Muir Mhòr Offshore Wind Farm

Environmental Impact Assessment Report

Volume 3, Appendix 17.1: Socio-Economics, Tourism and Recreation Technical Report

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BiGGAR Economics

Mhòr Offshore Wind Farm

Socio-Economics, Tourism and Recreation Technical Report

A report to Muir Mhòr Offshore Wind Farm
October 2024

Contents

1.	**Introduction**	**1**
2.	**Baseline Methodology**	**2**
3.	**Economic Impact Methodology**	**6**
4.	**References**	**13**

Tables

Table 2.1 Summary of key data sources used. 2
Table 3.1 SCDS Commitment Scenario (£m) 9

Figures

Figure 3.1 Economic Impact Methodology and Data Sources 7
Figure 3.2 Levels of Economic Activity and Impact 10
Figure 3.3 Turnover per GVA 11
Figure 3.4 Indirect GVA 12
Figure 3.5 Induced GVA 12

Acronyms

Term	Definition
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EU	European Union
FTE	Full-Time Equivalent
GVA	Gross Value Added
GW	Gigawatt
HM	His Majesty's
Kantar TNS	Kantar Taylor Nelson Sofres
km	Kilometres
NPV	Net Present Value
O&M	Operation and Maintenance
ONS	Office of National Statistics
rUK	Rest of UK
SCDS	Supply Chain Development Statement
UK	United Kingdom

1. Introduction

BiGGAR Economics has been commissioned to undertake an economic impact assessment of the Proposed Development.

1.1 Background

The Muir Mhòr Offshore Wind Farm (hereafter the Project) comprises an array area located in the North Sea approximately 63 kilometres (km) east of Peterhead, and Export Cable Corridor (ECC) with landfall near Peterhead. Onshore transmission infrastructure will facilitate connection of the Project to the National Grid. The offshore elements of the Project are the subject of this report and hereafter referred to as the Proposed Development.

BiGGAR Economics is currently undertaking an Environmental Impact Assessment (EIA) for the Proposed Development in the North Sea, which considers the socio-economic, tourism and recreation impacts.

1.2 Purpose of this report

The purpose of this report is to:

- Support Volume 2, Chapter 17 (Socio-Economics, Tourism and Recreation) of the Environmental Impact Assessment Report (EIAR);
- Provide more detail on the methodology used to develop the baseline; and
- Provide more detail on the methodology used to quantify the economic impacts associated with the Proposed Development.

The analysis presented in this report represents the findings based on the data available in June 2024.

A comprehensive model has been developed to analyse these impacts.

2. Baseline Methodology

This section outlines the methodology for establishing the baseline to inform the assessment of effects on employment and the economy in defined study areas.

2.1 Desktop Study

The methodology for establishing the baseline involved a broad desktop study. This study was aimed at evaluating and assessing the key datasets and statistics related to socio-economics features and supply chain capabilities in the UK and Scotland. It focused on various key statistics, including general population demographics, age group distribution, overall employment levels, and specific employment figures within industries linked to the offshore sector.

The data sources specific to the socio-economics baseline related to the Proposed Development are shown in Table 2.1.

Table 2.1 Summary of key data sources used.

Data Source	Summary
Mid-2022 Population Estimates Scotland (National Records of Scotland, 2024)	Population estimates, broken down by age.
2018-based Principal Population Projections (National Records of Scotland, 2020)	Population projections for Scotland and each of its 32 local authorities, broken down by age.
Principal Population Projections 2018-Based (Office for National Statistics (ONS), 2020)	Population projections for the United Kingdom (UK) as a whole, broken down by age.
Business Register and Employment Survey 2022 (ONS, 2023)	Provides a breakdown of employment by sector.
Offshore Wind Skills Intelligence Report 2023 (OWIC, 2023)	Provides information on the existing offshore wind labour force across the UK as well as the skills that are expected to be needed up to 2030.

Data Source	Summary
The Offshore Wind Operations and Maintenance (O&M) Opportunity (Offshore Renewable Energy Catapult, 2020)	Discusses the potential opportunities in offshore wind by 2030, with a detailed breakdown of annual spending and associated opportunities in the UK.
The Offshore Wind Sector Deal (Scottish Government, 2020)	Sets out the economic opportunities associated with offshore wind, including UK Government targets on the share of UK content.
National Performance Framework (Scottish Government, 2018)	Sets out a framework for what a successful country would look like, providing a range of measures to assess a proposed project against.
National Strategy for Economic Transformation (Scottish Government, 2022)	Sets out the priorities for the Scottish economy, as well as how to achieve a wellbeing economy.
Offshore Wind Policy Statement (Scottish Government, 2020)	Sets out the Scottish Government's ambitions for the future of offshore wind in Scotland.
GB Day Visitor 2023 (Kantar Taylor Nelson Sofres (TNS), 2024)	Annual publication of domestic day visits by number and value for 2023. Earlier data for local authorities will be from 2019 as the latest year not affected by Covid-19.
GB Tourism Survey 2022 (Kantar TNS, 2024)	Annual publication of domestic overnight tourism visits and nights by number, value and purpose for 2023. Earlier data for local authorities will be from 2019 as the latest year not affected by Covid-19.
International Passenger Survey (ONS, 2023)	Annual publication of international overnight tourism visits and nights by number, value and purpose for 2022.
Annual Growth Sector Statistics (Scottish Government, 2023)	Provides economic statistics, such as employment and Gross Value Added (GVA), on growth sectors identified by the Scottish Government, including sustainable tourism.

2.2 Study Areas for Economic Impact Assessment

2.2.1 Approach

While a significant proportion of the activity associated with the Proposed Development is expected to take place offshore, the relevant study areas for the socio-economic assessment are located onshore.

The socio-economic study areas for the assessment of effects on employment and economy will be defined in line with the guidance on the identification of 'local areas' for offshore developments published by the Scottish Government (Scottish Government, 2022). This guidance identified six principles for identifying local study areas for offshore development:

- Principle 1 (Dual Geographies): The local area for the supply chain and investment impacts should be separate from the local area(s) for wider socio-economic impacts, including tourism and recreation.
- Principle 2 (Appropriate Impacts): The appropriate impacts to be considered for assessments should be identified before defining the local areas.
- Principle 3 (Epicentres): The local areas should include all the epicentres of the appropriate impacts.
- Principle 4 (Accountability): The local areas used in the assessment should comprise pre-existing economic or political geographies (community councils, local authorities, development agencies) to enhance accountability.
- Principle 5 (Understandable): The local areas should be defined in such a way that they are understandable to the communities they describe.
- Principle 6 (Connected Geography): The local area for the supply chain and investment impacts should consist of connected (including coastal) pre-existing economic or political geographies.

2.2.2 Socio-Economic Study Areas

The main local epicentres of impact for the Proposed Development are expected to be the ports that will be used. However, at this stage these ports are not known, and therefore the following study areas have been considered:

- Construction port, i.e. the area around the construction port (construction phase only);
- Operations and Maintenance (O&M) port, i.e. the area around the O&M port (O&M phase only);
- Scotland; and
- the UK.

While the ports are not known, a list of potential ports for the construction and O&M phases have been considered to identify the worst case design scenario (Table 2.2).

Table 2.2 Summary of key data sources used.

Ports	Local Study Area (Local Authorities)
Construction	
Port of Aberdeen	Aberdeen City, Aberdeenshire
Ardersier	Highland, Moray
Burntisland	Fife, City of Edinburgh, West Lothian
Port of Cromarty Firth	Highland
Port of Dundee	Dundee, Angus, Fife
Port of Leith	City of Edinburgh, Midlothian, West Lothian, East Lothian
Port of Nigg	Highland
Orkney – Scapa Deep Water Quay	Orkney Islands
Peterhead	Aberdeenshire
O&M	
Port of Aberdeen	Aberdeen City, Aberdeenshire
Fraserburgh	Aberdeenshire
Port of Nigg	Highland
Montrose	Angus, Aberdeenshire, Dundee City
Peterhead	Aberdeenshire

3. Economic Impact Methodology

This section outlines the methodology for assessing the economic impacts of the Proposed Development.

3.1 Approach to Impacts from Offshore Wind

3.1.1 Key Steps in Assessing the Contribution of the Proposed Development

Before the analysis of economic impacts is undertaken, it is necessary to select the study areas for inclusion in the assessment of the Proposed Development, as set out in Section 2.2. This process is based on separate guidance that BiGGAR Economics developed on behalf of the Scottish Government (Scottish Government, 2022).

Having selected the study areas for which GVA and employment impacts are considered, it is then possible to gather relevant information and estimate economic impacts. The estimation of the economic benefits from the Proposed Development is based on a purposedly-built tool developed by BiGGAR Economics. As set out in Figure 3.1, the analysis is based on an Input-Output methodology built upon the following steps:

- Estimation of the total investment associated with the project (construction and development and operations and maintenance);
- Estimation of contract value by type;
- Estimation of contract content by geographical area;
- Conversion of contracts into the direct employment supported by the project;
- Estimation of direct GVA based on direct employment supported;
- Estimation of supply chain (indirect) impacts on GVA and employment; and
- Estimation of induced impacts on GVA and employment.

While data on decommissioning spending may not be available early on in a project's development, the analysis provides an estimate of economic activity during this phase. This assumes that decommissioning would take place in reverse of construction and would involve the performance of similar contracts.

Figure 3.1 Economic Impact Methodology and Data Sources

Source: BiGGAR Economics Approach to Offshore Wind

3.1.2 Information Requirements and Data Sources

The assessment requires knowledge of a series of parameters including:

- Number of turbines and their capacity;
- Foundations type (floating or fixed);
- Costs by project element;
- Estimates of content by study area; and
- Timescales of activity.

Key sources of information, include:

- Publicly available information as presented in the Muir Mhòr Offshore Scoping Report (EIAR Volume 3, Appendix 5.1);
- Commercial data from the Developer, including the Supply Chain Development Statement (SCDS) (Muir Mhòr Offshore Wind Farm, 2023);
- Classification of economic activity from the ONS 'Standard Industrial Classification of Economic Activity' (ONS, 2022);
- Scottish Annual Business Statistics for data on GVA, turnover and employment across Scotland (Scottish Government, 2022);
- UK Annual Business Survey for data on GVA, turnover and employment across the UK (ONS, 2022) ;
- Scottish Government Input-Output GVA and employment multipliers for Type 1 impacts (supply chain spending) and Type 2 impacts (supply chain spending and staff spending) (Scottish Government, 2022); and
- UK Input-Output GVA and employment multipliers for Type 1 and Type 2 impacts (ONS, 2023).

These data sources are complemented by BiGGAR Economics experience working with developers in the offshore wind sector and by the use of sectoral reports.

3.1.3 Supply Chain Development Statement

The starting point for assessing the economic impact assessment was the expenditure that is expected to be associated with combined onshore and offshore elements of the Project. The Developer's SCDS (Muir Mhòr Offshore Wind Farm, 2023) provides estimates of the share of expenditure in Scotland, the UK, the EU and elsewhere across two scenarios (commitment and ambition) associated with four categories of expenditure:

- Development;
- Manufacturing and fabrication;
- Installation; and
- Maintenance.

In the commitment scenario presented in the SCDS, it was expected that the total expenditure on onshore and offshore infrastructure during the development and construction phase of the Project would be £2.0 billion, including £239.3 million in Scotland and £258.5 million in the rest of the UK (rUK).

This includes:

- £141.2 million on development, such as studies, surveys, analysis and resources required to obtain planning consent;
- £1.6 billion on manufacturing and fabrication, including wind turbine engines, blades and towers, floating foundations, mooring and anchoring, inter-array and interconnector cables, onshore and offshore substation fabrication and the operation and maintenance base construction; and
- £214.3 million on foundation and mooring installation, onshore wind turbine and foundation assembly works, onshore substation construction and installation and export cable route works.

In addition, there is expected to be operation and maintenance spend of £92.5 million per year, including £33.6 million per year in Scotland. This is expected to include operating and maintaining the wind turbines and infrastructure associated with the Project, inspections, rents and transmission charges (Table 3.1).

Table 3.1 SCDS Commitment Scenario (£m)

	Scotland	rUK	EU	Rest of World	Total
Development	61.7	34.7	44.7	-	141.2
Manufacturing and fabrication	165.3	211.5	472.3	799.6	1,648.7
Installation	12.3	12.3	169.1	20.7	214.3
Development and construction	239.3	258.5	686.1	820.3	2,004.2
Annual operation and maintenance	33.6	34.5	24.4	-	92.5

Each of the categories of spend was then split into sub-categories based on BiGGAR Economics' own offshore wind economic model, which incorporates a detailed breakdown of cost categories, based on industry data, including BVG Associates Guide to a Floating Offshore Wind Farm (BVG Associates, 2024).

Each of these categories was assigned either wholly or partly to offshore or onshore. On this basis, it was assumed that the spending associated with offshore infrastructure (i.e. the Proposed Development) would be £1.9 billion, with £0.1 billion spent on onshore infrastructure.

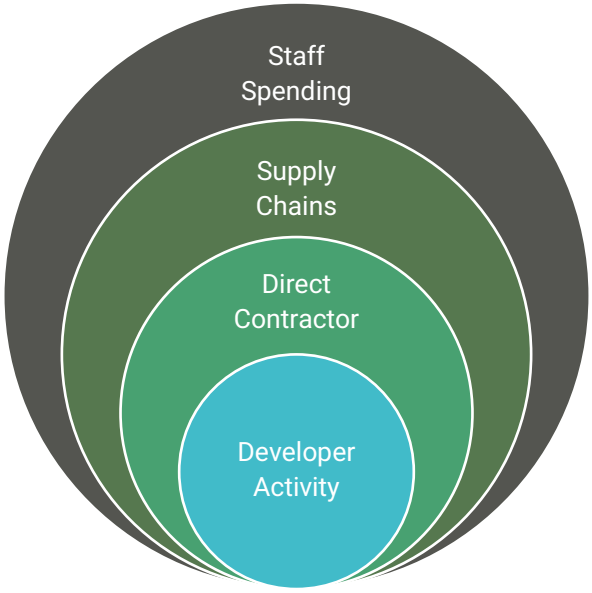
3.1.4 Dimensions of Impact and Key Terms

In line with industry best practice, for the assessment of GVA and employment impacts, the analysis focuses on:

- **Direct economic impacts**: economic impact associated with the activity of primary contractors involved in the development, construction and operations and maintenance of the Proposed Development; and
- **Indirect economic impacts**: economic impact associated with the spending taking place across the supply chain of those businesses involved in the development, construction and operations and maintenance of the Proposed Development.

The assessment also refers to the additional benefits associated with the spending in the economy by those employed to carry out works associated with the Proposed Development (**induced economic impacts**).

Figure 3.2 Levels of Economic Activity and Impact



Economic impacts are expressed in terms of:

- **GVA:** a measure of economic activity expressed as the difference between an organisation's turnover and its non-staff operational expenditure;
- **Years of Employment:** a measure of short-term employment used in the context of jobs associated with construction and development activity. As an example, a job lasting for 18 months is equivalent to 1.5 years of employment; and
- **Jobs**: a measure of employment used to reflect long-term employment such as the operations and maintenance phase.

3.1.5 Pricing and Discounting

All prices considered as part of the assessment are **real prices** (i.e., they reflect cost estimates as expressed in 2024 prices).

The analysis, where appropriate, also provides estimates based on the Net Present Value (NPV) of activity. This is based on His Majesty (HM) Treasury's guidance on economic appraisal as included in the Green Book (HM Treasury, 2022), where it is recommended that impacts occurring over long periods of time are discounted to account for the different value people give to present compared to future consumption. The HMT's suggested discount factor of 3.5% is applied.

3.2 Economic Impact Modelling

This section provides some details on the Input-Output methodology applied.

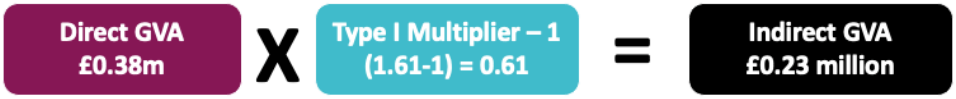
Having gathered data on spending by project element and assigned to offshore or onshore, next first step involves estimating the total spending supported by the contracts performed in each study area. Based on the turnover supported, it is then possible to estimate the direct employment and direct GVA supported by the Proposed Development by applying the relevant turnover per GVA and turnover per job ratios from the ONS Annual Business Survey.

This is illustrated in Figure 3.3 below.

Figure 3.3 Direct GVA

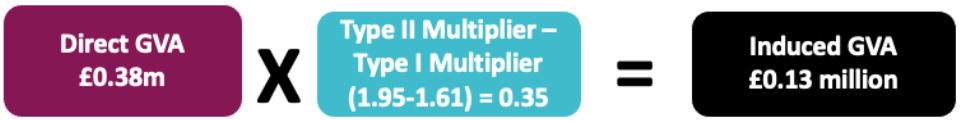
Alongside the direct impact generated by the project, there will be an impact on the supply chain of those businesses being awarded project-related contracts. To estimate indirect impacts, it was necessary to apply the direct GVA and direct employment Type 1 employment and GVA multipliers as sourced from the UK Input-Output Tables. How Type 1 multipliers are applied is shown in Figure 3.4 and Figure 3.5 below.

Figure 3.4 Indirect GVA



In line with industry best practice, for the assessment of GVA and employment impacts, the analysis focuses the direct and indirect impacts. In addition, the analysis also reports on induced impacts, which are the result of those employed to carry out project-related work spending their salaries and wages across the economy. To estimate induced impacts, it was necessary to apply Type 2 UK Employment and GVA multipliers to the direct GVA and employment supported by the project.

Figure 3.5 Induced GVA



As the economic impact multipliers reflect activity occurring within the UK economy, it is necessary to adjust multipliers to reflect activity occurring in each of the study areas. This is based on an analysis of household spending patterns and knowledge of supply chains at the regional level.

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