health services may have a greater impact on older members of the population.

133. The distribution of these effects would invariably depend on the analysis of the social effects in general on these communities.

6.5 Social Impact Summary

134. The social impacts associated with the Project are dependent on the locations that will be chosen for the primary construction and O&M ports.

135. However, based on the information that is available about the Project and the current offshore wind industry it is expected that:

[24] *Marine Analytical Unit (2022), General Advice for Socio-Economic Impact Assessment*

- The population that would move to the area to work on the Project, on either a permanent or temporary basis, is likely to have a greater proportion of males and more likely to be aged between 30 and 44 than the host community. The relative change in demographics as a result of this workforce will be dependent on the characteristics of the port location, for example communities around ports in rural communities have a smaller and older baseline population;
- The impact on services, including accommodation and housing provision, is highly dependent on the current capacity of the services in these areas and their ability to react to changes in demand; and
- The socio-cultural impacts from offshore wind projects are generally net positive, but the majority of the coastal communities with lived experience of offshore wind felt it has no impact on them.

136. The Applicant will continue to engage with relevant stakeholders throughout all stages of the process. Once port locations for construction and operation have been identified by the developer, it will engage with relevant communities and their representatives to understand their views of the Project. The Applicant will also consider how it can support community activities as the Project progresses.

7 Conclusion

137. The Project is a 450MW floating offshore wind farm, which is expected to be commissioned in 2028.

138. It was assumed to have a total capital cost of around £2.0 billion. Based on BiGGAR Economics analysis of the offshore wind sector, which considered a Base Case and High Case, it was estimated that the total economic impact of the development and construction impact would be:

- £176-284 million GVA and 1,630-3,150 years of employment in Scotland; and
- £284-411 million GVA and 3,950-5,740 years of employment in the UK.

139. At this stage, the ports used in manufacturing and construction are not known, and therefore it is not possible to calculate the economic impact associated with a given port. However, it was estimated that port-related construction contracts would be worth around £528 million, with spend of £216-376 million in Scotland, requiring peak employment of 700-1,220 jobs. The largest opportunity is associated with building the floating foundations.

140. The Project is expected to have an annual operations and maintenance expenditure of £40 million a year across its 35-year operational lifetime. It was estimated that this could support an average annual economic impact of:

- £16-19 million GVA and 210-240 jobs in Scotland; and
- £23-34 million GVA and 310-410 jobs in the UK.

141. As well as generating economic impacts, the Project could have wider social impacts on the communities that are located near to construction and operation ports. The social impacts are likely to be highly dependent on the characteristics of the port locations chosen, e.g. rural or urban, current population trend, ability to absorb changes in housing demand and demand for other local services.

142. Based on the information that is available about the Project and the current offshore wind industry it is expected that:

- The population that would move to the area to work on the Project is likely to have a greater proportion of males and more likely to be aged between 30 and 44 than the host community;
- There will be an increase in demand for services, including accommodation and housing provision; and
- The socio-cultural impacts from offshore wind projects are generally net positive, but the majority of the coastal communities with lived experience of offshore wind felt it has no impact on them.

The Applicant will continue to proactively engage with relevant stakeholders and communities, including those around the port locations that are chosen, to understand their views of the Project.

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GREEN VOLT

Flotation Energy Ltd | 12 Alva Street | Edinburgh EH2 4QG | Scotland
Tel: +44 7712 864013 | enquiries@flotationenergy.com | www.flotationenergy.com