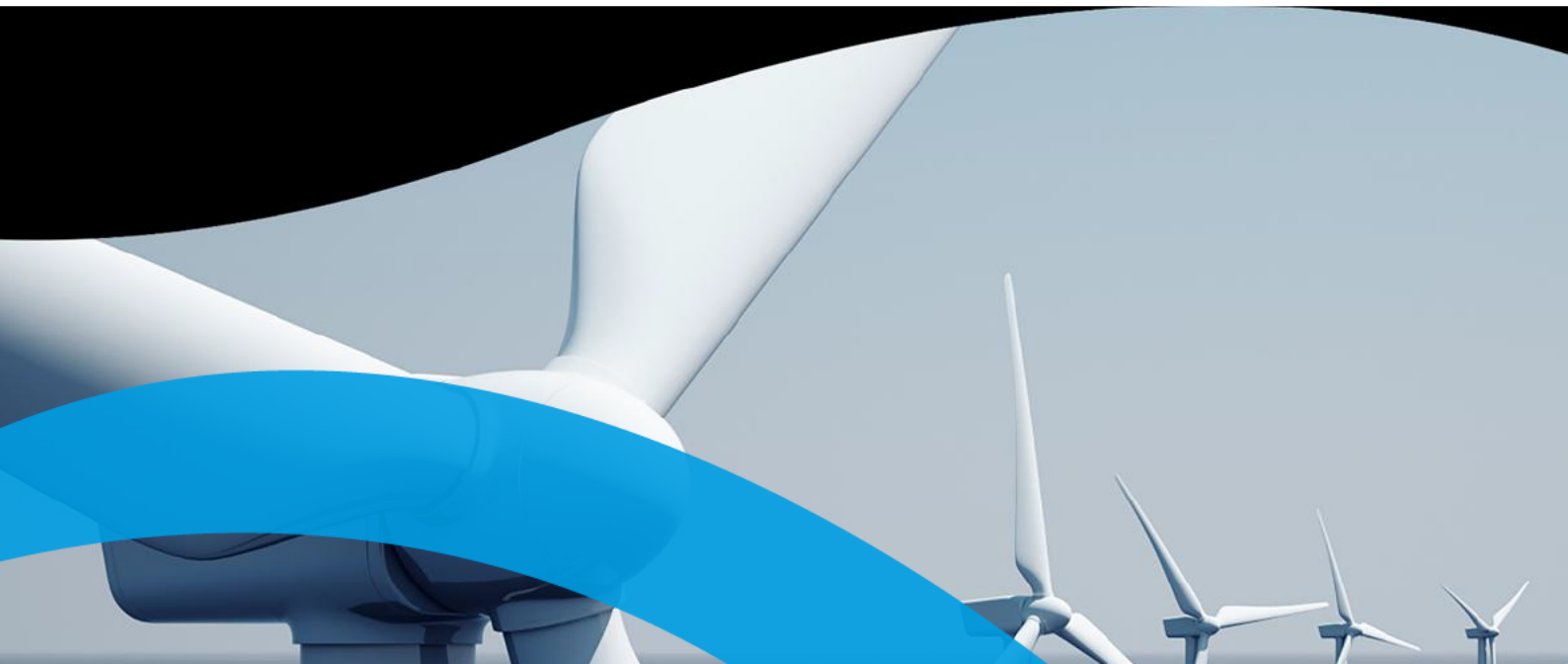
Muir Mhòr Offshore Wind Farm

Environmental Impact Assessment Report

Volume 1, Chapter 1: Introduction



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Glossary

Term	Definition
Array Area	The area in which the generation infrastructure (including Wind Turbine Generators and associated foundations and inter-array cables), Offshore Electrical Platform(s), and an interconnector cable will be located.
Developer	Muir Mhòr Offshore Wind Farm Limited
E2	The ScotWind Plan Option Area where the Proposed Development is located.
EIA Regulations	Collectively the term used to refer to The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, The Marine Works (Environmental Impact Assessment) Regulations 2007, and The Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017.
Floating Foundations	The floating structures on which the Wind Turbine Generators are installed.
Foundation anchors	The mooring structures which anchor the Floating Foundations to the seabed.
Inter-array cables	Cables which link the Wind Turbines Generators to each other and the Offshore Electrical Platform(s).
Interconnector cable	Cable which links the Offshore Electrical Platforms to one another, allowing for power to be transferred between the platforms.
Landfall	The area between Mean High Water Springs (MHWS) and Mean Low Water Springs (MLWS) where the offshore export cables are brought onshore.
Offshore Electrical Platform (OEP)	Offshore platform consisting of High Voltage Alternating Current (HVAC) equipment, details depending on the final electrical set up of the Project.
Offshore Export Cable Corridor (ECC)	The area within which the offshore export cables will be installed.
Offshore export cables	The subsea electricity cable circuits running from the Offshore Electrical Platform(s) to the landfall which will transmit the electricity generated by the offshore wind farm to the onshore export cables for transmission onwards to the onshore substation and the national electrical transmission system along with auxiliary cables such as fibre optic cables.
Offshore transmission infrastructure	The proposed transmission infrastructure comprising: Offshore Electrical Platform(s) and associated foundations and substructures; the interconnector cable, the offshore export cables; and the landfall area up to Mean High Water Springs (MHWS).
Project	Muir Mhòr Offshore Wind Farm – comprises the wind farm and all associated offshore and onshore components.
Proposed Development	The offshore Muir Mhòr Offshore Wind Farm project elements to which this Offshore EIA Report relates.
Wind Turbine Generator (WTG)	The wind turbines that generate electricity consisting of tubular towers and blades attached to a nacelle housing mechanical and electrical generating equipment.

Acronyms and Abbreviations

Term	Definition
CES	Crown Estate Scotland
GW	Gigawatt
ECC	Export Cable Corridor
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMP	Environmental Management Plans
EU	European Union
GW	Gigawatt
HRA	Habitat Regulations Appraisal
IAC	Inter-Array Cables
JV	Joint Venture
MCAA	Marine and Coastal Access Act
MD-LOT	Marine Directorate– Licensing Operations Team
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MW	Megawatt
nm	Nautical Miles
NTS	Non-Technical Summary
OEP	Offshore Electrical Platform
O&M	Operation and Maintenance
OWF	Offshore Wind Farm
PO	Plan Option
RIAA	Report to Inform Appropriate Assessment
SMP	Sectoral Marine Plan
UK	United Kingdom
WPA	Whole Project Assessment
WTG	Wind Turbine Generator

1. INTRODUCTION

1.1. BACKGROUND

1.1.1. In response to the Scottish Government's target of net-zero emissions of all greenhouse gases by 2045 and the aim to generate 50% of Scotland's overall energy consumption from renewable sources by 2030, the Crown Estate Scotland (CES) launched the ScotWind Leasing process in 2021, which released new areas of seabed within Scottish waters for future offshore development. The ambition was to offer offshore wind generating capacity within a series of Plan Options (PO), identified by the Scottish Government as the most suitable areas for development as set out within the Sectoral Marine Plan (SMP) for Offshore Wind Energy.

1.1.2. As part of the CES ScotWind Leasing process in January 2022, Muir Mhòr Offshore Wind Farm Limited (a joint venture (JV) between Fred. Olsen Seawind Limited and Vattenfall Wind Power Limited), hereafter 'the Developer' was identified as the successful bidder and awarded an Option Agreement (granting exclusive rights for offshore wind development) for what the Developer has named the Muir Mhòr Offshore Wind Farm (OWF) (hereafter 'the Project'), located within the E2 PO area. The Muir Mhòr Array Area covers an area of approximately 200 km^2 and is located approximately 63 km east of Peterhead on the east coast of Scotland (Figure 1-1). The Project is anticipated to have a capacity of approximately 1 GW comprising floating offshore wind technology.

1.1.3. The Project is comprised of both the offshore and onshore infrastructure required to generate and transmit electricity from the Muir Mhòr Array Area to the National Grid. The subject of this Environmental Impact Assessment Report (EIAR) is the offshore infrastructure only (hereafter 'the Proposed Development'). The Proposed Development is not being considered in isolation but rather as part of the wider Project development. A separate onshore EIAR is being prepared which will provide a description of the onshore elements of the Project landward of Mean Low Water Springs (MLWS), and an assessment of the associated likely significant effects.

1.1.4. Additionally, each topic-specific Chapter of the Offshore EIAR presents a Whole Project Assessment (WPA) of the relevant onshore effects alongside the offshore effects (see Section 1.5). This approach ensures the Offshore EIAR provides a comprehensive assessment of any combined effects of the offshore and onshore elements of the Project and prevents consideration of either the offshore or onshore Proposed Development in isolation.

1.1.5. The offshore infrastructure of the Proposed Development includes Wind Turbine Generators (WTGs) and associated floating foundations, foundation anchors, the Offshore Electrical Platform(s) (OEP), their associated fixed foundations, an interconnector cable, the Inter-array Cables (IAC), and offshore export cables. The Proposed Development is located wholly in the United Kingdom (UK) Exclusive Economic Zone (EEZ), and the offshore Export Cable Corridor (ECC) is located within the EEZ and then into Scottish Territorial Waters to landfall.

1.1.6. The Developer therefore intends to apply for the relevant consents and permissions required to enable construction, Operation and Maintenance (O&M) and decommissioning of the Proposed Development. The consents, licences and permissions which will be sought by the Developer for the Proposed Development include:

- A Section 36 consent under the Electricity Act 1989;
- A Marine Licence under the Marine and Coastal Access Act (MCAA) 2009 for the generating assets of the proposed development which are located beyond 12 nautical miles (nm) limit within the EEZ; and

- A Marine Licence under the Marine (Scotland) Act 2010 for the offshore transmission infrastructure, which is within 12 nm of the coast, and under the MCAA for the offshore transmission infrastructure located beyond the 12 nm limit within the EEZ.

1.1.7. The Developer will not seek deemed planning permission as part of the Section 36 consent application, however a separate application for onshore infrastructure will be made under the Town and Country Planning (Scotland) Act 1997. A separate Muir Mhòr Onshore EIA Report is being prepared providing a description of the onshore elements of the Project landward of MLWS and an assessment of the associated likely significant effects. This will support the onshore consent and licence applications. The Offshore EIA considers the Onshore EIA cumulatively, where appropriate.

1.1.8. This EIAR has therefore been prepared by GoBe Consultants Limited on behalf of the Developer in accordance with the suite of implementing legislation in Scotland to accompany the above listed applications for consent. Volume 1, Chapter 2: (Legislation and Policy Context) describes the policy and legislative background to the Proposed Development, including required consents and licences and therefore this has not been re-iterated here.

1.1.9. This introductory Chapter outlines the Proposed Development, summarises the consents and/or licenses required for the proposed works, and outlines the content of the Offshore EIAR.

1.2. PROPOSED DEVELOPMENT OVERVIEW

1.1.10. The location of the Proposed Development is shown in Figure 1-1. The key components of the Proposed Development include:

- Up to 67 offshore WTGs and associated infrastructure (nacelle and blades) on floating foundations, with associated mooring and anchorages;
- Up to two OEP(s) on fixed foundations;
- Scour protection for WTG anchors and OEP foundations;
- IAC connecting the WTGs to the OEP(s);
- An interconnector cable linking the OEP(s) to one another;
- Offshore export cables running from the OEP(s) to the landfall area up to Mean High Water Springs (MHWS); and
- Cable protection on unburied or shallow sections of cables and at cable crossings as and when required.

1.1.11. Further details of the Proposed Development are provided in Volume 1, Chapter 3 (Project Description), specifically the individual offshore elements of relevance to this EIAR. This includes the 'Design Envelope' for infrastructure within the Array Area and associated transmission infrastructure, such as WTG design parameters, foundation types, inter-array, interconnector and export cables, and other supporting infrastructure such as the OEP(s).

1.1.12. The Design Envelope approach (also known as the Rochdale Envelope approach) has been adopted for the assessment of the Proposed Development, in accordance with current good practice and the "Rochdale Envelope Principle". The Design Envelope concept allows for a degree of flexibility in design options, particularly for foundations and wind turbine types, where the full details of a project are not necessarily known at the time of application submission.

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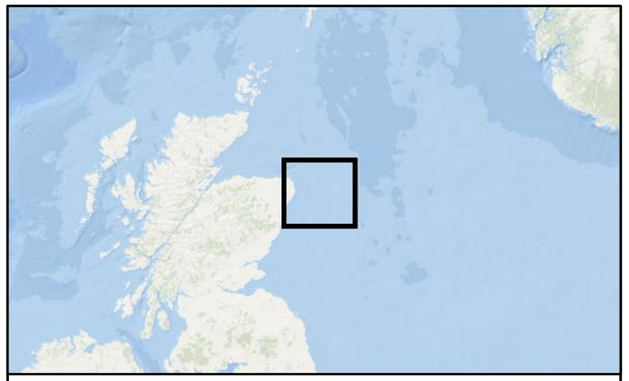

Legend:

- Array Area
- Offshore Export Cable Corridor

Project:	Report:
Muir Mhòr	Environmental Impact Assessment Report

Muir Mhor Offshore Wind Farm -
Array Area and Export Cable Corridor

Figure: 1.1	Drawing No: GoBe-0001		
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Map scale 1:400,000 @ A3

0 5 10 km

Co-ordinate system: ETRS 1989 UTM Zone 30N **EPSG:** 25830

MUIR MHÒR
OFFSHORE WIND FARM
A joint venture between Fred. Olsen Seawind & Vattenfall

Service Layer Credits: Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

1.3. THE DEVELOPER

1.1.13. The Developer (Muir Mhòr Offshore Wind Farm Limited) is an equal JV between Fred. Olsen Seawind Limited and Vattenfall Wind Power Limited. The Developer brings together a unique combination of financial, technical and project development capability, a commitment to delivery, and a clear vision for the Project.

Fred. Olsen Seawind VATTENFALL

1.1.14. Fred. Olsen Seawind Limited is an established offshore wind developer building on Fred. Olsen Renewables' 25 years wind track record, market presence and portfolio. Fred. Olsen has extensive experience in Scotland, gained through over 25 years of development, construction, and operation of onshore wind in the region. Fred. Olsen Seawind is active in Ireland, Norway and Scotland and is exploring opportunities in new markets.

1.1.15. Other entities include Fred. Olsen Wind Carrier, who are responsible for the installation of 20% of the world's offshore wind turbines outside of China, and Fred. Olsen 1848 who develop and commercialise renewable energy innovations.

1.1.16. Vattenfall Wind Power Limited is one of Europe's largest producers and retailers of electricity and heat. Vattenfall Wind Power Limited has been working in the UK for more than ten years, developing fossil fuel-free energy projects. Vattenfall Wind Power Limited have grown their wind business from one project in 2008 to 11 in 2023. Vattenfall Wind Power Limited currently operates more than 1 GW of wind energy capacity in the UK. In Scotland, their operational wind farms comprise a total generating capacity of approximately 400 Megawatts (MW), powering over 130,000 homes. This includes the 96.8 MW European Offshore Wind Deployment Centre in Aberdeen Bay, offering the domestic supply chain the chance to test and demonstrate the latest innovations in a real-world environment. Vattenfall Wind Power Limited is also constructing South Kyle, a 240 MW onshore wind project in south-west Scotland.

1.4. ENVIRONMENTAL IMPACT ASSESSMENT CONSULTANTS

1.1.17. The Developer is being supported by GoBe Consultants Limited with respect to the delivery of the Offshore and Onshore EIARs and the Report to Inform Appropriate Assessment (RIAA) (Muir Mhòr Offshore Wind Farm Limited, 2024), alongside consent management aspects of the Proposed Development. GoBe Consultants Limited have been supported by several specialists, independent and suitably qualified consultants, and subcontractors. In relation to the Onshore EIAR, Land Use Consultants Ltd (LUC) have been responsible for leading the Onshore EIA, RIAA, and onshore consent aspects.

1.1.18. Specialist consultants, listed in Table 1-1, have supported the Offshore EIA to date, including consultation with relevant stakeholders and preparation of the specialist Chapters of the Offshore EIAR. In line with the requirements of the EIA Regulations, Table 1-1 provides a summary of the relevant qualifications, expertise and experience of the technical consultants involved in preparing this EIAR.

Table 1-1 Qualifications and Experience of Offshore EIAR Competent Experts

Experts	Qualifications	Relevant Experience
GoBe Consultants Limited, Project Director	BSc (Hons), PhD	The Project Director is an Associate Director with over 12 years' experience as an EIA practitioner, a PhD in shellfish ecology and commercial fisheries, and a strong scientific and specialist technical background in the marine sciences, with technical skills in GIS. Their experience at GoBe Consultants has allowed them to apply this background to the offshore wind and aggregate industry, gaining invaluable experience in the EIA process and the UK and Irish planning systems. The Project Director has managed and directed the pre- and post-application phases of both the offshore and onshore elements of large offshore wind farm projects in Scotland, England and Ireland and also has experience of the examination and post-consent compliance phases of a number of offshore wind farms.
GoBe Consultants Limited, Proiect Manager	BSc (Hons), MSc (Distinction), CSci, CMarSci	The Project Manager is a Chartered Marine Scientist and APM certified project management professional, with over 15 years' experience of offshore and onshore EIA and environmental consent management. They have provided wide ranging marine environmental support to offshore and coastal energy and infrastructure projects in the UK and globally. They have led the successful delivery of EIA for major marine projects, marine baseline surveys, environmental and social due diligence assessments, Biodiversity Action Plans, critical habitat assessment, underwater noise impact assessment, climate change risk assessment and offshore decommissioning projects.
GoBe Consultants Limited, Marine and Coastal Processes Technical Lead	BSc (Hons), PhD	The Marine and Coastal Processes Technical Lead has over 18 years' experience in marine environmental consultancy, specifically in the field of physical processes and numerical modelling. As an Associate Director, they have acted as Project Director, Project Manager and Technical Expert for a number of offshore wind developments, including a range of Nationally Significant Infrastructure Projects from Rounds 1, 2, 3 and 4 in addition to those in Scottish Territorial Waters. Within commercial projects, they have contributed to Environmental Impact Assessments and associated requirements, from conception through to decommissioning on the topic of marine and coastal processes. They have also contributed to guidance for regulators and decision-makers.
GoBe Consultants Limited, Marine Water and Sediment Quality Technical Lead	BSc (Hons), MSc (Merit)	The Marine Water and Sediment Quality Technical Lead is a principal ecological consultant, programme manager and team leader, with over 20 years' experience in the marine, freshwater and terrestrial field, including ecological survey and monitoring, environmental impact assessment and policy. They have acted as a project manager of large and complex multidisciplinary projects and environmental lead for over 40 projects, covering major port development, dredging projects, nuclear and tidal stream power as well as a number of Defra research projects. They have

Experts	Qualifications	Relevant Experience
		provided key technical support to the provision and appraisal of data and evidence used to inform ten years of marine conservation designations. Additionally, they have specialist skills in survey design, interpretation and use of marine ecological data, habitat mapping, report writing and environmental impact assessment.
GoBe Consultants Limited, Benthic Subtidal and Intertidal Ecology Technical Lead	BSc, MSc	The Benthic Subtidal and Intertidal Ecology Technical Lead is an experienced marine ecologist and consultant who has a strong background providing scientific advice on the impacts of major industrial and construction developments in the marine environment. They have managed Ecological Impact Assessments and has delivered a significant number of technical Chapters and co-ordinated a team of environmental consultants on a number of projects for industries including aggregates, port and harbour development and energy provision. They have also provided technical and marine policy advice to government departments and agencies such as Cefas, Natural England and the JNCC. Their experience includes the project management of post-consent compliance assistance for many offshore wind farms, key involvement in the ecological impact assessments associated with 20 EIAs for marine aggregates licence renewals, the provision of expert advice to developers on mitigating construction impacts on Annex I habitats, leading the post-construction monitoring of benthic resources at offshore wind farms They also have extensive ecological survey experience and specialist skills in survey design, multivariate statistical analysis of and interpretation of marine ecological data, habitat mapping, report writing, GIS, and environmental impact assessment.
GoBe Consultants Limited, Fish and Shellfish Ecology Technical Lead	BSc, MSc	The Fish and Shellfish Ecology Technical Lead is a Principal Environmental Consultant with over five years' experience working for the offshore wind industry. They have a background in natural history and marine biology and has a keen interest in the environmental impacts of large offshore developments on the marine environment, and how the impacts of different activities can be manifested and mitigated. They have worked as the fish and shellfish technical lead for a number of offshore windfarm applications and is responsible for the authoring of a number of fish and shellfish ecology technical reports and environmental impact assessments for several offshore wind farm projects in English, Scottish and Irish waters. They have also been the fish and shellfish ecology technical lead through the examination phases of Nationally Significant Infrastructure Projects, having experience in responding to relevant representations, written representations and drafting statements of common grounds. They have also recently been an Expert Witness during an Examination hearing, providing expertise to the Examining Authority on key issues relating to fish and shellfish ecology. Additionally, they have a strong understanding of underwater noise and has a wealth of experience working alongside

Experts	Qualifications	Relevant Experience
		developers to develop appropriate mitigation measures to reduce potential impacts from noise on fish and shellfish populations.
Natural Power Limited, Offshore Ornithology Technical Lead	BSc (Hons) Ecology PhD Ornithology	The Offshore and Intertidal Ornithology technical lead is a consultant with 20 years of experience of providing ornithological advice to the renewables energy sector. This has included the delivery of ornithological Chapters as part of Environmental Impact Assessments, including offshore wind farm projects.
SMRU Consulting, Marine Mammals Technical Lead	BSc Hons Marine Biology MRes Marine Mammal Science	The Marine Mammals Technical Lead is a Principal Consultant with 11 years' experience as a consulting marine mammal scientist. They specialise in marine mammal impact assessment and have been involved in various stages of the offshore wind farm consenting process from initial scoping of impacts and baseline characterisation to the production of PEIR and full ES Chapters including quantitative noise impact assessments, production of MMMPs, Piling Strategies, EPS License assessments and HRA, presenting to technical panels at Issue Specific Hearings, and responding to stakeholder comments. They have worked on >20 EIAs for offshore wind farms in UK waters.
NiMa Consultants Limited, Commercial Fisheries Technical Lead	BSc (Hons) Marine Biology BEng (Hons) Chemical Engineering	The Commercial Fisheries Technical Lead has over 15 years' experience in commercial fisheries EIAs, including renewable energy developments for offshore wind and tidal developments in waters off Scotland, England, Wales and Ireland. They are currently undertaking commercial fisheries EIAs for a number of ScotWind projects, including fixed and floating foundations. They regularly develop post-consent fisheries liaison and mitigation plans, and commercial fisheries monitoring strategies as required by condition of consent. They are currently providing consultant support to Fisheries Improvement Projects (FIP) for UK wide Nephrops and scallop fisheries, including the North Sea. This work involves a collaborative approach working with industry associations and organisations, including regular quarterly meetings with the Steering Groups of industry, NGOs and fisheries administrators.
Anatec, Shipping and Navigation Technical Lead	BSc (Hons) Shipping and Port Operations	The Shipping and Navigation Lead has 25 years' experience within the maritime industry dealing with port and vessel operations as well as offshore installations. Since joining the marine consultancy industry, Sam has been actively involved in the majority of offshore renewable projects in the UK, as well as projects across Europe, US, Asia and Australia. Pre consent expertise includes as a marine navigation advisor for offshore developments, hazard assessments and workshops, spatial planning, individual site design, stakeholder management and mitigation strategies. Sam has managed NRAs undertaken as part of the wider consenting process for various projects including ScotWind, INTOG, TCE Rounds 3/4 and Ireland Phase One.

Experts	Qualifications	Relevant Experience
Wessex Archaeology Limited, Marine Archaeology and Cultural Heritage Lead	BSc (Hons), MA (with distinction), PhD	The Marine Archaeology and Cultural Heritage Technical Lead is an experienced geoarchaeologist and marine archaeological consultant whose role as Senior Project Manager for Wessex Archaeology Coastal & Marine includes the management and provision of specialist services, and consultancy across the full range of underwater cultural heritage environments. They have specialist knowledge in marine legislation and planning as demonstrated through the delivery of consultancy to a large number of large-scale developments in Scotland and across the UK over the last 15 years; including onshore and offshore wind farms, aggregate dredging, wave and tidal, pipeline and cable projects. Their specialist knowledge is augmented through their involvement in international and national strategic assessments for improving marine historic environment particularly in the context of Quaternary submerged prehistoric landscapes.
Cyrrus Limited, Military and Civil Aviation Technical Lead	BEng (Hons)	The Military and Civil Aviation Technical Lead has been working in the aviation sector for more than 30 years, including 20 years' experience as a flight inspector of airport and en-route navigation aids. At Cyrrus they are responsible for all aspects of aviation safeguarding, from studying the effects of proposed developments on an airport's operation to assessing the impact of wind farms on radar. He has provided advice to developers on the effects of proposed building programmes on navigation aids and offered possible mitigation solutions. They have provided aviation expertise for numerous wind farm projects, both onshore and offshore. This has included technical modelling of radar impacts and potential mitigations, the drafting of aviation Chapters and technical appendices, and consultation with civilian and military aviation stakeholders.
BiGGAR Economics Limited, Socio-Economics, Tourism and Recreation Technical Lead	MA (Hons)	The Socio-Economics, Tourism and Recreation Technical Lead is a principal consultant with 13 years of experience in delivering Environmental Impact Assessments across Scotland and the UK, including for onshore and offshore wind as well as other energy developments. The technical lead has assessed the economic impact of over 100 renewable energy projects and has worked with developers and public sector agencies to identify the opportunities from the development of the wind sector across Scotland. The technical lead has a significant understanding of the supply chain for the offshore wind sector and the implications of the development of these supply chains, particularly for rural economies. With also a good understanding of the social implications of the development of the wind energy sector and the interactions between this sector and others which are important for rural and coastal communities, such as tourism and fishing.

Experts	Qualifications	Relevant Experience
SLR, Climate Resilience Assessment Technical Lead	BA (Hons)	The Climate Resilience Assessment Technical Lead has 15 years' climate change experience and specialises in helping companies and institutional investors understand the risks and opportunities associated with the transition to a lower carbon economy, as well as the physical risks associated with a changing climate. They joined SLR from an independent not-for-profit think tank working to advance sustainability and climate resilience. They previously co-founded a boutique advisory firm providing climate data and risk analytics to institutional investors having previously held the role of CEO at a carbon rating firm. In terms of Climate Resilience experience, they are the project lead at SLR for the delivery of Climate Change Risk Assessments. This typically includes supporting institutions to meet the latest best practice standards such as those from Equator Principles EP4, International Finance Corporation Performance Standards etc. As part of these projects, forward looking climate projections are reviewed, climate hazards identified, climate risks scored and mitigation measures to limit the extent of risks proposed.
SLR, Greenhouse Gas (GHG) Technical Lead	MA, MEng, MSc, CEnv, MCIWM	The GHG Assessment Technical Lead's first citation for life cycle assessment work dates back 2005, and they have been a knowledge leader for Life Cycle Assessment (LCA) and GHG assessment since 2014. Building on their original chemical engineering degree, they have delivered LCAs for a wide range of public and private clients, on a correspondingly wide range of products and services, ranging from a brick to a supercar engine, and from botulinum toxin to nuclear power stations. Through this experience, they have developed an expertise for tailoring projects to deliver each client's particular needs, whether that be a product comparison, hot-spot analysis or simply responding to a customer request for data. Their strong numeracy and attention to detail mean that they are also in high demand for quality assurance, verification and peer review responsibilities for LCAs and GHG assessments. The technical lead has completed or is working on six separate offshore wind GHG assessments for planning and permitting applications, over which time they have refined their methodology and gathered comparative data on the key aspects, to give added confidence in the results generated.
GoBe Consultants Limited, Infrastructure and Other Users Technical Lead	BSc (Hons), MSc (Distinction), CSci, CMarSci	The IOU Technical Lead is a senior marine environmental consultant, Chartered Marine Scientist with over 14 years' experience of offshore and onshore EIA and consent management. They have provided wide ranging marine environmental compliance support to offshore and coastal energy and infrastructure projects in the UK and globally. They have developed EIA for major marine projects, marine baseline surveys, environmental and social due diligence assessments, critical habitat assessment, climate change risk assessment, underwater noise assessments and offshore decommissioning projects.

Experts	Qualifications	Relevant Experience
GoBe Consultants Limited, Major Accidents and Disasters Technical Lead	MSc (MMBiol)	The Major Accidents and Disasters Technical Lead is a Senior Consultant. He has worked for the Marine Management Organisation leading inspections of commercial fisheries, marine protected areas and licensable offshore activities across the South East Coast (Poole to Gravesend). As an Operations Manager they have experience in major and minor incident management including threats to life, property and reputation plus a keen interest in effective risk assessment.
Subacoustech Environmental Limited, Underwater Noise Technical Lead	BEng (Hons), MIOA	The underwater noise lead is the Principal Acoustic Consultant and Project Manager at Subacoustech Environmental. He has worked in acoustic consultancy since 2001, leading assessments of both underwater and airborne noise projects, and alongside Richard Barham, the underwater noise modelling lead at Subacoustech, has worked on the consent for the majority of offshore windfarms for all major offshore wind developers in the UK, as well as in the US and Danish waters. He has acted as a subject specialist for examinations for underwater noise and its effects on marine life from UK offshore windfarms. Tim is experienced in a wide range of acoustic disciplines, designing novel studies for assessment of projects for blasting, drilling, novel energy supply systems and many others.
Port and Coastal Solutions, Marine and Coastal Processes Modelling Technical Lead	BSc (Hons), PhD, CSci, CMarSci	The Marine and Coastal Processes Modelling Technical Lead lead is a chartered marine scientist with more than 20 years of experience in coastal and marine studies. They have worked on a wide range of projects with a specific focus on numerical modelling of hydrodynamics, waves, sediment and water quality in offshore, coastal and estuarine environments. They have modelled construction and operational effects for a large number and varied range of projects including offshore wind farm developments, sediment and effluent plume dispersion studies, port developments, managed realignments and coastal defence schemes. In these projects they have taken on both technical roles as a hydrodynamic modeller and management roles as project and quality manager. They have advised on many Nationally Significant Infrastructure Projects, have extensive experience in stakeholder and regulatory engagement and have provided specialist technical advice on thermal plume modelling to the Marine Management Organisation (MMO).

1.5. ENVIRONMENTAL IMPACT ASSESSMENT

OFFSHORE AND ONSHORE EIA

1.1.19. The Developer has prepared separate Offshore and Onshore EIA Reports to support the separate consents, licences, and permissions for the offshore (seaward of MHWS) and onshore (landward of MLWS) infrastructure of the Project. The Offshore EIAR provides a description of the offshore elements of the Project (the Proposed Development) and its likely significant effects on environmental receptors seaward of MHWS. The Onshore EIAR will provide a description of the onshore elements of the Project and its likely significant effects on the onshore environment (landward of MLWS).

1.1.20. Whilst the offshore elements of the Project are the focus of this Offshore EIAR, where the potential exists for onshore elements of the Project to impact the offshore receptors, this has been identified and assessed in this Offshore EIAR with a Whole Project Assessment presented in each topic-specific Chapter. This approach ensures this Offshore EIAR provides a full assessment of any combined effects of the offshore and onshore elements of the Project and ensures neither the Proposed Development nor the onshore project elements are considered in isolation.

PURPOSE OF THE OFFSHORE EIAR

1.1.21. The purpose of the Offshore EIAR is to ensure the potential effects of the Proposed Development on the environment are taken into consideration before relevant consents are granted. The EIAR process allows for reduction and mitigation of impacts during the early design phase. If a development is deemed to have the potential for a significant effect on the environment by virtue of its scale, size and location, then an EIA is required. The competent authority cannot grant consent for an EIA development without considering the EIAR.

1.1.22. The requirements of the EIAR are enacted through relevant Scottish legislation for electricity generation projects requiring consent under Section 36 of the Electricity Act 1989 by the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended). In relation to marine licensing under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009, the requirements of the EIA Directive are enacted by the Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended) and the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended). These EIA Regulations set out the statutory process and minimum requirements for EIA, to which the proposed development will adhere.

1.1.23. The EIAR provides a description of the Proposed Development and presents the environmental information gathered to assess the likely significant effects of the Proposed Development on the receiving environment.

1.1.24. The EIAR specifically:

- Provides technical information to statutory and non-statutory consultees to facilitate the understanding of the Proposed Development;
- Presents existing baseline environmental information, established from both desktop studies and site-specific surveys/consultation;
- Outlines any limitations encountered during the compilation of the environmental information, including acknowledgment of any data gaps or deficiencies and a level of confidence in the information gathered;

- Describes the methodology used to identify potential environmental impacts and determine likely significant effects arising from the Proposed Development;
- Suggests designed-in mitigation measures to avoid, prevent, reduce or, where possible, offset any identified significant adverse effects to the environment, and where appropriate, proposed monitoring arrangements to validate findings of the EIAR; and
- Provides a description of the reasonable alternatives considered for the Proposed Development, and an indication of the main reasons for site-selection.

1.1.25. An overview, in non-technical language, of the findings of the EIAR is provided in the Non-Technical Summary (NTS).

SCOPE OF THE OFFSHORE EIA

1.1.26. In June 2023, the Developer submitted the Muir Mhòr Offshore Wind Farm Scoping Report (Volume 3, Appendix 5.1 (Scoping Report)) to support a request for a formal Scoping Opinion from Scottish Ministers in relation to the Proposed Development. The associated Scoping Opinion for the Proposed Development was received from MD-LOT in September 2023 (Volume 3, Appendix 5.2 (Scoping Opinion)). This Scoping Opinion, and extensive stakeholder engagement informed the scope and development of the Offshore EIA.

1.1.27. This EIAR focuses on the following topic areas:

- Marine and Coastal Processes;
- Marine Water and Sediment Quality;
- Benthic Subtidal and Intertidal Ecology;
- Fish and Shellfish Ecology;
- Offshore and Intertidal Ornithology;
- Marine Mammals;
- Commercial Fisheries;
- Shipping and Navigation;
- Marine Archaeology and Cultural Heritage;
- Military and Civil Aviation;
- Seascape Landscape and Visual Resources;
- Socioeconomics, Tourism and Recreation;
- Climate;
- Infrastructure and Other Users; and
- Major Accidents and Disasters.

1.1.28. Throughout the Offshore EIA process, the Developer has undertaken extensive consultation with statutory and non-statutory stakeholders, and actively engaged with the public at Public Consultation Events. Details of the consultation with statutory and non-statutory stakeholders and public consultation events is presented in Volume 1, Chapter 5 (Consultation), together with a full list of stakeholders who were consulted. A summary of topic specific consultation is also provided in each topic Chapter (see Volume 2, Chapters 7 to 21). Further information is provided in Volume 4, Appendix 1 (Pre-Application Consultation Report).

STRUCTURE OF THE OFFSHORE EIA REPORT

1.1.29. The EIAR is divided into four volumes:

- Volume 1 – Introductory Chapters;
- Volume 2 – Offshore EIA Chapters;
- Volume 3 – Offshore EIA Technical Appendices; and
- Volume 4 – Supporting Documents.

1.1.30. Table 1-2 provides a breakdown of the contents of each of the EIAR volumes and the organisations that have contributed to them.

1.1.31. The EIAR is meant to be read alongside the NTS, which provides a brief non-technical overview of the information presented in the EIAR. The NTS is a stand-alone companion document to the main volumes of the EIAR.

Table 1-2 Structure and Content of the Offshore EIA Report

Chapter/ Appendix Number	Chapter Title/Report	Lead Author
-	Non-Technical Summary (NTS)	GoBe Consultants Limited
Volume 1 – Introductory Chapters		
1	Introduction	GoBe Consultants Limited
2	Legislation and Policy	
3	Project Description	
4	Site Selection and Consideration of Alternatives	
5	Consultation	
6	Environmental Impact Assessment Methodology	
Volume 2 – Offshore EIA Chapters		
7	Marine and Coastal Processes	GoBe Consultants Limited
8	Marine Water and Sediment Quality	
9	Benthic Subtidal and Intertidal Ecology	
10	Fish and Shellfish Ecology	
11	Offshore Ornithology	Natural Power Limited
12	Marine Mammals	SMRU Consulting
13	Commercial Fisheries	NiMa Consultants Limited
14	Shipping and Navigation	Anatec Limited
15	Marine Archaeology and Cultural Heritage	Wessex Archaeology Limited
16	Military and Civil Aviation	Cyrrus Limited
17	Socio-Economics, Tourism and Recreation	Biggar Economics Limited
18	Climate	SLR Consulting Limited
19	Infrastructure and Other Users	GoBe Consultants Limited
20	Major Accidents and Disasters	

Chapter/ Appendix Number	Chapter Title/Report	Lead Author
21	Summary of Embedded Commitments, Mitigation and Monitoring	
22	Summary and Conclusions	
Volume 3 – Offshore EIA Technical Appendices		
Appendix 3.1	Subsea Noise Technical Report	Subacoustech Environmental Limited
Appendix 5.1	Offshore Scoping Report	GoBe Consultants Limited
Appendix 5.2	Offshore Scoping Opinion	
Appendix 6.1	Commitments Register	
Appendix 6.2	Offshore Cumulative Effects	
Appendix 6.3	Offshore Transboundary Effects	
Appendix 6.4	Ecosystem Level Effects	
Appendix 7.1	Marine and Coastal Processes Technical Report	
Appendix 7.2	Marine Processes Modelling Report	Port and Coastal Solutions Limited
Appendix 8.1	Water Framework Directive Report	GoBe Consultants Limited
Appendix 9.1	Offshore Environmental Baseline Survey Reports	
Appendix 9.2	Marine Protected Area Assessment Report	
Appendix 10.1	Fish and Shellfish Ecology Technical Report	
Appendix 11.1	Offshore Ornithology Baseline Report	Natural Power Limited
Appendix 11.2	Offshore Ornithology Collision Risk Modelling Technical Report	
Appendix 11.3	Offshore Ornithology Displacement Technical Report	
Appendix 11.4	Offshore Ornithology Apportionment Technical Report	
Appendix 11.5	Offshore Ornithology Population Viability Analysis Technical Report	
Appendix 11.6	Offshore Ornithology Density and Abundance Technical Report	
Appendix 12.1	Marine Mammals Baseline Technical Report	SMRU Consulting
Appendix 13.1	Commercial Fisheries Technical Report	NiMa Consultants Limited
Appendix 14.1	Navigational Risk Assessment	Anatec Limited
Appendix 15.1	Marine Archaeology and Cultural Heritage Technical Report	Wessex Archaeology Limited
Appendix 16.1	Military and Civil Aviation Technical Report	Cyrrus Limited
Appendix 17.1	Socio-Economics, Tourism and Recreation Technical Report	Biggar Economics Limited

Chapter/ Appendix Number	Chapter Title/Report	Lead Author
Appendix 18.1	Greenhouse Gas Technical Report	SLR Consulting Limited
Volume 4 – Supporting Documents		
Appendix 1	Pre-Application Consultation Report	GoBe Consultants Limited
Appendix 2	Outline Environment Management Plan	GoBe Consultants Limited
Appendix 3	Outline Marine Mammal Mitigation Protocol	SMRU Consulting
Appendix 4	Outline Fisheries Management and Mitigation Strategy	NiMa Limited
Appendix 5	Outline Navigational Safety and Vessel Management Plan	Anatec Limited
Appendix 6	Outline Aid to Navigation Management Plan	Anatec Limited
Appendix 7	Outline Lighting and Marking Plan	Anatec Limited
Appendix 8	Outline Written Scheme of Investigation	Wessex Archaeology Ltd
Appendix 9	Offshore Planning Statement	GoBe Consultants Limited
Appendix 10	In Principle Fish Mitigation Plan	GoBe Consultants Limited

1.6. REFERENCES

Muir Mhòr Offshore Wind Farm Limited (2024). Report to Inform Appropriate Assessment.