Offshore Wind Power Limited

West of Orkney Windfarm Offshore EIA Report

Volume 1, Chapter 22 - Summary of Mitigation and Monitoring

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West of Orkney Windfarm

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22 SUMMARY OF MITIGATION AND MONITORING

This chapter of the Offshore Environmental Impact Assessment (EIA) Report outlines the proposed mitigation and monitoring requirements for the offshore Project, including:

- Embedded mitigation considered within the initial assessment of potential effects in each topic assessment chapter:
  - Primary mitigation - measures built into the design of the Project which reduce or avoid the likelihood or magnitude of an adverse environmental effect, including location or design; and
  - Tertiary mitigation - measures that are required through standard practice or to meet legislative requirements and are independent of the EIA process (i.e. they would be implemented regardless of the findings of the EIA).
- Secondary mitigation encompasses additional measures to reduce any environmental effects to 'not significant' levels (where reasonably practicable) in instances where the initial assessment concludes there is the potential for a significant effect to occur; and
- Proposed future monitoring.

These measures are presented on a topic-by-topic basis in the sections below.

22.1 Marine physical and coastal processes

The embedded mitigation, secondary mitigation and proposed monitoring identified for chapter 8: Marine physical and coastal processes are described below.

22.1.1 Mitigation

Table 22-1 Embedded mitigation measures for chapter 8: Marine physical and coastal processes

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Embedded mitigation			
Site selection	Primary	The offshore Project, including the Option Agreement Area (OAA) and offshore Export Cable Corridor (ECC), avoids any overlap with designated sites with seabed features (e.g. the North West Orkney Nature Conservation Marine Protection Area (NCMPA)).	Already secured through the OAA and offshore ECC boundaries.
Scour protection	Primary	The use of scour protection around the foundations of Wind Turbine Generators (WTGs) and Offshore Substation Platforms (OSPs) will minimise scour effects around infrastructure. However, scour protection will only be implemented where required and will be minimised as far as is practicable. This will be informed by a scour assessment, undertaken post-consent.	Final scour requirements will be informed by the scour assessment and detailed within the Construction Method Statement (CMS), required under Section 36 Consent and/or Marine Licence conditions.
Cable protection	Primary	Suitable implementation and monitoring of cable protection (via burial or external protection).	Final cable design will be informed by the CBRA and detailed within the Cable Plan (CaP), required under Section 36 Consent and/or Marine Licence conditions.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
		Cables will be buried as the first choice of protection. External cable protection will be used where adequate burial cannot be achieved and this will be minimised as far as is practicable. This will be informed by a Cable Burial Risk Assessment (CBRA) undertaken post-consent following results of the geotechnical survey.	
Landfall installation methodology	Primary	Landfall installation methodology (Horizontal Directional Drilling, HDD) will avoid direct impacts to the intertidal area.	Landfall installation methodology will be detailed within the CMS, required under Section 36 Consent and/or Marine Licence conditions.
Pre-construction cable route surveys	Primary	Pre-construction cable route survey to confirm the state of the seabed and that no significant changes have occurred from previous surveys, confirm the presence of morphological features and the requirement for micro-siting around these or completion of seabed preparation works. The final offshore Project layout will be presented within the Development Specification and Layout Plan (DSLP) and CaP.	Requirement for a pre-construction cable route survey will be secured under Section 36 and/or Marine Licence consent conditions. Final cable design will be detailed within the CaP, required under Section 36 Consent and/or Marine Licence conditions.
Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme, approved by Scottish Ministers prior to construction and updated throughout the Project lifespan.	The production and approval of a Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended).
Secondary mitigation			
No secondary mitigation, over and above the proposed embedded mitigation measures, is either required or proposed in relation to the potential effects of the offshore Project on marine physical and coastal processes as no adverse significant impacts are predicted.			

22.1.2 Proposed monitoring

No proposed monitoring for marine physical and coastal processes.

22.2 Water and sediment quality

The embedded mitigation, secondary mitigation and proposed monitoring identified for chapter 9: Water and sediment quality are described below.

22.2.1 Mitigation

Table 22-2 Mitigation measures for water and sediment quality

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Embedded mitigation			
Site selection	Primary	The offshore ECC avoids any direct overlap with the Food Environment and Protection Act (FEPA) Order Zone at Dounreay, reducing the potential release of radioactive contaminants associated with the offshore Project.	Already secured through offshore ECC boundary.
Wind Turbine Generator (WTG) and Offshore Substation Platform (OSP) design	Primary	The WTG and OSP topsides are designed and constructed to contain leaks, thereby reducing the risk of spillage into the marine environment. Details on control measures for reducing the risk of accidental leaks and spills will be detailed within the Marine Pollution and Contingency Plan (MPCP).	The production and approval of an EMP, including the MPCP, will be required under Section 36 Consent and/or Marine Licence conditions. An outline EMP is provided as part of the offshore application in Offshore EIA Report, Outline Plan (OP) 1: Outline Environmental Management Plan. The outline MPCP is contained within the outline EMP.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Environmental Management Plan (EMP)	Tertiary	The development of, and adherence to, an EMP covering pollution prevention, biosecurity and waste management. An MPCP and Invasive Non-Native Species (INNS) management plan will be included within the EMP.	The production and approval of an EMP, including the MPCP and INNS management plan, will be required under Section 36 Consent and/or Marine Licence conditions. An outline EMP is provided as part of the offshore application in OP1: Outline Environmental Management Plan. The outline MPCP is contained within the outline EMP.
Adherence to the International Convention for the Prevention of Pollution from Ships (MARPOL)	Tertiary	The risk of marine pollution will be minimised through compliance with The International Convention for the Prevention of Pollution from Ships (MARPOL) convention requirements. Control measures and Shipboard Oil Pollution Emergency Plans (SOPEP) (for oil tankers of 150 gross tonnage and above and all vessels of 400 gross tonnage and above) will be established and adhered to, as required under MARPOL Annex I.	Secured through the production of a MPCP within the EMP, required under Section 36 Consent and/or Marine Licence conditions. An outline EMP is provided as part of the offshore application in OP1: Outline Environmental Management Plan. The outline MPCP is contained within the outline EMP.
Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme, approved by Scottish Ministers prior to construction and updated throughout the Project lifespan.	The production and approval of a Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended).
Secondary mitigation			
No secondary mitigation, over and above the embedded mitigation measures proposed, is either required or proposed in relation to the potential effects of the offshore Project on water and sediment quality as no adverse significant impacts are predicted.			

22.2.2 Proposed monitoring

No monitoring is proposed for water and sediment quality.

22.3 Benthic subtidal and intertidal ecology

The embedded mitigation, secondary mitigation and proposed monitoring identified for chapter 10: Benthic subtidal and intertidal ecology are described below.

22.3.1 Mitigation

Table 22-3 Mitigation measures for benthic subtidal and intertidal ecology

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Embedded mitigation			
Site selection	Primary	The offshore Project, including the OAA and offshore ECC, avoids any overlap with designated sites with benthic or intertidal features.	Already secured through the OAA and offshore ECC boundaries.
Landfall installation methodology	Primary	Landfall installation methodology (HDD) will avoid direct impacts to the intertidal area.	Landfall installation methodology will be detailed within the CMS, required under Section 36 Consent and/or Marine Licence conditions.
Environmental Management Plan (EMP)	Tertiary	The development of, and adherence to, an EMP covering pollution prevention, biosecurity and waste management. An MPCP and INNS management plan will be included within the EMP. The INNS management plan will indicate whether there is a risk of INNS. Further monitoring will only take place if the risk assessment indicates there is a potential issue.	The production and approval of an EMP, including the MPCP and INNS management plan, will be required under Section 36 Consent and/or Marine Licence conditions. An outline EMP is provided as part of the offshore application in OP1: Outline Environmental Management Plan. The outline MPCP and the outline Invasive Non-Native Species Management Plan are contained within the outline EMP.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Consideration of benthic ecology features for final layout	Primary	Consideration of benthic ecology features as part of the constraints mapping exercise, and subsequent micro-siting exercises, to inform final locations of WTGs and associated offshore infrastructure including inter-array cables and offshore export cable routes. The final offshore Project layout will be presented within the DSLP and CaP.	Final layout will be captured in the DSLP, a condition of the Section 36 Consent and/or Marine Licence.
Cable protection	Primary	Suitable implementation and monitoring of cable protection (via burial or external protection). Cables will be buried as the first choice of protection. External cable protection will be used where adequate burial cannot be achieved and this will be minimised as far as is practicable. This will be informed by a CBRA undertaken post-consent, following results of the geotechnical survey. Burial or protection of cables increases the distances between cables and benthic subtidal and intertidal ecology receptors, reducing Electromagnetic Field (EMF) effects.	Final cable design will be informed by the CBRA and detailed within the CaP, required under Section 36 Consent and/or Marine Licence conditions.
Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme, approved by Scottish Ministers prior to construction and updated throughout the Project lifespan.	The production and approval of a Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended).
Secondary mitigation			
No secondary mitigation, over and above the embedded mitigation measures, is either required or proposed in relation to the potential effects of the offshore Project on benthic subtidal and intertidal ecology as no adverse significant impacts are predicted.			

22.3.2 Proposed monitoring

The EIA predicts that areas of temporary seabed disturbance during construction activities will recover, especially given the dynamic environment within the offshore Project area. However, Offshore Wind Power Limited (OWPL) will monitor the recovery of sensitive seabed habitats and communities post-construction. The approach to monitoring will be determined in discussion with NatureScot and other relevant stakeholders during the post-consent stage but is expected to involve grab sampling and seabed photography in both disturbed and undisturbed areas, using methods compatible with those used in the benthic baseline survey.

Furthermore, if the INNS risk assessment indicates the requirement for INNS monitoring, appropriate monitoring will be agreed with Marine Directorate.

The monitoring details will be included within the Project Environmental Monitoring Plan (PEMP) that will be subject to approval as part of the discharge of consent conditions.

22.4 Fish and shellfish ecology

The embedded mitigation, secondary mitigation and proposed monitoring identified for chapter 11: Fish and shellfish ecology are described below.

22.4.1 Mitigation

Table 22-4 Mitigation measures for fish and shellfish ecology

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Embedded mitigation			
Cable protection	Primary	Suitable implementation and monitoring of cable protection (via burial or external protection). Cables will be buried as the first choice of protection. External cable protection will be used where adequate burial cannot be achieved and this will be minimised as far as is practicable. This will be informed by a CBRA, undertaken post-consent following results of the geotechnical survey. Burial or protection of cables increases the distances between cables and fish and shellfish ecology receptors, reducing EMF effects.	Final cable design will be informed by the CBRA and detailed within the CaP, required under Section 36 Consent and/or Marine Licence conditions.
Landfall installation methodology	Primary	Landfall installation methodology (HDD) will avoid directly impacting the tidal reaches of the River Forss Water (i.e. between MHWS and MLWS) to protect salmonid river entry.	Landfall installation methodology will be detailed within the CMS, required under Section 36 Consent and/or Marine Licence t conditions.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Presence of Environmental Clerk of Works (ECoW) during Horizontal Directional Drilling (HDD) works at the landfall	Tertiary	Ensure appropriately qualified Environmental Clerk of Works (ECoW) presence during HDD works at the landfall.	The production and approval of an EMP, which will include the roles and responsibilities of the ECoW, will be required under Section 36 Consent and/or Marine Licence conditions. An outline EMP is provided as part of the offshore application in OP1: Outline Environmental Management Plan.
Piling Strategy (PS)	Tertiary	Development and adherence to a PS which delineates the requirement for and nature of noise mitigation measures (documented in the MMMP[1]) that will be implemented during piling activities (e.g. soft-start and ramp-up procedures) to reduce potential underwater noise effects during construction.	The production and approval of the PS and MMMP will be required under Section 36 Consent and/or Marine Licence conditions. An outline MMMP is provided as part of the offshore application in OP2: Outline Marine Mammal Mitigation Protocol.
Detonation of Unexploded Ordnance (UXO) using low order techniques	Primary	Low order techniques for UXO detonation will be utilised wherever practicable to reduce underwater noise effects.	The production and approval of the PS and MMMP will be required under Section 36 Consent and/or Marine Licence conditions. An outline MMMP is provided as part of the offshore application in OP2: Outline Marine Mammal Mitigation Protocol.
Environmental Management Plan (EMP)	Tertiary	The development of, and adherence to, an EMP covering pollution prevention, biosecurity and waste management. An MPCP and INNS management plan will be included within the EMP.	The production and approval of an EMP, including the MPCP and INNS management plan, will be required under Section 36 Consent and/or Marine Licence conditions.

[1] Although the Marine Mammal Mitigation Protocol (MMMP) is primarily aimed at mitigating noise impacts on marine mammals the same mitigations are also relevant for fish and shellfish ecology.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
			An outline EMP is provided as part of the offshore application in OP1: Outline Environmental Management Plan.
Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme approved by Scottish Ministers prior to construction and updated throughout the Project lifespan.	The production and approval of a Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended).
Secondary mitigation			
No secondary mitigation, over and above the embedded mitigation measures, is either required or proposed in relation to the potential effects of the offshore Project on fish and shellfish ecology as no adverse significant impacts are predicted.			

22.4.2 Proposed monitoring

There are potential uncertainties in the knowledge base in relation to the diadromous fish abundance, distribution and origin within the offshore Project area.

Details of the monitoring have not yet been confirmed. There remain data gaps in our understanding of the spatial and temporal patterns of diadromous fish movements not only in the offshore Project area but throughout / around Scotland. Strategic research initiatives beyond the scope of a single project developer are required to address these data gaps, as identified in the Scottish Marine Energy Research (ScotMER) diadromous fish and fish and fisheries evidence maps.

The final details of the monitoring will be presented within the PEMP that will be subject to approval as part of the discharge of consent conditions.

22.5 Marine mammals and megafauna

The embedded mitigation, secondary mitigation and proposed monitoring identified for chapter 12: Marine mammals and megafauna are described below.

22.5.1 Mitigation

Table 22-5 Mitigation measures for marine mammals and megafauna

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Embedded mitigation			
Piling Strategy (PS)	Tertiary	Development and adherence to a PS which delineates the requirement for and nature of noise mitigation measures (documented in the MMMP) that will be implemented during piling activities (e.g. soft-start and ramp-up procedures) to reduce potential underwater noise effects during construction.	The production and approval of the PS and MMMP will be required under Section 36 Consent and/or Marine Licence conditions. An outline MMMP is provided as part of the offshore application in OP2: Outline Marine Mammal Mitigation Protocol.
Marine Mammal Mitigation Protocol (MMMP)	Tertiary	The development of, and adherence to, an appropriate Marine Mammal Mitigation Protocol (MMMP). The MMMP will outline (either separately or in the same document), protocols to reduce underwater noise impacts on marine mammals in relation to geophysical surveys, UXO clearance and piling such as: • Marine mammal observers; • Passive acoustic monitoring;	The production and approval of an MMMP will be required under Section 36 Consent and/or Marine Licence conditions. An outline MMMP (with input from an installation contractor) is provided as part of the offshore application in OP2: Marine Mammal Mitigation Protocol.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
		• Soft-start procedure; and • Acoustic deterrent devices (ADD), as required. The MMMP also provides consideration to mitigation that will be considered as part of future European Protected Species (EPS) licences.	
Detonation of Unexploded Ordnance (UXO) using low order techniques	Primary	Low order techniques for UXO detonation will be utilised wherever practicable to reduce underwater noise effects.	The production and approval of the PS and MMMP will be required under Section 36 Consent and/or Marine Licence conditions. An outline MMMP (with input from an installation contractor) is provided as part of the offshore application in OP2: Outline Marine Mammal Mitigation Protocol.
Cable protection	Primary	Suitable implementation and monitoring of cable protection (via burial or external protection). Cables will be buried as the first choice of protection. External cable protection will be used where adequate burial cannot be achieved and this will be minimised as far as is practicable. This will be informed by a CBRA, undertaken post-consent following results of the geotechnical survey. Burial or protection of cables increases the distances between cables and marine mammal and megafauna, reducing EMF and barrier effects.	Final cable design will be informed by the CBRA and detailed within the CaP, required under Section 36 Consent and/or Marine Licence conditions.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Environmental Management Plan (EMP)	Tertiary	The development of, and adherence to, an EMP covering pollution prevention, biosecurity and waste management. An MPCP and INNS management plan will be included within the EMP. The EMP also includes measures to protect wildlife such as adherence to guidance and protocols supplied in the Scottish Marine Wildlife Watching Code (SMWWC) (SNH, 2017a) and the Guide to Best Practice for Watching Marine Wildlife (SNH, 2017b).	The production and approval of an EMP, including the MPCP and INNS management plan, will be required under Section 36 Consent and/or Marine Licence conditions. An outline EMP is provided as part of the offshore application in OP1: Outline Environmental Management Plan.
Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme approved by Scottish Ministers prior to construction and updated throughout the Project lifespan.	The production and approval of a Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended).
Secondary mitigation			
No secondary mitigation, over and above the embedded mitigation measures, is either required or proposed in relation to the potential effects of the offshore Project on marine mammals and other megafauna as no adverse significant impacts are predicted.			

22.5.2 Proposed monitoring

Once the PS has been finalised details of any required monitoring will be understood. Monitoring details will be presented within the PEMP that will be subject to approval as part of the discharge of consent conditions.

22.6 Offshore and intertidal ornithology

The embedded mitigation, secondary mitigation and proposed monitoring identified for chapter 13: Offshore and intertidal ornithology are described below.

22.6.1 Mitigation

Table 22-6 Mitigation measures for offshore ornithology

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Embedded mitigation			
Site selection	Primary	The offshore Project including the OAA and the offshore ECC avoids any overlap with designated sites (i.e. Species Protection Areas (SPAs)) for birds.	Already secured through the OAA boundary.
Minimum WTG blade clearance	Primary	Blade clearance of 27.05 m above Mean Sea Level (MSL) (29.52 m above Lowest Astronomical Tide (LAT)), which is in excess of the minimum requirement of 22 m above Mean High Water Springs (MHWS).	Secured through the description of the development within the Section 36 Consent and/or Marine Licence.
Lighting	Primary	Excess lighting, above levels set by regulatory requirements for navigation, aviation, escape/emergency procedures and general activity, will be avoided wherever possible. External general lighting will use timers and/or Passive Infrared (PIR) devices to reduce excessive lighting of the WTGs and OSPs.	Requirements will be detailed in the Lighting and Marking Plan (LMP), required under Section 36 Consent and/or Marine Licence conditions. An outline LMP is provided as part of the offshore application in OP6: Outline Lighting and Marking Plan. The outline LMP

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
			contains details on the proposed lighting requirements for the construction and operation and maintenance stage.
Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme approved by Scottish Ministers prior to construction and updated throughout the Project lifespan.	The production and approval of a Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended).
Secondary mitigation			
No secondary mitigation, over and above the embedded mitigation measures, is either required or proposed in relation to the potential effects of the offshore Project on offshore and intertidal ornithology as no adverse significant impacts are predicted.			

22.6.2 Proposed monitoring

Details of any required monitoring will be informed by the findings of the appropriate assessment undertaken by Marine Directorate and be discussed and agreed via a Regional Advisory Group (or equivalent). Monitoring details will be presented within the PEMP that will be subject to approval as part of the discharge of consent conditions.

22.7 Commercial fisheries

The embedded mitigation, secondary mitigation and proposed monitoring identified for chapter 14: Commercial fisheries are described below.

22.7.1 Mitigation

Table 22-7 Mitigation measures for commercial fisheries

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Embedded mitigation			
Cable protection	Primary	Suitable implementation and monitoring of cable protection (via burial or external protection). The cable will be buried as the first choice of protection. External cable protection will only be used where adequate burial cannot be achieved and this will be minimised as far as is practicable. This will be informed by a CBRA, undertaken post-consent following results of the geotechnical survey.	Final cable design will be informed by the CBRA and detailed within the CaP, required under Section 36 Consent and/or Marine Licence conditions.
Consideration of commercial fisheries receptors in final Wind Turbine Generator (WTG) locations and cable route and design	Primary	The fishing industry has been consulted through the Fisheries Working Group on the proposed offshore ECC. The fishing industry will continue to be consulted on the final WTG layout and cable routes and design through the Fisheries Working Group (or equivalent post consent).	Final cable route and design will be informed by the CBRA and detailed in the CaP, required under Section 36 Consent and/or Marine Licence conditions. The final WTG layout will be presented within the DSLP, required under Section 36 and/or Marine Licence conditions.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
			Consultation with the fishing industry is an ongoing commitment for OWPL.
Navigational Safety and Vessel Management Plan (NSVMP)	Tertiary	Development and adherence to a NSVMP that sets out project vessel management procedures and navigational safety measures.	Section 36 Consent and/or Marine Licence condition for a NSVMP. An outline NSVMP is provided as part of the offshore application in OP4: Outline Navigational Safety and Vessel Management Plan.
International Regulations for the Prevention of Collision at Sea (COLREGs) and the International Regulations for the Safety of Life at Sea (SOLAS)	Tertiary	All vessels will comply with the provisions of COLREGs and SOLAS, including the display of appropriate lights and shapes such as when vessels are restricted in their ability to manoeuvre.	Legislative requirement that will be detailed within the NSVMP, required under Section 36 Consent and/or Marine Licence conditions. An outline NSVMP is provided as part of the offshore application in OP4: Outline Navigational Safety and Vessel Management Plan. The outline NSVMP contains details on the adherence of vessels to COLREGs and SOLAS.
Fisheries Management and Mitigation Strategy (FMMS)	Tertiary	Development and adherence to an FMMS, covering: communication, Developers Marine Monitoring Centre (MMC), safety zones, guard vessels, dropped objects, transit plans, monitoring and cooperation agreements.	Production and approval of an FMMS will be required under Section 36 Consent and/or Marine Licence conditions. An outline FMMS is provided as part of the offshore application in OP3: Outline Fisheries Management and Mitigation Strategy.
Fisheries liaison	Tertiary	The Project has already engaged a Fisheries Liaison Officer (FLO) to engage in proactive consultation with the fishing industry with adherence to best practice guidance with support from Fisheries Industry Representatives (FIRs) (e.g. FLOWW, 2014; 2015 or equivalent). Use of a FLO will continue throughout the construction, operation and maintenance and decommissioning. An Offshore Fisheries Liaison Officer (OFLO) will also be appointed, as needed. The OFLO will be stationed on construction vessels, as	Section 36 Consent and/or Marine Licence conditions for the appointment of an FLO. Details on the fisheries liaison for the offshore Project, including the roles and responsibilities of the OFLO will be detailed in the FMMS, required under Section 36 Consent and/or Marine Licence conditions.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
		required, and will act as an on-site point of communication for fishing vessels.	An outline FMMS is provided as part of the offshore application in OP3: Outline Fisheries Management and Mitigation Strategy. The outline FMMS contains details on the proposed approach for fisheries liaison.
Dropped objects procedures	Tertiary	Procedures for dropped objects and claim processes for loss/damage to fishing gear/vessels.	Procedures will be detailed within the FMMS, required under Section 36 Consent and/or Marine Licence conditions. An outline FMMS is provided as part of the offshore application in OP3: Outline Fisheries Management and Mitigation Strategy.
Promulgation of information, such as Notice to Mariners, Kingfisher notifications and other navigational warnings on the location, duration and nature of works	Tertiary	Timely and efficient distribution of Notice to Mariners (NtMs), Kingfisher notifications and other navigational warning on the location, duration and nature of works.	Secured through Section 36 and/or Marine Licence consent conditions. Procedures will be detailed within the NSVMP and FMMS, required under Section 36 Consent and/or Marine Licence conditions. An outline NSVMP is provided as part of the offshore application OP4: Outline Navigational Safety Vessel Management Plan and an outline FMMS is provided as part of the offshore application in OP3: Outline Fisheries Management and Mitigation Strategy. The outline NSVMP and outline FMMS include details on the communication and information dissemination to other mariners and fishing vessels.
Charting of installed infrastructure	Tertiary	Notification to the UK Hydrographic Office (UKHO)/Kingfisher of the proposed works to facilitate the promulgation of maritime safety information and updating of nautical /admiralty charts and publications.	Charting requirements will be secured as a Section 36 Consent and/or Marine Licence condition. Details will be included within the NSVMP and FMMS. An outline NSVMP is provided as part of the offshore application in OP4: Outline Navigational Safety Vessel Management plan and an outline FMMS is provided as part of the offshore application in OP3: Outline Fisheries Management and Mitigation Strategy. The outline

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
			NSVMP and outline FMMS include details on the communication and information dissemination to other mariners and fishing vessels.
The use of guard vessels and Offshore Fisheries Liaison Officers (OFLO), where required	Primary/Tertiary	The use of guard vessels and OFLOs, where appropriate. Where possible, these will be sourced locally and /or will be Scottish.	Requirements will be detailed within the FMMS, required under Section 36 Consent and/or Marine Licence conditions. An outline FMMS is provided as part of the offshore application in OP3: Outline Fisheries Management and Mitigation Strategy. The outline FMMS includes details on the use of guard vessels and OFLO, where required.
Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme approved by Scottish Ministers prior to construction and updated throughout the Project lifespan.	The production and approval of a Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended).
Secondary mitigation			
Continued dialogue, consultation and establishment of cooperation agreements to reduce temporary loss or restricted access to fishing grounds and temporary displacement of fishing effort during construction within the OAA for creelers. OWPL will continue dialogue with the fishers who are directly impacted and develop a cooperation agreement which may incorporate provisions such as new gear, guard vessel offset etc. These discussions are ongoing, and any cooperation agreement discussions will be held post-consent once the Project design is refined. Requirements will be detailed within the FMMS, required under Section 36 Consent and/or Marine Licence conditions. An outline FMMS is provided as part of the offshore application in OP3: Fisheries management and mitigation strategy. The outline FMMS includes details on the cooperation agreements that will be further developed post-consent.		

22.7.2 Proposed monitoring

OWPL intend to continue monitoring fisheries related issues in the same manner it has to date OWPL has built a strong relationship with the local fishing industry through our FIRs, FLOs and the Fisheries Working Group (or equivalent post-consent). Following engagement with the fishing industry as part of the EIA, it was concluded that it would be appropriate to put resources into research projects for commercially important fish and shellfish species (further detail included in chapter 11: Fish and shellfish ecology). This ensures that research / monitoring resources are aligned with strategic initiatives, such as the ScotMER fish and fisheries evidence map.

22.8 Shipping and navigation

The embedded mitigation, secondary mitigation and proposed monitoring identified for chapter 15: Shipping and navigation are described below.

22.8.1 Mitigation

Table 22-8 Mitigation measures for shipping and navigation

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Embedded mitigation			
Application for and implementation of safety zones	Primary	Application for safety zones of up to 500 m around structures during construction and periods of major maintenance, and 50 m around structures pre-commissioning.	An application for safety zones will be made in accordance with Section 95 of the Energy Act 2004 and the Electricity (Offshore Generating Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations 2007. Details will be included within the NSVMP, required under Section 36 Consent and/or Marine Licence conditions. An outline NSVMP is provided as part of the offshore application in OP4: Outline Navigational Safety and Vessel Management Plan. The outline NSVMP details the process and approach for the application of statutory safety zones.
Buoyed construction area	Primary	Buoyage to mark construction area of the OAA during the construction stage, as directed by the Northern Lighthouse Board (NLB). The buoys will alert vessels to the construction area, they will not act to exclude vessels from the area.	Required under Section 36 Consent and/or Marine Licence conditions. Requirements will be detailed within the LMP and NSVMP, required under Section 36 consent and/or Marine Licence consent conditions. An Aids to Navigation (AtoN) management plan (ANMP) will also be produced post-consent. Outline LMP, NSVMP and ANMP are provided as part of the

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
			offshore application in OP6: Outline Lighting and Marking plan, OP4: Outline Navigational Safety and Vessel Management Plan and OP5: Aids to Navigation Management Plan. The outline NSVMP and outline LMP include details on the implementation of construction buoyage during the construction stage.
Cable protection	Primary	Suitable implementation and monitoring of cable protection (via burial or external protection). The cable will be buried as the first choice of protection. External cable protection will only be used where adequate burial cannot be achieved and this will be minimised as far as is practicable. This will be informed by a CBRA, undertaken post-consent following results of the geotechnical survey.	Final cable design will be informed by the CBRA and detailed within the CaP, required under Section 36 Consent and/or Marine Licence conditions.
Compliance with Marine Guidance Note (MGN) 654	Tertiary	Compliance with MGN 654 and its annexes, including completion of a SAR checklist and Emergency Response Co-operation Plan (ERCoP).	MGN 654 compliance required under standard Section 36 Consent and/or Marine Licence consent conditions. Details will be included within the NSVMP, also required under Section 36 Consent and/or Marine Licence conditions. An outline of this plan has been provided as part of the offshore application in OP4: Outline Navigational Safety and Vessel Management Plan. The MGN 654 checklist is included within the outline NSVMP and compliance with this checklist will be monitored post-consent.
The use of guard vessels, where required	Primary	Use of guard vessels where appropriate (as required by project risk assessment of hazards / activities).	Consideration of use of "guard vessels where appropriate" is required under MGN 654. Details will be included within the NSVMP, required under Section 36 Consent and/or Marine Licence conditions. An outline of this plan has been provided as part of the offshore application in OP4: Outline Navigational Safety and Vessel Management Plan. The outline NSVMP includes details on the use of guard vessels.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Layout approval via Development Specification and Layout Plan (DSLP) process	Tertiary	Layout to be approved by Scottish Ministers, following consultation with Maritime and Coastguard Agency (MCA) and NLB (and other relevant stakeholders), as part of DSLP process. Minimum spacing of 944 m between WTGs to reduce the likelihood of vessel collision and allision risk.	The layout will be detailed within the DSLP, required under Section 36 and Marine Licence conditions.
Lighting and marking as appropriate for the final agreed layout	Primary	Marking and lighting of the site in agreement with NLB and in line with International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) Guideline G1162 and Recommendation O-139 (IALA, 2021).	Requirements will be detailed in the LMP, required under Section 36 Consent and/or Marine Licence conditions. An outline LMP is provided as part of the offshore application in OP6: Outline Lighting and Marking Plan.
Marine coordination	Primary	Marine coordination and communication to manage Project vessel movements.	NSVMP required under Section 36 Consent and/or Marine Licence conditions An outline NSVMP is provided as part of the offshore application in OP4: Outline Navigational Safety and Vessel Management Plan. The outline NSVMP includes details on the communication and information dissemination to other mariners.
Environmental Management Plan (EMP)	Tertiary	The development of, and adherence to, an EMP covering pollution prevention, biosecurity and waste management. A MPCP will be included within the EMP.	The production and approval of an EMP, including the MPCP, will be required under Section 36 Consent and/or Marine Licence conditions An outline EMP is provided as part of the offshore application in OP1: Outline Environmental Management Plan. The outline MPCP is contained within the outline EMP.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Charting of installed infrastructure	Tertiary	Notification to the UKHO/Kingfisher of the proposed works to facilitate the promulgation of maritime safety information and updating of nautical /admiralty charts and publications.	Charting requirements will be secured as a Section 36 Consent and/or Marine Licence condition. Details will be included within the NSVMP and FMMS. An outline NSVMP is provided as part of the offshore application in OP4: Outline Navigational Safety Vessel Management Plan and an outline FMMS is provided as part of the offshore application in OP3: Outline Fisheries Management and Mitigation Strategy.
Minimum blade clearance	Primary	Blade clearance of 27.05 (above MSL) which is in excess of the minimum requirement of 22 m above MHWS.	Secured through the description of the offshore Project within the Section 36 Consent and/or Marine Licence.
Project vessel Automatic Identification System (AIS) transmission	Primary	All Project vessels will broadcast via AIS.	Requirements will be detailed within the NSVMP, required under Section 36 Consent and/or Marine Licence conditions. An outline NSVMP is provided as part of the offshore application in OP4: Outline Navigational Safety and Vessel Management Plan.
International Regulations for the Prevention of Collision at Sea (COLREGs) and the International Regulations for the Safety of Life at Sea (SOLAS)	Tertiary	All vessels will comply with the provisions of the COLREGs and SOLAS, including the display of appropriate lights and shapes such as when vessels are restricted in their ability to manoeuvre.	Legislative requirement that will be detailed within the NSVMP, required under Section 36 Consent and/or Marine Licence conditions. An outline NSVMP is provided as part of the offshore application in OP4: Outline Navigational Safety and Vessel Management Plan.
Promulgation of information, such as Notice to Mariners, Kingfisher notifications and other navigational warnings on the	Tertiary	Promulgation of information, including timely and efficient distribution of NtMs, Kingfisher notifications and other navigational warning on the location, duration and nature of works, including, statutory and advisory safety zones.	Secured through Section 36 Consent and/or Marine Licence conditions. Requirements will be detailed within the NSVMP, required under Section 36 consent and/or Marine Licence conditions.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
location, duration and nature of works			An outline NSVMP is provided as part of the offshore application in OP4: Outline Navigational Safety and Vessel Management Plan.
Navigational Safety and Vessel Management Plan (NSVMP)	Tertiary	Development and adherence to a NSVMP that sets out project vessel management procedures and navigational safety measures.	The production and approval of a NSVMP will be required under Section 36 Consent and/or Marine Licence conditions. An outline NSVMP is provided as part of the offshore application in OP4: Outline Navigational Safety and Vessel Management Plan.
Aids to Navigation Management Plan (ANMP)	Tertiary	Development and adherence to an ANMP that sets out details of the AtoN, including maintenance and repair of AtoN, associated with the offshore Project, in accordance with relevant guidance, during construction and operation and maintenance.	Alongside the LMP and NSVMP that are required under Section 36 Consent and/or Marine Licence conditions., an ANMP will be produced post-consent. An outline ANMP is provided as part of the offshore application in OP5: Outline Aids to Navigation Management Plan.
Fisheries Management and Mitigation Strategy (FMMS)	Tertiary	Development and adherence to a FMMS, covering: communication, Developers MMC, safety zones, guard vessels, dropped objects, transit plans, monitoring and cooperation agreements.	Production and approval of FMMS will be required under Section 36 Consent and/or Marine Licence conditions. An outline FMMS is provided as part of the offshore application in OP3: Fisheries Management and Mitigation Strategy.
Fisheries liaison	Tertiary	The Project has already engaged a FLO to engage in proactive consultation with the fishing industry with adherence to best practice guidance with support from FIRs (e.g. FLOWW, 2014; 2015 or equivalent at the time). Use of an FLO and OFLO (as appropriate) will continue throughout the construction and decommissioning stages. An OFLO will also be appointed, as needed. The OFLO will be stationed on construction vessels, as required, and will	Appointment of an FLO will be required under Section 36 Consent and/or Marine Licence conditions. Details on the fisheries liaison for the offshore Project, including the roles and responsibilities of the OFLO will be detailed in the FMMS, required under Section 36 Consent and/or Marine Licence conditions.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
		act as an on-site point of communication for fishing vessels.	An outline FMMS is provided as part of the offshore application in OP3: Outline Fisheries Management and Mitigation Strategy. The outline FMMS contains details on the proposed approach for fisheries liaison.
Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme approved by Scottish Ministers prior to construction and updated throughout the Project lifespan.	The production and approval of a Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended).
Secondary mitigation			
Once site constraints are further understood (technical and environmental), additional post consent consultation will take place with the MCA, NLB and UK Chamber of Shipping (UKCoS) in advance of the DSLP process to ensure the overarching spatial area covered by the layout is appropriate.			

22.8.2 Proposed monitoring

No monitoring is proposed for shipping and navigation.

22.9 Marine archaeology and cultural heritage

The embedded mitigation, secondary mitigation and proposed monitoring identified for chapter 16: Marine archaeology and cultural heritage are described below.

22.9.1 Mitigation

Table 22-9 Mitigation measures for marine archaeology and cultural heritage

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Embedded mitigation			
Written Scheme of Investigation (WSI) and Protocol for Archaeological Discoveries (PAD)	Tertiary	The preparation of a marine heritage WSI and PAD to avoid or mitigate any impacts on accidental discoveries of archaeological interest.	Production of a WSI and PAD will be a requirement of the Section 36 Consent and/or Marine Licence conditions. Details will be included in the WSI and PAD within the EMP. An outline EMP is provided as part of the offshore application in OP1: Outline Environmental Management Plan.
Review of further geophysical surveys by marine archaeologist	Tertiary	Further marine geophysical surveys that are undertaken as part of the offshore Project will be analysed by a marine archaeologist with specialist knowledge of geophysical survey.	Secured via the WSI and PAD, required under Section 36 Consent and/or Marine Licence conditions. Details on the review of geophysical surveys form part of the WSI. Details will be included in the WSI and PAD within the EMP. An outline EMP is provided as part of the offshore application OP1: Outline Environmental Management Plan.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Assessment of geotechnical cores	Tertiary	Cores collected during geotechnical surveys of the OAA will be assessed by environmental and geoarchaeological specialists, as appropriate.	Secured via the WSI and PAD, required under Section 36 Consent and/or Marine Licence conditions. Details will be included in the WSI and PAD within the EMP. An outline EMP is provided as part of the offshore application in OP1: Outline Environmental Management Plan.
Consideration of marine archaeology features for final layout	Primary	Where anthropogenic geophysical anomalies are identified in any subsequent marine geophysical survey, seabed preparation, device locations, cable routing and installation activities will avoid these by a minimum of 30 m. The final offshore Project layout will be presented within the DSLP and CaP.	Secured via the WSI and PAD, required under Section 36 Consent and/or Marine Licence conditions. Details will be included in the WSI and PAD within the EMP. An outline EMP is provided as part of the offshore application in OP1: Outline Environmental Management Plan.
Cable protection	Primary	Suitable implementation and monitoring of cable protection (via burial or external protection). Cables will be buried as the first choice of protection. External cable protection will be used where adequate burial cannot be achieved and this will be minimised as far as is practicable. This will be informed by a CBRA, undertaken post-consent following results of the geotechnical survey.	Final cable design will be informed by the CBRA and detailed within the CaP, required under Section 36 Consent and/or Marine Licence conditions.
Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme, approved by Scottish Ministers prior to construction and updated throughout the Project lifespan.	The production and approval of a Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended).

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Secondary mitigation			
No secondary mitigation, over and above the embedded mitigation measures, is either required or proposed in relation to the potential effects of the offshore Project on marine archaeology and cultural heritage receptors.			

22.9.2 Proposed monitoring

No monitoring is currently proposed for marine archaeology and cultural heritage.

22.10 Military and aviation

The embedded mitigation, secondary mitigation and proposed monitoring identified for chapter 17: Military and aviation are described below.

22.10.1 Mitigation

Table 22-10 Mitigation measures for military and aviation

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Embedded mitigation			
Site selection	Primary	The OAA was selected to avoid the Yankee Main Helicopter Route and 2 nautical mile (nm) (4 kilometre (km)) buffer.	Already secured through OAA boundary.
Lighting and marking as appropriate for the final agreed layout	Primary	Approval and implementation of a LMP, which will set out specific requirements in terms of aviation lighting to be installed on the WTGs, as required under Civil Aviation Authority (CAA). Civil Aviation Publication (CAP) 393, Air Navigation: The Order and the Regulations (2016). The LMP will be prepared in consultation with the CAA, Ministry of Defence (MoD) and MCA and will take into account requirements for aviation lighting as specified in Article 223 of the UK Air Navigation Order 2016 and changes to ICAO Annex 14 Volume 2, Chapter 6, paragraph 6.2.4 promulgated in November 2016.	The production and approval of an LMP will be required under Section 36 Consent and/or Marine Licence conditions. An outline LMP is provided as part of the offshore application in OP6: Outline Lighting and Marking Plan. The outline LMP includes details on the aviation lighting and marking requirements.
Charting of installed infrastructure	Tertiary	All permanent structures of more than 91.4 m in height will be charted on aeronautical charts and reported to the Defence Geographic Centre (DGC), which maintains the UK's database of tall structures	Charting requirements will be secured as a Section 36 Consent and/or Marine Licence consent condition.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
		(Digital Vertical Obstruction File) at least ten weeks prior to construction.	Requirements will be detailed in the LMP and the DSLP, required under Section 36 Consent and/or Marine Licence conditions. An outline LMP is provided as part of the offshore application in OP6: Outline Lighting and Marking Plan.
Notice to Airmen (NOTAM)	Tertiary	Any temporary obstacles associated with wind arms which are of more than 91.4 m in height (e.g. construction infrastructure such as cranes and/or meteorological masts) are to be alerted to aircrews by means of the Notice to Airmen (NOTAM) system. Consultation with CAA will be required to ensure that temporary obstacles of more than 91.4 m are identified to aircrews by NOTAM.	Notification of temporary obstacles will be a condition of the Section 36 Consent and/or Marine Licence.
Promulgation of information	Tertiary	CAA will be informed of the locations, heights and lighting status of the WTGs, including estimated and actual dates of construction and the maximum heights of any construction equipment to be used, prior to the start of construction.	Inclusion of locations, heights and lighting status of the WTGs on aviation charts and in the UK Integrated Aeronautical Information Package (UK IAIP) will be a condition of the Section 36 Consent and/or Marine Licence.
Emergency Response Co-operation Plan (ERcoP)	Tertiary	An ERCoP will be in place for the offshore Project. The ERCoP will refer to the marking and lighting of the WTGs and will consider helicopters undertaking SAR operations when rendering assistance to vessels and persons in the vicinity of the OAA. The ERCoP will provide sufficient information about the Project, actions and details required in the event of an emergency situation. This will ensure that MCA recommended standards and procedures are followed as well as ensuring appropriate lighting and marking is in place to facilitate aeronautical safety during Search and Rescue (SAR) helicopter operations.	The production and approval of an ERCoP will be required under Section 36 Consent and/or Marine Licence conditions.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Consultation with Space Hub Sutherland	Tertiary	Continue to consult with Space Hub Sutherland as they develop their launch exclusion zone and operational procedures.	Ongoing commitment for OWPL.
Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme, approved by Scottish Ministers prior to construction and updated throughout the Project lifespan.	The production and approval of a Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended).
Secondary mitigation			
No secondary mitigation, over and above the embedded mitigation measures proposed, is either required or proposed in relation to the potential effects of the offshore Project on military and aviation as no adverse significant impacts are predicted.			

22.10.2 Proposed monitoring

No monitoring is proposed for military and aviation.

22.11 Seascape, landscape and visual impact assessment

The embedded mitigation, secondary mitigation and proposed monitoring identified for chapter 18: seascape, landscape and visual impact assessment are described below.

22.11.1 Mitigation

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Embedded mitigation			
Site selection	Primary	Reduction of the N1 Plan Option area to form the OAA and selection of OAA to avoids sightlines between Scotland and Orkney.	Already secured by the OAA boundary.
Layout approval via Development Specification and Layout Plan (DSLP)	Tertiary	Layout to be approved by Scottish Ministers, following consultation with relevant stakeholders as part of the DSLP process.	The layout will be detailed within the DSLP, required under Section 36 Consent and/or Marine Licence conditions.
Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme, approved by Scottish Ministers prior to construction and updated throughout the Project lifespan.	The production and approval of a Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended).
Secondary mitigation			
The assessment of effects on Seascape Landscape and Visual Impact Assessment (SLVIA) receptors has predicted effects resulting from the presence of the offshore Project ranging from negligible to major / moderate. The assessment has been based upon the worst case scenario and it is anticipated that effects will be less than predicted.			

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Policy 11 (e) of National Planning Framework 4 (NPF4) states that '*In addition, project design and mitigation will demonstrate how the following impacts are addressed: ii. significant landscape and visual impacts, recognising that such impacts are to be expected for some forms of renewable energy. Where impacts are localised and/ or appropriate design mitigation has been applied, they will generally be considered to be acceptable*.' **It is acknowledged that traditional methods of landscape and visual mitigation, such as screen planting, are ineffective for offshore windfarm development. Mitigation for windfarms is generally limited to the reduction of potential effects through detailed layout design. As such secondary mitigation will be implemented in the form of the iterative design process during the post-consent development of the DSLP. The overall objective of the DSLP will be to set out the final design and layout parameters associated with the final design of the offshore Project. The DSLP will confirm that the design and layout parameters of the offshore Project align with those consented.** Post-consent additional pre-construction surveys and site investigations will be completed (as per chapter 5: Project description). This will allow the development of the ground model and further engineering studies to progress. The results of the pre-construction surveys will be shared with Marine Directorate and relevant Statutory Nature Conservation Bodies (SNCBs) (including Local Planning Authorities), and the implications on the Project design discussed, including the consideration of key SLVIA receptors as well as other constraints such as shipping and navigation. Following consultation the final design of the offshore Project will be produced and secured within the DSLP.			

22.11.2 Proposed monitoring

No monitoring is proposed for seascape, landscape and visual.

22.12 Socio-economics

The embedded mitigation, secondary mitigation and proposed monitoring identified for chapter 19: Socio-economics are described below.

22.12.1 Mitigation

Table 22-11 Mitigation measures for socio-economics

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Embedded mitigation			
Supply chain investment fund	Primary	OWPL have committed £33.5 million to fund co-investment with the supply chain to help deliver a step change in Scottish and UK supply chain preparedness. This fund will be allocated across key areas working closely with individual suppliers and available across all tiers of suppliers. It will also be used by the partners to leverage match funding from third parties into the supply chain, further enhancing its impact across Scotland and the UK.	Secured via the Supply Chain Development Statement (SCDS) and associated financial penalties for failing to deliver against agreed targets.
Collaborative supplier design and supply studies	Primary	From site award, OWPL would fund UK supplier design and supply studies to allow suppliers to plan investment in additional capability and capacity, and to position themselves competitively against the Project's procurement requirements. OWPL would support smaller suppliers to engage and help improve their preparedness and integration into the Project's supply chain.	Secured via the SCDS and associated financial penalties for failing to deliver against agreed targets.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Investment to support local port and harbour infrastructure	Primary	OWPL is committed to maximising the use of local ports and harbours and continues to work closely with Orkney Harbour Authority and Scrabster Harbour Trust to enable technical and commercial collaboration on the development of new facilities to support construction and operations. As part of the SCDS, OWPL is committed to £9.3 million of investment to support local port and harbour infrastructure in Orkney and Caithness within the first three years of Project development. This investment will help facilitate local participation in both the Project construction and operational stages.	Secured through a Memorandum of Understanding with collaborating local ports and harbour operators. Secured via the SCDS and associated financial penalties for failing to deliver against agreed targets.
European Marine Energy Centre (EMEC) programme to support innovation and cost reduction relevant to the Project and other ScotWind developments	Primary	OWPL is funding a bespoke programme with the EMEC to support innovation and cost reduction relevant to the Project and other ScotWind developments, but which may also address technical challenges across the wider offshore wind portfolio held by both Corio Generation and TotalEnergies. The programme will support the long-term sustainability of EMEC which plays an important role in the Orkney economy.	Funding is already committed for this initiative. Secured via the SCDS and associated financial penalties for failing to deliver against agreed targets.
North of Scotland - Workforce Strategy	Primary	OWPL recognise that large construction projects, require a diverse set of skills and expertise to complete each project successfully. However, in areas with relatively small populations, the pool of locally skilled and experienced workers may be limited, making it challenging to find qualified personnel. The West of Orkney Windfarm shall continue to collaborate and coordinate with other project developers and operators across the north of Scotland to help develop a Local Workforce Strategy. Projects/employers can share their knowledge of the local labour market, such as identifying transferrable skills and roles. Additionally,	The measure will form part of the Projects commitment register and will be tracked as the Project progresses alongside other planning conditions.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
		they can coordinate training and development programs to enhance the skills of existing workers or upskill new recruits. OWPL have already worked alongside other offshore wind developers to help fund the University of the Highlands and Islands (UHIs) Science, Technology, Engineering and Mathematics (STEM) programme. This is just one example of the type of collaboration and coordination required help to address skill shortages by identifying and filling critical roles across projects.	
Local skills development programme	Primary	OWPL would deliver a skills programme during the first five years of the project's development to support long term employment opportunities in the wind sector and to support its ambition to achieve a 50:50 gender balance across all operations from first generation. OWPL have signed agreements with the University of Highlands & Islands and the Energy Skills Partnership to deliver a local multi-level programme focussed on STEM development, diverse workforce programme, and student sponsorship programme. As a first stage, UHI will extend its outreach programme to schools in Orkney, the Western Isles, Shetland, Argyll and Bute, Moray and Perthshire local authority areas. The development has been made possible thanks to £900,000 of funding led by the West of Orkney Windfarm, a joint venture comprising Corio Generation, TotalEnergies and RIDG, alongside Floating Energy Alliance and their Buchan Offshore Wind project, Thistle Wind Partners and Ossian, a joint venture project led by SSER, Marubeni and Copenhagen Infrastructure Partners. The expansion will be supported through the employment of eight part-time and two full-time STEM coordinators. The full-time roles will	Secured via the SCDS and associated financial penalties for failing to deliver against agreed targets.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
		be located in Caithness, Sutherland and Orkney thanks to additional, targeted support from the West of Orkney Windfarm.	
Local accommodation strategy	Primary	The West of Orkney Windfarm workforce is expected to experience fluctuations in bed availability annually and during the construction and operation phases. To manage this, OWPL would work with local accommodation providers, agencies, and other projects to develop and implement a Local Accommodation Strategy prior to construction in 2027. OWPL wish to promote the use of local accommodation during the winter months when demand may be typically lower in an effort to help spread benefits throughout the year. The first step in developing this strategy is to identify all suitable accommodation options. This may include hotels, guest houses, bed & breakfasts, and other rental properties. If necessary, OWPL and its contractors may also explore sites for temporary accommodation to relieve pressure on availability during the peak season. Where possible, the project will seek accommodation close to the onshore work sites and local ports and harbours to reduce traffic. In any case the accommodation should be of a high standard, providing workers a safe and comfortable environment. The next step is to establish partnerships with suitable, local accommodation providers. This may be achieved through the negotiation of long-term contracts or through the establishment of preferred supplier agreements. OWPL want to work in partnership with local accommodation so they can maximize the utilisation of available beds.	The measure will form part of the Projects commitment register and will be tracked as the Project progresses alongside other planning conditions.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Visitor information stops	Primary	On a clear day, the West of Orkney Windfarm shall be visible from the North Coast 500 and Orkney. Passing tourists may be interested in the project and OWPL would like to enhance the visitor experience by providing some information and infrastructure. OWPL shall work with the local planning authorities to develop a visitor information stop in each local authority area, which ideally has a line of sight to the project. Each visitor stop will include features such as a car park, project information boards, public toilets, electric vehicle charging points, appropriate waste bins etc. The proposed location, layout and features of each visitor information stop shall be discussed with The Highland Council and Orkney Islands Council and may require further planning approval. OWPL shall aim to open the visitor information stops during construction.	The measure will form part of the Projects commitment register and will be tracked as the Project progresses alongside other planning conditions.
Operation and maintenance base public open days	Primary	OWPL shall periodically open the Operations and Maintenance base at to the public. Public open days will provide a unique opportunity for visitors to learn more about the West of Orkney Windfarm and talk with the staff maintaining the project. The open days shall aim to attract a diverse range of visitors, including tourists, locals, families, school groups, and individuals. The timing of the open days shall be discussed with relevant stakeholders, ideally, coincide with other local events or attractions.	The measure will form part of the Projects commitment register and will be tracked as the Project progresses alongside other planning conditions.
Construction Method Statement (CMS)	Tertiary	A CMS will be prepared to manage the construction process so as to avoid harm to construction personnel and third parties. This statement will reflect offshore renewable industry best practice, relevant health and safety and environmental management procedures, and best	For the offshore Project, the production and approval of the CMS will be required under Section 36 and/or Marine Licence conditions.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
		practice approaches to ensuring appropriate behaviour on the part of the workforce throughout the period of construction, including policies on alcohol and drug mis-use.	For the onshore Project, this commitment will be secured through a condition of the Planning Permission in Principle application.
A community benefits programme	Primary	A Community Benefits Fund (CBF) will commence at first generation and continue for the operational life of the Project (30 years). The CBF will be shared across communities in Caithness, Sutherland and Orkney. Short and long-term priorities have been identified, that will continue to evolve as the Project progresses. Short term priorities include supporting existing local initiatives (e.g. through sponsorship), local business grants and support for energy bills. Medium term priorities include digital connectivity, affordable housing and sustaining communities. Long term priorities include natural capital, community.	Secured via the SCDS and associated financial penalties for failing to deliver against agreed targets.
Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme, approved by Scottish Ministers prior to construction and updated throughout the Project lifespan.	The production and approval of a Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended).
Secondary mitigation			
No secondary mitigation, over and above the embedded mitigation measures proposed, is either required or proposed in relation to the potential effects of the offshore Project on socio-economic receptors as no adverse significant impacts are predicted.			

22.12.2 Proposed monitoring

Monitoring arrangements covering key performance indicators across all socio-economic topic areas will be designed and implemented as a core part of Project implementation activities.

The SCDS for the Project has been designed in collaboration with stakeholders, with the objective of enhancing the level of participation of UK, Scottish and local suppliers within the supply chain for the Project. There are also allied investments and collaborative initiatives that will promote offshore renewable energy as a career destination for university, college, and school leavers, thereby increasing the potential of the Project to contribute to national and local economic development and skills development objectives.

OWPL intend to continue monitoring socio economic related issues in the same manner it has to date. OWPL has built a strong relationship with national and local (Caithness and Orkney) organisations through the Socio Economic Working Group (or equivalent post consent).

22.13 Other sea users

The embedded mitigation, secondary mitigation and proposed monitoring identified for chapter 20: Other sea users are described below.

22.13.1 Mitigation

Table 22-12 Mitigation measures for other sea users

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Embedded mitigation			
Application for and implementation of safety zones	Primary	Application for and implementation of statutory safety zones of up to 500 m around structures during construction and periods of major maintenance, and 50 m around structures pre commissioning.	An application for safety zones will be made in accordance with Section 95 of the Energy Act 2004 and the Electricity (Offshore Generating Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations 2007. Details will be included within the NSVMP, required under Section 36 Consent and/or Marine Licence conditions. An outline NSVMP is provided as part of the offshore application in OP4: Navigational Safety and Vessel Management Plan. The outline NSVMP details the process and approach for the application of statutory safety zones.
Notifications to Dounreay Site Restoration Limited (DSRL) and the Ministry of Defence (MoD)	Tertiary	Notification to Dounreay Site Restoration Limited (DSRL) and the MoD regarding plans for offshore activity for compliance with the security measures of the Dounreay Nuclear Power Development Establishment (NPDE) and Vulcan Naval Reactor Test Establishment (NRTE) given their proximity to the offshore Project.	Secured through consultation with relevant stakeholders.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Crossing and proximity agreements	Tertiary	Crossing and proximity agreements with known existing cable operators will be established where reasonably practicable.	Secured through consultation with relevant stakeholders and OWPL's commitment to discuss the establishment of crossing and proximity agreements with relevant third-parties.
Emergency Response Cooperation Plan (ERCoP)	Tertiary	Development and adherence to an ERCoP. The ERCoP will provide sufficient information about the Project, actions and details required in the event of an emergency situation. This will ensure that MCA recommended standards and procedures are followed as well as ensuring appropriate lighting and marking is in place to facilitate aeronautical safety during SAR helicopter operations.	The production and approval of a ERCoP will be required through the Section 36 Consent and/or Marine Licence conditions. Lighting requirements will be detailed in the LMP, required under Section 36 Consent and/or Marine Licence conditions. An outline LMP is provided as part of the offshore application in OP6: Lighting and Marking Plan.
Promulgation of information, such as Notice to Mariners, Kingfisher notifications and other navigational warnings on the location, duration and nature of works	Tertiary	Promulgation of information, including timely and efficient distribution of NtMs, Kingfisher notifications and other navigational warning on the location, duration and nature of works, including, statutory and advisory safety zones.	Secured through Section 36 and/or Marine Licence consent conditions. Requirements will be detailed within the NSVMP, required under Section 36 Consent and/or Marine Licence conditions. An outline NSVMP is provided as part of the offshore application in OP4: Navigational Safety and Vessel Management Plan. The outline NSVMP includes details on the communication and information dissemination to other mariners.
Communication of final layout to confirm effects on telecommunication links, community television and radio	Tertiary	Continued consultation with British Telecommunications (BT), British Broadcasting Corporation (BBC), Joint Radio Company (JRC) and Ofcom with regards to potential interference with telecommunication links, community television and radio.	The production and approval of a DSLP will be required under Section 36 Consent and/or Marine Licence conditions.

MITIGATION MEASURE	TYPE	DESCRIPTION	HOW MITIGATION WILL BE SECURED
Charting of installed infrastructure	Tertiary	Notification to the UKHO/Kingfisher of the proposed works to facilitate the promulgation of maritime safety information and updating of nautical /admiralty charts and publications.	Requirements will be detailed within the NSVMP, required through Section 36 Consent and/or Marine Licence conditions. An outline NSVMP is provided as part of the offshore application in OP4: Outline Navigational Safety and Vessel Management Plan.
Database of local users	Tertiary	Creation of a database of known users (including local yacht clubs, local dive clubs and local recreational activity centres) to act as a mailing list for direct issue of NtMs. To ensure that as many interested parties as possible are aware of Proposed Development activities.	Ongoing commitment for OWPL.
Consultation with Space Hub Sutherland	Tertiary	Continue to consult with Space Hub Sutherland as they develop their launch exclusion zone and operational procedures.	Ongoing commitment for OWPL.
Decommissioning Programme	Tertiary	The development of, and adherence to, a Decommissioning Programme, approved by Scottish Ministers prior to construction and updated throughout the Project lifespan.	The production and approval of a Decommissioning Programme will be required under Section 105 of the Energy Act 2004 (as amended).
Secondary mitigation			
No secondary mitigation, over and above the embedded mitigation measures proposed, is either required or proposed in relation to the potential effects of the offshore Project on other sea users as no adverse significant impacts are predicted.			

22.13.2 Proposed monitoring

No monitoring is proposed for other sea users.

22.14 References

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22.15 Abbreviations

TERM	DEFINITION
AIS	Automatic Identification System
ANMP	Aids to Navigation Management Plan
AtoN	Aids to Navigation
BBC	British Broadcasting Corporation
BT	British Telecommunications
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
CaPs	Cable Plan
CBF	Community Benefit Fund
CBRA	Cable Burial Risk Assessment
CES	Crown Estate Scotland
CMS	Construction Method Statement
COLREGs	International Regulations for the Prevention of Collision at Sea
DGC	Defence Geographic Centre
DSLP	Development Specification and Layout Plan
DSRL	Dounreay Site Restoration Limited
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment

TERM	DEFINITION
EMEC	European Marine Energy Centre
EMF	Electromagnetic Fields
EMP	Environmental Management Plan
EPS	European Protected Species
ERCoP	Emergency Response Cooperation Plan
FEPA	Food Environment and Protection Act
FIR	Fisheries Industry Representatives
FLO	Fisheries Liaison Officer
FMMS	Fisheries Management and Mitigation Strategy
IAIP	Integrated Aeronautical Information Package
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IMO	International Maritime Organisation
INNS	Invasive Non-Native Species
JRC	Joint Radio Company
km	kilometre
LAT	Lowest Astronomical Tide
LMP	Lighting and Marking Plan
MARPOL	The International Convention for the Prevention of Pollution from Ships
MCA	Maritime and Coastguard Agency

TERM	DEFINITION
MGN	Marine Guidance Note
MHWS	Mean High Water Springs
MSL	Mean Sea Level
MMC	Marine Monitoring Centre
MMMP	Marine Mammal Mitigation Protocol
MoD	Ministry of Defence
MPCP	Marine Pollution Contingency Plan
NLB	Northern Lighthouse Board
nm	nautical mile
NMP	National Marine Plan
NOTAM	Notice to Airmen
NPF4	National Planning Framework 4
NPDE	Nuclear Power Development Establishment
NRTE	Naval Reactor Test Establishment
NSVMP	Navigational Safety and Vessel Management Plan
NtM	Notice to Mariners
OAA	Option Agreement Area
OSP	Offshore Substation Platform
OWPL	Offshore Wind Power Limited

TERM	DEFINITION
PAD	Protocol for Archaeological Discoveries
PEMP	Project Environmental Monitoring Plan
PIR	Passive Infrared
PS	Piling Strategy
SAR	Search and Rescue
ScotMER	Scottish Marine Energy Research
SCDS	Supply Chain Development Statement
SLVIA	Seascape, Landscape and Visual Impact Assessment
SNCB	Statutory Nature Conservation Body
SMWWC	Scottish Marine Wildlife Watching Code
SOLAS	International Regulations for the Safety of Life at Sea
STEM	Science, Technology, Engineering and Mathematics
UHI	University of the Highlands and Islands
UK IAIP	UK Integrated Aeronautical Information Package
UKHO	UK Hydrographic Office
UKCoS	UK Chamber of Shipping
UXO	Unexploded Ordnance
WSI	Written Scheme of Investigation
WTG	Wind Turbine Generator