MORAY OFFSHORE WINDFARM (WEST) LIMITED

Project Environmental Monitoring Programme

Document Name: 8460005-DBHA13-MWW-PLN-000001

Revision:2

Status: Final

Date: 12-08-2022

Version Control				
Revision	Date	Status	Revision Description	Distribution List
0	20-01-22	Draft	Submission to Moray West for review	Moray West
1	29-03-22	Final	Submission to MS-LOT	MS-LOT
2	12-08-22	Final	Second submission to MS-LOT	MS-LOT

Document Approval				
Prepared by:	ECoW Review by:	Legal Review by:	Approved by:	Approved by:
RHDHV (Jen McMillan, Alexia Chapman)	RHDHV (Erin Snaith)	Shepherd and Wedderburn (Scott McCallum)	Catarina Rei (Senior Development Manager)	Adam Morrison (Project Director)

Plan Overview

Purpose and Objectives of the Plan

This Project Environmental Monitoring Programme (PEMP) has been prepared to address the specific requirements of the relevant conditions attached to the Section 36 (S36) consent and Marine Licences (collectively referred to as 'offshore consent conditions') issued to Moray Offshore Windfarm (West) Limited (Moray West).

The overall objective of the PEMP is to outline and define the approach Moray West, its survey contractors and advisors will take with respect to the environmental monitoring of the Moray West Offshore Wind Farm and Offshore Transmission Infrastructure (OfTI) (collectively referred to as 'the Development') required under the offshore consent conditions.

Scope of the Plan

The PEMP provides:

- details on the environmental monitoring proposed for the pre-construction, construction and post-construction (if considered appropriate by Scottish Ministers) monitoring or data collection of the Development of the following receptors:
  - birds
  - marine mammals
  - commercial fisheries
  - socio-economic
  - benthic communities;
- the objectives and methodologies for the monitoring surveys;
- evidence of consultation on and approval of monitoring approach and surveys methodology; and
- the programme for proposed monitoring surveys and reporting.

Structure of the Plan

The PEMP is structured as follows:

Section 1 provides an overview of the Development and specifies the scope and objectives of the PEMP.

Sections 2 to 6 summarise the monitoring approach for each of the environmental receptors identified in the S36 Consent and Marine Licences PEMP conditions.

Plan Audience

The PEMP is intended to be referred to by personnel involved in the pre-construction, construction and operation of the Development, including Moray West personnel and Contractors.

This PEMP is intended to summarise Moray West's environmental monitoring programme for stakeholders and the Licensing Authority.

Compliance with this PEMP will be monitored by the Moray West Development team, Moray West's Environmental Clerk of Works (ECoW), and Marine Scotland Licensing Operations Team (MS-LOT).

Plan Locations

The latest version of this PEMP can be obtained from Moray West's document management system, Viewpoint For Projects and from Marine Scotland website[1]. Copies of the PEMP are also to be held in the following locations:

- Moray West's main project office in Edinburgh;
- with the ECoW(s).

[1] https://marine.gov.scot/ml/moray-west-offshore-windfarm

Table of Contents

Abbreviations and Acronyms

Acronym / Abbreviation	Description
AC	Alternating Current
AIS	Automatic Identification System
BMM	Brown and May Marine
BOWL	Beatrice Offshore Wind Ltd
BOP	Balance of Plant
BTO	British Trust for Ornithology
CaP	Cable Plan
CAPEX	Capital Expenditure
CFMS	Commercial Fisheries Management Strategy
CoP	Construction Programme
CPOD	Odontocetes click trains detector
DDV	Drop-Down Video
ECC	East Caithness Cliffs
ECOMMAS	East Coast Marine Mammal Acoustic Study
ECP	Export Cable Plan
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
FEED	Front End Engineering Design
FIR	Fishing Industry Representative
FMMS	Fisheries Management and Mitigation Strategy
FMS	Fisheries Management Scotland
FTE	Full-time equivalent
GBBG	Greater Black-Backed Gull
GSD	Ground Sampling Distance
GVA	Gross Value Added
HRA	Habitats Regulations Appraisal
HSE	Health, Safety, and Environment
IMU	Inertial Measurement Unit
JNCC	Joint Nature Conservation Committee
MAU	Marine Analytical Unit
MarLIN	Marine Life Information Network
MBES	Multibeam Echo Sounder
MCC	Marine Coordination Centre
MEDIN	Marine Environmental Data and Information Network
MFCWFG	Moray Firth Commercial Fisheries Working Group
MFRAG	Moray Firth Regional Advisory Group
MFRAG-MM	Moray Firth Regional Advisory Group – Marine Mammals Subgroup
MFRAG-O	Moray Firth Regional Advisory Group – Ornithology Subgroup
MMMP	Marine Mammal Monitoring Programme
MPA	Marine Protected Area
MRED	Marine Renewable Energy Devices

Acronym / Abbreviation	Description
MS-LOT	Marine Scotland Licensing Operations Team
MS-MPP	Marine Scotland Renewables and Offshore Wind Policy
MSS	Marine Scotland Science
NBN	National Biodiversity Network
NGO	Non-Governmental Organisation
NNR	National Nature Reserve
NVQ	National Vocational Qualification
OFLO	Offshore Fisheries Liaison Officer
OfTI	Offshore Transmission Infrastructure
OFTO	Offshore Transmission Owner
ONS	Office for National Statistics
OSP	Offshore Substation Platform
OWEC	Offshore Wind Evidence and Change Programme
PAM	Passive Acoustic Monitoring
PEMP	Project Environmental Monitoring Programme
PrePARED	Predators and Prey Around Renewable Energy Developments
PMF	Priority Marine Feature
PS	Piling Strategy
QHSE	Quality, Health, Safety, and Environment
RIAA	Report to Inform an Appropriate Assessment
ROV	Remotely Operated Vehicle
RSPB	Royal Society for the Protection of Birds
S36	Section 36
SAC	Special Area of Conservation
ScotMER	Scottish Marine Energy Research Programme
SMRU	Sea Mammal Research Unit
SMP	Seabird Monitoring Programme
SNCB	Statutory Nature Conservation Bodies
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SWFPA	Scottish White Fish Producers Associated Ltd.
TI	Transmission Infrastructure
UAV	Unoccupied Aerial Vehicle
VMS	Vessel Monitoring System
WDC	Whale and Dolphin Conservation
WTG	Wind Turbine Generators

1 Introduction

1.1 Background

The Moray West Offshore Wind Farm and associated Offshore Transmission Infrastructure (OfTI) (referred to as 'the Development') is being developed by Moray Offshore Windfarm (West) Limited (known as 'Moray West'; see Appendix A for defined terms). Consent for the Development was granted on 14 June 2019 under Section 36 (S36) of the Electricity Act 1989 (as amended), Part 4 of the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 from Scottish Ministers One S36 consent was granted by Scottish Ministers for the wind farm (012/OW/MORLW – 8) and two Marine Licenses were granted by Scottish Ministers, one for the wind farm (MS-00008731) and another for the offshore transmission infrastructure (06764/19/0).

A variation of the S36 consent and Wind farm Marine Licence (licence number: MS-00008731) were granted by the Scottish Ministers on 7 March 2022. The revised S36 consent and associated Marine Licences are referred to collectively as 'offshore consents'.

Further details of Moray West and the Development can be found in Appendix B.

1.2 Purpose of the Project Environmental Programme

The S36 and Marine Licences conditions (referred to as 'offshore consent conditions') require the production of a Project Environmental Monitoring Programme (PEMP; Condition 25 of S36, and Marine Licences 06763/19/0 and MS-00008731 conditions 3.2.2.19 and 3.2.2.18 respectively). The purpose of the PEMP is to detail the proposed monitoring for the pre-construction, construction and post-construction phases of the Development (if considered appropriate by the Scottish Ministers). This PEMP does not intend to address monitoring during and after the decommissioning of the Development. Decommissioning of the Development will require a separate Marine Licence and therefore will be subject to a separate assessment at the appropriate time which will inform and determine monitoring requirements at that stage.

The PEMP aims to 'ensure that appropriate and effective monitoring of the impacts of the Development is undertaken' as detailed within the PEMP conditions for the wind farm within the Moray West site and OfTI as detailed below in Section 1.5.

The relevant conditions setting out the requirement for a PEMP for approval, and which are to be discharged by this PEMP, are presented in full in Appendix B (Table B.1). In addition to the specific consent requirements for a PEMP and the requirements thereof, this PEMP also includes information in respect of a number of other offshore consent conditions which are linked to project environmental monitoring; these are set out in Appendix B, Table B.2. All data storage, analysis and reporting shall be done to Marine Environmental Data and Information Network ("MEDIN") standards.

The Moray West Environmental Impact Assessment (EIA) Report (July 2018), which accompanied the Section 36 and Marine Licence applications for the Development, provided a description of the

environmental sensitivities and impact assessment (including mitigation and commitments for monitoring as relevant) for the development of the Moray West Offshore Wind Farm. Additional information was provided in the Moray West Report to Inform an Appropriate Assessment (RIAA) July 2018 and Moray West Application Addendum Document November 2018.

1.3 Linkages with Other Consent Plans

The environmental monitoring strategy during the pre-construction, construction and post-construction phases of the Development is set out in this PEMP. The PEMP is part of a group of approved documents that provide the framework for environmental management of the Development – namely the other Consent Plans required under the offshore consents. Table 1-1 provides an overview of the linkages to other consent plans.

Table 1-1 PEMP linkage with other Consent Plans

Other Consent Plans	Linkage with PEMP
Environmental Management Plan (EMP)	The EMP sets out the environmental management framework for the Development during construction and operation. The EMP must be informed, so far as is reasonably practicable, by the baseline surveys undertaken as part of the EIA Report and the PEMP.
Wind Farm Cable Plan (CaP)	The Wind Farm CaP and Export Cable Plan (ECP) provide details on cable specification, installation and cable protection, their interactions with the environment and safety considerations. The analysis of geophysical data in the context of benthic habitats will help inform cable routing. Details are provided within Section 6 of this PEMP.
Export Cable Plan (ECP)	
Wind Farm and OfTI Operation and Maintenance Programmes (OMPs)	The OMPs set out the planned programme for operation and maintenance of the Development. The OMPs must, so far as is reasonably practicable, be consistent with the PEMP.
Piling Strategy (PS)	The PS must include details of mitigation and monitoring employed during pile driving as agreed with the Scottish Ministers. The monitoring for harbour porpoise, minke whale, bottlenose dolphin, harbour seal, grey seal and Atlantic salmon summarized within the PS is detailed within the PEMP (Section 3). The PS must, so far as is reasonably practicable, be consistent with the PEMP.
Vessel Management and Navigational Safety Plan (VMNSP)	The VMNSP describes how the vessel traffic will be managed during construction and operation. The VMNSP must, so far as is reasonably practicable, be consistent with the PEMP.

Table 1-1 PEMP linkage with other Consent Plans	
Other Consent Plans	**Linkage with PEMP**
Fisheries Management and Mitigation Strategy (FMMS)	The FMMS includes details of the aim of the commercial fisheries monitoring. The results of the commercial fisheries monitoring reports may inform updates to the FMMS.

1.4 Document Structure and Control

The structure of this PEMP is provided in Table 2-4.

Table 1-2 PEMP document structure		
Section	**Title**	**Summary of Content**
1	Introduction	An overview of the Development and its associated consent requirements, and an introduction to this PEMP.
2	Birds	A description of methodologies relevant to bird monitoring
3	Marine Mammals	A description of methodologies relevant to marine mammal monitoring
4	Commercial Fisheries	A description of methodologies relevant to commercial fisheries monitoring
5	Socio-economics	A description of methodologies relevant to socio-economic monitoring
6	Benthic communities	A description of methodologies relevant to benthic community monitoring
Appendix A	Defined Terms	Defines the terms to be used throughout this document.
Appendix B	Project Background Information	Detailed information of the Development. Including the construction programme, key stakeholders and legal context associated with the Development.

1.4.1 Document Control

This PEMP is a 'live document' and will be reviewed and revised as relevant to ensure the information is kept up to date, with any revisions being notified to the Scottish Ministers/Licensing Authority as soon as practicable and any proposed material revisions (i.e. significant changes to the monitoring approach as set out in the approved PEMP) being subject to prior approval by the Scottish Ministers/Licensing Authority.

Linkages exist between a number of offshore Consent Plans as highlighted in Section 1.3 within Table 1-1. As plans are updated, there will be a review of inter-linkages with other Consent Plans to ensure these are also updated as relevant. The document is controlled via Viewpoint For Projects, an electronic document management system.

1.5 Consultation Requirements

There is a consent requirement to participate in the Moray Firth Regional Advisory Group (MFRAG), or any successor group established by the Scottish Ministers, to consult on the scope of monitoring, reporting of results and discharge of the PEMP consent conditions. As referenced above in section 1.4, the PEMP is a live document and any proposed material revisions (i.e. significant changes to the monitoring approach as set out in the approved PEMP) will also be subject to consultation with MFRAG and other stakeholders, as appropriate.

The aims and objectives of MFRAG are to facilitate the wind farm developers in the Moray Firth to comply with relevant conditions, ensure appropriate and effective monitoring of effects is undertaken, encourage collaboration between developers in order to deliver strategic monitoring, and advise Scottish Ministers on the closure and sign-off of components of the PEMPs and EMPs amongst others. The MFRAG includes representatives from the following organisations:

- Marine Scotland Licensing Operations Team (MS-LOT)
- Marine Scotland Sciences (MSS)
- Marine Scotland Renewables and Offshore Wind Policy (MS-MPP)
- NatureScot
- Moray West
- Moray Offshore Windfarm (East) Limited (Moray East)
- Beatrice Offshore Wind Ltd (BOWL)
- Royal Society for the Protection of Birds Scotland (RSPB Scotland)
- Whale and Dolphin Conservation (WDC)
- Fisheries Management Scotland (FMS)
- Joint Nature Conservation Committee (JNCC) attend as an MFRAG observer

Two additional subgroups to the main MFRAG group have also been set up (and have been active since the end of 2014). These are MFRAG – Ornithology Subgroup (MFRAG-O) and MFRAG – Marine Mammals Subgroup (MFRAG-MM). The aim of these subgroups is to create a forum through which detailed discussions on specialist disciplines are held. The subgroups also have the authority to directly advise the Scottish Ministers (via MS-LOT) and the main MFRAG on aspects related to the discharge of the PEMP conditions for their specialist disciplines.

Consultations already carried out via the main MFRAG and the MFRAG subgroups are summarised within the relevant discipline sections in this PEMP and can be viewed on the MFRAG web page[2]. Consultation records are also available on the Marine Scotland website.

1.6 ScotMER Evidence Map Linkages to Moray West Monitoring

To improve understanding and assess the environmental and socio-economic implications of offshore renewable developments, and in line with the Precautionary Principle, Marine Scotland have established the Scottish Marine Energy Research (ScotMER) programme.

ScotMER is an initiative that involves collaboration from industry, environmental non-governmental organisations (NGOs), Statutory Nature Conservation Bodies (SNCBs), and other interested stakeholders, to facilitate the sustainable development of offshore renewable energy in Scottish waters. This body of research will support sound scientific decision making and management through filling knowledge gaps and using new research to inform future decision making and policy.

There are two parts to the ScotMER programme: the evidence maps that provide a comprehensive framework of gaps in knowledge[3], and the research programme that is structured around this framework. Monitoring at Moray West may help address a number of evidence gaps identified by ScotMER. These linkages to ScotMER evidence gaps are described in Table 1-3 below.

Linkages between individual project monitoring programmes and wider research activities, including ScotMER, are discussed at MFRAG meetings.

[2] Moray Firth Regional Advisory Group (MFRAG) | Marine Scotland Information https://marine.gov.scot/ml/moray-firth-regional-advisory-group-mfrag

[3] Streamlined ScotMER evidence map - gov.scot (www.gov.scot)

Table 1-3 Summary of ScotMER evidence map linkages to Moray West monitoring			
ScotMER knowledge gap and ID	**Summary of ScotMER evidence map description (ScotMER 2020)**	**ScotMER recommended research**	**Moray West proposed research**
Birds			
OR.01.GN	Baseline at sea distribution and abundance (Gannet).	At sea distribution: Undertake at sea surveys (tagging is colony focus)	Digital aerial surveys
OR.01.KW	Baseline at sea distribution and abundance (Kittiwake).	At sea distribution: Undertake at sea surveys (tagging is colony focus)	Digital aerial surveys
OR.01.LG	Baseline at sea distribution and abundance (Large Gulls).	At sea distribution: Undertake at sea surveys (tagging is colony focus)	Digital aerial surveys
OR.01.AU	Baseline at sea distribution and abundance (Auks).	At sea distribution: Undertake at sea surveys (tagging is colony focus)	Digital aerial surveys
OR.09.LG	Colony of origin of birds at sea during the breeding season (Large Gulls).	Movement and Connectivity: Develop apportioning methodologies and test them against existing e.g. GPS tracking data.	Digital aerial surveys, flight behaviour and chick provisioning study (GBBG monitoring)
Marine Mammals			
MM.04.Cet	Abundance and distribution of marine mammals (cetaceans) in locations and habitats suitable for renewable developments	Baseline Information: Static acoustic monitoring; line transect surveys (aerial or boat based)	Digital aerial surveys and CPODs
MM.04.Pin	Abundance and distribution of marine mammals (pinnipeds) in locations and habitats suitable for renewable developments	Baseline Information: Fine scale usage maps, from telemetry and haul out counts	Digital aerial surveys and and shore based and unoccupied aerial vehicle (UAV) photo ID

Table 1-3 Summary of ScotMER evidence map linkages to Moray West monitoring			
ScotMER knowledge gap and ID	**Summary of ScotMER evidence map description (ScotMER 2020)**	**ScotMER recommended research**	**Moray West proposed research**
MM.05.Cet	Broad scale abundance and distribution of marine mammals (cetaceans)	Baseline Information: SCANS-III surveys	Digital aerial surveys, CPODs and shore based and UAV photo ID
MM.05.Pin	Broad scale abundance and distribution of marine mammals (pinnipeds)	Baseline Information: UK wide usage maps from telemetry and haul out counts	Digital aerial surveys and shore based and UAV photo ID
MM.22.HS	Demographic rates to use in population models (harbour seal)	Population demographics: Monitoring of colonies for pupping rates. Long term photo-ID for survival. In the absence of empirical demographic rates/data expert elicitation could be used.	Shore based and UAV photo ID
MM.22.BD	Demographic rates to use in population models (bottlenose dolphin)	Population demographics: Monitoring of calving rates. Long term photo-ID for survival. In the absence of empirical demographic rates/data expert elicitation could be used.	Shore based and UAV photo ID
MM.22.HP	Demographic rates to use in population models (harbour porpoise)	Population demographics: In the absence of empirical demographic rates/data expert elicitation could be used.	Digital aerial surveys, CPODs and shore based and UAV photo ID
MM.23.HS	Status and trends of populations (harbour seal)	Population demographics: Not currently a constraint because surveys undertaken. Risk that funding for this will be cut, which will lead to it being a constraint	Digital aerial surveys and shore based and UAV photo ID
MM.23.BD	Status and trends of populations (bottlenose dolphin)	Population demographics: Not currently a constraint because surveys undertaken. Risk that funding for this will be cut, which will lead to it being a constraint	Shore based and UAV photo ID
MM.23.MW	Status and trends of populations (minke whale)	Population demographics: SCANS-III surveys provide single population estimate - would need to be repeated more regularly to give trend	Digital aerial surveys

Table 1-3 Summary of ScotMER evidence map linkages to Moray West monitoring			
ScotMER knowledge gap and ID	**Summary of ScotMER evidence map description (ScotMER 2020)**	**ScotMER recommended research**	**Moray West proposed research**
MM.23.HP	Status and trends of populations (harbour porpoise)	Population demographics: SCANS-III surveys provide single population estimate - would need to be repeated more regularly to give trend	Digital aerial surveys and CPODs
MM.14.HS	Consequences of disturbance to individual marine mammals	Disturbance: Tagging seals with known life histories and assessing their exposure to piling noise. Testing whether fecundity changes following exposure.	Seal tagging
MM.24.HP	Connectivity between animals that may be affected by development and protected areas (cetaceans and pinnipeds)	Baseline information: For all species except harbour porpoise, general principles are in place which allow licensing to continue	Tagging harbour seals from Loch Fleet
MM.28.1	Effects of renewables on foraging behaviour and changes to prey distribution (wind) (cetaceans and pinnipeds)	Prey Availability: Some limited work in Moray Firth but considerably more required	Tagging harbour seals from Loch Fleet
MM.21	Data collection to support EIA/HRA in application process (cetaceans and pinnipeds)	Baseline information: Developers are responsible for collecting or collating required information	Various
MM.10.BD	Behavioural responses to loud impulsive noise (e.g., pile driving) (bottlenose dolphin)	Underwater noise: static acoustic monitoring around construction sites	CPODs and Soundtraps
MM.10.HP	Behavioural responses to loud impulsive noise (e.g., pile driving) (harbour porpoise)	Underwater noise: static acoustic monitoring around construction sites	CPODs and Soundtraps
MM.10.HS	Behavioural responses to loud impulsive noise (e.g., pile driving) (harbour seal)	Underwater noise: Tracking animals tagged near to construction sites	Seal tagging and Soundtraps

Table 1-3 Summary of ScotMER evidence map linkages to Moray West monitoring			
ScotMER knowledge gap and ID	**Summary of ScotMER evidence map description (ScotMER 2020)**	**ScotMER recommended research**	**Moray West proposed research**
MM.10.MW	Behavioural responses to loud impulsive noise (e.g., pile driving) (minke whale)	Underwater noise: N/A	CPODs and Soundtraps
MM.10.DoI	Behavioural responses to loud impulsive noise (e.g., pile driving)	Underwater noise: static acoustic monitoring around construction sites	CPODs and Soundtraps
MM.16	Responses of marine mammals to operational wind turbines (cetaceans & pinnipeds)	Underwater noise: Tracking individuals, active and passive acoustic monitoring	CPODs and seal tagging
Commercial Fisheries			
FF.01	Accurate mapping of fishing effort and catches in space & time (All <12m fisheries).	Mapping: Up-to-date baseline distribution of <12 m commercial fishing vessels using logbooks, landing declaration, ScotMAP, FISH1 form or participatory mapping approaches	Analysis of vessel monitoring system (VMS) data, marine traffic survey data, and other relevant reports and records
FF.01	Accurate mapping of fishing effort and catches in space & time (whole fleet, emphasis on scallop fisheries).	Mapping: Seasonal variability of commercial fishing activity – Fisheries data (VMS, ScotMap, automatic identification system (AIS)) to include temporal (monthly) variation	Analysis of vessel monitoring system (VMS) data, marine traffic survey data, and other relevant reports and records
FF.01	Accurate mapping of fishing effort and catches in space & time (creel fisheries,	Mapping: Crustacea (static) fisheries: fishing locations and values, stock assessment, stock movement and recruitment to the fishery.	Analysis of landings data by species and method

Table 1-3 Summary of ScotMER evidence map linkages to Moray West monitoring			
ScotMER knowledge gap and ID	**Summary of ScotMER evidence map description (ScotMER 2020)**	**ScotMER recommended research**	**Moray West proposed research**
	emphasis on those targeting brown crab).		
Benthic Communities			
B.06	What is the impact of introduction of hard structures such as turbine foundations?	Biofouling / marine growth, artificial reefs / habitat creation: Studies into communities of marine growth, their ecosystem functions and processes. Comparisons between marine growth versus natural hard substrate communities. Studies reseaching connectivity of species between turbines and MRED sites.	Post-construction monitoring requirements to be confirmed.
B.09	Is there evidence for changes in hydrological conditions (current or change in wave energy) around a turbine or foundation and are there consequences for nutrient transfer?	Introduction of structures, hydrography, nutrient cycling: Research into hydrographic changes post-development of a new structure and implications for nutrient cycling.	Post-construction monitoring requirements to be confirmed.
B.10	What is the impact of changes in current flow and changes in wave energy on benthic communities?	Current flow, wave energy, nutrient cycling: Research into effects of changed current flow in the vicinity of a tidal or wind turbine or reduced wave energy under a wave device and how these changes alter sediment flow and affect benthic communities.	Post-construction monitoring requirements to be confirmed.
B.24	Improving archiving of baseline habitat and species data	Baseline, conservation, assessment, planning: Archiving of baseline surveys or monitoring data is essential for providing knowledge of species and habitat distribution, their spatial extent and rarity or change in abundance over time. Such knowledge is often lacking for benthic species particularly in the offshore environment. Ensuring data from baseline surveys or research are archived through the Marine Environmental Data and Information Network (MEDIN) portal or DASSH and are transferred to species distribution websites such as the Marine Life Information Network (MarLIN), the National Biodiversity Network (NBN)	Pre-construction geophysical surveys

Table 1-3 Summary of ScotMER evidence map linkages to Moray West monitoring			
ScotMER knowledge gap and ID	**Summary of ScotMER evidence map description (ScotMER 2020)**	**ScotMER recommended research**	**Moray West proposed research**
		Gateway and the European Marine Observatory and Data Network (EMODnet), are essential to enable planning of Marine Renewable Energy Devices (MREDs) with a view to summarise their impact on the benthic environment.	

2 Birds

2.1 Introduction

All potential Development impacts assessed within the EIA were assessed to be not significant in EIA terms. Potential cumulative effects (displacement during construction and operation) and collision risk were also assessed as being at most minor adverse and, therefore, not significant in EIA terms for all key species (guillemot, fulmar, gannet, puffin, razorbill, kittiwake, herring gull and great back-backed gull (GBBG)).

In determining the Moray West Offshore Wind Farm Consent Application, Scottish Ministers were required to carry out an Appropriate Assessment of the project in accordance with the Habitats Regulations[4]. These regulations transpose requirements of European Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive).

In accordance with the Habitats Regulations, Scottish Ministers were able to conclude that, with respect to European Sites with ornithological interests, there would be no adverse effects on the integrity of the Buchan Ness to Collieston Coast Special Protection Area (SPA), East Caithness Cliffs SPA, North Caithness Cliffs SPA, Troup, Pennan and Lion's Head SPA, and the Moray Firth SPA from the development either in isolation or in combination with other plans or projects, providing that the conditions set out in Section 4 of the Appropriate Assessment are complied with.

Based on the results from the Moray West EIA Report and Appropriate Assessment, it was agreed with MFRAG-O that the ornithological monitoring required under the PEMP focuses on the key species and impacts listed in Table 2-1 below.

Table 2-1 Key species, SPAs and potential impacts requiring monitoring

	Species (Note 1)	Sites (SPA)	Impact to be monitored
Primary	Kittiwake	East Caithness Cliffs SPA North Caithness Cliffs SPA	Collision Risk Displacement
	Great black-backed gull	East Caithness Cliffs SPA	Collision Risk
Secondary	Herring gull	East Caithness Cliffs SPA Troup, Pennan and Lion's Head SPA	Collision Risk
	Guillemot	East Caithness Cliffs SPA North Caithness Cliffs SPA	Displacement
	Razorbill	East Caithness Cliffs SPA North Caithness Cliffs SPA	Displacement
Tertiary	Puffin	North Caithness Cliffs SPA	Displacement
	Gannet	Gamrie and Pennan Coast SSSI	Collision Risk Displacement

[4] These consist of The Conservation (Natural Habitats &c.) Regulations 1994 (as amended), The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended), and the Conservation of Habitats and Species Regulations 2017 (as amended; for consents granted under S36).

Table 2-1 Key species, SPAs and potential impacts requiring monitoring			
	Species (Note 1)	**Sites (SPA)**	**Impact to be monitored**
	Fulmar	East Caithness Cliffs SPA North Caithness Cliffs SPA Troup, Pennan and Lion's Heads SPA	Displacement

Note 1: As part of the digital aerial surveys, all species (in addition to those listed above) observed within the Moray West Site and surrounding buffer area will be reported as part of the pre-construction surveys. The species listed above have been identified specifically to inform the design of the surveys to ensure data coverage enables change to be detected pre- and post-construction.

The proposal for ornithology monitoring was presented to MFRAG-O and has been further developed within the PEMP for approval within the PEMP consultation process. This consultation is summarised in Table 2-2.

Table 2-2 Consultation and documents for ornithology monitoring			
Date	**Stakeholders / Consultation format**	**Summary of Consultation**	**Documents reference**
3 November 2020	MFRAG-Ornithology subgroup meeting	Digital Aerial Surveys methodology	8460005-DBHA25-MWW-RFP-000001 Moray West Pre-construction Aerial Survey Method Statement MFRAG-O meeting minutes available on MFRAG website
9 February 2021	MFRAG-Ornithology subgroup meeting	Digital Aerial Surveys methodology and survey area key species and potential impacts requiring monitoring	8460005-DBHA-MWW-REP-000005 Moray West Note on consultation responses from NatureScot and MSS on Moray West pre-construction digital aerial survey method statement - Rev B 15/02/2021 MFRAG-O meeting minutes available on MFRAG website
1 October 2021	MFRAG-Ornithology subgroup meeting	GBBG Monitoring approach was discussed	MFRAG-O meeting minutes available on MFRAG website
19 January 2022	MFRAG-Ornithology subgroup meeting	Moray West GBBG monitoring proposal was discussed. Moray West proposed conducting a cliff top based study: flight behaviour and chick	8460005-DBHA13-MWW-LET-000003 Great black-backed gull pre-construction monitoring approach – flight behaviour and chick provisioning study proposal MFRAG-O meeting minutes available on MFRAG website

Table 2-2 Consultation and documents for ornithology monitoring			
Date	**Stakeholders / Consultation format**	**Summary of Consultation**	**Documents reference**
		provisioning study proposal	

2.2 Monitoring Approach

2.2.1 Digital Aerial Surveys

Moray West digital aerial surveys seek to acquire information on the distribution and abundance of seabirds within and around the Moray West Site.

Pre-construction digital aerial surveys have been undertaken by APEM since 2nd April 2021 (this relates to a March survey which was delayed due to unsuitable weather conditions) to inform on the use of the Moray West Site by sea birds.

Further details on the objectives, methodology and programme of the pre-construction and post-construction digital aerial surveys can be found in the section 2.3 and section 2.5, respectively.

2.2.2 Great Black-Backed Gulls

It was agreed during the MFRAG-O meeting of 1st October 2021 that tagging breeding GBBG at the East Caithness Cliffs (ECC) SPA should be postponed until there is better evidence of improved tag attachment techniques and tag effects on birds.

The purpose of tagging GBBG was agreed at the MFRAG-O meeting on 14 November 2014 as:

"*primarily to establish connectivity between the SPA population and wind farms, and therefore potential for any population level effects*".

The S36 consent and Marine Licences PEMP condition for Moray West required the PEMP to include, "pre-construction monitoring of the great black-backed gull of the East Caithness Cliffs SPA". This would, therefore, require monitoring of the GBBG population at the ECC SPA during the breeding season of 2022.

In lieu of being able to conduct tagging work in 2022, Moray West proposed conducting a clifftop-based study at the study sites used in 2014 and the sites previously used as a baiting trial undertaken by BOWL in 2021. This approach was agreed with MFRAG-O on 19th January 2022. These sites are known to be safely accessible, and it is possible to observe nesting birds at these locations. The location of the southern sites is more relevant to the Moray West wind farm as it is closer to the western boundary of the wind farm. The more northerly sites are more relevant to the BOWL and Moray East wind farms.

It is proposed that observations will be made of actively nesting gulls during several periods in the breeding cycle in 2022 using binoculars and telescope from one or more suitable vantage points. Observations will concentrate on collecting information about:

- flight behaviour; and
- chick provisioning.

2.3 Pre-Construction Monitoring

2.3.1 Objectives

2.3.1.1 Digital Aerial Surveys

The main aims of the pre-construction digital aerial surveys are to:

- collect pre-construction data on seabird distributions, and estimations of species abundance, from which potential changes occurring post-construction can be detected through post construction surveys in order to determine the extent to which (if any) displacement of key species (guillemot, razorbill, kittiwake, puffin, gannet and fulmar) has occurred;
- collect data on flight direction of key species (guillemot, razorbill, kittiwake, GBBG, herring gull, puffin, gannet and fulmar) to further inform understanding on the extent of connectivity with key SPA breeding colonies (ECC SPA, North Caithness Cliffs SPA, Troup, Pennan and Lion's Heads SPA, and Gamrie and Pennan Coast Site of Special Scientific Interest (SSSI)); and
- where possible, obtain flight height data for key species (kittiwake, GBBG, herring gull and gannet) to assess flight heights in relation to the wind farm and/or turbines.

2.3.1.2 Great Black-Backed Gulls

The fieldwork for GBBGs aims to investigate the potential for connectivity between the GBBG population in ECC SPA and the Moray West, Moray East, and BOWL wind farms. Flight behaviour will be used to determine the proportions of marine, coastal and terrestrial flights taken by breeding GBBGs. These data may indicate the likelihood of connectivity and could be suitable for considering this question in the absence of suitable tagging options for GBBG. Similarly, the chick provisioning fieldwork is unlikely to, on its own, confirm or rule-out connectivity, but as part of a pattern of information from multiple sources it may be useful. For example, if diets can be characterized as predominantly terrestrial and/or coastal this would be indicative of low connectivity. However, a diet characterized by predominantly pelagic fish would indicate a preference for offshore foraging and, hence, a higher likelihood of connectivity with the wind farms (although this could also indicate foraging at fishing vessels).

2.3.2 Monitoring Methodology

2.3.2.1 Digital Aerial Surveys

The ongoing aerial surveys, carried out by APEM, are carrying out a transect-based survey design with an additional uneven buffer area surrounding the Moray West Site (Figure 2.1), in line with advice from MFRAG-O and described in the approved pre-construction digital aerial survey method statement produced by APEM (8460005-DBHA25-MWW-RFP-000001). As discussed with MFRAG-O, the buffer area

surrounding Moray West is reduced within existing wind farms (BOWL and Moray East) but increases the survey area into un-surveyed regions surrounding Moray West Site.

Moray West's survey design (approved through consultation with MFRAG-O) consists of transect flight lines spaced 2.53 km apart, which were aligned to match up with existing digital aerial transects that have been undertaken in the BOWL and Moray East wind farms. This spacing with the imaging equipment employed by APEM delivers the 15% area coverage necessary to provide sufficient data to meet the recommendations of the previous power analysis[5] undertaken for the EIA and Habitats Regulations Appraisal (HRA). Full details are provided in Moray West pre-construction digital aerial survey method statement (APEM, 2021).

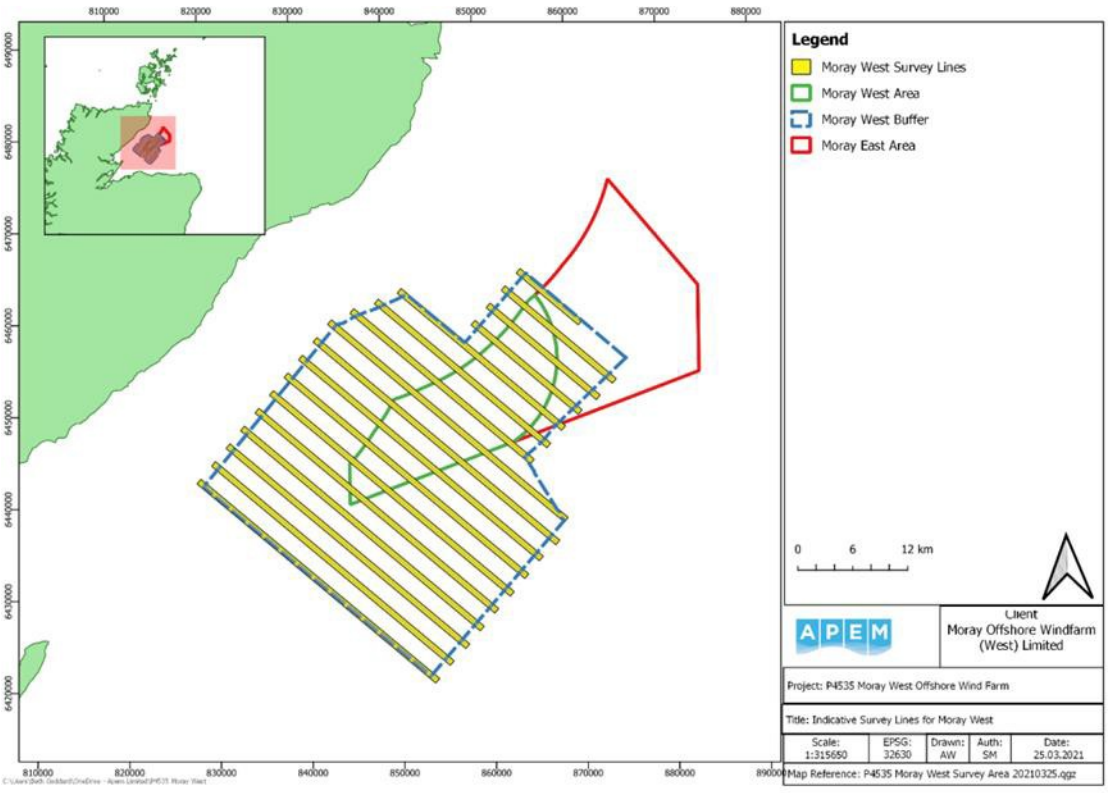

Figure 2.1Moray West survey area with uneven buffer area and indicative survey transects (source Moray West, 2021).

The surveys are planned to be undertaken in weather conditions that do not limit the ability to identify marine fauna at or near the water surface. These conditions are listed below and are those that have been acceptable to the UK SNCBs advisers:

[5] Estimate of how much of a sample size is necessary to capture the effect of the study at the desired significance level, effect size, and statistical power.

- Cloud base: > 1,700 ft
- Visibility: > 5 km
- Wind speed: < 30 knots
- Sea state: 4 or less (Beaufort 5 or 6)
- No icing conditions

Data is being collated and provided in the form of ArcGIS shapefiles and corresponding Excel spreadsheets, where applicable. The data relevant to birds recorded as part of the aerial digital still imagery are as follows:

- Date and time of each bird recorded on survey.
- Corresponding GPS coordinate for each bird recorded (for instance, the easting and northing of the location is provided as standard, but other formats are readily available on request). APEM's aircraft's internal GPS and IMU (Inertial Measurement Unit) systems record to an accuracy of +/- 3 to 5 m as standard.
- Unique identifying numbers for each bird recorded, with reference to the survey line (transect line), the image number and individual camera that captured that image provided in the data as standard.
- All individual birds recorded are provided with details of their age, gender and moult status where possible.
- Additional behavioural information observed for each bird is recorded to provide data on whether a bird is sitting, flying or diving. Further information on whether an individual is part of a group, carrying food or nursing a juvenile are also recorded.
- The height at which individual birds are flying with associated +/- error and confidence are provided for birds that can be measured accurately.
- The orientation of birds in flight is routinely collected and provided in APEM's standard data sets from their aerial digital surveys. This would be provided in compass degrees to true north.
- The sea state whilst on survey is assessed and recorded on a regular basis throughout an aerial digital survey. Additional information relating to water turbidity and the percentage of glare are also recorded throughout.

With respect to the Moray East Offshore Wind Farm, there were on-going offshore construction activities within the Moray East Wind Farm Site during most of the Moray West aerial survey season (April – October 2021) as this coincided with the installation of the turbines and inter-array cables. The first turbine was installed at Moray East in January 2021 and the final turbine was installed by September 2021. Therefore, there will be operational turbines on the Moray East Wind Farm Site during the Moray West aerial surveys undertaken in Year 2 (2022). These activities have been and will continue to be recorded as part of the survey reporting.

Using a set of rules developed by APEM, the flight height of birds with a range of error and confidence intervals, dependent upon image quality, size of the bird species and the size of the bird relative to the

image can be estimated and recorded. From the basic premise that the higher the bird is flying the greater the proportion of its reference length will be in the image, its flight height can be calculated.

The position of a bird's head and tail in an image as well as species is recorded by an analyst. All inputs have an individual error associated with them (derived from internal trials), and for the calculation each input is bootstrapped to 10,000 samples. Using accurate GPS, IMU, aircraft, and camera system data, these two positions in the image are translated to real-world coordinates, using principles of geometry, map projection and vector manipulation. This step accounts for changes in surface Ground Sampling Distance (GSD), orientation of the aircraft and camera system, and other spatial factors. The distance between these two points is compared to a normal distribution of reference lengths measured physically for that species. From this, the height of the bird above the surface, the orientation, and the real-world position above the surface can be calculated. The output is a normal distribution of 10,000 results, from which a mean and standard deviation are derived, for the bird's flight height, orientation, and position. All results are to 99.7% confidence intervals.

It must be noted that it is not possible to accurately estimate flight heights for birds that are diving or turning sharply, as these individuals are not fully stretched out and, therefore, their measured lengths are not comparable to the reference length of the relevant species.

Following various trials to better understand the accuracy and precision of bird flight heights generated from high resolution aerial digital imagery, APEM has developed a robust approach to generating confidence intervals for bird flight heights[6]. These new estimates allow for variation in the size of individual birds, aircraft flight height measured by GPS, aircraft pitch, roll and yaw, and analyst measurements. The whole approach, developed by an Imperial College mathematician, is based on statistical procedures and vectorial maths (to allow for, amongst other factors, the aircraft's movements in three-dimensions). Much of the standard deviation in each flight height estimate is due to the variation in the body lengths of each species of seabird of interest to this project.

2.3.2.2 Great Black-Backed Gulls

2.3.2.2.1 Flight behavioural observations

Flight behaviour observation will be used to estimate the approximate direction of foraging flights of GBBGs from the ECC SPA. Gulls leaving nest sites will be tracked as far as possible and their flight direction and distance noted. Birds will be observed until out of site and notes on their behaviour made. This will be used to estimate the proportions of onshore, coastal, and offshore foraging flights. A proportion of flights will likely be impossible to assign to one of these categories, so only clear examples will be assigned to a likely foraging location. There may be some flights coming into the colony that can be assigned to foraging locations, but these are expected to be more difficult to determine. Flights that do not begin or end at a nest site will not be recorded.

[6] The flight height estimation approach has not been (at the time of writing this PEMP) peer-reviewed or ratified by the Statutory Nature Conservation Bodies (SNCBs).

In addition to collecting flight behaviour observations, surveyors will collect nesting data following the British Trust for Ornithology (BTO) nest records scheme methods. These data may be useful in comparing breeding success with either other locations in the same year (from the Joint Nature Conservation Committee (JNCC) Seabird Monitoring Programme (SMP) database), or from different years within the ECC SPA. Knowing whether nest success is unusually high, or low in 2022 may be useful in explaining unexpected results on possible foraging locations. In addition, it may be possible to determine whether nests with different possible foraging locations have different levels of success.

2.3.2.2.2 Chick provisioning

GBBGs feed their chicks by regurgitating food from their crop directly into the chicks' mouth. It is, therefore, impossible to determine what the chicks are being fed by adults through observation. Several studies have used pellets[7] collected from nest site to determine the food being brought back to the nest (e.g., Steenweg et al., 2011, Lindsay & Meathrel 2008, Rome & Ellis 2004, Wilkens & Exo 1998). Pellet analysis is non-invasive, but it does not identify soft -bodies animals in the diet. However, Rome & Ellis (2004) concluded that pellet analysis of GBBGs in Canada were a good reflection of the actual diet.

Following field work of collecting flight behaviour data, pellets will be collected from around accessible GBBG nests once or twice a week. Steenweg et al. (2011) stated that pellets collected within 30 cm of a nest, "should be pellets regurgitated by the adults at that nest". Contents of the pellets will be identified to the lowest taxonomic level possible, but within the following categories:

- Fish
- Marine invertebrates
- Mammals
- Birds
- Other terrestrial prey

The relative proportions of these items in the studied pellets will give a general indication of the main sources of food taken by adults. Fish will give a stronger indication of marine foraging, or scavenging from fishing boats, e.g., if the fish identified in the pellets are not ones expected to be ordinarily accessible, while marine invertebrates would be more indicative of coastal foraging. Birds in the diet will most likely indicate coastal foraging (i.e., other seabird remains in pellets) or terrestrial foraging (i.e., any terrestrial bird remains). Mammal remains would be indicative of terrestrial foraging.

2.3.3 Monitoring Programme

2.3.3.1 Digital Aerial Surveys

Aerial surveys commenced 2nd April 2021 (the first survey was due in March but delayed due to weather) and will cover two full breeding seasons (March-October) over two consecutive years (2021 and 2022), shown in Table 2-3.

[7] Hard animal parts regurgitated by birds after the soft tissues have been digested.

Table 2-3 Digital aerial survey programme		
Survey Year	**Survey Number**	**Survey Month**
Year 1 (2021)	1	March 2021. Due to unsuitable weather during the latter part of March 2021 the first pre-construction aerial survey was undertaken on the 2 April 2021.
	2	April 2021
	3	May 2021
	4	June 2021
	5	July 2021
	6	August 2021
	7	September 2021
	8	October 2021
Year 2 (2022)	9	March 2022
	10	April 2022
	11	May 2022
	12	June 2022
	13	July 2022
	14	August 2022
	15	September 2022
	16	October 2022

2.3.3.2 Great Black-Backed Gulls

Fieldwork for monitoring GBBG is proposed for the 2022 breeding season in the months shown in Table 2-4.

Table 2-4 Period of fieldwork proposed in 2022 for flight observations and pellet collection of GBBG at ECC SPA																			
Month	**March**				**April**				**May**				**June**				**July**			
Week	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**	**2**	**3**	**4**
Flight observations																				
Pellet collection																				

2.4 Construction Monitoring

No digital aerial surveys will be carried out during the construction phase of the Development, as it has been agreed with MFRAG-O that the key impacts to be monitored would be during the operational phase of the Moray West Offshore Wind Farm, as presented in Table 2-1.

2.5 Post-Construction Monitoring

2.5.1 Objectives

Post construction digital aerial surveys will be undertaken to ascertain the use of the Moray West Site by birds following the installation of the WTGs. This will be compared against the data gathered during the pre-construction surveys.

2.5.2 Monitoring Methodology

Survey methodology for post construction surveys will be the same as for the pre-construction phase (see Section 2.3).

2.5.3 Monitoring Programme

The periodicity of these surveys will be discussed and agreed with MFRAG-O at a suitable MFRAG-O meeting prior to Final Commissioning.

This PEMP does not intend to address monitoring during and after the decommissioning of the Development. Decommissioning of the Development will be subject to a separate assessment at the appropriate time which will inform and determine monitoring requirements at that stage. Any monitoring requirements (and associated reporting) at the decommissioning phase and post decommissioning would be included in the Marine Licence required for the decommissioning of the Development.

2.6 Reporting

Following on the completion of the digital aerial surveys, the images are analysed to enumerate individual birds to specie level, where possible.

Annual reports summarising the results of each aerial digital survey undertaken will be provided to MS-LOT and MFRAG-O within three months of receipt of the final report. Each monthly report provides the raw counts of all birds and marine megafauna recorded, their distribution on a simple GIS map and a description of the survey conditions encountered including environmental conditions such as weather and sea state.

Following on the completion of the GBBG fieldwork, a report will be produced which will include a description of the survey methodology and survey results. In addition to the fieldwork, pellet analysis will be carried out, where each pellet would need to be dissected and the contents analysed to the lowest taxonomic level possible. Moray West intends to submit fieldwork and pellet analysis reports to MFRAG-O for consultation within three months of receipt of the final report being received from the contractors undertaking the work. Once the reports have been subject to consultation with MFRAG-O, Moray West will submit the reports to MS-LOT for approval.

3 Marine Mammals

3.1 Introduction

The most regularly occurring marine mammals in the study area (Moray Firth) include harbour porpoise, bottlenose dolphin, minke whale, harbour seal, and grey seal. All species of whale, dolphin, and porpoise (collectively referred to as cetaceans) are protected under the Habitats Directive (transposed in Scotland through the Habitats Regulations[4], either individually or through the designation of Special Areas of Conservation (SACs). Potential effects on SACs i.e., the Dornoch Firth and Morrich More SAC, which is designated for harbour seals and the Moray Firth SAC, which is designated for bottlenose dolphin; have been assessed as part of the HRA, the results of which are presented in a separate report (the RIAA). Minke whale is also the primary interest feature associated with Southern Trench Marine Protected Area (MPA). In addition, harbour porpoise has been recognised by MFRAG-MM as a strategic species of interest for the industry in the UK and North Sea, and provides an important model for understanding behavioural changes due to disturbance.

All potential impacts on marine mammals from the construction and operation of the Development were assessed to be not significant in EIA terms following agreed mitigation including use of soft-start techniques for piling and preparation of a PS to reduce impacts of underwater noise during construction. Results from additional population modelling undertaken for bottlenose dolphin concluded that, although there is potential for short term disturbance of a small number bottlenose dolphins associated with the Moray Firth SAC, long term effects on the SAC population would not be significant (see the RIAA (Moray West, 2018) for more further information on effects on designated sites).

When assessing other offshore wind farms and other projects cumulatively with the Development, it was concluded that all potential effects, except underwater noise, would be not significant. The cumulative impact assessment (CIA) concluded that although the BOWL and Moray East Offshore Wind Farm would be constructed prior to construction commencing for this Development, there remained a potential for harbour seal and bottlenose dolphin to be affected as a result of these projects all occurring one after the other, extending the time period over which noisy activities are occurring in the Moray Firth. This also applies to the Aberdeen Harbour Extension, where animals affected by blasting activities carried out for this project could then also be affected by noise from this Development. However, long term cumulative effects on both the harbour seal and bottlenose dolphin populations have been assessed as not significant.

The overall objectives and workplan for the Moray Firth Marine Mammal Monitoring Programme (MMMP) were outlined in the document dated 27 June 2016 (Thompson, 2016). This document was updated by an addendum on 2 December 2021 to include Moray West and address recent requirements from NatureScot. The Moray Firth MMMP addendum covers the 3 consented offshore wind farms in the Moray Firth:

- BOWL (operational)
- Moray East (under construction and operations in May 2022); and
- Moray West (pre-construction).

Moray West have committed to undertake pre-construction, construction, and post construction marine mammal surveys to better understand the distribution of marine mammals within the vicinity of the wind farm, to validate assumptions made within the EIA Report and RIAA and to inform the PS as part of best practice.

The proposal for marine mammal monitoring was presented to MSS and NatureScot and has been further developed within the PEMP for approval within the PEMP consultation process. This consultation is summarised in Table 3-1.

Table 3-1 Consultation and documents for marine mammal monitoring

Date	Stakeholders / Consultation format	Summary of Consultation	Documents reference
11 March 2021	Meeting with MSS and NatureScot	Moray West set out the marine mammal pre-construction monitoring proposal	8460005-DBHA-MWW-REP-000006 Moray West Marine Mammal pre-construction monitoring
25 August 2021	MFRAG-MM subgroup meeting	Post-construction monitoring plans for the Moray Firth offshore wind farm projects were discussed. Bottlenose dolphin, harbour seal and minke whale were identified as key species for Moray West.	MFRAG-MM meeting minutes available on MFRAG website
9 February 2022	MFRAG-MM subgroup meeting	Addendum Moray Firth MMMP, including the pre-construction and construction monitoring programme for Moray West.	MFRAG-MM meeting minutes available on MFRAG website Moray Firth Addendum MMMP prepared by University of Aberdeen, issued to MFRAG-MM on 3 December 2021

3.2 Monitoring Approach

Post consent consultations with stakeholders to date has taken place through the MFRAG-MM.

MFRAG-MM meeting minutes and documents for discussion are publicly available within the Marine Scotland Website[8].

The draft approach for pre-construction monitoring for marine mammals was distributed to MFRAG-MM on 13 April 2021. MS-LOT approved the methodology on 13 May 2021, with the addition that there should

[8] http://www.gov.scot/Topics/marine/Licensing/marine/scoping/mfrag/marine-mammals

be a focus on minke whale within the proposed data collection methods, including digital aerial surveys, due to the Moray West export cable route crossing the Southern Trench MPA.

On 16 September 2021, NatureScot presented a guidance note detailing pre-, during and post-construction monitoring for the three consented wind farms in the Moray Firth for the key marine mammal species of concern, following discussions with MFRAG-MM on 25th August 2021.

An addendum to the Moray Firth MMMP (which previously didn't include the Moray West Development) was prepared on 2 December 2021 by the University of Aberdeen and presented to MFRAG-MM on 3 December 2021. This included the Moray West Development and was prepared in response to the emerging policy questions highlighted in the NatureScot marine mammal monitoring note dated 16th September 2021 and during related meetings with key stakeholders.

Table 3-2 Moray West Marine Mammal Monitoring Programme

Work Packages (WP)	Pre-construction	Construction	Post-Construction
WP 1. Harbour seal monitoring	Monitoring Population Size, Structure and Vital Rates	Monitoring Population Size, Structure and Vital Rates Assessing Temporal Changes in Foraging Distribution	Monitoring Population Size, Structure and Vital Rates
WP 2. Bottlenose Dolphin monitoring	Monitoring Population Size, Structure and Vital Rates Assessing Temporal Change in Use of, and Connectivity with, Key Foraging Areas		
WP 3. Minke whale monitoring	Spatial and Temporal Variation in Occurrence		
WP 4. Marine mammal responses to wind arm construction and operation	Baseline data on the occurrence and foraging activity of harbour porpoises	Responses to Piling and Other Anthropogenic Noise Sources	
WP 5. Noise measurement and modelling		Characterisation of Received Noise Levels from Monopile Installation	

Moray West will continue engaging with the MFRAG-MM subgroup members to discuss and identify the requirements and objectives for construction and post-construction monitoring.

This PEMP does not intend to address monitoring during and after the decommissioning of the Development. Decommissioning of the Development will be subject to a separate assessment at the appropriate time which will inform and determine monitoring requirements at that stage. Any monitoring

requirements (and associated reporting) at the decommissioning phase and post decommissioning would be included in the Marine Licence required for the decommissioning of the development.

3.3 Pre-Construction Monitoring

3.3.1 Objectives

The key objective of the pre-construction monitoring is to gather baseline data on presence and habitat use of the Moray West Site and surrounding area (as agreed with MFRAG-MM and noted below under Section 3.3.2) by priority species during the pre-construction period (2021, 2022 and in 2023 prior wind farm construction commencing). The pre-construction monitoring approach has been developed considering the primary drivers for construction mitigation and monitoring and the uncertainties over cumulative impacts arising during the Development construction period.

The key primary drivers for monitoring are as follows:

- Harbour seals: to collect data that can be used to assess demographic trends and key foraging areas of the population of harbour seals using the Dornoch Firth and Morrich More SAC.
- Bottlenose dolphins: to extend the time-series of data collected during the EIA and HRA process that can be used to assess demographic trends in the population of bottlenose dolphins using the Moray Firth SAC, and to monitor seasonal occurrence and activity within core foraging areas.
- Minke whale: to characterise broad-scale spatial variation in the occurrence of minke whales across the Development and adjacent areas, and to characterise temporal variation in the occurrence of minke whales around the Development.

Additionally, CPODs will be deployed at four long-term monitoring sites in order to collect baseline data on the occurrence and foraging activity of harbour porpoises within Moray West Site.

3.3.2 Monitoring Methodology

Moray West will be undertaking the following as pre-construction monitoring for marine mammals, as agreed with MFRAG-MM.

3.3.2.1 Harbour seal monitoring: monitoring population size, structure and vital rates

Harbour seal monitoring will continue to focus on individual-based studies at the core long-term study sites within Loch Fleet National Nature Reserve (NNR). However, changes in sandbank structure within Loch Fleet have made collection of shore-based photo-identification (photo-ID) data challenging in recent years. Following successful pilot studies in 2021, a series of annual, unoccupied aerial vehicle (UAV) surveys will be undertaken in 2022 and 2023 to extend the long-term monitoring of harbour seals in Loch Fleet. An UAV will be flown at 50-60 m above sea level to allow simultaneous collection of wide-angle imagery for geo-referencing and counting individual seals, while a second camera operator zooms in to obtain photo-ID images (see Thompson (2021) for details). A sub-set of individuals will be photographed using conventional shore-based photo-ID. The results will be used to estimate population size and structure from a sub-set of surveys conducted annually in Loch Fleet during the pupping and moulting season. The results will also extend the time series of sightings of known individuals and use these

individual recapture histories to periodically update estimates of vital rates. Finally, the results will help evaluate the potential for using new UAV techniques to extend the spatial coverage of surveys to assess connectivity between haul-out sites and spatial variation in population structure.

3.3.2.2 Bottlenose dolphin monitoring: monitoring population size, structure and vital rates

Bottlenose dolphin monitoring will continue to focus on boat-based photo-ID studies that are conducted within the Moray Firth SAC. Data will be collected on trends in population size and vital rates as agreed under existing site condition monitoring plans for the SAC. Parallel data will also be collected on body size using laser photogrammetry (Cheney et al. 2017) and, where possible, using UAVs, with the aim of using this information to increase the power of the study to detect changes in demographic trends.

3.3.2.3 Bottlenose dolphin monitoring: assessing temporal change in use of, and connectivity with, key foraging areas

Previous Passive Acoustic Monitoring (PAM) studies highlighted high inter-annual variability in the occurrence of bottlenose dolphins along the southern Moray Firth, but no discernible far-field effects on these patterns during three periods of offshore impulsive noise (Fernandez-Betula et al. 2021).

In future, work on variations in occurrence within key foraging areas will focus on core-foraging sites within the Moray Firth SAC that are surveyed during photo-ID studies (i.e., the Sutors and Chanonry Narrows). The proposed use of broadband PAM recordings provides opportunities to integrate these data with those from MSS' East Coast Marine Mammal Acoustic Study (ECOMMAS) array to monitor changes in vessel noise in key areas. Potentially, connectivity with other parts of the population's East Coast range could also be assessed through individual identification of signature whistles (see Longden et al. 2020) on these recordings.

Prior to construction, it is proposed to monitor temporal variation in dolphin occurrence and foraging activity within the Sutors and Chanonry narrows. CPODs will be deployed annually within each site, extending the PAM monitoring started at these sites in 2006 (see Fernandez-Betula 2019). Broadband recordings within the Sutors and Chanonry narrows will also be collected in order to characterise variation in vessels and other anthropogenic noise within the Moray Firth SAC. These data will also provide a resource to explore longer term use of signature whistles to measure connectivity and movement rates both at local and regional scales.

3.3.2.4 Minke whale monitoring: spatial and temporal variation in occurrence

Characterising broadscale spatial and temporal variation of minke whales across the Development and adjacent areas will be based upon raw count and distribution marine mammal sightings extracted from Digital Aerial Survey data collected during seabird monitoring at Moray West, and these will be integrated with other available Digital Aerial Survey data from nearby areas. Other marine mammal species will also be recorded from the Digital Aerial Survey data, where possible.

The data relevant to marine mammals and other large marine megafauna recorded as part of the aerial digital still imagery are as follows:

- date and time of each individual recorded on survey;
- corresponding GPS coordinate for each individual recorded (for instance the easting and northing of the location is provided as standard, but other formats are readily available on request). The aircraft's internal GPS and IMU systems record to an accuracy of +/- 3 to 5 m as standard;
- unique identifying numbers for each individual recorded, with reference to the survey line (transect line), the image number and individual camera that captured that image provided in the data as standard; and
- additional behavioural information observed for each individual is recorded to provide data on whether an individual is submerged or surfacing.

Characterising temporal variation in the occurrence of minke whales around offshore wind farm sites will build upon earlier coastal studies within the Moray Firth using ECOMMAS data (Risch et al. 2019). Soundtraps have been deployed during the summer of 2021 and will again be deployed during 2022 to make broadband recordings within the Moray West Site, and these will be used to explore fine-scale temporal variation in minke whale detections. This work will include new AI algorithms to detect minke whales, opening up the potential to, cost-effectively, analyse archive recordings and characterise longer-term temporal variation in occurrence.

3.3.2.5 Marine mammal responses to wind farm construction and operation

Pre-construction baseline data will be collected on the occurrence and foraging activity of harbour porpoises within Moray West Site. CPODs will be deployed at four long-term monitoring sites during the summers of 2021 and 2022. These include sites at which historic baseline data have been collected during earlier studies and will provide baseline for potential future studies (outside the scope of this PEMP) on comparison of responses of harbour porpoises to monopile substructures with responses to other substructures on other offshore wind farms (i.e. jackets).

3.3.3 Monitoring Programme

Digital aerial surveys commenced on 2nd April 2021 (the March survey was delayed due to weather) and will cover two full breeding seasons (March-October) over two consecutive years (see Section 2 for further details).

Soundtraps will be deployed in the Sutors and Chanory narrows between May and September to build on work initiated in 2018. Soundtraps have also been deployed in 2021 and will be deployed in 2022 to make broadband recordings within the Moray West Site.

10 UAV surveys will be made between May and September in 2022 and 2023 to provide a baseline of harbour seals at Loch Fleet.

Approximately 20 boat-based photo-ID surveys will be carried out between May and September each year prior to construction (2022 and in 2023 prior wind farm construction commencing). CPODs will be deployed annually to monitor dolphin occurrence and foraging activity.

3.4 Construction Monitoring

3.4.1 Objectives

The key objectives of the construction monitoring are to compare marine mammal distribution and activity against the pre-construction baseline and monitor for any changes to disturbance or noise generated during the construction phase.

3.4.2 Monitoring Methodology

During the construction phase of the Development, the following monitoring activities described in Section 3.3 will continue to be undertaken:

- harbour seal monitoring of population size, structure and vital rates;
- bottlenose dolphin monitoring of population size, structure, and vital rates;
- bottlenose dolphin - assessing temporal change in use of, and connectivity with, key foraging areas; and
- harbour porpoise - providing baseline for future studies (outside this PEMP) on comparisons of responses to different substructure installations.

In addition, the following activities are proposed:

3.4.2.1 Harbour seal: assessing temporal changes in foraging distribution

There is extensive information on the foraging movements of Moray Firth harbour seals prior to the installation of foundation structures in the Moray Firth. Analyses of data collected in 2017 demonstrated that tagged individuals did not forage in areas where behavioural responses or hearing damage were likely to occur during construction at Beatrice Offshore Wind Farm. As a result, further tagging work was not proposed when piling was undertaken at foundation structure sites more distant from Loch Fleet National Nature Reserve within Moray East (Thompson 2018). However, harbour seals have been shown to forage around operational wind farms (Russel et al. 2014). If prey availability is now higher around jackets at BOWL and Moray East, baseline foraging distribution may have changed, and there may be greater opportunity to characterise harbour seal responses to pile driving noise at Moray West Site.

To explore whether harbour seals have responded to changes in habitats and prey fields around constructed wind farms and provide insights into the potential use of operational wind farms for foraging; to achieve this, a sample of 20 individuals from the Loch Fleet population will be tagged before the first phase of pile-driving at Moray West, with the aim of subsequently characterising responses to piling activity (see marine mammal responses to wind farm construction and operation below). Work will be carried out in collaboration with the Sea Mammal Research Unit (SMRU), and GPS-GSM tags used to characterise individual foraging patterns. Importantly, these tags will transmit summarised accelerometer data, providing new fine scale data on variation in prey capture events.

3.4.2.2 Marine mammal responses to wind farm construction and operation: responses to piling and other anthropogenic noise sources

This work package aims to improve understanding of how key marine mammal receptors respond to pile driving noise. The focal species will be harbour porpoises and harbour seals, first, due to their known presence on or proximity to the Moray West Site and, second, due to their occurrence in sufficient numbers for response studies to be feasible. The rationale for extending earlier work at BOWL and Moray East is twofold. First, responses to higher energy piling of monopiles will permit greater generalisation of results from the Moray Firth studies. Second, linkage with PrePARED[9] provides an opportunity to assess how response levels vary in relation to local prey availability.

To assess changes in the occurrence and feeding activity of harbour porpoises in response to piling noise at Moray West, CPODs will be deployed in a gradient design to replicate studies used at BOWL and Moray East and allow comparison of dose response relationships for these three construction programmes. Using results from similar deployment at BOWL and Moray East, the array will be designed to incorporate paired sites at, and between, monopile substructures to assess whether new foraging habitat around structures moderates cumulative responses to disturbance. Deployments will be restricted to a 4-6 week period to minimise equipment losses from unknown levels of fishing activity within the wind farms.

To collect data that can be used to characterise fine-scale behavioural responses of harbour seals to piling noise, GPS-GSM tags will be deployed prior to construction start at Moray West as discussed above. In addition to location and dive data collected during earlier studies at BOWL, these tags will transmit summarised accelerometer data, providing data on finer scale behavioural responses to far-field noise and variation in prey capture events.

3.4.2.3 Noise measurement and modelling: Characterisation of received noise levels from monopile installation

To make field measurements during the installation of monopile foundations, work carried out at BOWL and Moray East will be replicated at a subset of sites within Moray West. Measurements of received levels will be based upon calibrated Soundtrap recordings, and these data related to engineering records to assess how received levels vary in relation to changes in hammer energy.

Deployment locations within Moray West Site will be discussed and agreed with MFRAG-MM prior the work commencing.

3.4.3 Monitoring Programme

To estimate population size and structure of harbour seals from a sub-set, UAV surveys will be conducted annually in Loch Fleet during the pupping season (15 June-15 July) and moult season (1-31 August).

[9] Throughout 2021, MSS have been developing a funding bid to the Crown Estate's Offshore Wind Evidence and Change (OWEC) programme for a strategic study of Predators and Prey Around Renewable Energy Developments (PrePARED). Key work packages within PrePARED build upon the MMMP, and MSS have been in discussion with Moray West and other developers to identify where ongoing consent monitoring can provide in-kind support for this broader strategic project.

CPODS will be deployed during installation of monopiles to assess changes in occurrence and feeding activity of harbour porpoises in response to piling noise at Moray West. Soundtraps will be deployed during construction. Monopile installation dates are detailed in the Construction Programme (CoP) and scheduled to commence Summer/Autumn 2023.

Harbour seal tagging will take place prior to the first phase of pile driving at Moray West.

3.5 Post-Construction Monitoring

Upon completion of construction of Moray West, the following monitoring activities described in Section 3.3 will continue to be undertaken:

- harbour seal monitoring of population size, structure and vital rates;
- bottlenose dolphin monitoring of population size, structure and vital rates; and
- bottlenose dolphin assessing temporal change in use of, and connectivity with, key foraging areas.

3.5.1 Monitoring programme

A post-construction monitoring programme will be discussed and agreed with MFRAG-MM at a suitable MFRAG-MM meeting prior to Final Commissioning.

3.6 Reporting

Annual reports summarizing the results of the pre-construction monitoring and analysis of marine mammal digital imagery will be submitted to MFRAG-MM for consultation within three months of receipt of the final report. Once the reports have been subject to consultation with MFRAG-MM, Moray West will submit the reports to MS-LOT for approval.

4 Commercial Fisheries

4.1 Introduction

The key fleets considered within the Moray West EIA Report (July 2018) included creel, mackerel jigging, demersal trawl, local Nephrops, squid, whitefish and scallop, nomadic scallop and Scottish seine fleets. The EIA assessment carried out in respect of the construction, operation, and decommissioning phase of Moray West did not identify significant effects (i.e., above minor significance) on commercial fisheries. Mitigation measures other than embedded measures, including safety measures and development of a Fisheries Management and Mitigation Strategy (FMMS), were, therefore, not considered necessary. When assessing other offshore wind farms and other projects cumulatively with the Development, it was concluded that no cumulative effects were assessed to be greater than minor adverse.

The proposal for commercial fisheries monitoring has been developed within the PEMP for approval within the PEMP consultation process.

4.2 Monitoring Approach

Moray West have committed to undertake pre-construction, construction, and post construction desk-based commercial fisheries monitoring to provide a series of updates to the commercial fisheries baseline. The purpose of this is to provide an accurate representation of current activity from which to improve understanding of variations and trends in commercial fisheries activity in areas of relevance to Moray West as the project progresses. For consistency for monitoring trends, the objectives and methodology will be the same for all phases of development.

The waters in the vicinity of Moray West support a range of commercial fishing activities, including a seasonal summer squid fishery. Due to the limited availability of existing data on squid fisheries and taking into consideration the feedback received from squid fisheries representatives, Moray West has committed (outside of this PEMP) to undertake squid scout surveys within the main known squid fishing grounds in the nearshore area around the landfall in order to identify the distribution and level of activity of vessels targeting squid around Moray West. Two squid fishery scout surveys were undertaken by Brown and May Marine (BMM) in July/August and October 2021, respectively. Moray West propose that the squid fishery scout survey is repeated in the 2022 summer squid season (during the peak period which is typically July – September), to ensure a realistic representation of the seasonal fishery is obtained. The repeat 2022 squid fishery scout survey will follow the methodology conducted during 2021 surveys, as discussed with SFF, Scottish White Fish Producers Associated (SWFPA) and MSS and detailed in Brown and May (2021).

Moray West previously prepared a draft Commercial Fisheries Management Strategy (CFMS) that set out potential mitigation and safety measures that Moray West will review for inclusion in the final FMMS.

The overall objective of the FMMS is to set out the approach to fisheries liaison and mitigation during the construction of the Development, based upon the draft Fisheries Management and Mitigation Strategy

(FMMS) Marine Scotland Guidance (Marine Scotland, 2020). The results of the monitoring reports may inform updates to the FMMS.

This PEMP does not intend to address monitoring during and after the decommissioning of the Development. Decommissioning of the Development will be subject to a separate assessment at the appropriate time which will inform and determine monitoring requirements at that stage. Any monitoring requirements (and associated reporting) at the decommissioning phase and post decommissioning would be included in the Marine Licence required for the decommissioning of the development.

4.3 All Development Phase Monitoring

4.3.1 Objectives

The aim of commercial fisheries monitoring is to provide a series of updates to the commercial fisheries baseline to provide an accurate representation of current activity from which to improve understanding of variations and trends in commercial fisheries activity in areas of relevance to Moray West, as the project progresses.

The key objectives are to collate data on:

- commercial fisheries landings and activity data (monthly data collated annually); and
- other sources of evidence on commercial fisheries activity.

4.3.2 Desk Based Monitoring Methodology

The commercial fisheries monitoring will utilise the following information and data sources:

- analysis of landings data by species and method;
- available VMS data on UK fishing vessel activity;
- available marine traffic survey data in respect of fishing vessel activity;
- reports from Offshore Fisheries Liaison Officers (OFLOs) and guard vessels (where available);
- Marine Coordination Centre (MCC) records in respect of fishing vessel activity (where available);
- results of fisheries observation surveys (e.g., static gear and squid scout surveys);
- records of ongoing consultation with the commercial fishing industry through the onshore company FLO;
- any additional sources of information which may be available; and
- other contributing factors not directly related to the development e.g., changes in legislation, quota, Covid, Brexit, etc.

4.4 Reporting

Data will be collected periodically (when data from the sources identified in the section above becomes available) at different stages of the Development to provide an on-going review and to identify any changes to the fishing activity.

Reporting on the commercial fisheries monitoring is proposed to cover the Development phases detailed in Table 4-1.

Reports summarising the results of the commercial fisheries monitoring will be submitted to MFRAG and Moray Firth Commercial Fisheries Working Group (MFCFWG) for consultation within three months of receipt of the final report covering each of the Development phases. Once the reports have been subject to consultation with MFRAG and MFCFWG, Moray West will submit the reports to MS-LOT for approval.

Table 4-1 Reporting schedule for commercial fisheries monitoring

Phase	Date	No. reports	Purpose
Post-application	2017 - 2020	1	Update to the baseline assessment provided within the EIA and Commercial Fisheries Technical Report
Pre-construction	2021 to beginning of construction	1	Monitoring of fishing activity during pre-construction phase
Construction	Q4 2022 – Q4 2024 Yr1, Yr2	2	Annual report from the start of offshore construction to the end of construction
Post-construction	2025 – 2028 Year 3 after construction	1	End of construction to three years after the completion of construction

5 Socio-Economics

5.1 Introduction

The proposal for socio-economics was presented to The Highland Council on 9 December 2021 and discussed with Marine Analytical Unit (MAU) on 9 March 2022. This consultation is summarised in Table 5-1

Table 5-1Consultation, approvals and documents for Socio-Economic monitoring

Date	Stakeholders / Consultation format	Summary of Consultation	Documents reference
9 December 2021	Meeting with The Highland Council	Monitoring approach, objectives, and criteria was presented and discussed with the Highland Council	Moray West Socio-economic Monitoring Approach letter (8460005-DBHA13-MWW-LET-000004 Revision B)
5 January 2022	Monitoring proposal issued via email to the Marine Analytical Unit (MAU)	Socio-economic monitoring approach, objectives, and criteria	
9 March 2022	Meeting with MAU	Monitoring approach, objectives, and criteria was presented and discussed with the MAU	

5.2 Monitoring Approach

Moray West has identified monitoring criteria for socio-economics to fulfill the requirements under PEMP condition within offshore consents. Table 5-2 below presents the monitoring criteria and related measurements, data sources, and frequency of monitoring and reporting for the socio-economic environment.

This PEMP does not intend to address monitoring during and after the decommissioning of the Development. Decommissioning of the Development will be subject to a separate assessment at the appropriate time which will inform and determine monitoring requirements at that stage. Any monitoring requirements (and associated reporting) at the decommissioning phase and post decommissioning would be included in the Marine Licence required for the decommissioning of the development. Moray West will engage with The Highland Council, MAU and relevant stakeholders at the appropriate time to discuss socio-economic monitoring requirement after operational phase.

5.3 All Development Phase Monitoring

5.3.1 Objectives

The objective of the socio-economic monitoring is to provide sufficient information for stakeholders to gain an insight into the socio-economic impacts of the Moray West project in comparison to the predictions in the EIA Report that supported the S36 application.

5.3.2 Monitoring Methodology

The methodology for monitoring socio economics is detailed in Table 5-2 below.

Table 5-2 Socio-economic monitoring approach

Criteria	Measurement	Source of Data	Data Collection (Snapshots)	Reporting Stage(s)
Local and Regional Economy and Society				
Population	UK / Scotland / Local Study Area (Highland, Moray, Aberdeenshire, and Aberdeen City (aggregated))	Office for National Statistics (ONS)	1. EIA stage 2. Pre-commencement 3. c. 50% construction programme 4. Completion of construction 5. 6 months operation 6. End of Year 1 of operation 7. End of Year 2 of operation 8. End of Year 5 of operation. Subject to availability of data from public sources	1. 6 months after commencement of operation 2. After End Year 5 of operation
Working Age Population		ONS		
Economically active population		ONS		
In employment		ONS		
Economically inactive		ONS		
Job Seeker Allowance claimants		ONS		
Universal Credit claimants		ONS		
Qualifications – by National Vocational Qualification (NVQ)- level		ONS		
Employment by standard occupation (high, medium and low skill)		ONS Business Register and Employment Survey		
Employment by sector	Local Study Area			
Annual Median Gross Pay for Full time equivalent (FTEs)	UK / Scotland / Local Study Area (Highland, Moray, Aberdeenshire, and Aberdeen City (aggregated))	ONS Annual Survey of Hours and Earnings, Residence and Workplace Based		
Total Gross Value Added (GVA)		ONS Regional GVA		
GVA per head				
Tourist trips	Scotland / Highlands & Islands, Grampian	Visit Scotland		

Workforce				
Approach to UK and local labour market	Number and type of approaches (e.g., LinkedIn, etc)	Moray West Project Team, with input from sub-contractors where available	1. c. 50% construction programme 2. Completion of construction 3. End of Year 1 of operation 4. End of Year 5 of operation.	1. 6 months after commencement of operation 2. After End Year 5 of operation
Apprenticeships, T-level industry placement and trainee positions	Direct number within Moray West (supplier details are not likely to be available)			
Employment	FTEs years - generated by model and distributed into UK, Scotland, Local Study Area (Highland, Moray, Aberdeenshire, and Aberdeen City (aggregated)). Clarity will be provided at Moray West Level where available. Distributed between: 1. Professional 2. Technician 3. Basic			
Employment – equal opportunities	FTE number (Gender) - (generated by model and distributed into UK, Scotland, Local Study Area (Highland, Moray, Aberdeenshire, and Aberdeen City (aggregated)). Clarity will be provided at Moray West Level where available. Distributed between: 1. Professional 2. Technician 3. Basic			

Expenditure				
Capital Expenditure (CAPEX) Tier 1 expenditure, including: • Turbines • Foundations • Cables • Electrical Infrastructure Balance of Plant (BoP) • Installation Operation	GVA[10] between UK, Scotland and Local Study Area	Moray West Project Team with input from sub-contractors as available.	1. c. 50% construction programme 2. Completion of construction 3. End of Year 1 of operation 4. End of Year 5 of operation.	1. 6 months after commencement of operation 2. After End Year 5 of operation
Project expenditure during construction	Direct expenditure by the Moray West project team within the Local Study Area (such as accommodation/subsistence)	Moray West Project Team and extracted from sub-contractor's invoices	1. Completion of construction 2. End of Year 1 of operation 3. End of Year 5 of operation.	1. 6 months after commencement of operation 2. After End Year 5 of operation

[10] To protect commercial confidentiality GVA will be calculated from a combination of project figures and government published figures, including the latest version of https://www.gov.uk/government/collections/energy-generation-cost-projections. The GVA calculation methodology will be described, including relevant multipliers and industry codes.

5.4 Reporting

Moray West proposes to report data collected at different stages of the Development after 6 months of the commencement of the operational phase and after the end of Year 5 of operation.

Following on the data collection and subsequent reporting after the end of Year 5 of operation, Moray West will discuss further data collection and reporting requirements with The Highland Council, MAU and relevant stakeholders, to ensure that monitoring after the five first years of operation, if required, is appropriate and meaningful.

6 Benthic Communities

6.1 Introduction

The site specific benthic surveys and assessments undertaken to inform the EIA identified a small area of potential low-grade Annex 1 habitat within the Moray West Site, and the Priority Marine Feature (PMF) of SS.SMu.CFiMu.SpnMeg 'Seapens and burrowing megafauna in circalittoral fine mud' (also a qualifying feature of the Southern Trench MPA) at five locations within the OfTI Corridor. The EIA assessed the impact of temporary habitat loss / subtidal habitat disturbance to be minor adverse in significance. Although this was not assessed to be significant in EIA terms, best practice measures to avoid potential Annex I habitat and proposed MPA qualifying features were identified within the EIA Report as part of the additional mitigation measures.

The RIAA concluded no potential impacts from construction or operation of the Development would adversely affect benthic features of the Moray Firth SAC, located 17 km west of the Project and, therefore, no benthic monitoring is proposed for the SAC.

Moray West proposes to review available geophysical data to delineate any potential Annex 1 features or PMF habitats. This review will better understand the location of potential Annex 1 feature habitat and MPA qualifying features within the vicinity of the wind farm, to validate assumptions made within the EIA Report and enable micrositing of the project infrastructure as part of best practice, if required.

The proposal for benthic monitoring was discussed with MFRAG Main Group and has been further developed within the PEMP for approval within the PEMP consultation process. This consultation is summarised in Table 6-1.

Table 6-1 Consultation and documents for benthic habitats monitoring

Date	Stakeholders / Consultation format	Summary of Consultation	Documents reference
14 April 2021	MFRAG Main Group meeting	Moray West presented the proposed pre-construction benthic monitoring approach. The geophysical data will be reviewed for the purposes of delineating any potential Annex I features and Priority Marine Features (PMF) habitats	MFRAG Main group meeting minutes

6.2 Monitoring Approach

The Marine Licence and S36 conditions listed in Appendix B state that the PEMP must include the monitoring or data collection of the benthic communities. As identified within the EIA Report, the primary concern is to identify the location of potential Annex 1 habitat to enable the WTGs and cables to be microsited away from this sensitive benthic feature. All other potential impacts to benthic communities

were assessed to be not significant within the EIA, with no further mitigation proposed. The benthic monitoring will, therefore, be as follows:

1) review of existing (pre-consent) monitoring;
2) review of geophysical data to identify locations of potential Annex I and PMF features (if present) to microsite turbine locations and cabling;

Moray West will seek approval from MS-LOT not to undertake construction monitoring as the EIA outcome states this impact is not significant.

Moray West will carry out discussions with MS-LOT, MSS, and NatureScot to determine details of post-construction surveys, if required.

The approach to pre-construction benthic monitoring was presented to and discussed with MS-LOT, MSS, NatureScot and JNCC at an MFRAG meeting on 14 April 2021.

This PEMP does not intend to address monitoring during and after the decommissioning of the Development. Decommissioning of the Development will be subject to a separate assessment at the appropriate time which will inform and determine monitoring requirements at that stage. Any monitoring requirements (and associated reporting) at the decommissioning phase and post decommissioning would be included in the Marine Licence required for the decommissioning of the development.

6.3 Pre-Construction Monitoring

6.3.1 Objectives

The objective of the pre-construction monitoring is to determine the location and extent of potential Annex 1 habitat, if present, within the Development footprint and surrounding area to enable micrositing of project infrastructure.

6.3.2 Monitoring

6.3.2.1 Study Area

Geophysical surveys have been undertaken across the whole Development Site in 2018, 2019 and 2021. The data from these surveys, and from geophysical surveys planned for 2022, will be reviewed to determine presence or absence of Annex 1 habitat and PMF features.

6.3.2.2 Monitoring Methodology

Annex 1 habitat is identifiable through analysis of data gathered during the pre-construction site investigation surveys. Multibeam echo sounder (MBES) surveys have been included within the suite of surveys undertaken within the geophysical surveys. MBES surveys are an effective, non-destructive surveying technique for covering a large area without the need for drop down video tows or more destructive methods such as grab or trawl sampling.

The geophysical data already gathered from the Development Site will be reviewed for the purposes of delineating any potential Annex 1 habitat or MPA features and to confirm acoustic interpretations, with the full coverage seabed video tow or remote operated vehicle (ROV) video footage used to ground-truth

the data collected and to inform micrositing activities for foundations and inter-array cables. The results of this review will be presented within the ECP and Wind Farm CaP which will be submitted following detailed Front End Engineering Design (FEED) studies.

The need for additional benthic ecology surveys is not considered necessary and is not proposed. Any new geophysical data collected along the OfTI in 2022 to inform engineering decisions will also be reviewed as part of the discharging of the offshore export cable condition.

6.3.2.3 Monitoring Programme

MBES surveys have been undertaken in 2021 as part of the suite of site investigation surveys and the benthic report from the geophysical data assessment is due Q2 2022. Further MBES surveys are proposed prior to construction in Quarter 2-3 (June to August) 2022.

6.4 Construction Monitoring

No benthic monitoring is proposed during construction, as the pre-construction surveys will have informed micrositing of the Development's infrastructure to avoid sensitive / protected features if any were identified. No other potential benthic ecology impacts (such as suspended sediment concentrations, sediment deposition or scour) were assessed to be significant within the EIA. Moray West seek to agree this position with MS-LOT.

6.5 Post-Construction Monitoring

6.5.1 Objectives

The reason for the post-construction monitoring surveys is to confirm that the benthic environment has not changed following the installation of the foundations and cables and to confirm the outcomes of the EIA. The need for, and methodology of post construction surveys will be confirmed with MS-LOT and MFRAG following the results of the pre-construction surveys and the presence or absence of any sensitive features. Reports for these pre-construction surveys are due April 2022.

6.5.2 Monitoring

6.5.2.1 Study Area

Considerable quantities of benthic ecological data have been collected for the Moray West EIA Report (2017). These data have been collected from literature review and site-specific surveys involving grab and scientific trawl sampling and seabed video surveillance between 2010 and 2017. Any post-construction surveys will use data from 2017 and 2021 surveys as a baseline.

Exact details of the survey will be provided closer to the time.

6.5.2.2 Monitoring Programme

Details on the post-construction benthic monitoring will be agreed with MS-LOT and confirmed nearer the time.

6.6 Reporting

A number of pre-construction site investigation surveys have already been undertaken as detailed in Section 6.1 above and the benthic report from the geophysical data assessment is due in Q2 2022. The results of the 2017 geophysical and geotechnical surveys have been included within the Moray West EIA Report (2018). A summary of the results of the remainder surveys will be provided upon completion of the analysis of the full pre-construction survey campaign. Moray West will aim to provide the benthic report to MFRAG and MS-LOT within three months of completion of survey data analysis.

References

APEM (2021). Moray West Pre-Construction Digital Aerial Survey Method Statement. Document Name: 8460005-DBHA25-MWW-RFP-000001

Brown and May (2021) Moray West Offshore Wind Farm Squid Fishery Scout Survey Report, October 2021

Cheney, B., Wells, R.S., Barton, T.R. & Thompson, P.M. (2017) Laser photogrammetry reveals variation in growth and early survival in free-ranging bottlenose dolphins. Animal Conservation. 10.1111/acv.12384

Coggan, R., Mitchell, A., White, M., & Golding, N. (2007). Recommended operating guidelines for underwater video and photographic imaging techniques, report prepared for Mapping European Seabed Habitats (MESH)

Davies, J., Baxter, J., Bradley, M., Connor, D., Khan, J., Murray, E., Sanderson, W., Turnbull, C. & Vincent, M., (2001), Marine Monitoring Handbook, 405 pp, ISBN 1 85716 550 0

Fernandez-Betelu, O., Graham, I.M., Cornulier, T., & Thompson, P.M. (2019) Fine scale spatial variability in the influence of environmental cycles on the occurrence of dolphins at coastal sites. Scientific Reports 9:2548 10.1038/s41598-019-38900-4

Fernandez-Betelu, O. et al. (2021) Far-field effects of impulsive noise on coastal bottlenose dolphins. Frontiers in Marine Science 8

Gilbert, G., Gibbons, D.W., & Evans, J. 1998. Bird Monitoring Methods: A Manual of Techniques for UK Key Species. The Royal Society for the protection of Birds, Sandy, Bedfordshire, England.

Longden, E.G. et al. (2020). Mark–recapture of individually distinctive calls—a case study with signature whistles of bottlenose dolphins (*Tursiops truncatus*). Journal of Mammalogy. 5, 1289-1301

Limpenny, D.S., Foster-Smith, R.L., Edwards, T.M., Hendrick, V.J., Diesing, M., Eggleton, J.D., Meadows, W.J., Crutchfield, Z., Pfeifer, S. and Reach, I.S. (2010) Best Methods for Identifying and Evaluating Sabellaria spinulosa and Cobble Reef. Natural England Supported Through Defra's Aggregates Levy Sustainability Fund, ALSF Ref No. MAL0008, 149pp

Lindsay, M.C. and Meathrel, C.E., 2008. Where, when and how? Limitations of the techniques used to examine dietary preference of Pacific Gulls (*Larus pacificus*) using non-consumed parts of prey and regurgitated pellets of prey remains. Waterbirds, 31: 611-619.

Marine Scotland (2020). Draft Fisheries Management and Mitigation Strategy ("FMMS") Guidance, Marine Scotland, July 2020. http://marine.gov.scot/data/fisheries-management-and-mitigation-strategy-fmms-guidance-document

Moray Firth (undated) Moray Firth Regional Advisory Group web page. Available at: https://marine.gov.scot/ml/moray-firth-regional-advisory-group-mfrag accessed 01/02/2022

Moray West (2018) Moray West Offshore Windfarm Offshore Environmental Impact Assessment Report. Available at http://marine.gov.scot/data/moray-west-offshore-windfarm-environmental-impact-assessment-report accessed 18/01/2022

Moray West (2018) Moray West Offshore Windfarm Information to Inform HRA: Refinement to the assessment of in combination effects on great black-backed gull feature of East Caithness Cliffs SPA Available at moray_west_information_to_inform_hra_final.pdf (marine.gov.scot) Accessed 18/01/2022

Moray West (2018)Moray West Offshore Wind Farm Report to inform Appropriate Assessment Available at Moray West Offshore Windfarm - Report to inform Appropriate Assessment | Marine Scotland Information Accessed 18/01/2022

Moray West (2021) Moray West Pre Construction Digital Aerial Survey Method Statement. Document Name: 8560005-DBHA25-MWW-RFP-000001

Risch, D. et al. Seasonal and diel acoustic presence of North Atlantic minke whales in the North Sea. Sci Rep 9, 3571 (2019). https://doi.org/10.1038/s41598-019-39752-8

Rome, M.S. and Ellis, J.C., 2004. Foraging ecology and interactions between herring gulls and great black backed gulls in New England. Waterbirds, 27: 200-210

Russell, D. J. F. et al. (2014). Marine mammals trace anthropogenic structures at sea, Current Biology. 24, 14, p. R638-R639 2

Thompson, P.M. (2016). A strategic regional Marine Mammal Monitoring Programme for assessing the population consequences of constructing the BOWL and MORL [Moray East] Wind Farm Developments, University of Aberdeen, 27th June 2016.

Thompson, P.M. (2018). MFRAG - Marine Mammals - Moray East Offshore Windfarm - Addendum to the Construction Marine Mammals Monitoring Programme. https://marine.gov.scot/data/mfrag-marine-mammals-moray-east-offshore-windfarm-addendum-construction-marine-mammals

ScotMER 2020. Streamline ScotMER Evidence Map. Available at **Error! Hyperlink reference not valid.** Accessed 18/01/2022

Steenweg, R.J., Ronconi, R.A. and Leonard, M.L., 2011. Seasonal and age-dependent dietary partitioning between the Great Black-backed and Herring gulls. Condor, 113: 795-805.

Ware, S.J. and Kenny, A.J. (2011). Guidelines for the Conduct of Benthic Studies at Marine Aggregate Extraction Sites. 2nd ed. Marine Aggregate Levy Sustainability Fund, p. 80,

Wilkens, S.A. and Exo, K.M., 1998. Population size and density dependent effects on breeding success in Herring Gulls (*Larus argentatus*) on Mellum island. Journal fur Ornithologie, 139: 21 – 36

Appendix A – Defined Terms

Term	Description
Design Envelope	The range of design parameters used to inform the assessment of impacts.
Marine Licence for the Generating Station	Marine Licence for the Moray West Offshore Wind Farm - Licence Number: MS-00008731 - granted under the Marine and Coastal Access Act 2009, Part 4 Marine Licensing for marine renewables construction works and deposits of substances or objects in the Scottish Marine Area and the UK Marine Licensing Area granted to Moray West on 14 June 2019, varied on 7 March 2022 and on 11 April 2022.
Marine Licence for the Transmission Works	Marine Licence for the Offshore Transmission Infrastructure – Licence Number MS-06764/19/0 – granted under the Marine and Coastal Access Act 2009, & Marine (Scotland) Act 2010, Part 4 Marine Licensing for marine renewables construction works and deposits of substances or objects in the Scottish Marine Area and the UK Marine Licensing Area (referred to as the "OfTI Marine Licence"), granted to Moray West on 14 June 2019 and varied on 11 April 2022.
Moray Offshore Windfarm (West) Limited	The legal entity submitting this Project Environmental Monitoring Programme (PEMP).
Moray West EIA Report	The Environmental Impact Assessment Report for the Moray West Offshore Wind Farm and Associated Transmission Infrastructure, submitted July 2018. Additional information was provided in the Moray West Report to Inform an Appropriate Assessment (RIAA) July 2018 and Moray West Application Addendum Document November 2018
Moray West Offshore Wind Farm	The wind farm to be developed in the Moray West site (also referred as the Wind Farm).
Offshore Consents	Collective term for the two Marine Licences and the Section 36 consent
Offshore Consent Conditions	Collective term for the conditions attached to the Section 36 Consent and Marine Licences
Offshore Transmission Infrastructure (OfTI)	The offshore elements of the transmission infrastructure.
OfTI Corridor	The export cable route corridor, i.e., the OfTI area excluding the Moray West site.
Section 36 Consent	Section 36 consent under Section 36 of the Electricity Act 1989 for the construction and operation of the Moray West Offshore Wind Farm was granted on 14 June 2019 and varied on 7 March 2022.
The Development	The Moray West Offshore Wind Farm and OfTI.
The Development Site	The area outlined in Figure 1 attached to the Section 36 Consent Annex 1, Figure 1 attached to the two Marine Licences, and Figure B.1 of this PEMP.

The Moray West Site	The area in which the Moray West Offshore Wind Farm will be located. Section 36 Consents and associated Marine Licence to construct and operate generating stations on the Moray West site were granted in June 2019 and varied in March 2022.
The Works	The construction and O&M activities undertaken for the Development.
Transmission Infrastructure (TI)	Includes both offshore and onshore electricity transmission infrastructure for the consented wind farm. Includes connection to the national electricity transmission system near Broad Craig in Aberdeenshire encompassing Alternating Current (AC) Offshore Substation Platforms (OSPs), AC export cables offshore to landfall point at Broad Craig, near Sandend in Aberdeenshire continuing onshore to the AC collector station (onshore substation) at Whitehillock and the additional regional Transmission Operator substation at Blackhillock near Keith. A Marine Licence for the OfTI was granted in June 2019.

Appendix B - Development Background Information

B1 Development Description

Moray West Offshore Wind Farm is being developed by Moray Offshore Windfarm (West) Limited (Moray West; Company Number 10515140) which is registered at Octagon Point, 5 Cheapside, London, England, EC2V 6AA. Moray Offshore Windfarm (West) Limited is a wholly owned subsidiary of Moray West Holdings Limited which in turn is owned by Moray Offshore Renewable Power Limited, Delphis Holdings Limited, EDP Renewables Europe, S.L.U and UAB Ignitis Renewables.

The Moray West Site covers an area of approximately 225 km^2 on the Smith Bank in the Outer Moray Firth approximately 22 km from the Caithness coastline.

The Moray West Offshore Wind Farm will comprise 60 wind turbine generators (WTGs), associated substructures and seabed foundations, inter-array cables, one OSP interconnector cable and any scour protection around substructures or cable protection. The OfTI comprises up to two offshore substation platforms (OSPs) which will be located within the Moray West Site, and two offshore export cable circuits which will be located within the OfTI Corridor and will be used to transmit the electricity generated by the offshore wind farm to shore.

The offshore export cable circuits will come ashore at Sandend Bay, which is located on the Aberdeenshire Coast at Broad Craig, approximately 65 km south of the Moray West Site. There will be two underground circuits from landfall at Sandend Bay to Whitehillock where the onshore substation will be located. There will also be further underground cabling between Whitehillock substation and Blackhillock substation. Moray West will transfer ownership of the transmission asset to an Offshore Transmission Owner (OFTO) who will manage the transmission infrastructure.

Figure B.1 displays a map of the Moray West Site and OfTI Corridor.

The development is aiming to be fully operational in 2024/25 with an operational life of 25 years from the date of final commissioning of the Development.

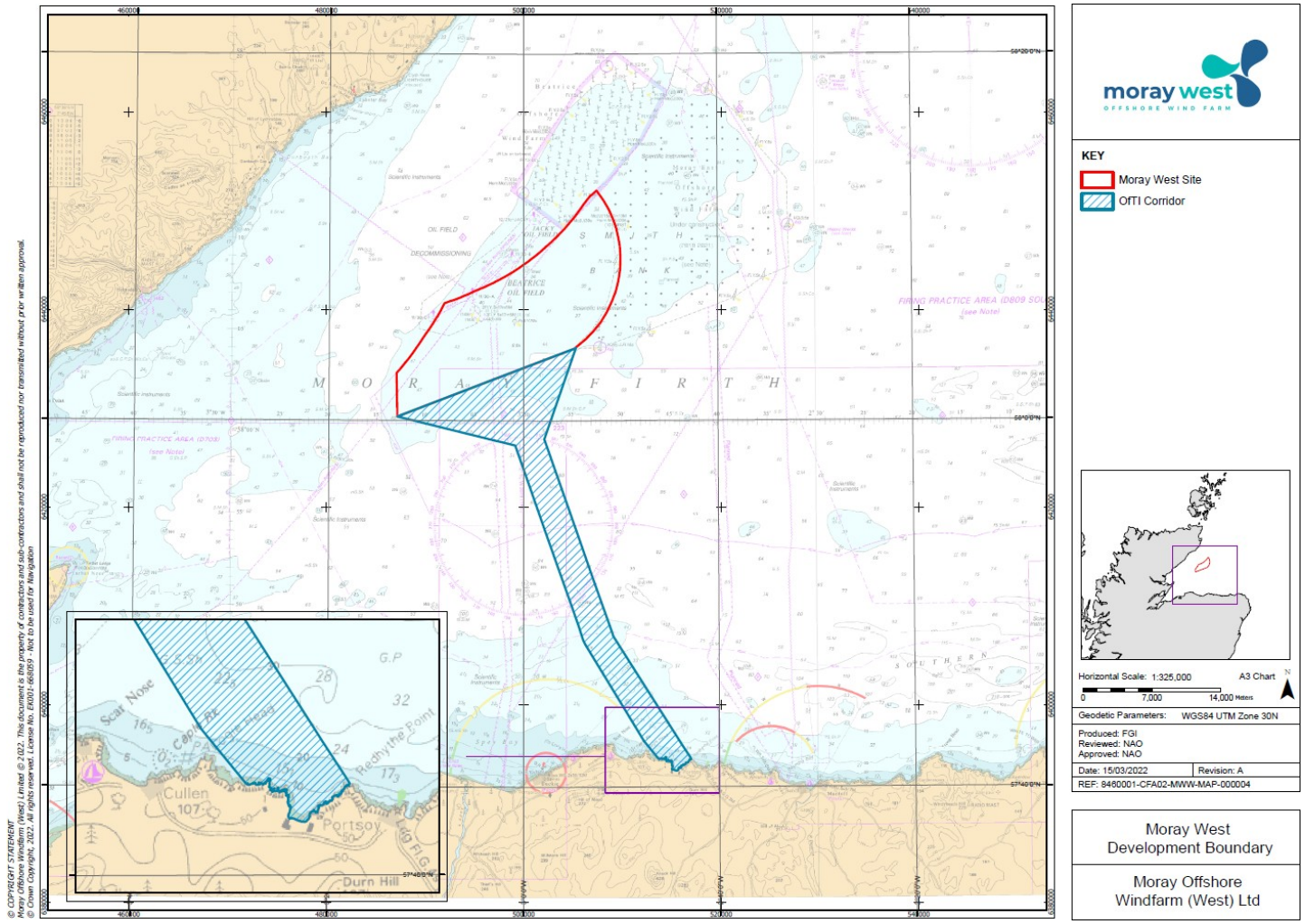

Figure B.1 Geographical location of the Moray West Site and OfTI Corridor

B2 Construction Programme Milestones

The key milestone dates associated with the construction activities of the Development are presented in Table B2.1.

Details of the programme for construction are provided in the Construction Programme (CoP).

Table B2.1 Key Milestones Dates	
Milestone	**Anticipated Programme**
First Generation	April 2024
Final Commissioning	November 2024
Wind Farm	
Commencement of Wind Farm Construction	Q3/early Q4 (following Scour protection installation Q2 2023)
OfTI	
Commencement of OfTI Construction	December 2022

B3 Legal Context

Table B3.1 provides a list of S36 and Marine Licence consent conditions relevant to this PEMP and how they are addressed within it.

Table B3.1 Consent conditions to be discharged by this PEMP		
Consent Condition Reference	**Condition**	**Relevant Section of this PEMP**
	The Company must, no later than six months prior to the Commencement of the Development, submit a Project Environmental Monitoring Programme ("PEMP"), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with SNH, SFF, the Highland Council and any other environmental advisors or organisations as required at the discretion of the Scottish Ministers. Commencement of the Development cannot take place until such approval is granted. The PEMP must be in accordance with the Application as it relates to environmental monitoring.	This document sets out the PEMP for approval by the Scottish Ministers. Consultation to be undertaken by the Scottish Ministers.
	The PEMP must set out measures by which the Company must monitor the environmental impacts of the Development. Monitoring is required throughout the lifespan of the Development where this is deemed	

	necessary by the Scottish Ministers. Lifespan in this context includes pre-construction, construction, operational and decommissioning phases.	
S36 Condition 25 OfTI Marine Licence Condition 3.2.2.18 Wind farm Marine Licence Condition 3.2.2.19	The Scottish Ministers must approve all initial methodologies for the above monitoring, in writing and, where appropriate, in consultation with the Highland Council for the socio-economic receptor and MFRAG [referred to in condition 26 of the Section 36 consent in respect to all the other receptors listed in point a)].	
	Monitoring must be done in such a way so as to ensure that the data which is collected allows useful and valid comparisons between different phases of the Development. Monitoring may also serve the purpose of verifying key predictions in the Application. In the event that further potential adverse environmental effects are identified, for which no predictions were made in the Application, the Scottish Ministers may require the Company to undertake additional monitoring.	
	The PEMP must cover, but not be limited to, the following matters: a) Pre-construction, construction and post-construction (if considered appropriate by the Scottish Ministers) monitoring or data collection as relevant in terms of the Application, and any subsequent monitoring or data collection for impacts on the following receptors: 1. Birds, including the pre-construction monitoring of the great black-backed gull of the East Caithness SPA (**S.36 and Generating Station Marine Licence only**); 2. Marine Mammals; 3. Commercial Fisheries; 4. Socio-economic; and 5. Benthic communities. b) The participation by the Company to contribute to data collection or monitoring of wider strategic relevance, identified and agreed by the Scottish Ministers.	Birds – section 2 Marine mammals – section 3 Commercial fisheries – section 4 Socio-economics – section 5 Benthic communities – section 6
	Due consideration must be given to the Scottish Marine Energy Research ("ScotMER") programme, or any successor programme formed to facilitate these research interests	Section 1.6
	Any pre-consent monitoring or data collection carried out by the Company to address any of the above issues may be used in part to discharge this condition subject to the written approval of the Scottish Ministers.	
	The PEMP is a live document which will be regularly reviewed by the Scottish Ministers, at timescales to be determined by them to identify the appropriateness of on-going monitoring. Following such reviews, the Scottish Ministers may, in consultation with the MFRAG require the Company to amend the PEMP and submit such an amended PEMP, in writing, to the Scottish Ministers, for their written approval. Such approval may only be granted following consultation with the MFRAG and any other environmental, or such other advisors as may be required at the discretion of the Scottish Ministers	Section 1.4

	The Company must submit written reports and associated raw and processed data of such monitoring or data collection to the Scottish Ministers at timescales to be determined by them. Consideration should be given to data storage, analysis and reporting and be to Marine Environmental Data and Information Network ("MEDIN") standards.	Details of reporting is provided throughout this PEMP.
	Subject to any legal restrictions regarding the treatment of the information, the results are to be made publicly available by the Scottish Ministers, or by such other party appointed at their discretion.	
	The Scottish Ministers may agree, in writing, that monitoring may be reduced or ceased before the end of the lifespan of the Development	

This PEMP has also been written to address (in part) the following conditions detailed in Table B3.2

Table B3.2 Other consent conditions relevant to the PEMP

Condition	Summary of Condition	Relevant Section of this PEMP
S36 Condition 26 Wind farm Marine Licence Condition 3.2.2.20 OfTI Marine Licence Condition 3.2.2.19	**Regional Advisory Group** The Company must participate in the Moray Firth Regional Advisory Group ("MFRAG") or any successor group, established by the Scottish Ministers for the purpose of advising the Scottish Ministers on research, monitoring and mitigation programmes for, but not limited to, ornithology, marine mammals, and commercial fish. The extent and nature of the Company's participation in the Regional Advisory Group is to be agreed by the Scottish Ministers.	Section 1.5
S36 Condition 27 Wind farm Marine Licence Condition 3.2.2.21 OfTI Marine Licence Condition 3.2.2.20	**Fisheries Management and Mitigation Strategy** The Licensee must no later than six months prior to the Commencement of the Works, submit a FMMS, in writing, to the Licensing Authority for its written approval, in consultation with SFF and other fisheries representatives. Commencement of the Works cannot take place until such approval is granted. The FMMS must be defined and finalised in consultation with the MFCFWG. In order to inform the production of the FMMS, the Licensee must monitor or collect data as relevant and agreed with Licensing Authority. The FMMS must include a Transit Plan, which must lay out guidelines to address potential interactions with fishing activity, for vessels operating in and around the Works and transiting to the Works. As part of any finalised FMMS, the Licensee must produce and implement a mitigation strategy for each commercial fishery that can prove to the Licensing Authority that they would be adversely affected by the Works. The Licensee any contractors, or sub-contractors working for the Licensee must implement the mitigation measures committed to be carried out by the Licensee within the FMMS. The Licensee must participate in and remain a member of the MFCFWG or any successor group formed to facilitate commercial fisheries dialogue.	Section 4.2

S36 Condition 28, Wind Farm Marine Licence Condition 3.2.2.22, OfTI Marine Licence Condition 3.2.2.21	**ECoW** Prior to the commencement of the Development, and with approval of the Scottish Ministers in consultation with SNH, the Company must appoint an independent Environmental Clerk of Works (ECoW). The terms of the appointment must include: a) Quality assurance of final draft versions of all plans and programmes required under this consent; b) Responsible for the monitoring and reporting of compliance with the consent conditions and the environmental mitigation measure for all wind farm infrastructure; c) Provision of on-going advice and guidance to the Company in relation to achieving compliance with consent conditions, including but not limited to the conditions relating to and the implementation of the CMS, the EMP, the PEMP, the PS, the CaP and the VMP; d) Provision of reports on point b & c above to the Scottish Ministers at timescales to be determined by the Scottish Ministers; e) Induction and toolbox talks to onsite construction teams on environmental policy and procedures, including temporary stops and keeping a record of these; f) Monitoring that the Development is being constructed in accordance with the plans and this consent, the Application and in compliance with all relevant regulations and legislation; g) Reviewing and reporting incidents/near misses and reporting any changes in procedures as a result to the Scottish Ministers; and h) Agreement of a communication strategy with the Scottish Ministers.	Details are provided throughout this PEMP
Generating Station Marine Licence Condition 3.1.7 OfTI Marine Licence Condition – 3.1.7	**Submission of reports and notifications to the Licencing Authority** The Licensee must submit all reports and notifications to the Licensing Authority, in writing, as are required under this licence within the time periods specified in this licence. Where it would appear to the Licensee that there may be a delay in the submission of the reports or notifications to the Licensing Authority, then the Licensee must advise the Licensing Authority of this fact as soon as is practicable and no later than the time by which those reports or notifications ought to have been submitted to the Licensing Authority under the terms of this licence. The reports must include executive summaries, assessments and conclusions and any data will, subject to any rules permitting non-disclosure, be made publicly available by the Licensing Authority or by any such party appointed at its discretion. Reports prepared pursuant to another consent or licence relating to the Works by the Licensee or by a third party may also be used to satisfy the requirements of this licence. Such reports will include, but not be limited to a TAR, the Noise Registry, MMO records and all appropriate reports as stipulated with the PEMP.	Details of reporting is provided throughout this PEMP.