West of Orkney Windfarm Offshore EIA Report

Non-Technical Summary

West of Orkney Windfarm

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Revisions & Approvals

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West of Orkney
Windfarm

1. Introduction

Offshore Wind Power Limited (OWPL) is proposing the development of the West of Orkney Windfarm ('the Project'), an offshore windfarm, located 23 kilometres (km) from the north coast of Scotland and 28 km from the west coast of Hoy, Orkney. The Project consists of both onshore and offshore components to generate and export the power from the offshore windfarm to a new onshore substation at Spittal, Caithness.

The purpose of this Non-Technical Summary is to summarise the Offshore Environmental Impact Assessment (EIA) Report, which has been prepared to support the Section 36 Consent and Marine Licence Applications for the offshore Project. The structure of the Offshore EIA Report is provided in Figure 1. Full technical details of the EIA and all the assessments summarised within this Non-Technical Summary can be found within the Offshore EIA Report and associated supporting studies.

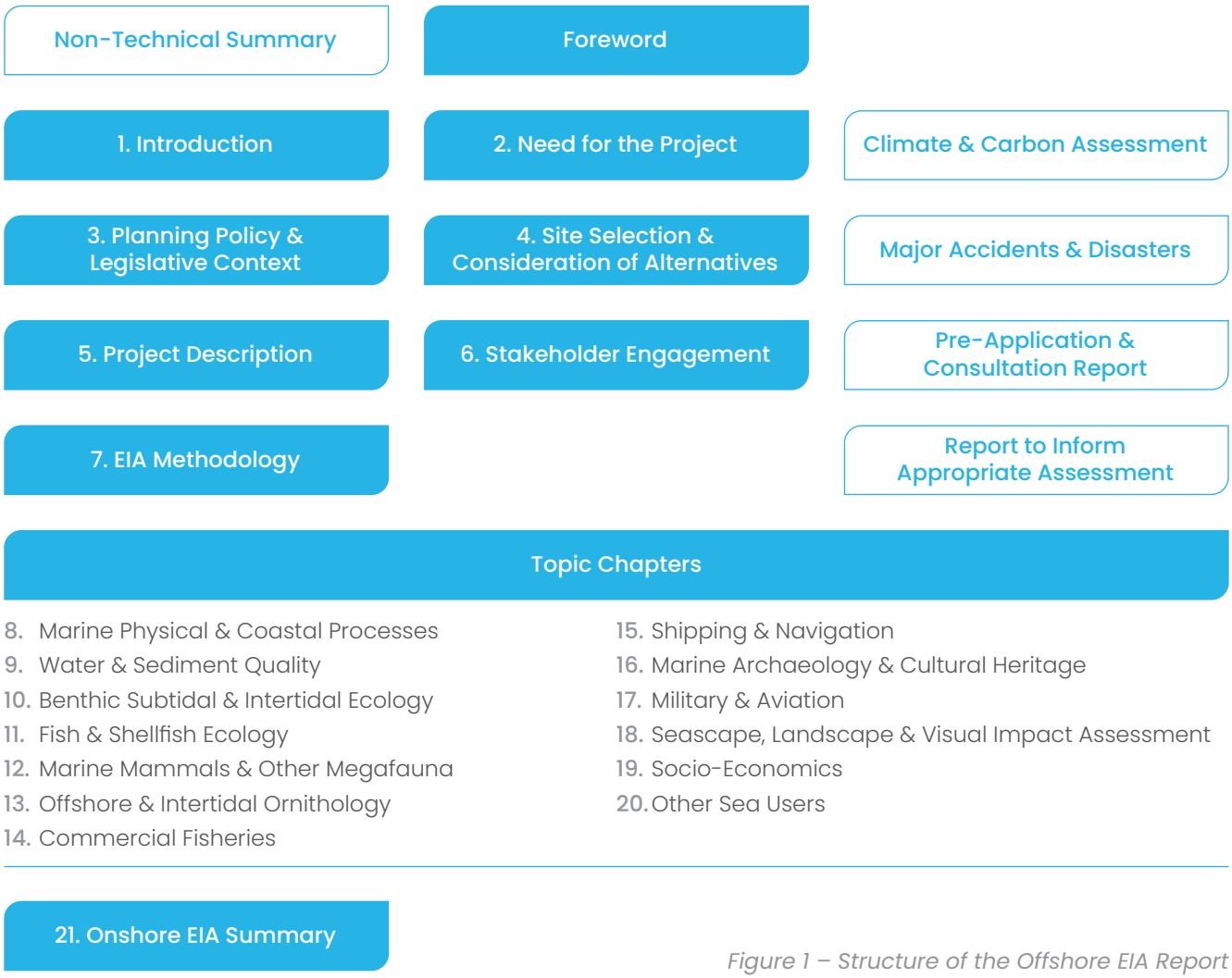


Figure 1 – Structure of the Offshore EIA Report

1.1 Project Overview

An overview of the key Project components is shown in Figure 2.
The Project consists of onshore and offshore components:

The 'Offshore Project'
All offshore components seaward of Mean High Water Springs (MHWS) including Wind Turbine Generators (WTGs), cables, foundations, Offshore Substation Platforms (OSPs), all other associated infrastructure, and all offshore Project stages from pre-construction to decommissioning including temporary works.

The 'Onshore Project'
All onshore components landward of Mean Low Water Springs (MLWS) (cable landfalls, underground cables, onshore substation, access, and all other associated infrastructure) and all Project stages from construction to decommissioning, including temporary works.

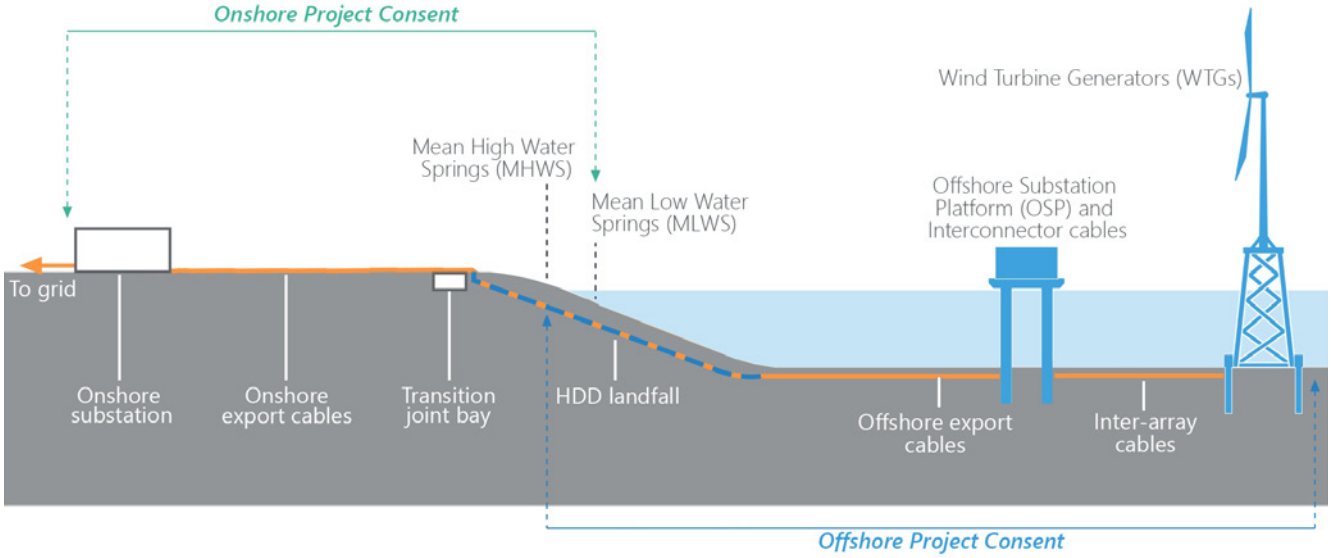


Figure 2 – Offshore Project Overview

The location of the offshore and onshore Project are shown in Figure 3. The offshore Project boundary, which is the subject of the Offshore EIA Report, encompasses:

- Option Agreement Area (OAA) – where the WTGs and associated foundations and supporting structures, inter-array cables, inter-connector cables and the OSPs (including offshore export cable connections) will be located. The OAA is located wholly within the N1 Plan Option area, which is one of the 15 Plan Option areas around Scotland that the Scottish Government considered suitable for the development of commercial scale offshore windfarms through the ScotWind Leasing Round;
- Offshore Export Cable Corridor (ECC) – within which the offshore export cables will be located from the OAA to the landfall; and
- Landfall (up to MHWS) – where the offshore export cables come ashore and interface with the onshore Project.

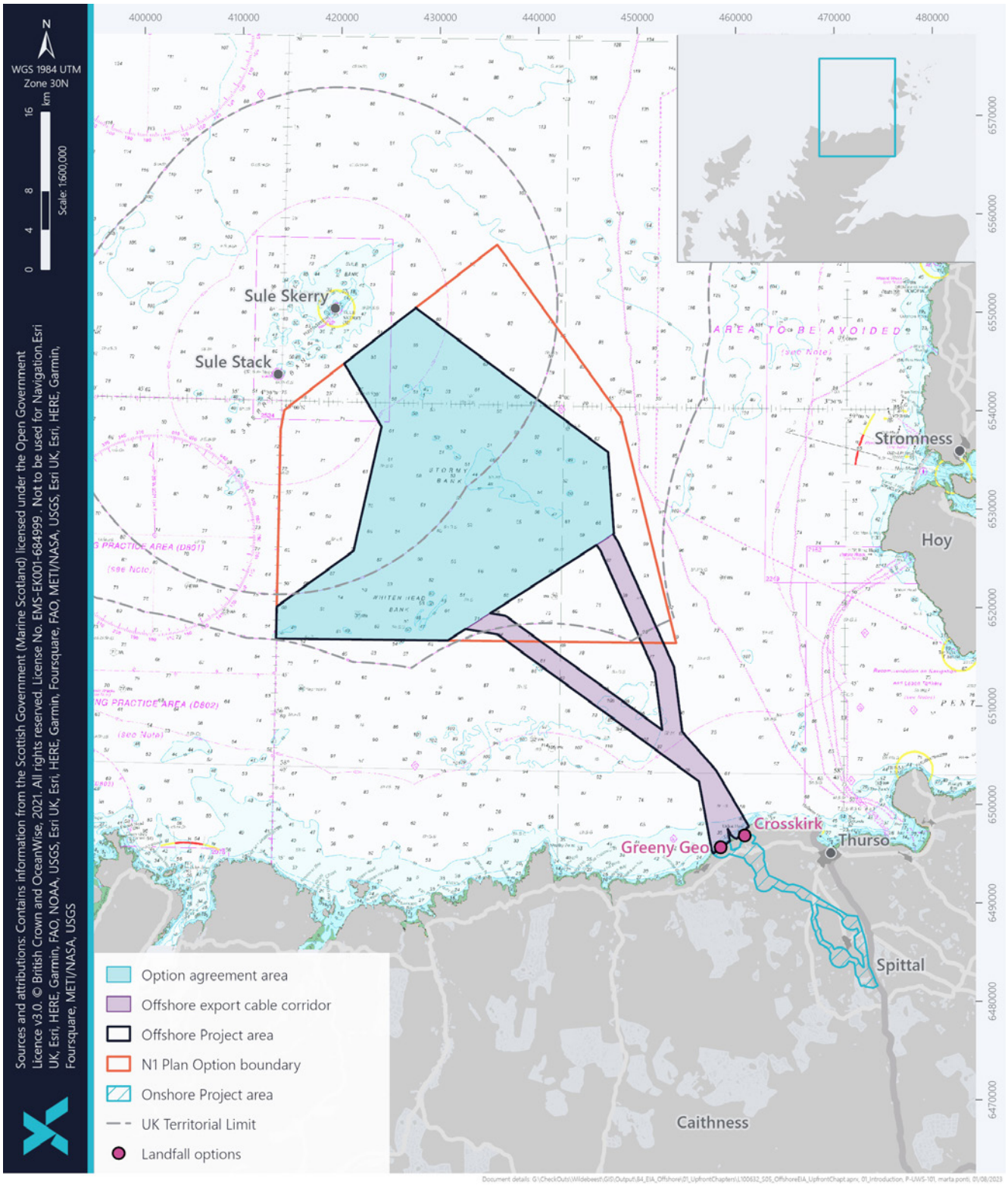


Figure 3 – Project Location

1.2 Background

OWPL is a consortium of Corio Generation, TotalEnergies and Renewable Infrastructure Development Group (RIDG). OWPL was awarded the OAA from the Crown Estate Scotland in January 2022 for the development of the Project (see Figure 4).

Corio Generation is a Macquarie Green Investment Group portfolio company, operating on a standalone basis. Corio has a project pipeline of over 20 GW. Their global team of offshore wind specialists take projects from origination, through development, construction and into operations.

TotalEnergies is one of the largest offshore operators on the United Kingdom (UK) continental shelf, majority owner of Seagreen OWF and the Shetland Gas Plant. Targeting 35 GW of renewables by 2025 and 100 GW by 2030.

Renewable Infrastructure Development Group (RIDG) is a Scottish offshore wind project developer with over 40 years' experience in the sector, set up to deliver high value projects alongside strategic partners.

The Project has a connection agreement with National Grid for a connection to the grid network in Caithness, on mainland Scotland. Connection will be to a new Scottish Hydro Electric Transmission Limited (SHET-L) substation located at or near Spittal, with the preferred location of this substation located north of Spittal Hill at Banniskirk.

OWPL are responsible for the construction and operation of their own onshore substation (in order to ensure its power is grid compliant), and this forms part of the onshore Project. The indicative location for the OWPL onshore substation is to the west of the preferred new SHET-L substation location, at Achalone.

Following award of the OAA from Crown Estate Scotland, a single Scoping Report covering both the offshore and onshore aspects of the Project was submitted to Marine Scotland Licensing Operations Team (MS-LOT)[1] and the Highland Council in March 2022. A Scoping Opinion was received from Scottish Ministers (via MS-LOT) on the 29th of June 2022.

Box 1 – Flotta Hydrogen Hub
The proposed Flotta Hydrogen Hub (Flotta, Orkney) provides a second power export opportunity for the Project. The Scoping Report for the Project included the offshore and onshore infrastructure for a private wire export option to Flotta Hydrogen Hub, in addition to the grid connection at Caithness[2]. Since the submission of the Scoping Report, OWPL have been negotiating the terms of this private wire export option through a 'Power Purchase Agreement'. These negotiations will provide clarity on the timing for the availability of this power export option to the Flotta Hydrogen Hub and will determine the timing of a subsequent separate Marine Licence application and Planning application for the associated offshore and onshore transmission infrastructure respectively. Therefore, the applications for the onshore and offshore transmission infrastructure associated with the connection of the Project to the proposed Flotta Hydrogen Hub will be submitted at a later date and are not considered in the Offshore EIA Report or this NTS.

1. MS-LOT have since been renamed Marine Directorate Licensing Operations Team (MD-LOT).
2. The Scoping Report was also submitted to the Orkney Islands Council (OIC), as the scoping exercise included consideration of the power export to the Flotta Hydrogen Hub; however, this scope is not covered in the Offshore EIA Report and will be subject to separate Marine Licence and onshore planning applications.

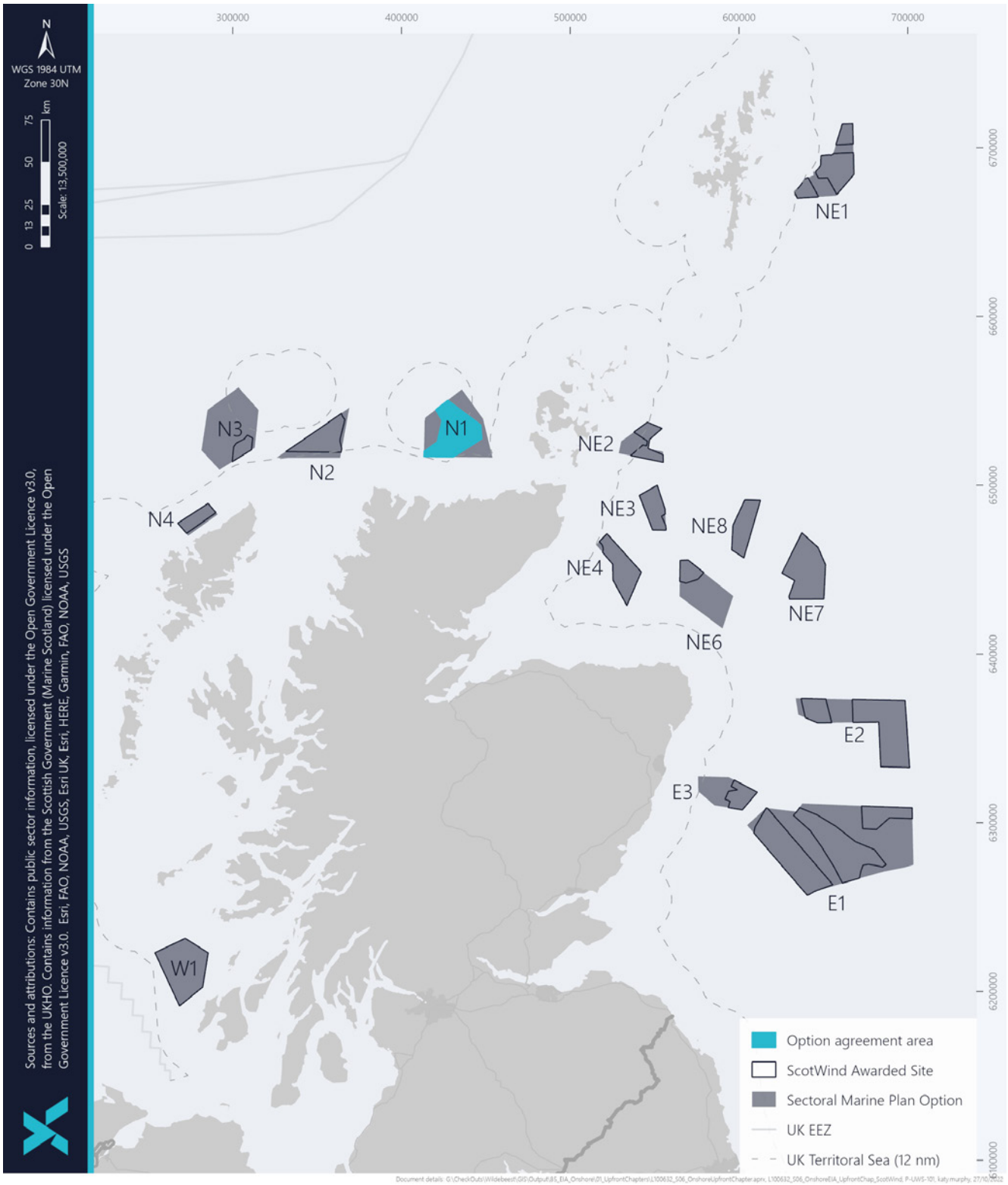


Figure 4 – ScotWind Plan Options and OWPL Option Agreement Area (OAA)

Box 2 – Scapa Deep Water Quay
Orkney Islands Council Harbour Authority (OICHA) are applying for permission to develop the Scapa Deep Water Quay. This is a separate development to Project. The main purpose of the quay would be to support multiple industrial activities that require both deep-water berthing and a laydown area. OICHA envisage that the primary use of the facility shall be the assembly of offshore WTGs for multiple offshore wind developments in the north of Scotland. The Scapa Deep Water Quay was one of five developments identified in OICHA's Orkney Harbours Masterplan Phase 1 which was approved by OIC in August 2020. Deep Water Quay is a purpose-built facility that shall be developed, owned and operated by OICHA.

1.3 Consent & Regulatory Requirements

The following consents are required for the offshore Project:

- Section 36 consent under the Electricity Act 1989 for generating stations with capacity of > 50 megawatts (MW) in the Scottish offshore region (i.e. between the 12 and 200 nautical miles (nm) limits) and > 1 MW in the Scottish inshore region (i.e. within the 12 nm limit). This consent applies to the WTGs, inter-array cables and associated scour and cable protection; and

- Marine Licences under the Marine and Coastal Access Act 2009 (within the Scottish offshore region) and the Marine (Scotland) Act 2010 (within the Scottish inshore region), required for construction or deposition in or over the sea, or on and under the seabed. Marine Licences are required for the WTGs, OSPs, inter-array cables, interconnector cables, offshore export cables, and associated scour and cable protection.

An EIA is required for the offshore Project under the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended), the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) and the Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended).

A Habitats Regulation Appraisal (HRA) has also been undertaken for the offshore Project in accordance with the Conservation (Natural Habitats &c.) Regulations 1994 (as amended) which apply from 0 to 12 nm and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended) which apply from 12 to 200 nm. The HRA process assesses potential impacts on European Sites that form part of the UK National Site Network. The process initially assesses the potential for Likely Significant Effects (LSE) and if these cannot be ruled out, goes on to assess the potential for adverse effects on European Sites. The results of the HRA are presented in the Report to Inform an Appropriate Assessment (RIAA).

1.4 Key Planning Policies

The UK Marine Policy Statement[3], established under the Marine and Coastal Access Act 2009, facilitates an integrated approach to marine planning across the UK and sets out the high-level framework for preparing marine plans and taking decisions affecting the marine environment.

The UK Marine Policy Statement outlines the requirement for marine plans within UK waters to set out environmental, social, and economic objectives. The Marine (Scotland) Act 2010, together with the Marine and Coastal Access Act 2009, establishes the marine planning framework in Scotland, including the requirement for a National Marine Plan and Regional Marine Plans.

The key Scottish planning policies relevant to the offshore Project include:

Scotland's National Marine Plan
Introduces policies for the sustainable development of Scotland's seas (out to 200 nm) and set objectives for economic, social and marine ecosystems and mitigation of and adaptation to climate change. At the time of application, the Scottish Government is in the process of developing a new National Marine Plan.

Orkney Islands Regional Marine Plan
The offshore Project is partly located within the Orkney Islands Scottish Marine Region, within which the Orkney Islands Regional Marine Plan will apply once approved. Approval of the Orkney Islands Regional Marine Plan is expected following consultation on the draft plan which was submitted to Scottish Ministers for approval for public consultation in December 2022.

Pilot Pentland Firth and Orkney Waters Marine Spatial Plan
Applicable within waters out to 12 nm around the coasts of the Orkney Islands and the North of Scotland. The Pilot Pentland Firth and Orkney Waters Marine Spatial Plan sets out a planning policy framework to guide marine development and activities and management decisions, whilst ensuring the quality of the marine environment is protected. The Pilot Pentland Firth and Orkney Waters Marine Spatial Plan informed the development of the Orkney Islands Regional Marine Plan.

National Islands Plan
The Islands' (Scotland) Act 2018 establishes the requirement for Scottish Ministers to develop a National Islands Plan. The National Islands Plan sets out objectives for Scotland's Island communities, centred around environmental, social and economic improvements. The National Islands Marine Plan is relevant to the offshore Project which is partly located within the Scottish Marine Area.

Sectoral Marine Plan for Offshore Wind Energy
Developed to identify sustainable Plan Options for future commercial-scale offshore wind energy in Scotland. The plan identified 15 Plan Options across four regions within Scottish waters, the Project is being developed in the north region.

National Planning Framework 4 (NPF4)
Outlines a national spatial strategy, and associated national planning policies, for reducing greenhouse gas emissions, adapting to future impacts of climate change, enhancing biodiversity[4], and aligning with the delivery of United Nations Sustainable Development Goals up until 2045.

Local Development Plan
The Project will also need to consider the relevant policy and legislation of local development plans, including the Highland-wide local development plan, Caithness and Sutherland Local Development Plan.

3. https://www.gov.uk/government/publications/uk-marine-policy-statement
4. The West of Orkney Windfarm is committed to enhancing the environment where possible. The Biodiversity Enhancement Plan submitted with the Application details the Project's proposals for biodiversity enhancement that will be explored further post-consent.

1.5 Project Need & Benefits

The Project need and benefits are centred around four key areas:

Climate Change & Emissions Reduction

There are various pieces of climate change and renewable energy legislation and policy that drive the need for the Project at an international and national level (see Figure 5). For example, the Climate Change (Emissions Reductions Targets) (Scotland) Act 2019 commits the Scottish Government to reaching net zero emissions of all greenhouse gases by 2045, five years ahead of the rest of the United Kingdom (UK). The Project will act to offset Greenhouse Gas (GHG) emissions that might otherwise be produced by other means of electricity generation and will, therefore, contribute to meeting various climate change and net zero emissions targets (further information can be found in the Project climate and carbon assessment see section 1.1).

New Energy Infrastructure

The UK requires new energy transmission infrastructure in order to:

- Reduce the carbon footprint of electricity generation capacity to achieve net zero climate change targets;
- Enable the transition from fossil fuels to renewable energy sources; and
- Ensure security of supply through replacing and upgrading infrastructure systems to meet increased demands.

Energy Security

Energy consumers need to have access to a reliable, secure and affordable energy supply. The Project will be capable of powering the equivalent of more than two million homes with clean electricity and as such will provide significant contributions to energy security.

Economic Benefit

The development of home-grown renewable energy can help the UK to avoid paying to import energy. A Supply Chain Development Statement (SCDS) was prepared by the Project as part of the ScotWind Leasing Round application. The SCDS, which will be reviewed by Crown Estate Scotland to ensure commitments made are realised, sets out the commitment from the Project to invest £105 million in developing the supply chain capacity within the UK, including over £9 million investment in ports and harbours located in Caithness and Orkney, support for local skills development and supply chain readiness. The Project will also deliver economic benefits to the local community and Scotland by providing jobs and opportunities for the local supply chain.

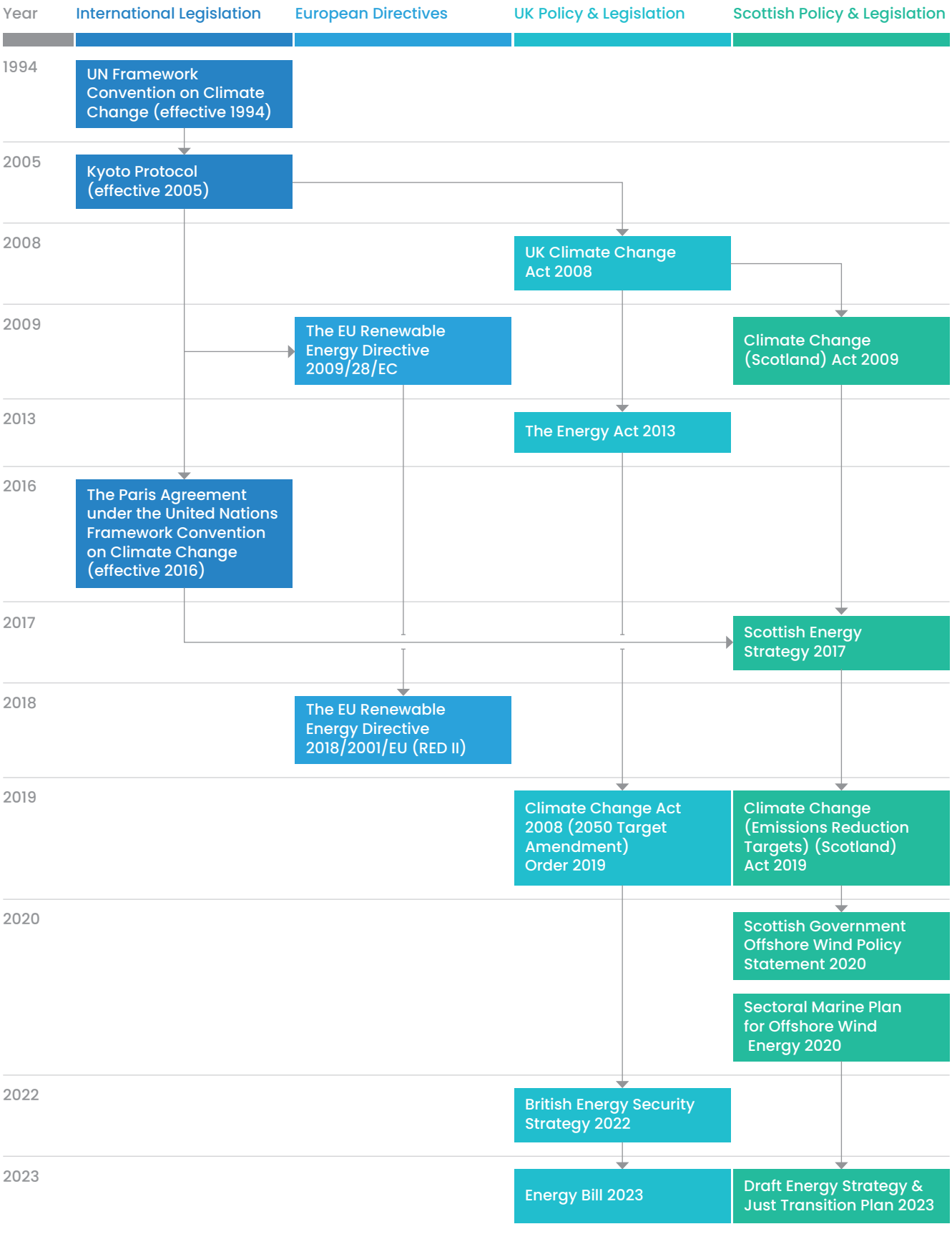


Figure 5 – Climate change and renewable energy legislation and policy[5]

5. At the time of writing The Energy Bill 2023 is passing through Parliament but has been included for completeness.

1.6 Alternatives Considered

A number of alternatives have been considered throughout the development of the Project, both in terms of location and design options. The site selection process and the choice of Project design is ongoing and further refinements may occur as the development of the offshore Project progresses.

1.6.1 Site Selection

The site selection process involved consideration of environmental (e.g. other sea users and visual effects) and technical (e.g. wind resource, water depths, ground and wind, wave and tidal conditions) considerations, informed by desk-based studies and stakeholder engagement. The site selection process has been guided and informed by key events in the Project's development timeline as shown in Figure 6.

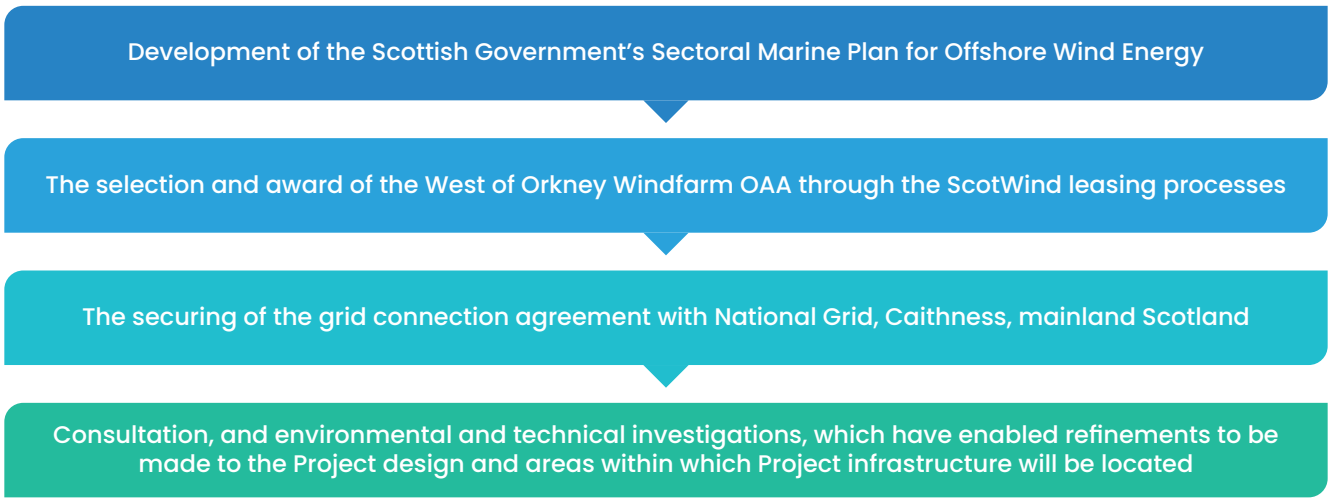


Figure 6 – Site selection process for the offshore Project location and design to date

OWPL developed and selected the OAA within the N1 Plan Option area through an iterative constraint mapping exercise to identify areas which should be avoided due to key technical, environmental or other sea users constraints. As shown on Figure 7, the key constraints that influenced the OAA selection included the avoidance of a direct yachting route and key sightlines between Orkney and mainland Scotland in the southeast of the N1 Plan Option area, the Yankee Helicopter Main Route in the east of the N1 Plan Option area, and commercial fisheries activities east of the 4-degree line (depicted in white on Figure 7). The location of infrastructure within the OAA is yet to be finalised and is subject to further Project design refinement, based on the results of ongoing site investigations and WTG procurement.

The main driver of the selection of the offshore ECC was the grid connection offer from the National Grid at Spittal, Caithness in November 2020. Offshore ECC search areas were developed as wide corridors between the OAA and six potential cable landfall options along the north coast of Scotland. The various landfall and cable route options were assessed against technical and environmental constraints. The landfalls at Greeny Geo and Crosskirk were identified as the preferred options. A more defined offshore ECC between these landfalls, and the OAA was developed based on environmental, technical and commercial studies, surveys and consultation.

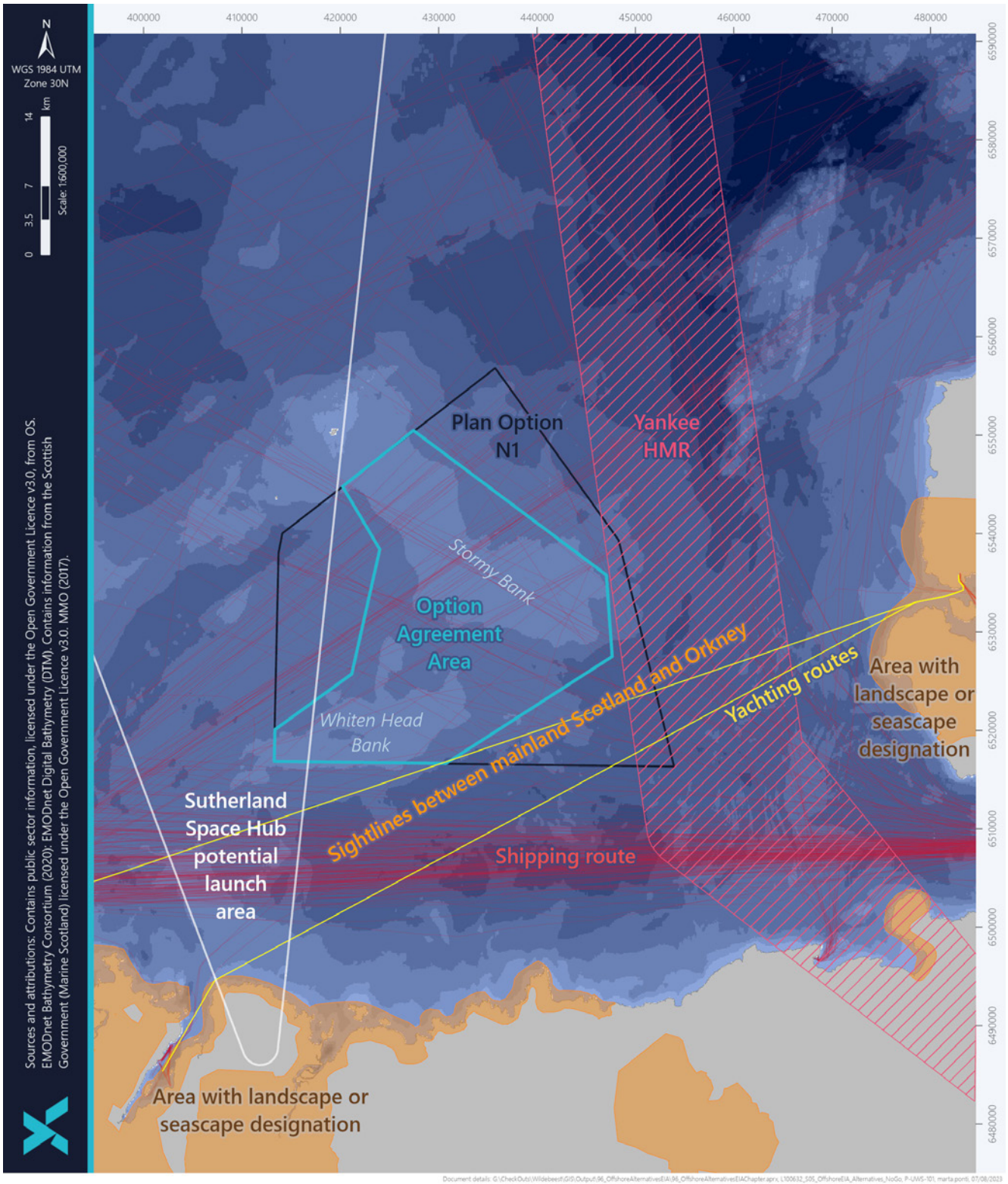


Figure 7 – Key constraints and bathymetry of the OAA (note HMR = Helicopter Main Route)

1.6.2 Project Design Alternatives

A number of different Project design options have been considered, and refinement of these options has occurred throughout the development of the offshore Project. Since the submission of the Scoping Report in March 2022, key design decisions have been taken which have removed the following from consideration by the Project:

- Floating sub-structures – the presence of two shallower banks in the OAA present an opportunity for fixed-bottom foundations, therefore floating sub-structures were removed as a Project design option, for the current consent application;
- Gravity based structures as an option for fixed foundations – due to the challenging metocean conditions at the OAA and the larger seabed footprint associated with these structures, gravity based structures were removed as a Project design option, for the current application; and
- Use of High Voltage Direct Current (HVDC) export cables – due to the requirement for more infrastructure and larger OSPs, HVDC export cables were removed as a Project design option, for the current application.

A number of design options have been retained in the 'Project Design Envelope' which forms the basis of the Project design for the application and EIA. This approach is aligned with Scottish Government guidance and required in order to maintain flexibility in the Project design for a number of reasons, such as ensuring all appropriate survey data is available to inform the WTG turbine layout and to inform seabed clearance requirements ahead of construction. It also takes account of ongoing dialogue with the supply chain, combined with internal engineering, to future proof the Project design for any currently unknown product evolutions.

As WTG turbines technology has significantly developed over the past decade, an internal extrapolation of the design evolution has been assessed to help define the upper parameters of the design envelope. The project requires to maintain optionality (e.g. rotor sizes) and competition throughout the procurement process with a relatively small market of WTG turbine suppliers. With such a demand on WTG turbine supply for the years of construction of the Project, the design envelope ensures that all credible suppliers are included.

1.7 Description of the Project

1.7.1 Offshore Infrastructure

The offshore Project is composed of WTGs and all the infrastructure required to transmit the power generated by the WTGs to shore. The key offshore components of the offshore Project include:

- Up to 125 WTGs with fixed-bottom foundations (monopile, piled jacket or suction bucket jacket) (Figure 8);
- Up to five High Voltage Alternating Current (HVAC) OSPs to transform and export power generated by the WTGs via the inter-array cables and offshore export cables;
- Up to 500 km of inter-array cables installed between the WTGs and OSPs;
- Up to 150 km of interconnector cables installed between the OSPs; and
- Up to five offshore export cables from the OSPs to landfalls at Greeny Geo and/or Crosskirk at Caithness, with a total length of up to 320 km (average of 64 km per offshore export cable).

The offshore Project design will not be finalised until post-consent. Therefore, a 'Project Design Envelope' approach has been used for the EIA. The 'Project Design Envelope' consists of a range of design parameters for each component of the offshore Project, providing flexibility for further refinement of the offshore Project design in order to accommodate technological advancements and more detailed site information.

An indicative layout is displayed in Figure 9. The final layout will be based on further site investigation and detailed design studies conducted post-consent. Worst-case scenario layouts have been developed for each of the relevant EIA topics and are presented in the topic-specific assessments.

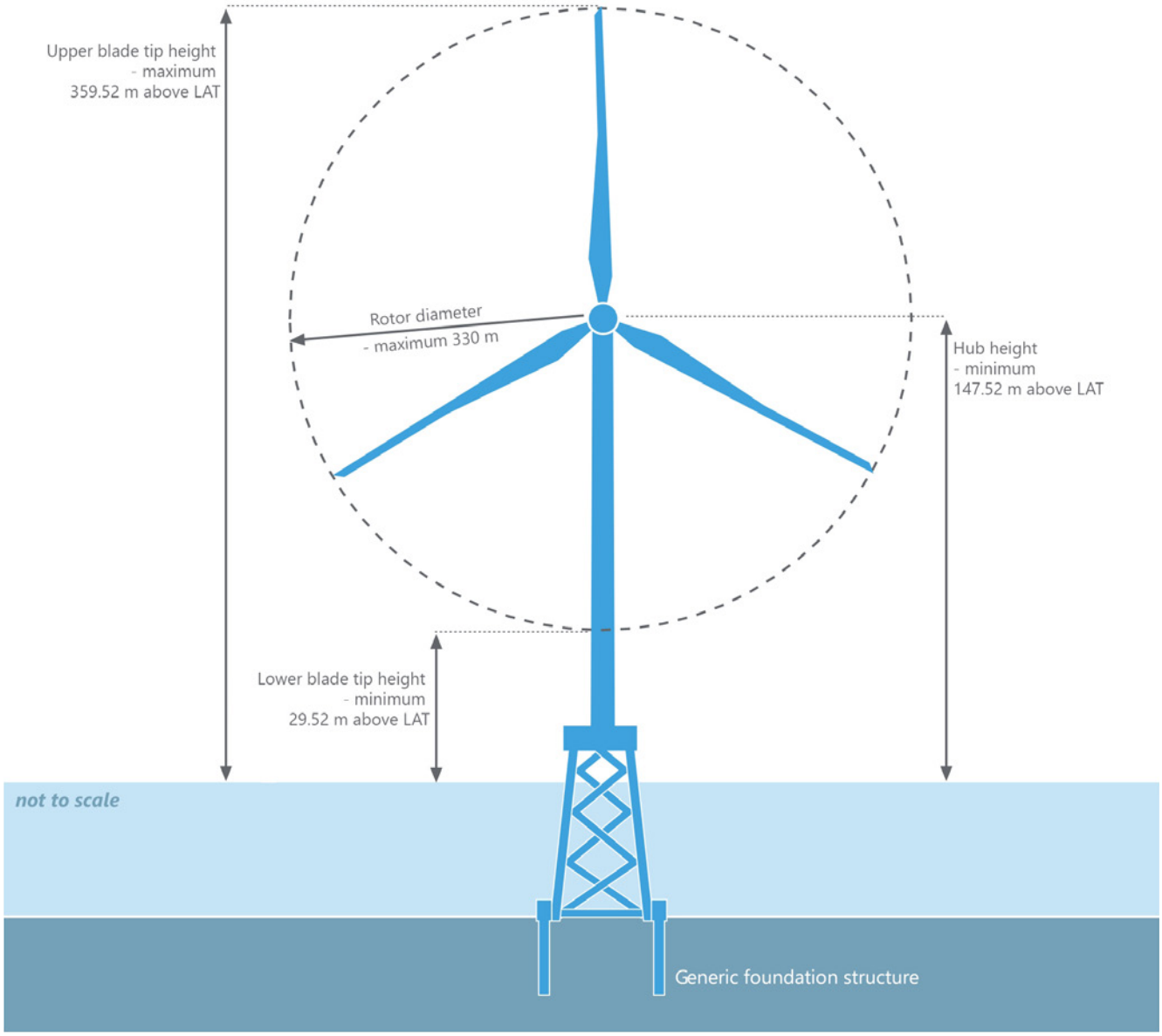


Figure 8 – Wind turbine design elements (not to scale)

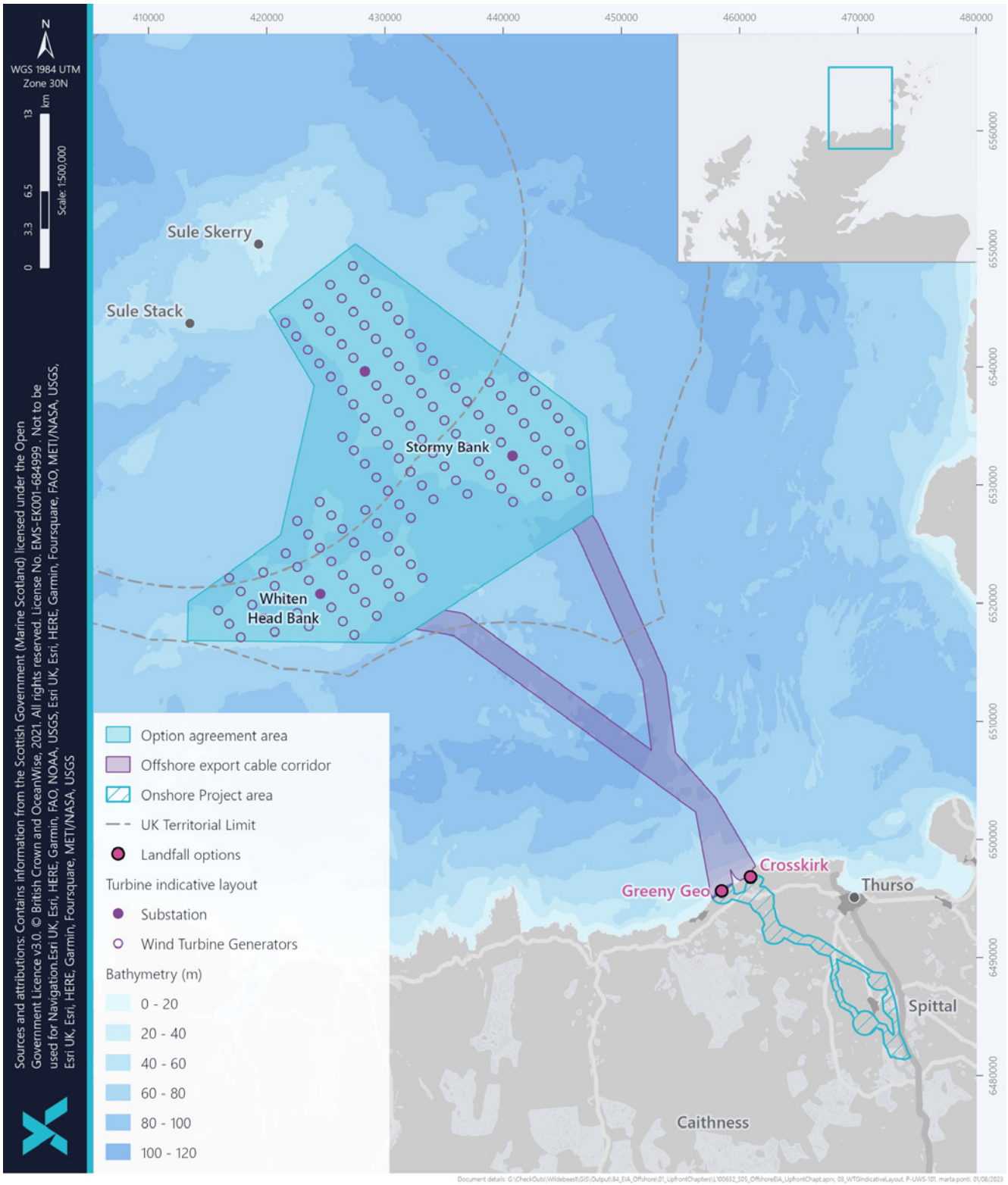


Figure 9 – Indicative Layout

1.7.2 Pre-Construction & Construction

Several activities will be required ahead of construction of the offshore Project, including:

- Pre-construction surveys – including geophysical, geotechnical, benthic and Unexploded Ordnance (UXO) clearance surveys and metocean measurement campaigns; and
- Site preparations – including boulder clearance, pre-lay grapnel runs, UXO clearance, bedform clearance and dredging.

Exact requirements for boulder clearance and dredging will only be confirmed during the next stage of the Project design process. Environmental impacts from these activities have been assessed to the extent that it is possible based on current available information in the EIA. Marine Licence applications, with all appropriate supporting information will be made separately to this application and subject to additional consultation.

The UXO clearance procedure would also be subject to an agreed method statement detailed within a separate Marine Licence application submitted post-consent.

Construction activities will involve the following:

- WTG foundation installation;
- OSP installation (including foundation and topsides);
- Offshore export cable – landfall and offshore installation;
- Inter-array and interconnector cable installation; and
- WTG installation and commissioning.

European Protected Species (EPS) Licences will be required for certain pre-construction and construction activities that have the potential to impact protected species. These will be applied for once appropriate details are available.

It is expected that WTGs and OSPs will be assembled on site although there will be some pre-assembly activities onshore at an assembly port (e.g. tower assembly). The foundation structures will be transported via a vessel from a construction base to the OAA for installation and the WTG and OSP topside infrastructure will be subsequently installed on top of these foundation structures.

WTGs, OSPs and associated foundations are likely to be stored onshore / inshore ahead of installation to ensure a continual supply of components during construction. A number of options are currently being considered for the assembly and construction ports. The cable infrastructure will be laid and buried where possible, and where this is not possible, cable protection will be used.

It is anticipated that the construction of the offshore Project will commence in 2028 and take up to four years in total (subject to change), with an additional year of pre-construction works e.g. seabed preparation, ahead of construction. Construction will not be continuous throughout the year, but is planned to occur during distinct seasons of up to nine months per year (February to October).

1.7.3 Operation & Maintenance

During the operation and maintenance stage, the offshore Project will operate with minimum day-to-day intervention. The following maintenance may be required:

- Scheduled / preventative maintenance;
- Correction of unplanned events (either remotely or through the attendance of technicians and / or trouble-shooters);
- Major component replacement; and
- Remote monitoring and routine inspections.

An Operator will be appointed by the Project who will be responsible for the co-ordination and execution of the operation and maintenance activities. The Operator will employ remote monitoring of the offshore Project, either from an onshore operations and maintenance base or another location. Options for the onshore operations and maintenance base are currently being considered, but it is likely to be a local onshore facility. Maintenance and repair activities are expected to be coordinated from the operations and maintenance base and personnel will be transported from there to the offshore Project.

The operational stage will commence once the Project is commissioned. The design operational life of the offshore Project is 30 years.

1.7.4 Decommissioning

The preferred decommissioning option will be for as close to full removal as possible, whilst recognising that this will be subject to technical and environmental assessments and consultation closer to the time of decommissioning. Decommissioning activities will comply with all relevant legislation at that time and best practice at the time of decommissioning will be followed.

A Decommissioning Programme will be prepared based on industry best practices and submitted to Scottish Ministers for approval ahead of construction. It will be reviewed and updated every five years throughout the offshore Project's life-cycle.

1.7.5 Embedded Mitigation

Embedded mitigation measures are measures that reduce the potential for impacts to the environment. There are two main types of mitigation measures that are considered in the EIA process:

- Embedded mitigation – measures that are built into the Project design (primary mitigation) or implemented through standard practice or to meet legislative requirements (tertiary mitigation) that are independent of the EIA process. These measures are assumed to form part of the design of the offshore Project prior to any assessment; and
- Secondary mitigation – additional measures that do not form part of the fundamental design of the offshore Project. These measures are implemented to further reduce environmental effects to 'not significant' levels where the initial assessment concludes there is the potential for a significant effect to occur.

1.8 Consultation

Box 3 – Public Events Overview

33
Public Events

2,488
Event Attendees

61,864
Leaflets Delivered

579
Questionnaires Completed

Early and ongoing engagement with stakeholders is an important part of EIA best practice and the development of any project. OWPL have committed to go beyond its statutory obligations as it seeks to build effective and long-term working relationships with the Project's stakeholders, including local communities. The key stakeholder engagement and consultation activities are shown in Figure 10. A range of other engagement methods were also used, outlined in Box 4.

Pre-application advice

OWPL began engaging with various stakeholders in late 2020 to inform them of OWPL's application to the ScotWind leasing round and receive early feedback.

EIA Scoping

OWPL submitted an EIA Scoping Report to MS-LOT in March 2022 and a Scoping Opinion was received on 29th June 2022. Scoping is a key phase of the EIA which provides the developer and decision-maker with an opportunity to identify and consult on potentially significant environmental effects that should be considered for further assessment in an EIA Report, the methodologies by which impacts should be addressed and survey data required to inform the assessment.

Consultation with statutory and non-statutory consultees

Consultation has occurred throughout the EIA process in the form of topic-specific meetings and dedicated working groups to discuss fisheries and socio-economics. Feedback gained during these meetings has been integral to the preparation of the assessments presented within the Offshore EIA Report.

Pre-Application Consultation (PAC)

- **Spring 2022** – launch of virtual exhibition and live Q&A sessions;
- **November 2022** – formal in-person PAC events across seven venues (four in Orkney and three in Caithness and Sutherland) in November 2022; and
- **May 2023** – formal in-person PAC events across seven venues (four in Orkney and three in Caithness and Sutherland).

Figure 10 – Key stakeholder engagement and consultation activities

Box 4 – Additional Engagement Methods

Posters
Posters promoting events and directing people to the key information were displayed at key local venues including shops and businesses.

Community Panels
Community panels (with representatives from 14 community councils in the Highlands and 12 community councils in Orkney) provided liaison points and helped to share information with local communities.

Local Newspapers
Adverts promoting events were placed in The Orcadian, Caithness Courier and John O'Groats Journal.

Mail Drop
Leaflets advertising our events and sharing contacts details for feedback were sent to all addresses within the consultation zone.

Project Website
The Project website which hosted updates, a document library, and links to other information was set up at the start of the consultation period.

Summer Shows
Attendance at summer shows and the Climate Festival.

Press Releases
Regular press releases to relevant media outlets were issued promoting consultation activities and providing Project updates.

Social Media
Social media posts were issued and shared via the Project partners, Community Panels, and other stakeholder groups.

Email
Emails were sent inviting numerous stakeholder organisations and individuals to attend all consultation events.

1.9 EIA Methodology

The principal aim of an EIA is to ensure that the authority granting consent (the 'regulatory authority') for a particular project makes its decision in full knowledge of any potential significant effects on the environment. EIA is a means of drawing together, in a systematic way, an assessment of a project's likely environmental impacts and effects , both beneficial and adverse. This helps to ensure that the significance of the predicted effects, and the scope for reducing any adverse effects, is properly understood by the public and the regulatory authority before it makes its decision.

1.9.1 EIA process

Figure 11 illustrates the EIA process. The key steps are as follows:

1. Baseline characterisation to describe the relevant characteristics of the receiving environment in which the proposed offshore Project will be set, including over a defined study area.
2. Description of the Project Design Envelope to set out the range of project design parameters used to determine the worst-case scenario for each impact that is assessed (Box 5).
3. Assessment of potential effects to identify and assess potentially significant effects that could arise from the offshore Project, including direct, indirect, cumulative, inter-related, whole project assessment, transboundary effects and ecosystem effects (where appropriate) (Box 6). The assessment of potential effects is informed by the worst-case scenario, the baseline characterisation, feedback gained through consultation (including the Scoping Opinion) and takes account of embedded mitigation measures. Cumulative effects were assessed for each EIA topic where other plans and developments have the potential to affect the same receptors at the same time as the offshore Project. A list of developments for inclusion in the cumulative list assessment was collated through a screening exercise to identify relevant developments. Additional information was gathered for each cumulative development to inform the cumulative effects assessment.
4. Identification of secondary mitigation to reduce or remove impacts, where practicable, if potential impacts are likely to be significant.
5. Assessment of residual effects once all proposed mitigations are taken into account.
6. Identification of relevant monitoring studies to monitor the predicted impacts of the offshore Project as appropriate for each receptor.
7. Publication of EIA Report and Non-Technical Summary and subsequent consultation with Marine Directorate – Licensing Operations Team (MD-LOT), their statutory consultees, and other relevant stakeholders and the public on the findings of the EIA.

Box 5 – Worst-Case Scenario

For all EIA topics, the potential impacts of the offshore project are assessed based on the 'worst case' parameters contained within the Project Design Envelope. The worst-case scenario is the project design option (or combination of options) that represents the greatest potential for change and is considered on a case-by-case basis, depending on the receptor and impact being considered. Given that the worst case scenario is based on the design option (or combination of options) that represents the greatest potential for change, the development of any alternative options within the Project Design Envelope will give rise to no worse effects than those assessed in the EIA.

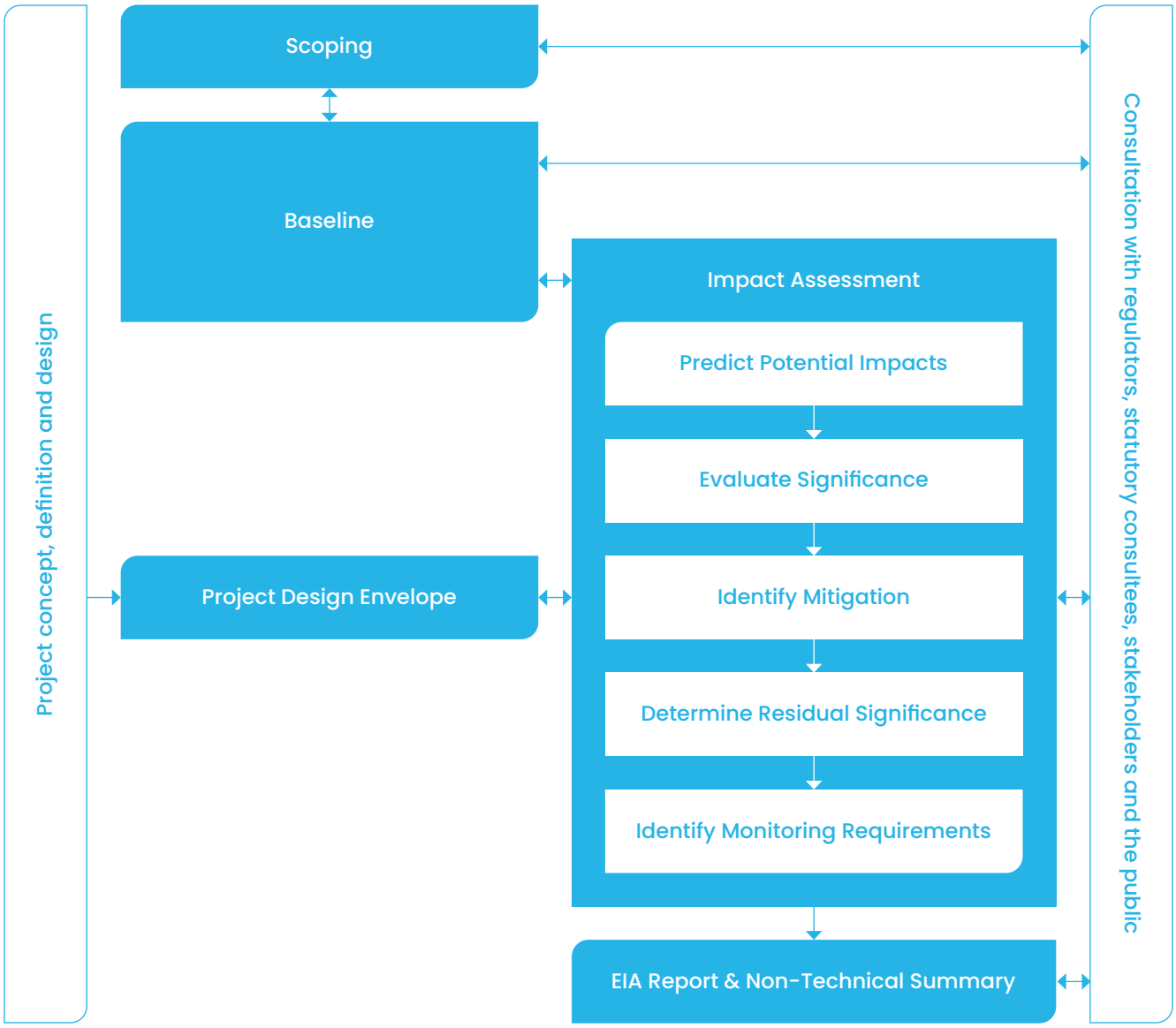


Figure 11 – EIA Process

Box 6 – Types of Effects

For each receptor the following types of effects are considered:

Offshore Project Alone
Assessment of the direct and indirect effects from the offshore Project construction (including pre-construction), operation and maintenance and decommissioning stages.

Cumulative Effects
Assessment of the effects of the offshore Project cumulatively with other foreseeable projects (other developments), plans and activities.

Transboundary Effects
Assessment of the potential for the offshore Project to affect other countries other than the UK.

Inter-Related Effects
Assessment of the potential effects of multiple impacts affecting a single receptor, either within a single Project stage or across multiple stages.

Ecosystem Effects[7]
Assessment of the potential effects that may occur across trophic levels (i.e. at an ecosystem scale), for example, impacts on prey species affecting their availability for predators.

Whole Project Assessment
Holistic overview of the effects from both offshore and onshore Project elements, to ensure that the whole Project impacts and effects are understood and that neither the offshore nor onshore Project is considered in isolation.

1.9.2 Assessing Impact Significance

Despite the assessment of impact significance being a subjective process, a defined methodology, outlined below, is used to make the assessment as objective as possible and consistent across different topics. However, the environmental factors under consideration vary considerably between the different receptors depending on what is being assessed, therefore there is some variation in the process between different topics and as required by receptor specific guidance.

For each impact, the assessment identifies a receptor's sensitivity to that effect and implements a systematic approach to understand the consequence and significance of the effect associated with the impact under consideration. The process considers the following:

- Identification of receptor and impact;
- Definition of sensitivity of receptor, taking into account their tolerance to change, recoverability, adaptability and value;
- Definition of magnitude of impact, taking into account the spatial extent, duration, frequency, intensity and likelihood of the impact; and
- Evaluation of consequence of the effect on the receptor, considering the sensitivity of receptor and magnitude of impact using a matrix approach.

7. Ecosystem effects have been considered holistically throughout the EIA for each marine ecology receptor: benthic subtidal and intertidal ecology, fish and shellfish ecology, marine mammals and megafauna, and offshore and intertidal ornithology.

Sensitivities and magnitudes are categorised as 'Negligible', 'Low', 'Medium' or 'High' based on topic-specific assessment criteria[8]. Table 1 sets out how the magnitude of impact and the sensitivity of the receptor are combined to provide a consequence of effect.

CONSEQUENCE OF EFFECT		MAGNITUDE			
		NEGLIGIBLE	LOW	MEDIUM	HIGH
SENSITIVITY	NEGLIGIBLE	Negligible	Negligible	Negligible	Negligible
	LOW	Negligible	Negligible	Minor	Minor
	MEDIUM	Negligible	Minor	Moderate	Moderate
	HIGH	Negligible	Minor	Moderate	Major

Table 1 – Consequence of Effect

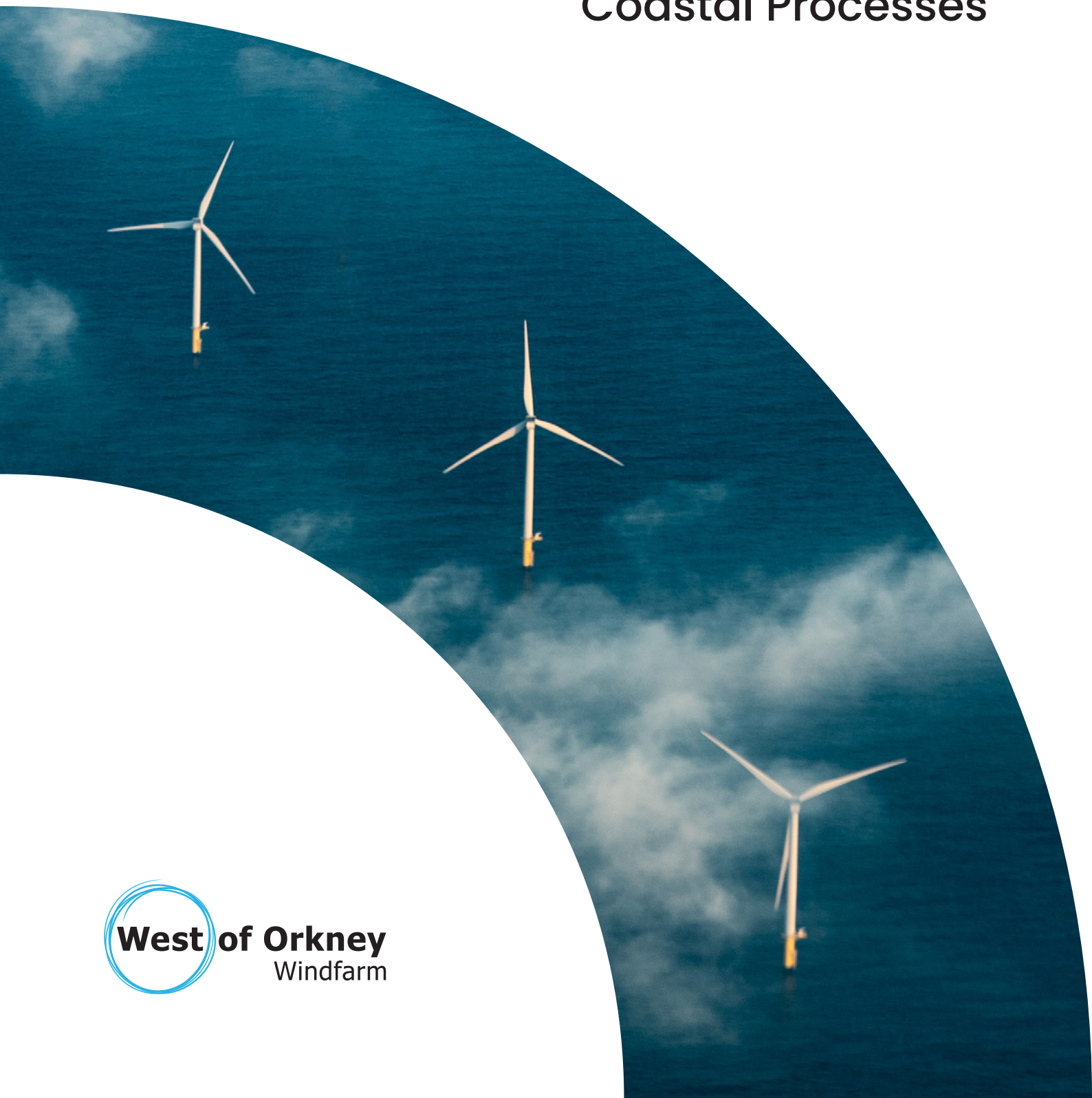
The categories provide a threshold to determine whether or not significant effects may result from the offshore Project, with 'Moderate' and 'Major' effects being defined as 'significant' in EIA terms. Where the impact assessment identifies that an aspect of the Project is likely to give rise to significant environmental effects, additional mitigation measures, above and beyond any embedded mitigation, or design changes will be implemented to avoid impacts or reduce them to acceptable levels, where reasonably practicable. At this point the impacts are reassessed, considering the additional mitigation to determine the residual effect.

The following sections of this Non-Technical Summary present the results of the topic specific assessments that have been undertaken as part of the EIA.

8. There are some exceptions to this generic methodology which are influenced by topic specific guidance; for example, shipping and navigation, archaeology and cultural heritage and seascape, landscape and visual assessments.

2

Marine Physical & Coastal Processes



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2. Marine Physical & Coastal Processes

The marine physical and coastal processes assessment considered the seabed, the coast at the offshore Project landfall location, designated sites with physical receptors, tidal currents, wave climate and sediment transport regimes. This assessment characterised a number of pathways which can have consequences for the assessment of impacts on other receptors.

The study area encompassed a 10 km buffer around the OAA and a 15 km buffer around the offshore ECC. The baseline was characterised using a combination of desk-based studies and site-specific survey data, and included the development of the 'West of Orkney' numerical model, developed specifically to inform the EIA. NatureScot and Marine Scotland Science were consulted with during the EIA, with regards to the scope and input data for the model. Site-specific survey data were collected across the offshore Project area in 2022 during a series of offshore and nearshore baseline surveys used to characterise the seabed conditions, sediment types and water column properties. The key features in the study area include Whiten Head Bank and Stormy Bank within the OAA, and Sites of Special Scientific Interest (SSSI) located on the north coast of Caithness. The two bank features within the OAA are stable with no evidence of migration.

Water depths within the OAA range between approximately 41 mLAT and 90 mLAT with shallower regions located on the two banks. Surface sediments are mostly sandy and quite coarse, with significant quantities of gravel also making a considerable component in places and areas of exposed bedrock. Boulders are also a common feature, with extensive areas, known as boulder fields, characterised as having medium to high boulder density. The coastline where the offshore ECC landfalls will occur is characterised by hard and mixed substrate which is considered to be erosion resistant with the presence of exposed bedrock (Figure 12).

The impacts of the offshore Project construction (including pre-construction), operation and maintenance and decommissioning were assessed. The potential impacts assessed included changes in seabed levels, sediment properties, suspended sediment concentration, tides, waves, sediment transport regimes, scour and stratification, and the resulting effects on coastal morphology, and designated marine and coastal sites. It should be noted that dredging and boulder clearance are two key sources of impact. Details on the boulder clearance and dredging activities are yet to be confirmed and, if required, will be subject to a separate Marine Licence application. Environmental impacts from these activities have been assessed to the extent that it is possible for the offshore EIA.

The assessment was informed by site-specific data and the 'West of Orkney' numerical model. Only a small proportion of the finer sediment disturbed during construction is expected to enter into a persistent plume with most settling out quickly within 8 km. Sediment plumes are not anticipated to last any longer than three days, and any sediment that settles would be of a very limited thickness (i.e. region of millimetres).

The coarser sediments that are disturbed would settle more rapidly and may result in thicker deposits on the seabed, affecting a very small proportion of the offshore Project area. Eventually this would enter into the natural sediment transport regime with sediments returning to natural (or close to) levels. There will be no direct impacts on the intertidal area due to the use of a trenchless landfall technology (Horizontal Directional Drilling (HDD).

During the operation and maintenance stage, any impact of presence of infrastructure in the OAA on tides, waves and sediment transport regimes is not anticipated to significantly affect the seabed, given the stable nature of the two banks in the OAA (Stormy Bank and Whiten Head Bank), and similarly, the coastline is considered to be resistant to any erosion that these changes could result in. Potential affects resulting from the introduction of scour, changes in coastal processes at the landfall and stratification are considered unlikely to be noticeable in the context of natural variation.

It was concluded that impacts would be highly localised and no significant effects to any marine physical and coastal processes receptors are predicted, either for the offshore Project alone, or cumulatively with other developments adjacent to the offshore Project. Therefore, no secondary mitigation or monitoring requirements were proposed. There were also no transboundary effects predicted.

Impacts on marine physical and coastal processes are mostly unique to each offshore Project stage and occur over discrete periods of time, and the interaction of effects within an offshore Project stage were already considered as an inherent part of the assessment. Therefore, the assessment concluded that there were no significant inter-related effects.

Lastly, the whole project assessment concluded that there is no overlap between the effects of the onshore and offshore Project on marine physical and coastal processes receptors.

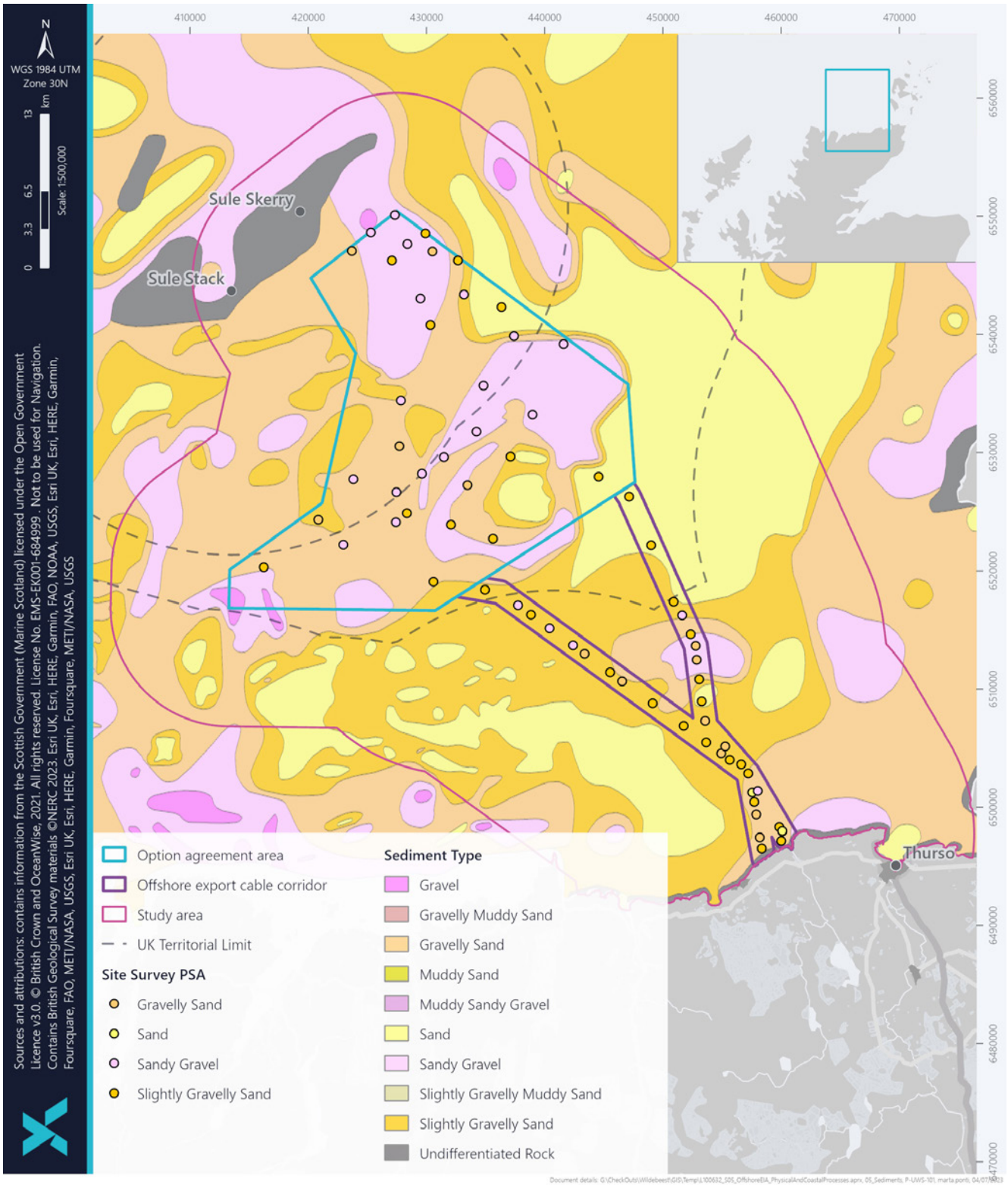

Figure 12 – Sediments across the offshore Project area comparing site specific sampling with published British Geological Society (BGS) data.

3

Water & Sediment Quality

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3. Water & Sediment Quality

The water and sediment quality assessment considered any potential reductions in water and sediment quality resulting from the offshore Project and assesses the potential effects on designated waters[9].

The water and sediment quality study area encompassed a 10 km buffer around the OAA and a 15 km buffer around the offshore ECC. The baseline characterisation was informed by a desk-based assessment supplemented by the site-specific surveys conducted in 2022 which included water and sediment sampling and contaminants analysis.

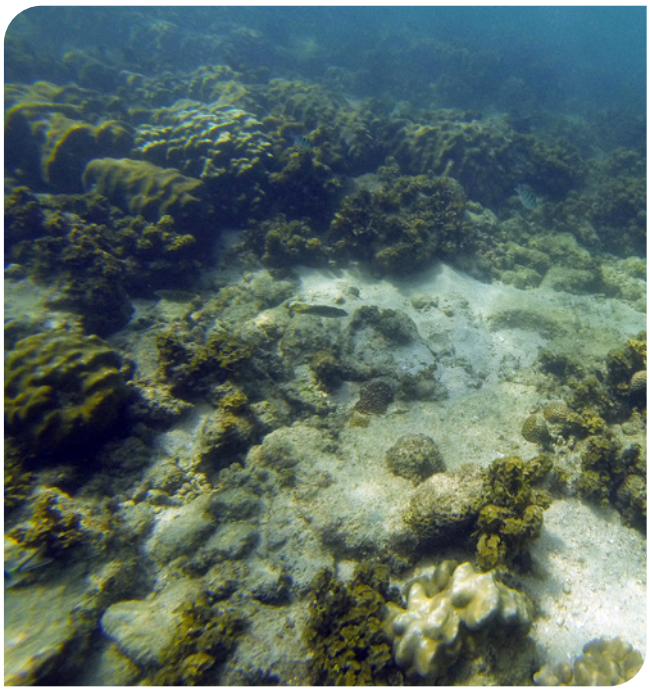
There are two designated waterbodies that overlap with the offshore Project area, Strathy Point to Dunnet Head, and Sule Skerry and Sule Stack, both defined as being in high or good condition (Figure 13).

The Cape Wrath to Strathy Point designated waterbody and one bathing water is located within the wider study area. The results of the site-specific surveys and the associated contaminants analysis, the scope of which was subject to consultation and agreement with NatureScot, indicate that there were generally low levels of contamination across the offshore Project area.

Radiological contamination in the form of radioactive particles is known to be present in the marine environment at the coast around Dounreay. Due to historic practices of the coastal nuclear facilities at the Dounreay Nuclear Power Development Establishment and the Vulcan Naval Reactor Test Establishment. The Scottish Environment Protection Agency (SEPA) has established a 2 km radius protected zone (under the Food and Environment Protection Act 1985) ('the FEPA order zone') (Figure 13).

The offshore Project area does not overlap this zone. There has been extensive remediation and monitoring efforts to reduce radioactive contamination in the region and there is considered to be a low potential for radiological particles to be present within the offshore Project area.

The impacts of the offshore Project construction (including pre-construction) and decommissioning were assessed, including the potential release of contaminated sediments and radioactive particles from seabed disturbance (e.g. from trenching of cables) and the resulting impacts on designated water bodies. All operation and maintenance impacts were scoped out.



9. Designated waters is a collective term for designated waterbodies, designated bathing waters, designated shellfish waters and nitrate sensitive areas.

The assessment was informed by the outputs of the marine physical and coastal processes technical report (including the 'West of Orkney' numerical model) as described above for marine physical and coastal processes. The assessment concluded that due to the low levels of sediment contamination and the highly localised and temporary nature of the impacts, no significant effects to any water and sediment quality receptors were predicted, either for the offshore Project alone or cumulatively with other plans or developments. There were also no transboundary effects predicted. No secondary mitigation or monitoring requirements were proposed.

Appropriate embedded mitigations will be in place to manage and control marine pollution, and this will be implemented through the Marine Pollution Contingency Plan (MPCP) that will be contained within the Environmental Management Plan (EMP). The EMP will be produced post-consent and an outline version is provided with the application in Outline Plan (OP) 1: Outline Environmental Management Plan.

The interaction of effects within an offshore Project stage was already considered as an inherent part of the assessment, and therefore, the assessment concludes that there were no significant inter-related effects.

The whole project assessment concluded that although there was the potential for coastal waterbodies to be affected by surface water contamination resulting from the onshore Project, standard mitigation measures and the use of a trenchless landfall methodology (HDD) would minimise these effects. Overall, the potential combined effects of the onshore and offshore Projects activities on water and sediment quality receptors were expected to be minimal with no significant effects anticipated.

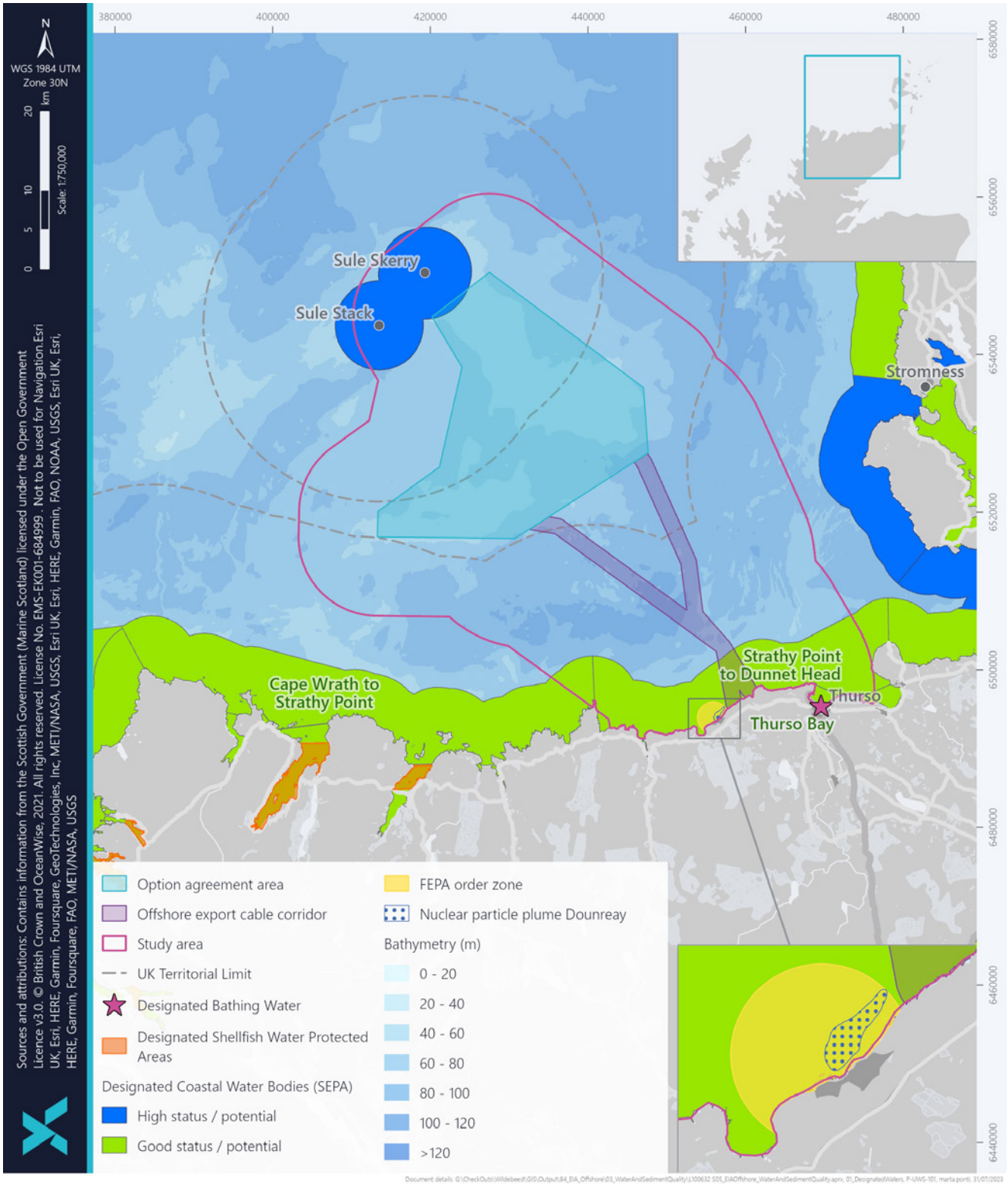


Figure 13 – Water and sediment quality features in the vicinity of the offshore Project area

4

Benthic Subtidal & Intertidal Ecology

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4. Benthic Subtidal & Intertidal Ecology

Benthic ecology concerns the species and communities that live on or in the seabed. The benthic subtidal and intertidal ecology study area encompassed a 10 km buffer around the OAA and a 15 km buffer around the offshore ECC. The baseline was characterised through a combination of site-specific survey data and desk-based studies.

Offshore and nearshore baseline surveys, including seabed imagery and sediment grab sampling, were conducted in 2022 to collect information on the benthic habitats, communities and species present. An intertidal ecology survey including aerial imagery accompanied by a walkover survey was also conducted to characterise the coastal ecology at the cable landfalls. Statutory consultee, NatureScot, was engaged with throughout the EIA with regards to the agreement of the scope for the baseline surveys and results of the impact assessment with regards to potential impacts on protected habitats.

The benthic ecology surveys identified 16 habitat types, with a mixture of sedimentary and rocky habitats resulting in a varied benthic community. The seabed within the OAA contains a patchwork of mixed and coarse sediments with extensive areas of boulders and cobbles.

A range of benthic subtidal and intertidal ecology receptors of conservation importance are present in the study area, including those that are protected through national or international legislation and policy, namely: stony reef and bedrock reef (potential Annex I habitat[10]), offshore subtidal sands and gravels habitat (a common seabed habitat in British waters and a Scottish Priority Marine Feature, (PMF)), ocean quahog (a slow growing and long-lived burrowing bivalve mollusc that is on the OSPAR Convention's List of Threatened and Declining Species), and kelp and seaweed communities on Atlantic infralittoral rock a PMF and a 'blue carbon' habitat).

Areas of potential Annex I reef, stony reef were assessed against published criteria to further understand the potential resemblance of habitats in the offshore Project area to Annex I reef. The seabed in the southwest of the OAA represents 'medium resemblance' Annex I stony reef, with areas of 'low to medium resemblance' stony reef found largely in the north of the OAA (see Figure 14).

Further study was undertaken to provide information on the characteristics and patchiness of the "low to medium" resemblance stony reefs within the OAA. This work concluded that approximately 60% of the 'low to medium' stony reef was likely to be Annex I reef. All areas of delineated Annex I reef in the OAA and ECC were very patchy in nature and associated with sands and gravels in almost all cases.

Based on the survey results, the reef is associated with lower levels of biodiversity than that in areas such as the Solan Bank Reef Special Area of Conservation (SAC), a designated site protected for Annex I reefs (bedrock and stony) approximately 25 km west of the OAA, which are unaffected by scour resulting from coarse sediment.

10. Habitats of conservation interest that are listed on Annex I of the Habitats Directive, for which one or more Special Areas for Conservation (SAC) are designated in the UK Site Network.

Potential impacts from the offshore Project construction (including pre-construction), operation and maintenance and decommissioning were assessed. These included temporary impacts such as habitat loss / disturbance and temporary increases in suspended sediment and associated deposition, the risk of introduction and spread of Invasive Non-Native Species (INNS), and impacts resulting from the presence of offshore Project infrastructure, including long term loss or damage of benthic features, the colonisation of introduced hard structures (e.g. by encrusting organisms), electromagnetic field and thermal load effects, and changes in physical processes (as described for marine physical and coastal processes).

The assessment of effects was informed by the site-specific survey data, the 'West of Orkney' numerical model, and a quantification of the worst case seabed footprint associated with the offshore Project construction (including pre-construction), operation and maintenance, and decommissioning. It was concluded that impacts related to seabed disturbance and the presence of infrastructure would occur over a small area, in the context of the national distribution and extent of benthic receptors, and no significant impacts to any benthic subtidal and intertidal receptors are predicted, either for the offshore Project alone, or cumulatively with other plans or developments. A quantification of the temporary and long-term impacts on Annex I reef habitat revealed that the equivalent of up to 0.77% of the area of Annex I reef in Scottish SACs would be affected and only 0.5% of Annex I reef in UK SACs would be affected, which is low in national terms.

Effects on benthic receptors as qualifying features of European Sites, i.e. SACs, have been considered by the HRA process. The screening process, undertaken in consultation with NatureScot and MS-LOT, concluded there was no potential for LSE and therefore no further assessment was required under the HRA process.

The introduction and spread of INNS will be minimised through the implementation of an INNS management plan, developed post-consent. Overall, no significant effects were identified, and no secondary mitigation requirements were proposed. There were also no transboundary effects predicted.

A potential for an inter-related effect between temporary habitat loss / disturbance and increases in suspended sediment and associated deposition between offshore Project stages was identified but was not considered to result in any greater effect than each impact in isolation due to the temporary and localised nature of each impact.

The whole project assessment concluded no overlap between the effects of the onshore and offshore Project on benthic subtidal and intertidal ecology receptors due to the use of a trenchless installation method at the landfall (HDD).

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 may include sediment sampling and seabed photography at both disturbed and undisturbed areas.

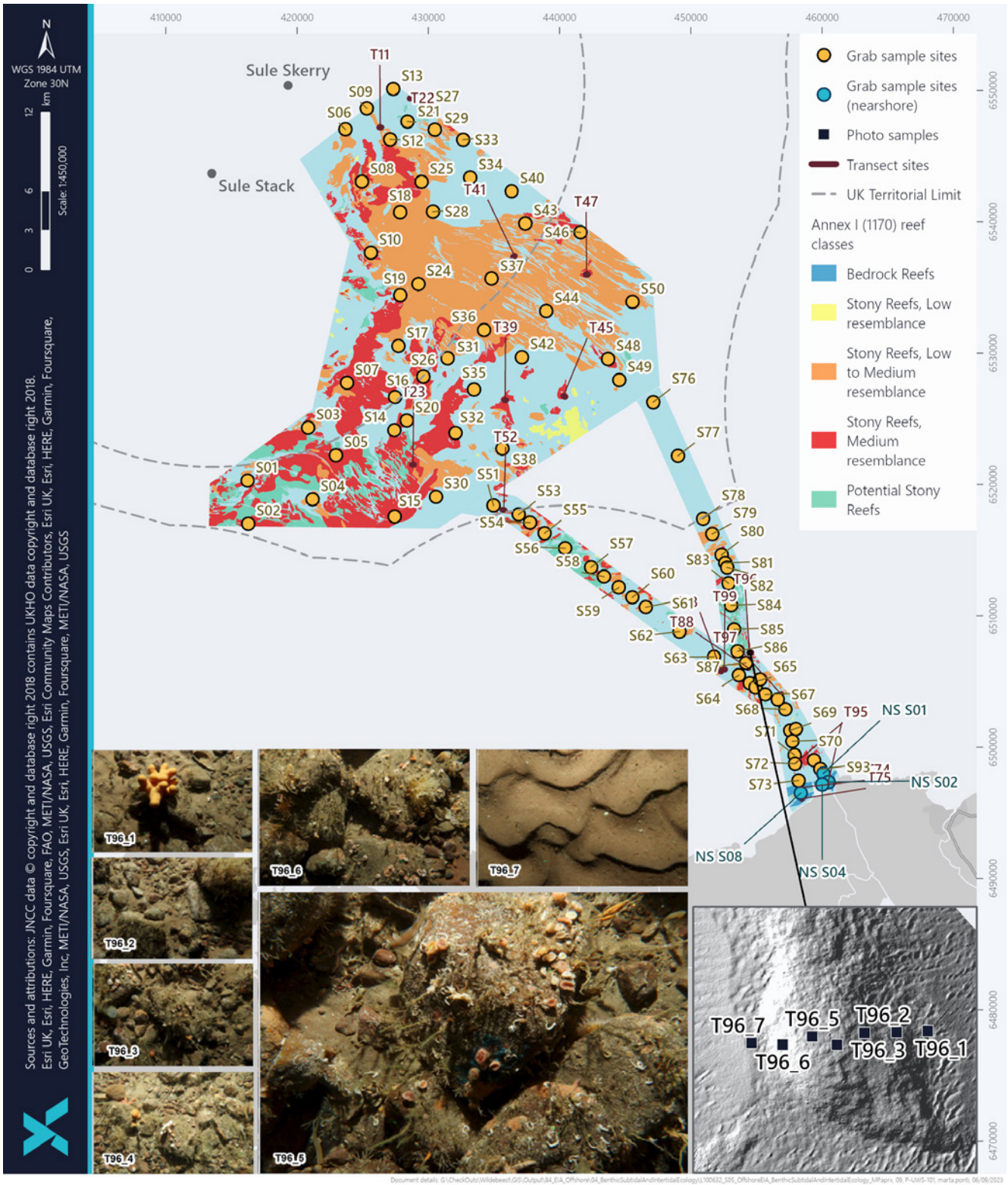

Figure 14 – Annex I reef resemblance and extent across the offshore Project area

5

Fish & Shellfish Ecology

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5. Fish & Shellfish Ecology

The fish and shellfish ecology assessment considered a range of receptors present within and around the offshore Project area, including marine finfish[11] (non-diadromous bony fish), shellfish, elasmobranchs (cartilaginous fish such as sharks, rays and skates) and diadromous fish (fish that migrate between freshwater and marine environments during their life cycle).

The fish and shellfish ecology study area encompassed the four International Council for Exploration of the Sea (ICES)[12] rectangles that the offshore Project overlaps. The baseline was characterised using a combination of desk-based studies, environmental DNA (eDNA) analysis of water samples collected throughout the offshore Project area and consultation throughout the EIA with a range of interested stakeholders, including Fisheries Management Scotland and district salmon fisheries boards. The results of the site-specific benthic surveys were also used to understand the potential for fish spawning habitat in the offshore Project area.

Box 7 – eDNA Surveys
An eDNA survey is a non-invasive sampling method used to investigate the presence of species, based on the DNA found within water samples. It involves sampling the DNA that accumulates in the environment (e.g. through excretions or secretions), rather than through direct sampling of an organism. This novel approach to collecting data on species and diversity was used to inform the offshore EIA, supplementing other data sources.

A range of species potentially utilise the study area for spawning, foraging, migration, or as a nursery habitat. Key species of conservation importance include those with declining populations and/or those that are protected through national or international legislation and policy, such as Atlantic salmon, flapper skate, cod, herring and sandeel. Additionally, the North West Orkney Nature Conservation Marine Protected Area (NCMPA), designated for sandeels, is located approximately 11 km from the OAA, however there will be no impacts on this designated site as a result of the Project.

Other species in the study area are considered to be of commercial value, such as mackerel, haddock, brown crab and scallops, and certain species are important as prey for other fish, marine mammals and birds, including sandeel, herring, mackerel and sprat. Brown crab are considered to be a key species for the local fishing community (see section 8) and available tagging studies for brown crab indicate the potential for brown crab migratory routes to intersect the offshore Project area.

Diadromous fish migrate between freshwater and marine environments during their life cycle (Figure 15). For example, Atlantic salmon depart Scottish rivers as juveniles to migrate to offshore feeding grounds before returning back to their native river to spawn. The presence, abundance and origin of diadromous fish (e.g. Atlantic salmon and sea trout) in the vicinity of offshore Project area remains relatively unknown, as there are uncertainties around the migration routes and behaviours by these species. Although it is expected that these species may migrate through the offshore Project area (Figure 16), including but not limited to those originating from rivers along the north coast of Scotland, the eDNA surveys did not detect any of these species, in the offshore Project area.

11. Including those that are pelagic (inhabit the water column) and demersal (bottom dwelling).
12. ICES rectangles are a standard gridded spatial system used for analysis and visualisation of data.

Figure 15 – Atlantic salmon lifecycle © Robin Ade and Atlantic Salmon Trust

The impacts assessed for construction include temporary habitat loss and disturbance from seabed disturbance (e.g. from seabed preparation and the trenching of cables), and underwater noise from piling of foundation structures and UXO clearance. Impacts resulting from the presence of the offshore Project during operation and maintenance were also considered, such as habitat loss, electromagnetic field effects from subsea cables, fish or predator aggregation around offshore structures and barrier effects to diadromous fish.

Impacts on diadromous fish were assessed in the context of the current understanding of their migratory patterns, including impacts on diadromous fish migrating to and from the River Forss at the landfall area. Indirect effects related to changes in availability or distribution of prey species were also assessed for all offshore Project stages. The assessment of effects was informed by a combination of qualitative assessments and quantitative underwater noise and EMF modelling studies utilising Project-specific design data.

Any habitat loss or disturbance was anticipated to be highly localised in the context of the wider availability of habitats. The effects of underwater noise effects from piling activities, UXO clearance and other less noisy activities, were considered to be short-term. Embedded mitigation measures will act to reduce impacts on fish and shellfish ecology receptors. For example, the development of a Piling Strategy ahead of construction, once the offshore Project design has been further refined, will define the mitigation measures (such as soft starts and ramp-up procedures) to be implemented.

Electromagnetic field effects, which may impact electroreceptive species that utilise the earth's natural magnetic field for navigation or prey / predator detection, were assessed as highly localised and unlikely to affect the long-term functioning of the wider available spawning and nursery ground or migratory routes for fish or shellfish (e.g. for brown crab and diadromous fish). Potential increases in fish or predator aggregation, resulting from any artificial reefs that arise from the introduction of hard substrate, were also assessed as highly localised, in the context of the existing presence of natural hard substrate at the offshore Project.

No barrier effects to diadromous fish are expected to affect migration success of Atlantic salmon to and from Scottish rivers and the indirect effects related to changes in availability or distribution of prey species will be minimal. Therefore, no significant effects to any fish and shellfish ecology receptors were predicted, either for the offshore Project alone, or cumulatively with other plans or developments, and no secondary mitigation requirements were proposed. The assessment also concluded that there were no significant transboundary effects.

Effects on diadromous fish and associated features as qualifying features of SACs have been considered by the HRA process. The screening process, undertaken in consultation with NatureScot and MS-LOT, concluded that there was no potential for LSE in relation to effects on sea lamprey or river lamprey and no further assessment was required under the HRA process. Feedback from NatureScot stipulated that although Atlantic salmon and FWPM are qualifying features of European Sites, impacts on these species should be considered within the EIA only, due to inherent issues on apportioning population estimates to specific designated sites.

The potential for an inter-related effect from habitat loss between offshore Project stages was identified, but not considered to result in any greater effect than each impact in isolation, due to the temporary and localised nature of these impacts. No significant inter-related effects within an offshore Project stage were identified. The whole project assessment concluded that the effects of the onshore Project on diadromous fish are not expected to exacerbate the effects assessed for the offshore Project alone.

Fish and shellfish operate at various levels of the food chain, acting as both predators and prey, and play an important role in the transfer of energy across the ecosystem. Therefore, effects on fish and shellfish may affect other components of the ecosystem and vice versa. However, no significant effects were predicted on any fish prey species and no significant change in the distribution or abundance of predators at the offshore Project area is anticipated.

The fish and shellfish ecology assessment used the best available evidence to inform the assessment of potential effects. There are potential uncertainties in the knowledge base on diadromous fish abundance, distribution and origin within the offshore Project area, as highlighted above. The potential for monitoring of diadromous fish will be explored post-consent, focussing on the key data gaps identified in the Scottish Marine Energy Research (ScotMER)[13] diadromous fish and fish and fisheries evidence maps[14,15].

13. As part of the ScotMER programme, the Scottish Government has collaborated with representatives from academia, industry, statutory nature conservation bodies and environmental non-governmental organisations to map evidence gaps for environmental and socio-economic impact assessments for offshore renewable energy developments.
14. https://www.gov.scot/publications/diadromous-fish-specialist-receptor-group/
15. https://www.gov.scot/publications/fish-and-fisheries-specialist-receptor-group/

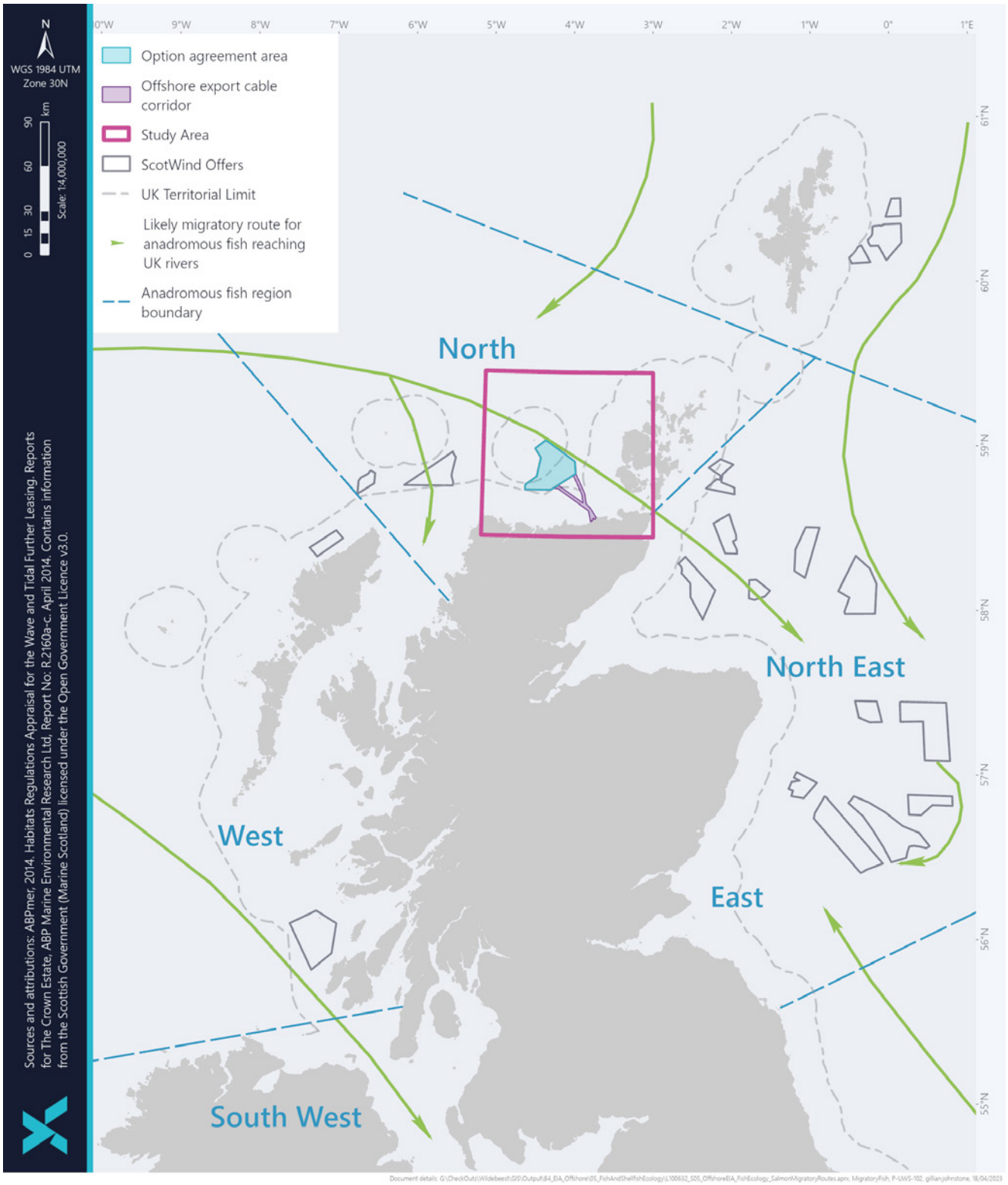

Figure 16 – Potential migration routes of homing adult Atlantic salmon when they return from overwintering in the northeast Atlantic

6

Marine Mammals & Other Megafauna

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6. Marine Mammals & Other Megafauna

A range of marine mammals (e.g. whales, dolphins and seals) and megafauna (e.g. basking shark) may occur within the offshore Project area and its vicinity. The marine mammal and other megafauna study area encompassed the N1 Plan Option area (within which the OAA is located) plus a 4 km buffer.

However, as marine mammals and megafauna are highly mobile, it was also important to consider the wider area within which these animals range. Therefore, this assessment has also considered the ecology, distribution, and density / abundance of animals within a wider region to understand each species on a broader regional scale.

The baseline was characterised using a combination of desk-based studies, digital aerial surveys (July 2020 – September 2022), sightings obtained from observers aboard survey vessels, and eDNA analysis. The digital aerial surveys involve using aircraft equipped with digital video cameras to provide information on species abundance, density and distribution.

Ten marine mammal species, harbour porpoise, white-beaked dolphin, common dolphin, Risso's dolphin, minke whale, white-sided dolphin, killer whale, humpback whale, harbour seal and grey seal, along with basking sharks, are considered to use the study area regularly, and were considered in the impact assessment. There are no designated sites with marine mammal and megafauna features, or seal haul out sites[16] in the vicinity of the offshore Project.

The impacts of the offshore Project construction (including pre-construction), operation and maintenance and decommissioning were assessed, including those from underwater noise generation, collision risk and disturbance from vessels, and displacement due to the presence of offshore Project infrastructure. Indirect effects related to changes in availability or distribution of prey species were also assessed.

The assessment of effects was informed by a combination of qualitative assessments and quantitative underwater noise modelling studies across activities such as UXO clearance and pile installation.

Population modelling was also undertaken to understand the population-level consequences for certain species (harbour porpoise, harbour seal and grey seal). NatureScot, as the statutory consultee with an interest in marine mammals, was consulted throughout the EIA to agree modelling and assessments scopes and input data, as well as having the opportunity to comment on early impact assessment findings.

16. Onshore locations where seals rest, moult or breed. Seal haul-out sites are designated under section 117 of Marine (Scotland) Act 2010.

While some temporary and highly localised injurious or behavioural effects were expected to occur at an individual level for several marine mammal species, no population level effects were anticipated and no significant effects to any marine mammal and megafauna receptors are predicted.

Embedded mitigation measures will be in place to reduce underwater noise effects. The development of a Piling Strategy ahead of construction, once the Project design has been further refined, will define the mitigation measures (such as soft-starts, ramp-up procedures and any other appropriate mitigation) to be implemented.

An outline Marine Mammal Mitigation Protocol (MMMP) supports the Offshore EIA Report and details mitigation options for marine mammals that will reduce any potential effects (OP2: Outline Marine Mammal Mitigation Protocol). Underwater noise impacts from other (less noisy) sources (e.g. cable laying and dredging), disturbance or collision with vessels, and any displacement or barrier effects from the presence of infrastructure are anticipated to be highly localised and/or temporary and the indirect effects related to changes in availability or distribution of prey species are expected to be minimal. Cumulative effects with other plans and developments were assessed to potentially increase the magnitude of impacts for several species when compared to the offshore Project alone. However, all cumulative effects were still assessed as not significant.

Effects on marine mammal features as qualifying features of European Sites, i.e. SACs, have been considered by the HRA process. The screening process, undertaken in consultation with NatureScot and MS-LOT, concluded there was no potential for LSE and therefore no further assessment was required under the HRA process.

As no significant effects were identified, no secondary mitigation requirements were proposed. As noted above, a Piling Strategy will be in place for construction, and once approved, the MMMP will detail the mitigation methods to be employed to reduce effects on marine mammals. There were also no significant transboundary effects predicted.

The potential for an inter-related effect, between the underwater noise during the construction (including pre-construction), operation and maintenance and decommissioning stages, to result in a greater effect than when each stage is assessed in isolation was considered to be low, given the temporary and intermittent nature of impacts. Whilst it is possible for multiple impacts to effect marine mammals within an offshore Project stage, there was not expected to be potential for any significant adverse effect from these activities in combination.

Marine mammals are part of the wider ecosystem and, therefore, impacts on this receptor may affect other components of the ecosystem and vice versa. No significant effects were predicted on any marine mammal prey species and no significant change in the distribution or abundance of marine mammals as predators at the offshore Project area is anticipated. Therefore, no ecosystem effects were anticipated to occur in relation to marine mammals either as direct impacts to them as predators or through indirect effects to their prey species.

The whole project assessment concluded no overlap between the effects of the onshore and offshore Project on marine mammal and megafauna receptors. A detailed monitoring programme will be developed through consultation with relevant stakeholders and will be presented within the Project Environmental Monitoring Programme (PEMP) that will be subject to approval as part of the discharge of consent conditions.

7

Offshore & Intertidal Ornithology

West of Orkney
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7. Offshore & Intertidal Ornithology

The offshore and intertidal ornithology assessment considered the potential effects of the offshore Project on breeding, non-breeding and migratory birds and designated sites. The offshore and intertidal ornithology study area encompassed the OAA plus a 4 km buffer and the offshore ECC.

There has been ongoing consultation with NatureScot throughout the EIA and associated HRA processes, to discuss the constraints analysis, environmental surveys, assessment scope and present early results of the assessments. OWPL are confident that all the information required by the regulator and NatureScot to understand potential impacts, prepare the Appropriate Assessment and determine the consent application has been provided.

The baseline characterisation was informed by a combination of desk-based studies and site-specific surveys. The site-specific surveys consisted of digital aerial surveys between July 2020 – September 2022.

The baseline site-specific digital aerial surveys identified the following key species within the offshore Project area: kittiwake, great black-backed gull, Arctic tern, great skua, guillemot, razorbill, puffin, fulmar and gannet. Species recorded regularly in most months within the OAA, and its vicinity included kittiwake, guillemot, razorbill, puffin and gannet. For most species recorded at most times of year, relative abundance in the OAA was low or very low in the context of their population size. Great skuas and European storm-petrels were generally absent from the OAA during the non-breeding season, storm petrels were recorded only in August and September. The key species present within the offshore Project area are considered to have a moderate sensitivity to disturbance. Four species (kittiwake, great black-backed gull, Arctic tern and gannet) have a moderate to high vulnerability to WTG collision risk.

The impacts of the offshore Project construction (including pre-construction), operation and maintenance and decommissioning were assessed, including the risk of collision with WTG, disturbance, displacement, and barrier effects and indirect effects on prey species.

Overall, for the offshore Project alone, the assessment of potential effects of disturbance and displacement combined with collision risk showed that for all species at all times of year, effects would have a negligible or low impact on receptor populations. Disturbance and displacement during construction (including pre-construction) would be short-term, temporary and reversible and considered not significant in EIA terms. The assessment of the operation and maintenance stage was informed by Project-specific collision risk modelling, displacement assessment and Population Viability Analysis to understand the potential effects on regional populations. Embedded mitigations will likely reduce impacts on birds, such as the minimum clearance between the lowest WTG blade tip and sea-level, set by the engineering requirements, is above the minimum required clearance, which reduces potential collision risk.

Collision risk, disturbance, displacement and barrier effects during the operation and maintenance stage were assessed as affecting very low proportions of breeding and non-breeding populations. Indirect effects from impacts to key prey species (e.g. sandeel and herring) were informed by the outcomes of other topic-specific assessments, such as fish and shellfish ecology and were assessed as not significant. There are also no significant transboundary effects predicted.

For cumulative impacts with other projects, the potential for combined disturbance and collision effects on kittiwake, Article tern and gannet were identified. The cumulative impacts on the regional breeding and non-breeding populations were assessed to be minor and impacts assessed as not significant.

For cumulative impacts with other projects, the potential for disturbance, displacement and barrier effects only effects on guillemot, razorbill, puffin and fulmar were identified. The cumulative impacts on the regional breeding and non-breeding populations were assessed to be minor and impacts assessed as not significant.

For cumulative impacts with other projects, the potential for collision only effects on great black-backed gull and great skua were identified. The cumulative impacts on the regional breeding and non-breeding populations were assessed to be minor and impacts assessed as not significant.

It was also assessed that there was no potential for the effects during other stages of the offshore Project to interact in a way that would result in combined effects of greater significance than the assessments for each individual stage. In addition, offshore and intertidal ornithology receptors are part of the wider ecosystem, and therefore, impacts on this receptor may affect other components of the ecosystem and vice versa.

However, no significant effects were predicted on any key prey species and no significant change in the distribution or abundance of seabirds as predators in the offshore Project area is anticipated. Therefore, no ecosystem effects were anticipated to occur in relation to ornithology receptors, either as direct impacts to them as predators or through indirect effects to their prey species.

The whole project assessment concluded no overlap between the effects of the onshore and offshore Project on offshore and intertidal ornithology receptors.

An assessment of effects on Special Protection Areas (SPAs), as required by the HRA process, is reported in the RIAA. The RIAA concluded that when considering the "best scientific knowledge in the field" and using available evidence from operational offshore windfarms, no adverse effects on site integrity can be concluded for all SPAs.

Details of any required monitoring will be determined post-consent and 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.

8

Commercial Fisheries

West of Orkney
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8. Commercial Fisheries

In the context of EIA, commercial fishing activity is defined as legal fishing activity undertaken for commercial profit. The commercial fisheries study area encompassed the four ICES rectangles that the offshore Project overlaps.

The baseline desk-based study, supplemented with data received during consultation, identified the following key fleets as being operational in the study area: creelers (i.e. pots and traps, including smaller local vessels and larger vivier crabbers[17]), demersal trawlers (i.e. vessels using conical nets towed along the seabed) and scallop dredgers (i.e. rigid structures towed along the seabed to collect scallops). Non-UK fishing activity is expected to occur in the area at low levels, mostly by Dutch and Norwegian pelagic vessels (i.e. vessels towing large conical nets through the water column). Key commercial species were identified as whitefish (e.g. haddock, cod), brown crab, mackerel, herring, and scallops.

Fishing activity occurs throughout the offshore Project area. Key areas for pots and traps include nearshore areas of the offshore ECC for local vessels with areas further offshore in the OAA being targeted by vivier crabbers. Demersal trawls and scallop dredging mainly occurs in the offshore ECC, with low levels of dredging within the OAA itself over Whitten Head Bank. Overall, the levels sustained across the study area are lower than other areas in Scottish waters.

OWPL set up a Fisheries Working Group with representatives across various fisheries groups / organisations to discuss any issues arising and consult with the fishing industry on relevant matters. Three fisheries working group meetings were held at various stages of the EIA and were a key source of input to the assessment.

The impacts of the offshore Project construction (including pre-construction), operation and maintenance and decommissioning were assessed, including loss of access to fishing grounds, displacement of fishing effort, safety issues (e.g. the potential for fishing gear to snag subsea infrastructure), interference with fishing activity (e.g. due to fouling of static gear by offshore Project vessels) and obstruction of fishing transit routes / increases in steaming times (e.g. due to vessels having to route around the offshore Project). The socio-economic implications of these effects were also considered.

17. Larger vessels targeting crab, which have a tank with circulating seawater to keep the catch alive until it is landed.

The impact assessment was qualitative in nature and informed by stakeholder consultation through discussion of impacts and their significance with the Fisheries Working Group. The assessment concluded that the majority of impacts during construction (including pre-construction) will be highly localised and short term, and therefore not significant. However, potentially significant effects on creelers from temporary loss or restricted access to fishing grounds and displacement of fishing effort within the OAA during the construction (including pre-construction) and decommissioning stages were identified. Therefore, secondary mitigation measures have been proposed to reduce the significance of these effects. OWPL will continue dialogue with the directly-impacted fishers to develop cooperation agreements.

This secondary mitigation will be presented in a Fisheries Management and Mitigation Strategy (FMMS), produced post-consent, alongside embedded mitigation measures around the wider management of commercial fisheries impacts. An outline FMMS supports this application (OP3: Outline Fisheries Management and Mitigation Strategy). For operation and maintenance, it was recognised that some larger vessels may not choose to resume fishing or transit through the OAA due to the potential safety risks. However, alternative fishing areas were considered to be available to these vessels that have a larger operational range and it was anticipated that smaller vessels and creelers (that do not tow gear along the seabed) may be able to resume fishing in the OAA. The effects of interference with fishing activity and safety issues were anticipated to be adequately managed through the implementation of embedded mitigation measures, including the charting of infrastructure and effective fisheries engagement to ensure all fishers are aware of offshore Project works and can plan accordingly.

Overall, with the implementation of mitigation, no significant effects were identified, either for the offshore Project alone or cumulatively with other plans or developments. There were also no significant transboundary effects anticipated.

Potential inter-related effects were identified, as loss of access may extend from the pre-construction stage through to operation and maintenance for a small number of vessels that may choose to not return to fishing within the OAA. However, this combined effect was not anticipated to be greater than what was assessed for each impact alone.

The whole project assessment concluded no overlap between the effects of the onshore and offshore Project on commercial fisheries receptors.

9

Shipping & Navigation

West of Orkney
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9. Shipping & Navigation

The shipping and navigation assessment considered the impact of the offshore Project on vessels within the vicinity of the offshore Project, including in relation to key navigational features such as ports, harbours and anchorages.

The assessment is supported by a navigational risk assessment, which provides a formal safety assessment in line with the Maritime Coastguard Agency's (MCA) guidance. The shipping and navigation study area encompassed a 10 nm (18.5 km) buffer around the OAA and a 2 nm (3.7 km) buffer around the offshore ECC. In response to feedback on the Preliminary Hazard Analysis, presented in the Scoping Report a wider study area was also applied around Sule Skerry to capture the area offshore of the island to ensure baseline routeing in this area was included in the assessment.

Shipping and navigation activity within the study area was characterised by 28 days of site-specific vessel traffic survey data (split between summer and winter 2022), stakeholder consultation and desk-based studies, including analysis of long-term shipping track data. The key navigational features in the study area include the nearby Area to Be Avoided[18] surrounding Orkney and the local rock / shallow features to the northwest of the OAA, notably Sule Skerry and Sule Stack. The closest port or harbour is Stromness Harbour, located approximately 20 nm (37 km) to the east, on the Orkney mainland coast. During the vessel traffic survey, the scope of which was agreed with key consultee the Maritime and Coastguard Agency, an average of 23 unique vessels per day were recorded during the summer survey period in the study area, with an average of six to seven unique vessels within the OAA[19]. During the winter survey period, an average of 18 unique vessels were recorded per day with an average of five to six within the OAA. The main vessel types were cargo vessels and fishing vessels, and 12 commercial shipping routes were identified that cross the study area, including some of the main shipping routes across the north of Scotland which are located to the south of the OAA (Figure 17).

The impacts of the offshore Project construction (including pre-construction), operation and maintenance and decommissioning were assessed. A key input to the assessment was a hazard identification workshop[20], attended by 15 representatives from local / national marine stakeholders. The impacts assessed include vessel displacement, increased vessel collision risk (including between third party vessels and between third Party and Project vessels), vessel to structure allision risk, changes in under keel clearance, interaction with subsea cables (e.g. snagging of fishing gear and anchor strikes), adverse weather routing (e.g. the impact of the offshore Project on the routes taken by third party vessels during periods of poor weather), and reduction of emergency response provision.

All impacts assessed were determined to be broadly acceptable or at tolerable risk levels with the implementation of embedded mitigation measures, such as the application and implementation of safety zones during construction and major maintenance works, the establishment of

18. The IMO defines an Area to Be Avoided as "an area within defined limits in which either navigation is particularly hazardous, or it is exceptionally important to avoid casualties, and which should be avoided by all ships, or by certain classes of ships." https://www.imo.org/en/OurWork/Safety/Pages/ShipsRouteing.aspx#:~:text=area%20to%20be%20avoided%3A%20an,by%20certain%20classes%20of%20ships)
19. The OAA is located to the north of the main shipping route around the north coast of Scotland, as illustrated in Figure 18.
20. Meeting of local/national marine stakeholders to identify and discuss potential shipping and navigation hazards.

construction buoyage area and compliance with relevant industry best practice guidelines. Measures to be implemented around navigational safety and vessel management during construction and operation and maintenance will be detailed within the Navigational Safety and Vessel Management Plan (NSVMP), produced post-consent. An outline NSVMP supports this application (OP4: Navigational Safety and Vessel Management Plan). Furthermore, once site constraints are further understood, additional post-consent consultation will be undertaken with key stakeholders as part of the Development Specification and Layout Plan process to ensure the overarching spatial area covered by the WTG layout is appropriate and that all impacts are reduced to acceptable levels. With the consideration of this secondary mitigation, all effects for the offshore Project alone and cumulatively with other plans and developments were assessed as being As Low As Reasonably Practicable (ALARP) and not significant. The assessment was conducted irrespective of vessel nationality, and therefore, the assessment of non-significance also applies to transboundary effects. No specific monitoring for shipping and navigation was proposed.

For shipping and navigation, it was not anticipated that any inter-related effects will be produced that are of greater significance than the assessments presented for each individual stage. The whole project assessment concluded no overlap between the effects of the onshore and offshore Project on shipping and navigation receptors.

Please note that the assessment of potential major accidents and disasters in relation to vessel collision or allision was assessed in a separate report, as detailed in section 15.2.

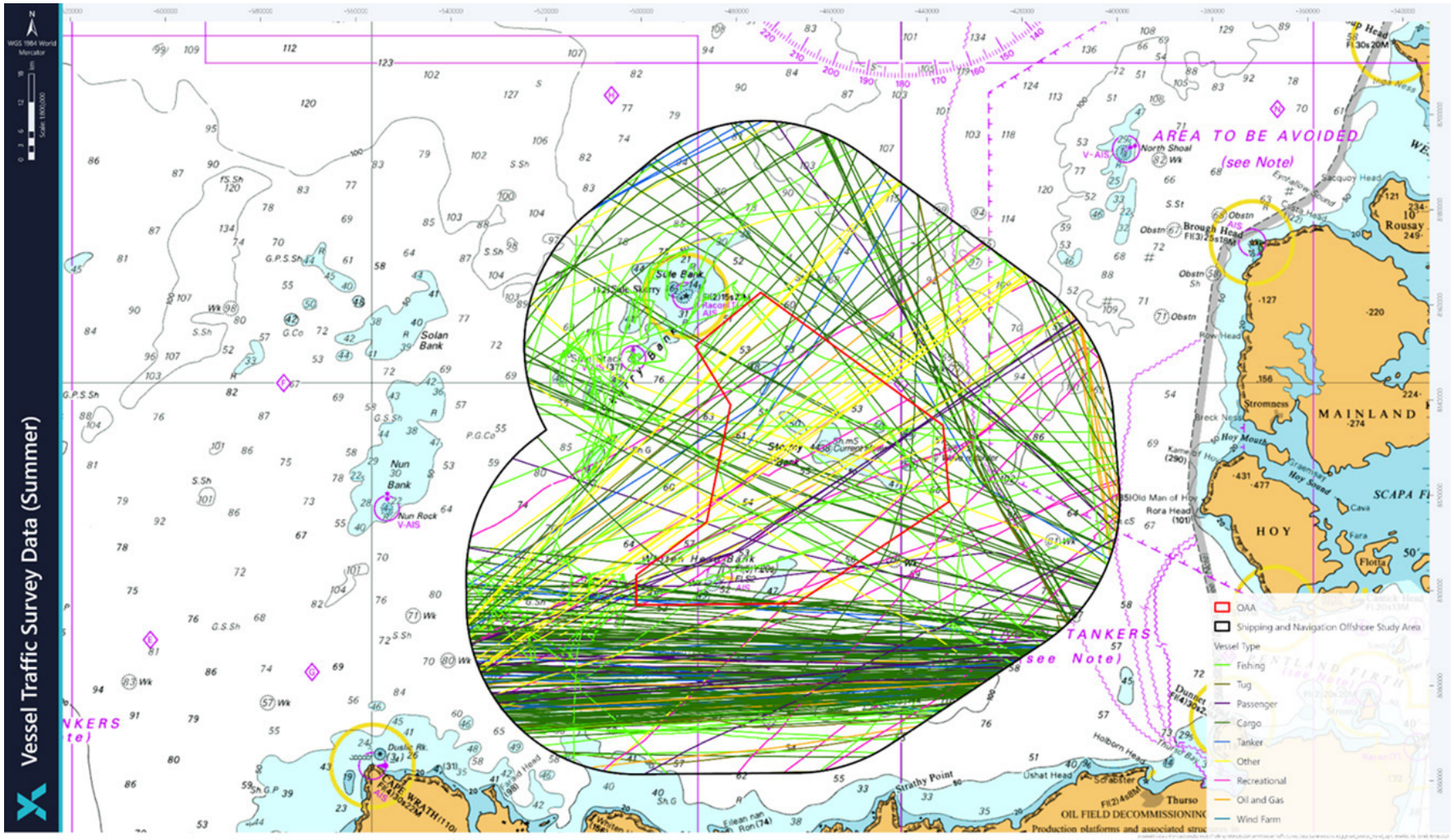

Figure 17 – Summer vessel traffic survey data within the shipping and navigation OAA study area by vessel type

10

Marine Archaeology & Cultural Heritage

West of Orkney
Windfarm

10. Marine Archaeology & Cultural Heritage

The marine archaeology and cultural heritage assessment evaluated the potential effects of the offshore Project on marine historic environment assets (e.g. shipwrecks and aviation crash sites) and also onshore historic environment assets (e.g. scheduled monuments) in relation to visual impacts on setting.

The setting of historic environment assets was defined by establishing how the surroundings contribute to the ways in which the historic structure is understood, appreciated and experienced.

The marine archaeology and cultural heritage study area encompassed the offshore Project area boundary for direct impacts on marine historic environment assets, and a 60 km buffer area around the OAA for indirect setting impacts on onshore historic environment assets.

The baseline characterisation was informed by a combination of desk-based studies and site-specific marine geophysical surveys. In addition, fieldwork conducted for the Seascape, Landscape and Visual Impact Assessment (SLVIA) at relevant onshore historic environment asset viewpoints conducted in July and August 2022, informed the assessment of impacts on setting. The viewpoints chosen to inform the assessment of impacts on setting, were agreed with consultees (Historic Environment Scotland, and The Highland Council and Orkney Island Council country archaeologists) prior to the fieldwork being undertaken.

The initial desk-based study indicated that there were a number of post-medieval and 20th century wreck sites within the offshore Project area. However, analysis of the site-specific geophysical survey results did not identify any evidence of these wreck sites being present.

Parts of one of the largest German minefield from the First World War, known as the Whiten Head Field, are in or very close to the offshore Project area with the potential for live mines to be present.

A review of the site-specific survey data identified the potential for UXO which will be confirmed through more targeted surveys post-consent.

A core retrieved from the offshore Project area contained a pocket of possible organic material that may contain microfossils that could provide palaeoenvironmental information (i.e. information from a period in geological past) on a now eroded former terrestrial land surface close to the shore at Caithness. Subsequent analysis of this sample confirmed that there was no organic material within this sample, and therefore, no potential for it to provide palaeoenvironmental information.

The impacts of the offshore Project construction (including pre-construction), operation and maintenance and decommissioning were assessed. The impacts assessed include loss of or damage to known and unknown marine and intertidal historic environment assets, loss of or damage to submerged prehistoric landscapes and long term changes to the setting of onshore historic environment assets that reduces their value.

No significant direct impacts relating to known or unknown marine and intertidal historic environment assets or any loss of or damage to submerged prehistoric landscapes were identified, as the likelihood of impact was considered to be very low.

The long-term changes to the setting of onshore historic environment assets were assessed for assets likely to have the most visibility of the OAA, as identified through consultation with stakeholders. No changes in setting were identified as resulting in significant effects.

Therefore, no significant impacts to any marine archaeology and cultural heritage receptors were predicted, either for the offshore Project alone or cumulatively with other plans or developments. No significant inter-related effects or transboundary effects were predicted and no secondary mitigation or monitoring was proposed. However, embedded mitigations will be implemented in the event of any accidental discoveries of archaeological interest to ensure these are dealt with appropriately. This includes the production of a marine heritage Written Scheme of Investigation (WSI) and Protocol for Archaeological Discoveries (PAD) to avoid or mitigate impacts due to accidental discoveries of archaeological interest. An outline WSI and PAD will be contained within the EMP, produced post-consent. An outline EMP supports this application (OP1: Outline Environmental Management Plan).

Due to the distance of the onshore substation from the coast (approximately 18 km from the landfall area and approximately 12 km from nearest coastal location) there are no locations where it is possible to see both the offshore Project and the onshore substation at the same time. Therefore, the whole Project assessment concluded that there is no potential for the onshore Project to exacerbate any of the effects of the offshore Project.

11

Military & Aviation

West of Orkney
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11. Military & Aviation

The military and aviation assessment evaluated the potential effects from the offshore Project on military and aviation receptors (e.g. airports, air traffic control and air defence radars, military activities, helicopters and space ports).

The military and aviation study area was determined by the presence of potentially affected aviation receptors, particularly air traffic control and air defence primary surveillance radars. The study area included any radars that could potentially detect WTGs within the OAA; and was defined by the furthest potential aviation receptor.

The OAA was selected to specifically avoid overlap with military and aviation receptors, such as the Helicopter Main Route (HMR YANKEE) (Figure 18). The key features within the study area are shown on Figure 18 and include:

- Military Danger Area D801 (Cape Wrath) which is activated periodically from the surface up to 55,000 ft and used for air to ground bombing exercises (immediately west of the OAA). This is the only range in Europe where land, air and sea training activities can be conducted simultaneously;
- An active Helicopter Main Route (HMR YANKEE) located 3 nm (6 km) to the east of the OAA. This constraint, together with a 2 nm buffer (aligned with Civil Aviation Authority guidance), was specifically avoided in the selection of the OAA location;
- A helicopter landing pad located at Sule Skerry lighthouse 3 nm (6 km) to the northwest of the OAA; and
- Space Hub Sutherland, a space port located on the A' Mhòine peninsula, Sutherland located approximately 16 nm (30 km) south-southwest of the OAA.

The WTGs will be located outside the safeguarding area of any civil airports and also outside the coverage of any civil air traffic control radars, military air traffic control / air defence radars or Met Office radars. The location of the pre-assembly port(s) (where WTGs, foundations and other infrastructure will be stored, assembled and transported to the OAA) is currently undefined.

Once confirmed, the locations will be communicated to Highlands and Islands Airports Limited and further consultation will be carried out to determine whether there could be any impact to any safeguarding area of civil airports during the assembly and transport (to the OAA) of 'tall' (greater than 91.4 m) offshore components such as WTG towers and jacket structures.

Space Hub Sutherland is located on the A' Mhòine peninsula, Sutherland approximately 16 nm (30 km) south-southwest of the OAA. Construction commenced in July 2023 and the first space launch expected in 2024; launches are capped at 12 per year. Impacts on Space Hub Sutherland were scoped out as subsequent consultation with the operator of this facility (Orbex) confirmed that the operation of the offshore Project would not disrupt Space Hub Sutherland's operations.

The impacts of the offshore Project construction (including pre-construction), operation and maintenance and decommissioning were assessed.

Consultation with key stakeholders such as the Ministry of Defence and National Air Traffic Service (NATS Holdings) confirmed the Project would not result in impacts on a number of military and aviation receptors. The impacts that were assessed include those on military and UK search and rescue helicopter operations during the construction or operation of the WTGs.

The offshore Project was not expected to affect any of the aviation receptors assessed, with the exception of the WTGs themselves creating obstacles to military aircraft operating at low level and to search and rescue helicopters operating within the OAA in the event of a rescue mission. Any potential impact will be mitigated through engagement with the Ministry of Defence and the MCA on the development of the specific WTG layout and by a Lighting and Marking Plan that will need to be approved in consultation with the Civil Aviation Authority prior to the construction phase of the offshore Project. Therefore, no significant impacts to any military and aviation receptors were predicted, either for the offshore Project alone or cumulatively with other plans or developments.

There were no significant inter-related effects and transboundary effects predicted and the whole project assessment concluded no overlap between the effects of the onshore and offshore Project on military and aviation receptors.

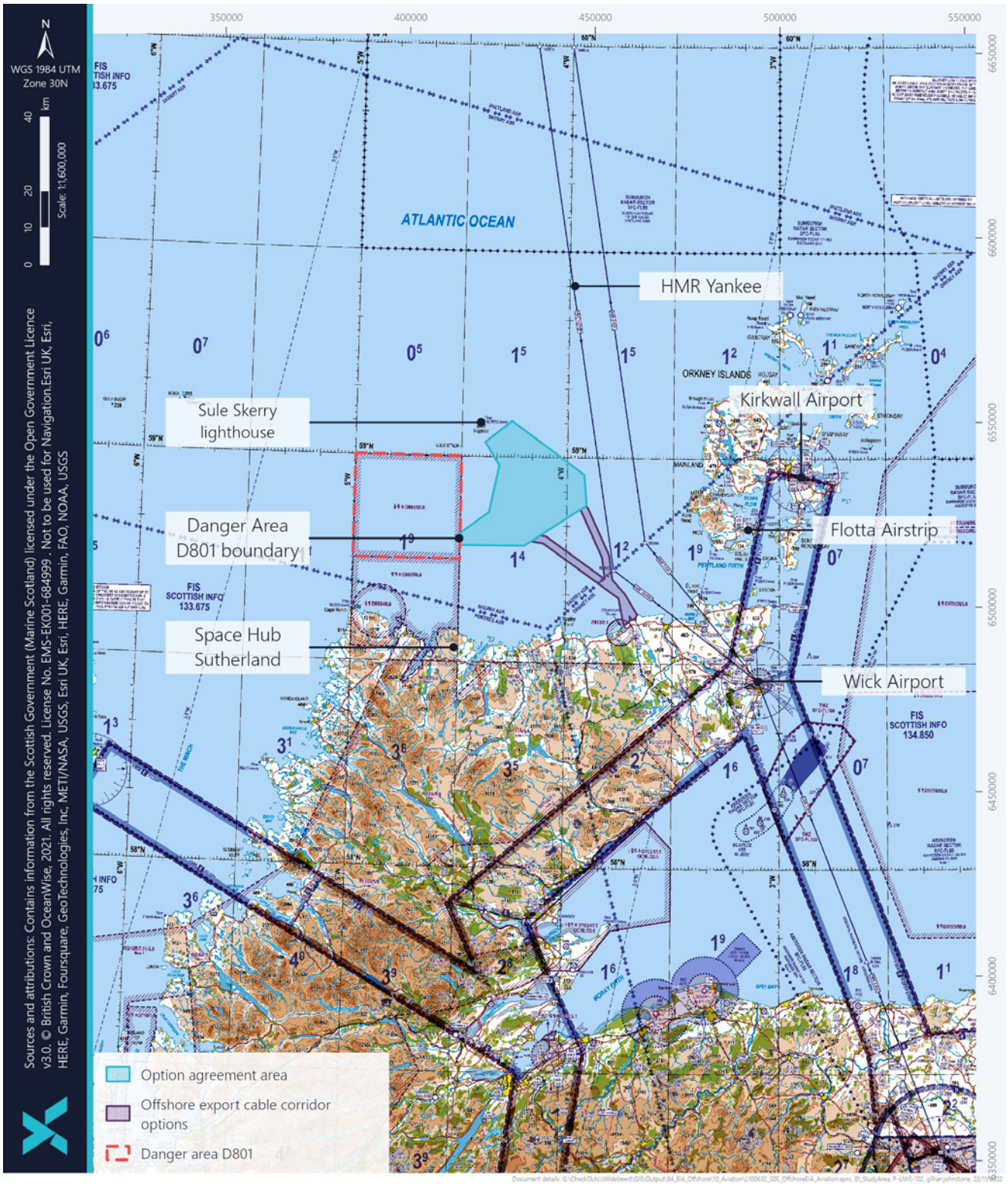

Figure 18 – Military and aviation activity in the study area (please note only airspace designations relevant to the offshore Project are labelled)

12

Seascape, Landscape & Visual

West of Orkney
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12. Seascape, Landscape & Visual

The Seascape, Landscape and Visual Impact Assessment (SLVIA) identified and assessed the significance of changes resulting from the construction (including pre-construction), operation and decommissioning of the offshore Project.

The assessment focused on the operation and maintenance stage, as this is when the significant effects are most likely to arise over the long-term, although construction impacts were still considered. The SLVIA was carried out in relation to both the seascape character and landscape character as environmental resources in their own right, and on people's views and visual amenity.

The SLVIA study area encompassed a 60 km buffer around the OAA, comprising the surrounding Atlantic ocean and western coast of Orkney mainland and Hoy to the east, and the northern coast of Scotland to the south (Figure 19). The assessment of effects was informed by desk-based studies and field work to understand the key receptors potentially impacted. Following consultation with The Highland Council and Orkney Islands Council, with regards to the viewpoints that needed considered in the offshore EIA, 28 viewpoints were photographed. The receptors with the potential to be affected include landscape and coastal character types, landscape designations (e.g. National Scenic Areas, Highland Council Special Landscape Areas and Wild Land Areas), and visual receptors (i.e. the different groups of people who may experience views of the development) with associated viewpoints. There are three National Scenic Areas within the SLVIA study area, Kyle of Tongue, North West Sutherland and Hoy and West Mainland NSAs, six Highland Council Special Landscape Areas and seven Wild Land Areas (Figure 19).

The following impacts were assessed for construction (including pre-construction), operation and maintenance and decommissioning:

- Effects on landscape character / coastal character;
- Effects on designated landscapes;
- Effects on visual receptors;
- Night time effects; and
- Cumulative effects.

To understand the potential effects on the landscape and visual amenity, the SLVIA developed a Zone of Theoretical Visibility, encompassing the area in which the offshore Project could be visible.

The Zone of Theoretical Visibility was mainly limited to the sea and along the coastal parts of Caithness, Sutherland, and Orkney. Although theoretical visibility could also occur further inland, this would largely be from elevated locations affording panoramic views within the 60 km study area, and the offshore Project would be visible only in very clear conditions.

Due to the offshore Project's location, approximately 24 km from the coast, it would only be seen on the horizon. Offshore visibility is affected by a number of factors including distance, weather, atmospheric perspective and sunlight.

The assessment considered that any effects on visual receptors a significant distance from the windfarm would be low to negligible.

Significant effects on seascape and coastal character were identified for the Kyles and Sea Lochs seascape character type in Sutherland and the Rora Head and St John's Head regional coastal character area in Orkney. Significant effects on landscape character would be limited to parts of the Sandy Beaches and Dunes Landscape Character Type (LCT) in Sutherland and the Rugged Hills and Enclosed Bays LCTs which overlap with the Road Head and St John's Head regional coastal character area in Orkney.

Significant effects on two Special Landscape Qualities of the Kyle of Tongue National Scenic Area were identified. Additional significant effects (including cumulative effects) were identified at small settlements and visitor destinations in Caithness, Sutherland and Orkney and on short sections of the North Coast 500 and sustrans National Cycle route 1, core paths on Orkney, as well as at sections of the Scrabster to Stromness ferry route. A night-time lighting assessment also identified potentially significant effects at night during periods of poor visibility that would be expected 6% of the time when brighter lights would be required.

The assessment was based on the worst case scenario layout, and therefore, not all significant effects would be realised. The layout assessed represents the maximum effect in terms of the proximity, scale, spread, density and prominence of the WTGs from receptors around the coastline. In reality, WTGs will not be present at both the size and numbers assessed, nor be present along all the southern and eastern boundaries of the OAA (i.e. nearest to the coast), therefore reducing the magnitude of impact from that assessed at some locations and viewpoints based on the final WTG layout. The detailed design of the offshore Project is ongoing, and therefore, mitigation measures relating to the final layout that would potentially reduce significant effects, cannot be adopted at this stage. Design objectives have been identified and will be considered as part of further iterative design refinements and consideration of environmental impacts within the post-consent stage. This process will involve further consultation with MD-LOT and statutory nature conservation bodies. The final design of the offshore Project will be secured within the Development Specification and Layout Plan.

In relation to the acceptability of significant impacts on seascape, landscape and visual receptors, NPF4, that was adopted earlier this year, recognises 'that such impacts [significant landscape and visual 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.'

The assessment of inter-related effects concluded that effects on views and on perceived character would not interact to produce a different, or greater effect, on a receptor than when effects are considered in isolation, as changes are experienced by the same receptor in each case (people) and in one way (visually) at one point in time. The whole Project assessment assessed that there was the potential for the onshore Project to affect the same receptors as the offshore Project at the landfall area. However, any effects were assessed as short term, localised and temporary in nature during construction only, due to the fact there would be no above ground infrastructure at the landfall during the operation and maintenance stage of the Project.

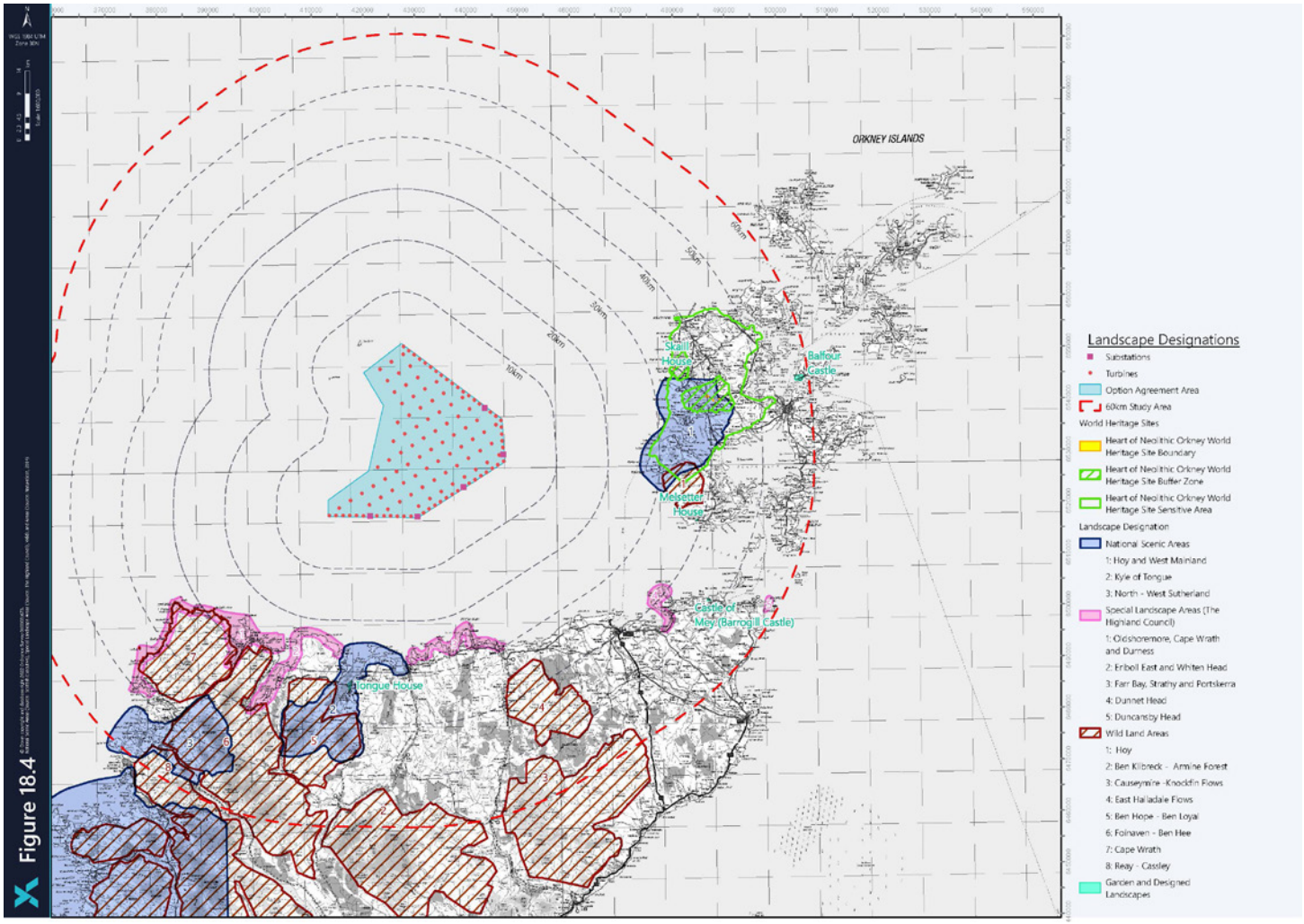

Figure 19 – SLVIA landscape designations (WTG locations shown are indicative and selected to represent a worst case scenario for the EIA only)

13

Socio-Economics

West of Orkney
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13. Socio-Economics

The socio-economics assessment (including tourism) evaluated the potential socio-economic effects in the following spatial areas: UK; Scotland; Highland; Orkney; Caithness and Sutherland.

The assessment considered potential effects from the onshore and offshore Project as a 'whole Project'. This is because project expenditure for the onshore and offshore Projects is intrinsically linked, and people have the potential to be affected by impacts from both aspects.

The desk-based study supplemented with data received through stakeholder and community consultation, including an extensive questionnaire, and consultation with Community Panels (groups of local Community Councils in Orkney, Caithness and Sutherland), identified evidence of local economic vulnerability, especially in Caithness where there is a depopulation trend.

At the time of the assessment, a total of 356 local resident responses to the questionnaire survey were received, including 240 Orkney residents, 85 Caithness residents and 31 Sutherland residents. In addition, a Socio-Economics Working Group was set up to provide a forum for local authorities, local enterprise agencies and other key stakeholders to provide views on the Project, input to initial assessment findings and share relevant information. The Socio-Economics Working Group has met regularly since June 2022.

Labour market activity metrics indicate long-term structural weakness to the Caithness economy, but there is also evidence of increasing vulnerability for the Orkney economy.

Tourism is identified as an important industry in Caithness and Sutherland, and also in Orkney, with visitor numbers rebounding following the difficulties caused by the Covid-19 pandemic. The baseline assessment indicates that there are business sub-sectors that have the potential to contribute to the supply chain for the Project, including the provision of civil engineering, transport services, and professional services. There are existing concentrations of deprivation in Caithness, particularly in Wick, but not in areas that are likely to be epicentres for the Project.

The impacts of the offshore Project construction (including pre-construction), operation and maintenance and decommissioning were assessed. These included beneficial impacts such as employment opportunities, economic output (Gross Value Added) and supply chain opportunities. Potential adverse effects were identified on tourism, fish processing, and the commercial fishing industry, socio-cultural receptors (e.g. the potential for the Project to exacerbate existing social problems such as crime) and distributional receptors (e.g. changes in income distribution and housing affordability).

OWPL are committed to implementing a range of initiatives to support the local community and economy. As part of the ScotWind leasing round application process, the Project was required to develop an SCDS, with the objective of enhancing the level of participation of UK, Scottish and local suppliers within the supply chain for the Project.

The SCDS outlines a commitment to:

- Provide £33.5 million into a supply chain investment fund to enhance key supplier capability and competitiveness prior to Contract for Difference (CfD) award;
- Fund UK supplier design and supply studies to allow suppliers to plan investment in additional capability and capacity, and to position themselves competitively in terms of OWPL's procurement requirements;
- Invest £9.3 million to support local port and harbour infrastructure in Orkney and Caithness;
- Fund a bespoke programme with the European Marine Energy Centre to support innovation and cost reduction relevant to the Project and other ScotWind developments;
- Invest in a local skills development programme;
- Develop a Local Accommodation Strategy, including partnership arrangements with local hotels and other accommodation providers to provide a temporary construction workforce with good quality accommodation as close to the Project assembly and marshalling site(s) as possible; and
- Provide a community benefits programme to deliver a range of short-term to longer-term strategic goals, such as support for energy bills, provision of local business grants, and sponsorship of local community events (which OWPL are already involved in). Discussions are ongoing around the specific details of the community benefit fund.

The assessment of effects was informed by Project-specific economic modelling, using a range of assumptions around Project expenditure.

The assessment of potential effects took account of embedded mitigation measures, including the commitments in the SCDS that the Project agreed with the Crown Estate Scotland as part of the ScotWind bid application.

Several significant beneficial effects were identified including impacts on local employment, economic output, and demand for housing and local services. For example, the Project will result in job creation, directly for those employed by OWPL, indirectly through job creation (i.e. those not directly employed by OWPL but involved in the supply chain), and through induced employment as a result of Project expenditure in the local areas.

The modelling predicted up to an 8.3% increase in jobs and 5.6% increase in Gross Value Added in Caithness and Sutherland and 17.1% increase in jobs and 6.4% increase in Gross Value Added in Orkney. No significant adverse effects on socio-economic receptors were identified in the assessment, either for the Project alone or cumulatively with other plans and developments. No transboundary effects were predicted. There was not considered to be any residual potential for inter-related effects within Projects stages that have not yet been taken into account.

As no significant adverse effects were identified, no secondary mitigation requirements are proposed with respect to socio-economics receptors. 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). This group (or equivalent) will continue to meet post-consent and play a role in ensuring local and national benefits are maximised as appropriate and to monitor any potential adverse effects.

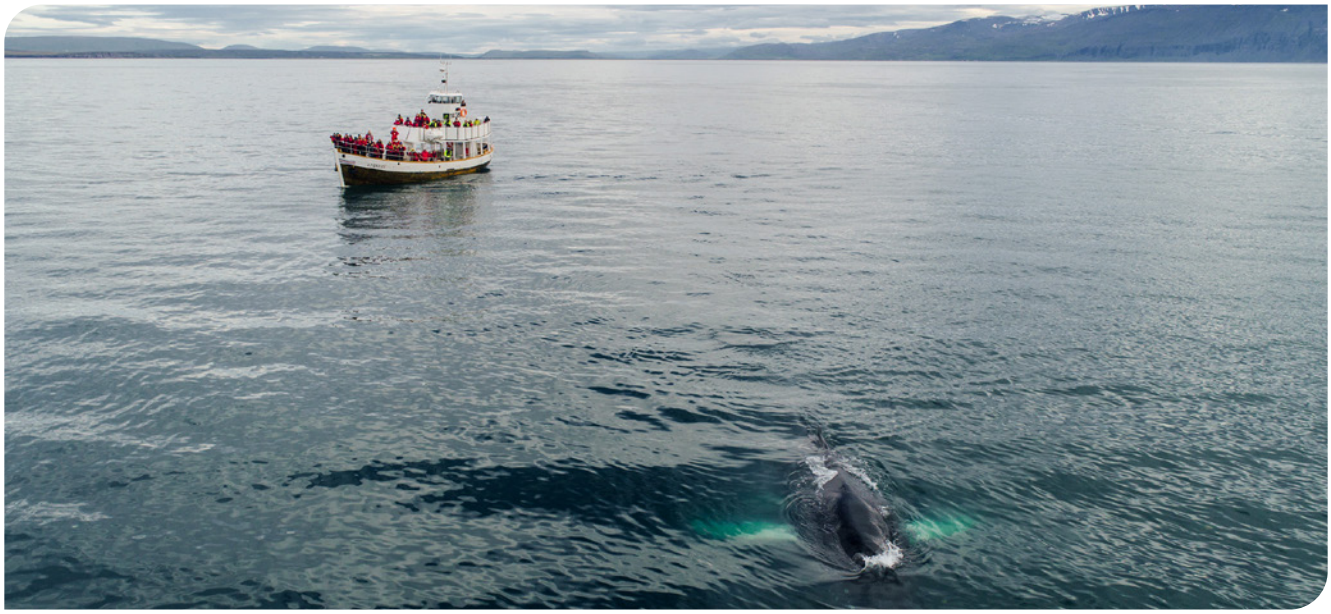
14

Other Sea Users

West of Orkney
Windfarm

14. Other Sea Users

The other sea users assessment evaluated the potential effects from the offshore Project on all users of the marine environment except commercial fisheries, shipping and navigation and military and aviation receptors, as these have been the subject of separate assessments.



The other sea users study area encompassed the same study area as shipping and navigation for the OAA to ensure that the movement of mobile other sea users is considered. A 10 nm (18.5 km) buffer study area was also applied to the offshore ECC. There are a range of other sea user receptors present in the study area.

There is one marine renewable energy project, the Pentland Floating Offshore Wind Farm (PFOWF), two existing telecommunications cables (BT Northern Lights and Farice-1), three active power cables (Pentland Firth East and Pentland Firth West and the Pentland Firth East replacement cable, which is being replaced by the Pentland Firth East 3 cable), with a fourth consented (SHET-L Caithness to Orkney HVAC Link) (Figure 20). The proposed SHET-L Caithness to Orkney HVAC Link would cross the offshore ECC in the nearshore area, in accordance with a crossing agreement that will be sought post-consent.

The intensity of marine recreation and tourism activities is high along the coasts, including activities such as scuba diving, surfing, canoeing or kayaking, coastal climbing and coasteering, and wildlife watching, but not prevalent within the OAA which is situated over 20 km from shore, and is also of a lower intensity at the landfall area when compared with neighbouring coastal regions.

Additional other sea users include one active spoil disposal site near Thurso and the Dounreay Nuclear Power Development Establishment and Vulcan Naval Reactor Test Establishment sites and associated decommissioning activities which are located to the west of the landfall options.

Finally, the temporary launch exclusion zone associated with the Space Hub Sutherland project has potential to overlap with the offshore Project. The launch exclusion zone would be initiated 1-2 hours before each launch and would exclude marine users when active. Consultation with the operator of Space Hub Sutherland (Orbex) confirmed that the operation of the offshore Project would not disrupt Space Hub Sutherland's operations, and OWPL will coordinate with Space Hub Sutherland and develop appropriate safety procedures during launches.

The impacts of the offshore Project construction (including pre-construction), operation and maintenance and decommissioning were assessed. The impacts assessed include obstruction to the activities / works at the PFOWF, nearby subsea cables, recreation and tourism, Dounreay Nuclear Power Development Establishment and Vulcan Naval Reactor Test Establishment sites, and Space Hub Sutherland.

All impacts to other sea users were predicted to be highly localised and manageable through consultation and coordination with relevant receptors. Impacts on recreation and tourism activities were assessed as short-term and intermittent, allowing for marine recreation and tourism users to plan ahead of any offshore Project activities. Furthermore, based on the marine physical and coastal processes assessment on waves, no change in the wave climate at the coast could affect surfing at nearby beaches.

Therefore, no significant impacts to any other sea user receptors were predicted, either for the offshore Project alone, or cumulatively with other plans or developments. Therefore, no secondary mitigation or monitoring requirements were proposed. There were also no inter-related effects or transboundary effects and the whole project assessment concluded that the onshore Project would not exacerbate the effects of the offshore Project on other sea user receptors.

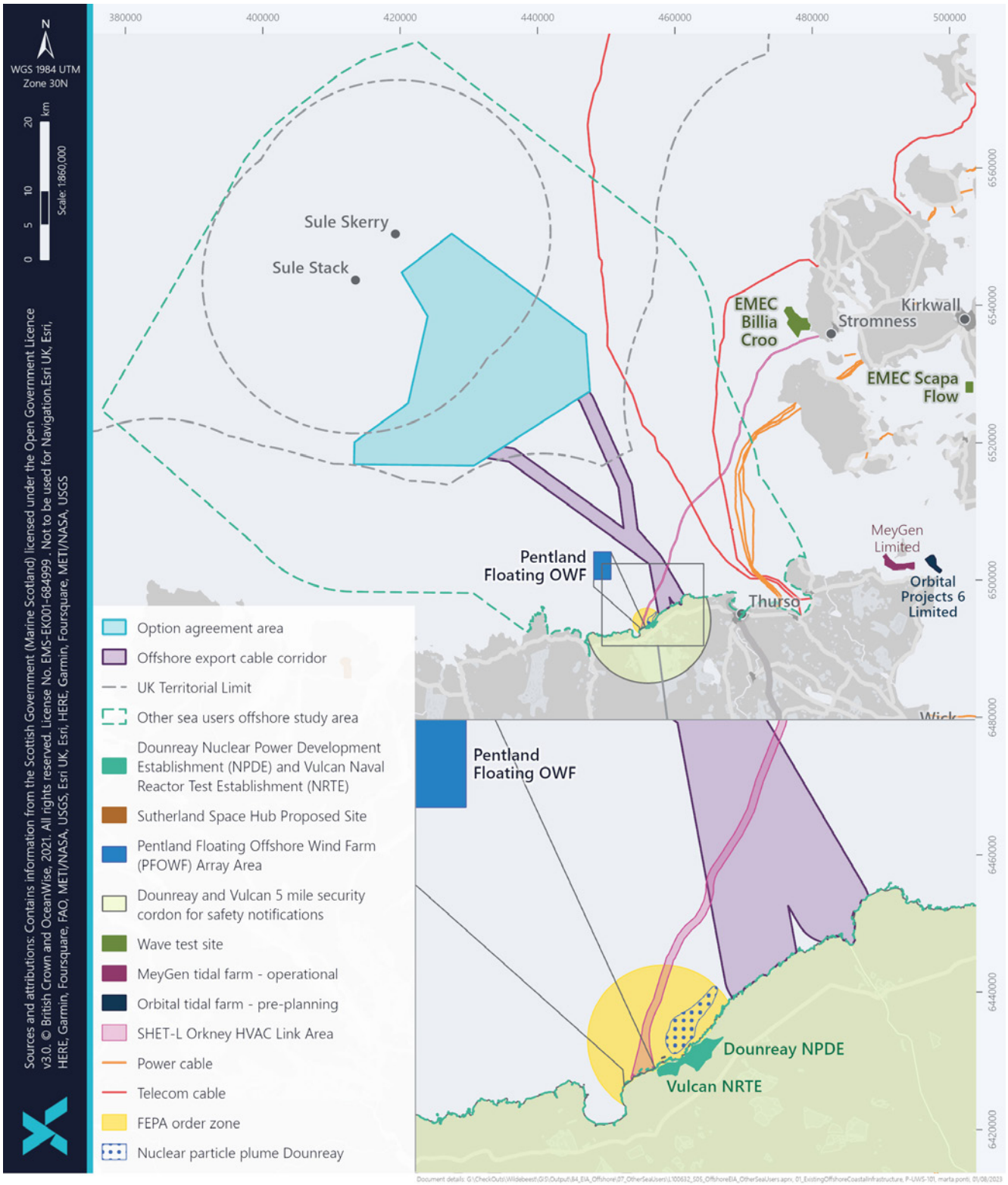
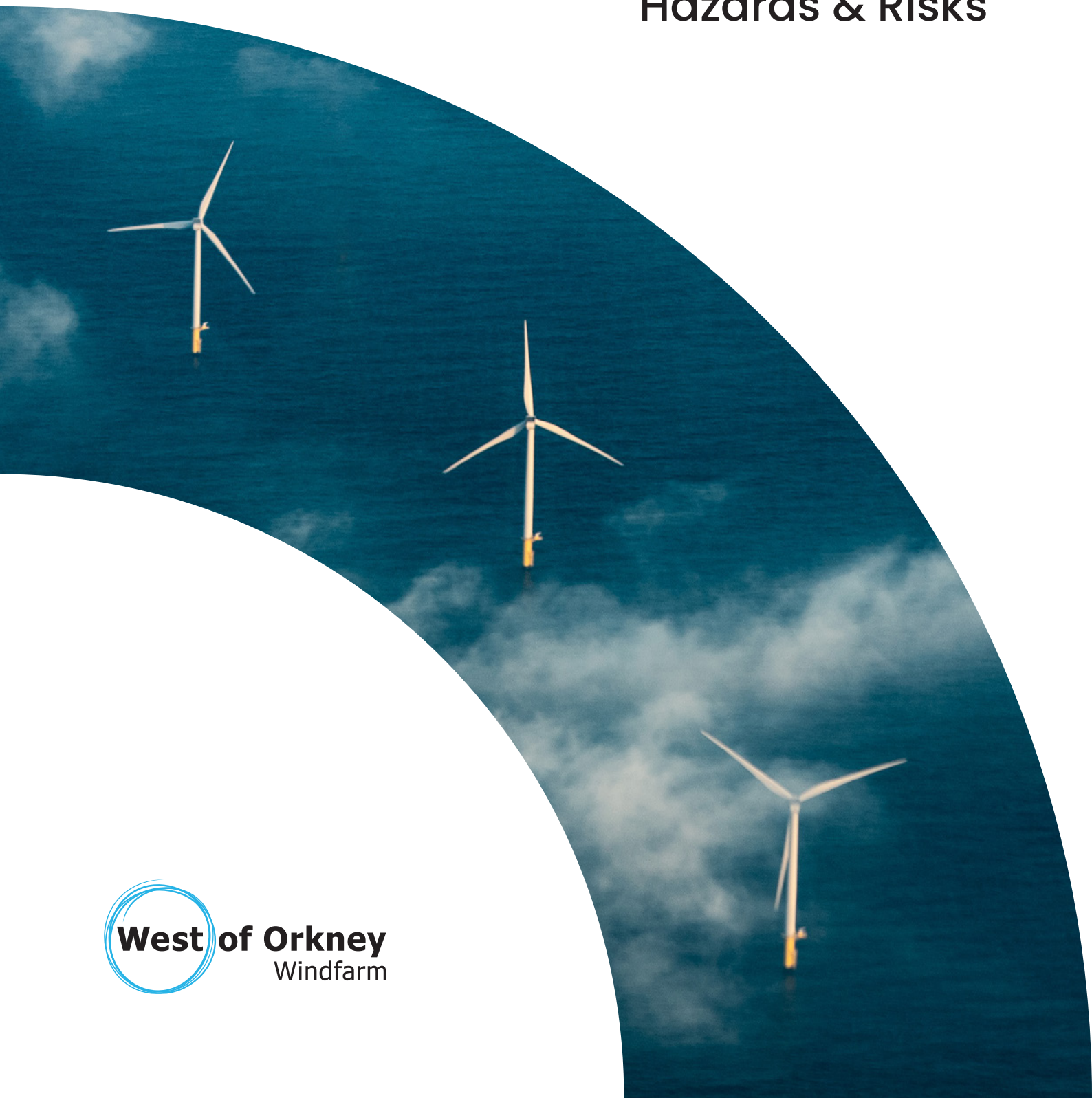


Figure 20 – Third party infrastructure in the vicinity of the offshore Project

15

Consideration Of Climate, Hazards & Risks



West of Orkney
Windfarm

15. Consideration Of Climate, Hazards & Risks

15.1 Climate & Carbon Assessment

As required by the EIA regulations[21], consideration must be given to the "potential impact of the development on the environment resulting from the impact of the Project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the Project to climate change". The offshore EIA Report is supported by a Climate and Carbon Assessment, covering both the onshore and offshore Project to fulfil this requirement. This provides an assessment of:

1. Climate resilience review: the vulnerability of the Project to climate change impacts (e.g. increased frequency of storms);
2. Carbon assessment: the potential impacts of the Project on climate (e.g. the nature and magnitude of carbon emissions);
3. Assessment of effects on biological carbon stores / sequestration: the potential impact of any disturbance or loss of habitats that store or sequester carbon (e.g. peatland, woodland and 'blue carbon' habitats and sediments); and
4. In-combination climate impact assessment: the potential influence of climate change on the assessment of effects presented within the Offshore and Onshore EIA Reports (i.e. whether any effects from the Project could be exacerbated or reduced by climate change).

The climate resilience review assessed the ability for the Project to withstand projected changes in climate variables that could present a climate hazard or risk (e.g. projected changes in wave height and frequency of storms) and was informed by the Project engineers. Overall, the Project was assessed as being effectively designed to withstand the predicted changes in climate over the operational life of the Project.

The carbon assessment concluded that the Project would make a significant beneficial contribution to the UK carbon budget through the avoidance of more carbon-intensive energy sources. The payback period, the period of time before the Project has avoided more carbon emissions than has been produced by its construction and operation, was estimated to be 8 years.

The Project may result in disturbance of biological carbon stores which could result in the release of CO_2 into the atmosphere. However, the prevalence of these types of habitats within the offshore and onshore Project area was considered to be low, as informed by Project-specific surveys, including the offshore benthic surveys and onshore forestry and peat surveys. Any effects on these carbon stores or the future sequestration of CO_2 was assessed as not significant, both for the Project alone and cumulatively with other developments.

The in-combination climate impact assessment considered how the assessments of effects within each topic-specific assessment could be exacerbated or reduced by climate change. The in-combination climate impact assessment identified several impacts which could be affected by climate change. However, in all instances, embedded mitigation measures were considered to adequately manage impacts and no significant effects from the Project, in-combination with the impact of climate changes were identified, and no additional mitigations are required.

21. The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended), the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) and the Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended).

15.2 Assessment of Major Accidents and/or Disasters

In line with the EIA regulations, a major accidents and disasters risk assessment was undertaken, which considers the potential vulnerability of the offshore Project to major accidents and/or disasters, such as severe weather events and industrial accidents. The following hazards were identified as having the potential to result in a major accident and/or disaster:

- External interference – cable snagging (e.g. fishing gear snagging resulting in potential injury, fatalities, damage to assets and/or vessels);
- External interference – third-party vessel or aviation collision or allision;
- Transport accidents – vessel or aviation collision;
- Ground hazards – unexploded ordnance;
- Natural and climate hazards (e.g. increased frequency of extreme weather events);
- Electrical / system failures; and
- External industrial hazards (i.e. major accidents at a nearby development).

A risk assessment was undertaken of the hazards identified which had a potential to cause a major accident or disaster, to understand the potential for a significant adverse effect on the environment, human health or material assets. The assessment references relevant topic specific assessments and the Construction Design Management Risk Register[22] to assign a risk consequence and likelihood. All risks were considered to be at an acceptable level with the implementation of embedded mitigation measures and no additional mitigation has been identified. Risk reduction will continue to be refined during detailed engineering design, to ensure that a hierarchy of controls are in place through the various management plans and method statements.

22. The Construction Design Management risk register is a live document produced to identify, assess, and control potential hazards and risks, in line with the Construction (Design and Management) Regulations 2015

16. Summary

The Offshore EIA has undertaken a robust assessment of potential impacts from the construction (including pre-construction), operations and decommissioning of the offshore elements of the West of Orkney Windfarm ('the offshore Project') in support of the Section 36 Consent and Marine Licence applications and in accordance with relevant regulations and guidance.

A Project Design Envelope approach has been used to provide the flexibility for further refinement of the offshore Project design. Flexibility in design is required and necessary at this stage, due to the scale of the Project and potential for technological and supply chain advancements ahead of procurement and construction. The design parameters which represent the worst case scenario for the impact assessments have been determined using the Project Design Envelope on a topic-by-topic basis, depending on the receptor and impact being considered. This approach results in an impact assessment, that provides security and confidence that the likely significant environmental effects of the offshore Project will be no greater than those identified and assessed within the Offshore EIA Report.

The significance of effects was determined within each topic-specific assessment by defining the sensitivity of each receptor (influenced by tolerance to change, recoverability, adaptability and value) and the magnitude of impact (influenced by spatial extent, duration, frequency, intensity and likelihood) using professional judgement and industry best practice guidance, science, and accepted approaches.

Each impact assessment took account of embedded mitigation measures, and where significant effects were identified in the initial assessment, appropriate and proportionate additional mitigation measures are proposed in order to reduce the residual effects to non-significant levels, where reasonably practicable. Overall, with the implementation of the identified mitigation measures (embedded and secondary) and monitoring proposals, the majority of potential effects of the offshore Project are predicted to be reduced to non-significant levels. The exception to this are some localised significant seascape, landscape and visual effects during the operation and maintenance stage. OWPL will continue to consider the environmental impacts of the offshore Project during further design refinement in the post-consent stage to reduce these effects where possible, for example through further refinement of the final layout, however the Scottish NPF4, does identify that significant seascape, landscape and visual 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.' This ongoing iterative design process will also take account of other constraints that need further consulted on ahead of the final WTG layout, for example shipping and navigational constraints.

If successful in attaining the required consents and licences, the development of the offshore Project will play a key role in fulfilling Scottish and UK renewable energy and climate change reduction targets and will have beneficial impacts for energy security and on the local and Scottish economy, for example through positive contributions towards employment opportunities and wider economic output.

17. Further Information

The Offshore EIA Report has been submitted to MD-LOT to support the Section 36 Consent and Marine Licence applications. Paper copies of the consent application together with the Offshore EIA Report and other documentation are available to view publicly at the locations below.

Thurso Library
Davidson's Lane, Thurso, KW14 7AF
Monday and Wednesday, 10am-6pm
Tuesday and Friday, 10am-8pm
Thursday and Saturday, 10am-1pm

Stromness Library
2–12 Victoria Street, Stromness, Orkney, KW16 3AA
Monday to Friday, 10am-4pm
Saturday, 12pm-3pm

Orkney Library
44 Junction Road, Kirkwall, Orkney, KW15 1AG
Monday to Thursday, 10am-6pm
Friday to Saturday, 10am-5pm

Bettyhill Hotel
A836, Bettyhill, KW14 7SP
Monday to Sunday, 3pm-10.30pm

The Highland Council Headquarters
Glenurquhart Road, Inverness, IV3 5NX
Monday to Friday, 8am-4pm

Xodus Group
8 Garson Place, Stromness, KW16 3EE
Monday to Friday, 9am-5pm

West of Orkney Windfarm
32 Charlotte Square, Edinburgh, EH2 4ET
Monday to Friday, 9am-5pm

Additional hard copies of the Offshore EIA Report can be purchased for £350 (**info@westoforkney.com**), and electronic copies of this Offshore EIA Report, including all figures, supporting studies, and accompanying documents, are available to view on the Project website at **www.westoforkney.com**.

Anyone having difficulty accessing the application documents through this website can contact **info@westoforkney.com** for assistance.

The application documents are also available via the Marine Scotland website at **www.marine.gov.scot/marine-licence-applications**

If you wish to comment on this Offshore EIA Report or make representations to Marine Directorate, you must do so within the representation period specified in the relevant newspaper advert or in any consultation letter you receive. Please email Marine Directorate at **ms.marinerenewables@gov.scot**, or write to:

Scottish Government
Marine Directorate-Licensing Operations Team
Marine Laboratory, PO Box 101
375 Victoria Road, Aberdeen, AB11 9DB