Salamander Offshore Wind Farm

Offshore EIA Report

Volume ER.A.1, Non-Technical Summary

SALAMANDER

Powered by Ørsted and
Simply Blue Group

Document Title:	Non-Technical Summary
Document no:	08638722
Project:	Salamander Offshore Wind Farm
Revision	00
Originator	ERM
Date	April 2024

Revision History:

Revision	Date	Status	Originator	Reviewed	Approved
00	19 April 2024	Final	ERM	Salamander	Hugh Yendole

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1 Introduction

1.1 What is this document?

The purpose of this Non-Technical Summary (NTS) is to summarise the Offshore Environmental Impact Assessment Report (EIAR), which has been prepared to support the **Section 36 Consent** and **Marine Licence Applications** for the Offshore Development of the Salamander Offshore Wind Farm (hereafter known as 'the Salamander Project'); full details of the impact assessment are presented with the EIAR and supporting documentation. A separate Onshore EIAR application will be submitted for the onshore aspects of the Salamander Project with planning permission sought from Aberdeenshire Council, and a Section 36 Consent and deemed planning permission from the Energy Consents Unit of the Scottish Ministers.

The Offshore EIAR provides the environmental information which has been gathered to carry out an assessment of the potential significant effects upon the receiving environment as a result of construction, operation and maintenance, and decommissioning of the Offshore Development. This NTS presents a summary of the main findings of the Environmental Impact Assessment (EIA) undertaken for the Offshore Development and full details of the assessment are provided with the EIAR **Volumes ER.A, 2-6**.

A Habitats Regulations Appraisal (HRA) has been carried out for the Offshore Development, which does not form part of the EIA process. Full details of the HRA are presented within **RP.A.1.1 Report to Inform Appropriate Assessment (RIAA)**.

1.2 What is the Salamander Offshore Wind Farm and who wants to develop it?

The Applicant, Salamander Wind Project Company Ltd. (SWPC), a joint venture (JV) partnership between Ørsted, Simply Blue Group and Subsea7, is seeking consent to develop the Salamander Offshore Wind Farm approximately 35 kilometres (km) off the coast of Peterhead, Scotland (**Figure 1-1**). The proposed floating offshore wind farm will have a capacity to generate up to 100 Megawatts (MW). The Salamander Project will consist of offshore and onshore infrastructure, including an offshore wind farm, export cables to landfall, an onshore substation and onward connection to the UK electricity transmission network.

Ørsted

The Ørsted vision is a world that runs entirely on green energy. Ørsted develops, constructs, and operates offshore and onshore wind farms, solar farms, energy storage facilities, renewable hydrogen and green fuels facilities, and bioenergy plants. Globally, Ørsted is the market leader in offshore wind and operates the world's biggest offshore wind farm off the East Coast of the United Kingdom (UK). Its UK offshore wind farms generate enough clean electricity for seven million UK homes. Ørsted is recognised on the CDP Climate Change A List as a global leader on climate action and was the first energy company in the world to have its science-based net-zero emissions target validated by the Science Based Targets initiative (SBTi). Headquartered in Denmark, Ørsted employs approx. 8,900 people.

Simply Blue Group

Simply Blue Group, headquartered in Cork, Ireland, is a leading blue economy developer focused on replacing fossil fuels with clean ocean energy. It develops pioneering blue economy projects – offshore wind, sustainable fuels, marine energy, carbon dioxide removal and low-impact aquaculture – all in harmony with the oceans. The company has a pipeline of over 10GW of offshore wind projects across the globe. Simply Blue Group is committed to creating new economic opportunities for coastal communities, and developing projects that co-exist with sustainable fisheries and marine conservation. With a passionate team of over 100 people, Simply Blue Group has offices in Cork, Dublin, Newquay, Pembrokeshire, Edinburgh, Bilbao, and Nova Scotia.

subsea 7

Subsea7 is a global leader in the delivery of offshore projects and services for the evolving energy industry. Subsea7 creates sustainable value by being the industry's partner and employer of choice in delivering the efficient offshore solutions the world needs.

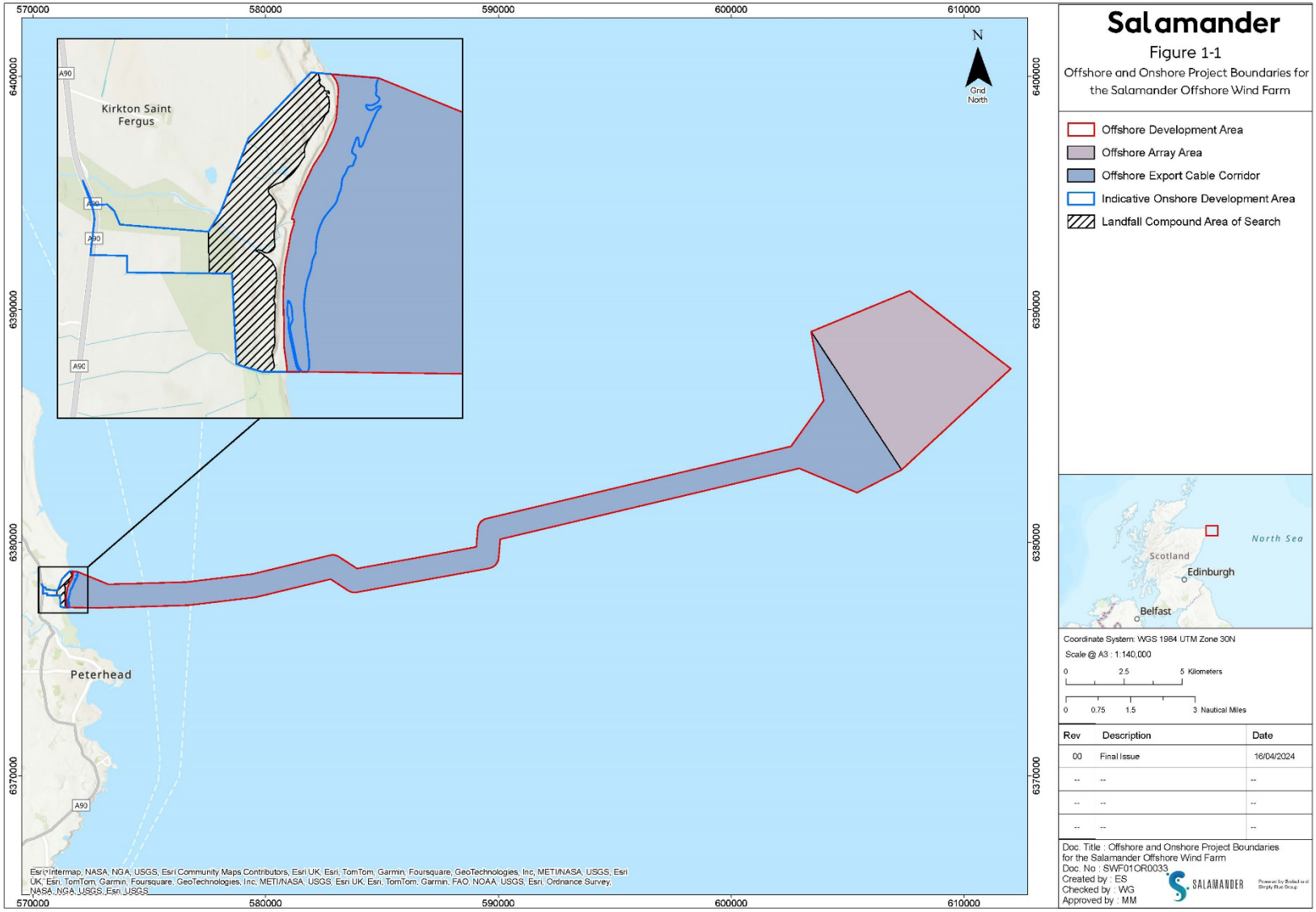

Figure 1-1 Offshore and Indicative Onshore Boundaries for the Salamander Offshore Wind Farm

2 Project Overview

The Salamander Project is split into several infrastructure locations, as shown in **Figure 2-1**, and consists of the offshore aspects:

- **Offshore Array Area:** this is where the offshore wind generating station will be located, which will include up to seven wind turbines, floating foundations and mooring system, subsea hub(s), and inter-array cables. At the boundary of the Offshore Array Area, array cables transition to the export cable(s). The Offshore Array Area will be located approximately 35 km east of Peterhead.
- **Offshore Export Cable Corridor (Offshore ECC):** this is where the offshore export cable(s), will be located. The Offshore ECC runs from Mean High Water Springs (MHWS) north of Peterhead to the western boundary of the Offshore Array Area.

And onshore aspects:

- **Onshore Export Cable Corridor (Onshore ECC):** this is where landfall occurs and the onward onshore export cable(s) will be located. The Onshore ECC runs from landfall to the onshore substation.
- **Onshore Substation (OnSS):** comprising of the Salamander Project OnSS compound and the Scottish and Southern Electricity Networks OnSS compound, and additionally where the Energy Balancing Infrastructure (EBI) (e.g. battery storage) will be located.

The Offshore Development Area (which this NTS relates to) includes both the Offshore Array Area and the Offshore ECC. The onshore aspects down to Mean Low Water Springs (MLWS) will be addressed within a separate planning application and are therefore not included within the scope of the consent applications for the Offshore Development. The offshore assessment has, however, also considered the potential impacts of whole project within the assessment. This includes an assessment of the combined effects of the Offshore and Onshore Development on relevant biological, human and physical environment receptors.

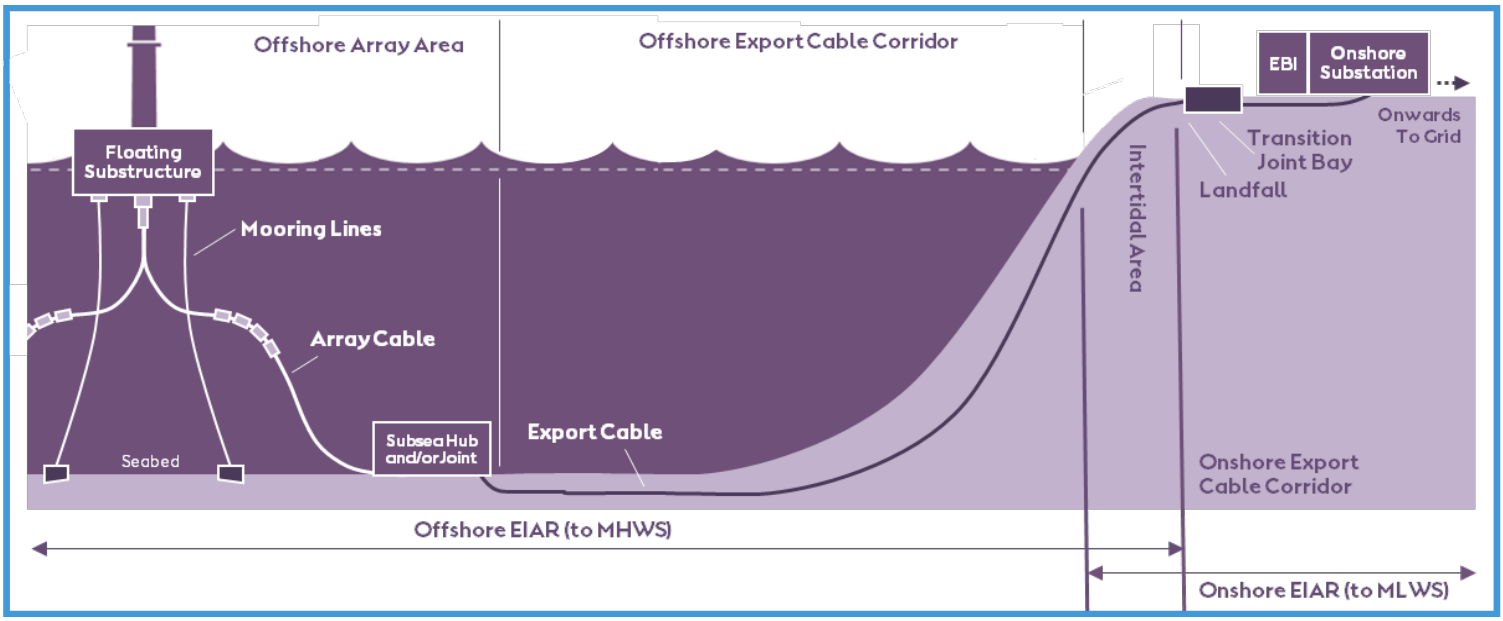

Figure 2-1: Salamander Project Infrastructure Schematic

2.1 Project need, benefits and background

Once operational, the Salamander Project will contribute to Scotland's netzero targets, as set out in the Climate Change (Scotland) Act 2009 and the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019. The Salamander Project will also contribute to the wider UK target to produce 50 GW of operational offshore wind energy by 2030 and the Scottish Government's ambition within the Draft Energy Strategy and Just Transition Plan for deployment of up to 11 GW installed offshore capacity by 2030.

- Once complete, the Salamander Project will provide enough power to meet the average daily electricity need of up to **100,000 homes**.
- The Salamander Project will help to deliver **high-quality jobs and investment** into the UK's offshore wind supply chain.
- The Salamander project is focusing on **innovative solutions** for floating offshore wind technology and onshore Energy Balancing Infrastructure (EBI) to help broaden the horizons of what renewable energies can deliver.

The Salamander Project has secured an Exclusivity Agreement from the Crown Estate Scotland (CES) for the site location of the Offshore Array Area through the Innovation aspect of the Innovation and Targeted Oil and Gas (INTOG) leasing round, aimed at further developing Scotland as a destination for innovation and technical development. [1]

[1] Uncaptioned images are included for illustrative purposes only

2.2 What permissions are needed and what legislation applies?

The Salamander Offshore Wind Farm is a project up to 100 MW requiring the following key consents for the Offshore Development:

- **Section 36 Consent** under the **Electricity Act 1989** for generating stations with capacity of > 50 megawatts (MW); and
- **Marine Licences** under the **Marine and Coastal Access Act 2009** (within the Scottish offshore region, between the 12 and 200 nautical miles (nm) limits) and the **Marine (Scotland) Act 2010** (within the Scottish inshore region up to 12 nm), required for construction or deposition in or over the sea, or on and under the seabed.

Applications have been submitted to Marine Directorate - Licensing Operations Team (MD-LOT), who determine these on behalf of Scottish Ministers.

The Offshore Development of the Salamander Project requires an EIA, as it falls under the relevant criteria set out within the **Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017**, the **Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017**, and the **Marine Works (Environmental Impact Assessment) Regulations 2007**.

The Onshore Development of the Salamander Project will be subject to a separate consenting process which requires a **Section 36 Consent under the Electricity Act 1989** from the Scottish Government Energy Consents Unit (ECU) with a deemed planning permission for the EBI, as well as planning permission from the Aberdeenshire Council under the **Town and Country Planning (Scotland) Act 1997** for the onshore substation and associated works, (these will be applied for separately).

2.3 How was the site selected and what alternatives were looked at?

Site selection is an important part of the development process. A comprehensive site selection exercise was undertaken in 2020 to identify the optimal site for the Offshore Array Area that met the requirements of the INTOG leasing round and took into account the existing environment and wider commercial, socio-economic and technical factors.

Consideration of reasonable alternatives has been made at every stage of development and has been informed by engagement with key stakeholders. The selection of the final Offshore Array Area and options for Offshore ECC routes were considered alongside the requirements for onshore infrastructure and potential grid connections.

The Offshore Array Area, identified as part of the site selection process, was confirmed as the Salamander Project Offshore Array Area when an Exclusivity Agreement was awarded from CES in March 2023. The site refinement took a number of technical factors into consideration as well as input from key commercial fisheries stakeholders to avoid areas, where practicable, for the Offshore Array Area that had high intensity fishing levels.

Three export cable route options were considered, with the selected Offshore ECC making landfall approximately 2.5 km north of Peterhead on Scotstown Beach between Lunderton and Kirkton. One of the discounted options was ruled out due to electricity grid constraints within the Peterhead substation, and the other option was ruled out due to insufficient space between a patch of designated Annex 1 reef habitat and the active Fulmar to St Fergus gas pipeline. Further minor modifications to the Offshore ECC were made to align with the final Offshore Array Area and expected crossings of pipelines and cables (**Figure 2-2**).

In developing the project, alternative designs have been considered. Changes made since issue of the scoping opinion are provided in **Volume ER.A.2, Chapter 3: Site Selection and Consideration of Alternatives,** Table 3-6. Examples of design alternatives considered include: landfall installation methodology, offshore export cable voltage and refinement of the Wind Turbine Generator (WTG) dimensions.

The final design of the Offshore Development will progress post-consent and the WTG array layout will be developed based on geotechnical survey data, as well as selection of the specific infrastructure to be installed. The final site layout will be consulted on and agreed with the Marine Directorate – Licensing and Operations Team (MD-LOT) post-consent. The exact export cable route within the Offshore ECC will also be refined following pre-construction seabed surveys, so that the cable avoids sensitive ecological and archaeological features as far as technically possible.

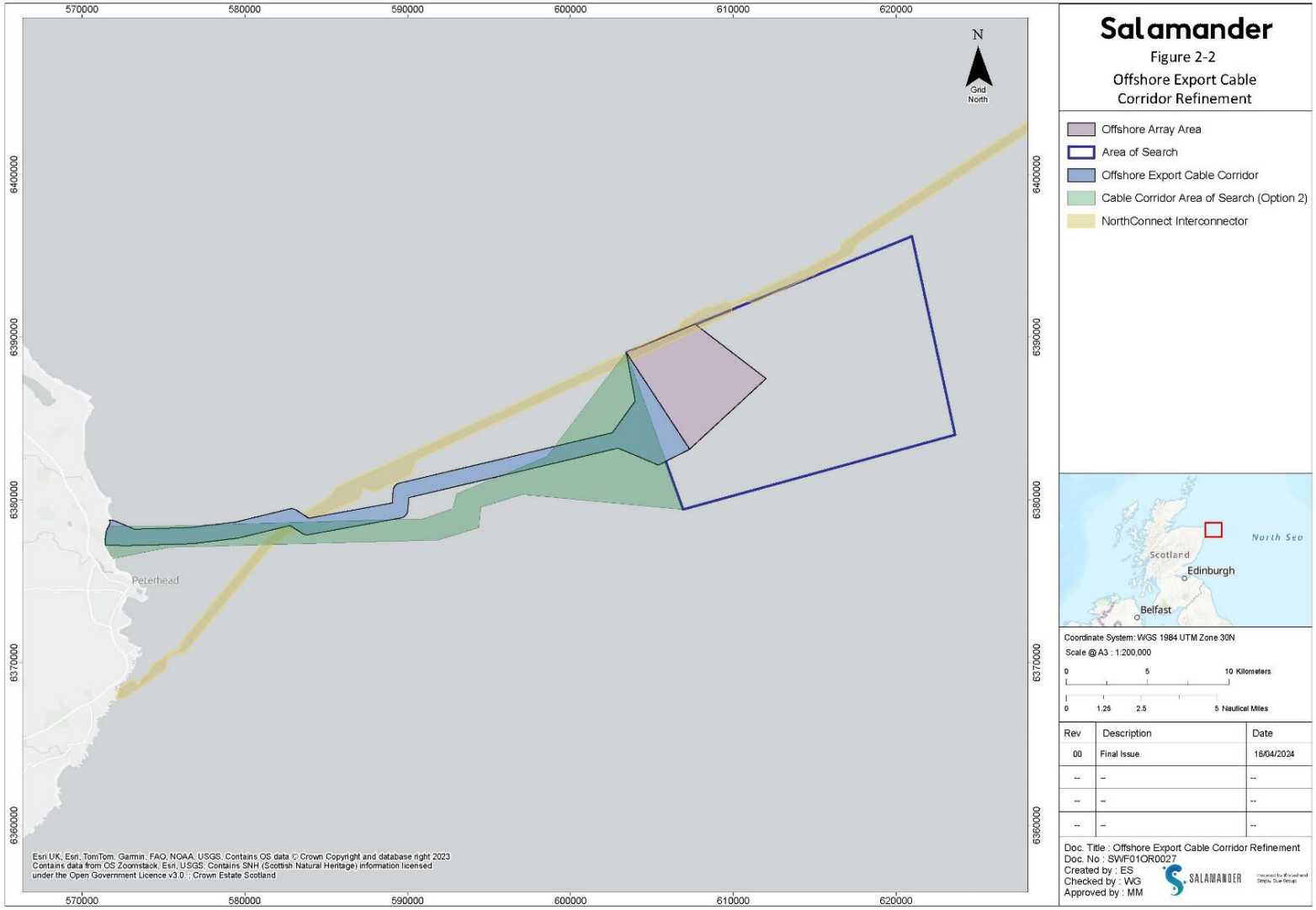

Figure 2-2: Offshore Export Cable Corridor Refinement

2.4 Summary Description of the Project

The offshore project design will not be finalised until post-consent, closer to construction. Therefore, a 'Project Design Envelope' approach has been used which forms the basis upon which the impact assessments have been assessed. The 'Project Design Envelope' consists of a range of design parameters for each component of the Salamander Project, providing flexibility for further refinement of the project design in order to accommodate technological advancements and further understanding of site conditions.

The Offshore Development of the Salamander Project includes the following key offshore components, for which SWPC is seeking consent (**Figure 2-3, Figure 2-4** and **Figure 2-5**):

- Up to seven offshore WTGs with a maximum tip height of 310 m above mean sea level (MSL);
- Floating substructures to support the WTGs;
- Mooring and anchoring systems to connect the structures to the seabed;
- Inter-array Cables (including both dynamic and static cable sections) to collect the power from the WTGs;
- Connection hub(s)/joint(s) on the seabed, and their associated foundations;
- Up to two static Offshore Export Cable(s) either from up to two subsea hubs or as a continuation of the dynamic inter-array cables to bring power ashore; and
- Landfall works using trenchless techniques, such as Horizontal Directional Drilling (HDD), to bring the subsea cable to land.

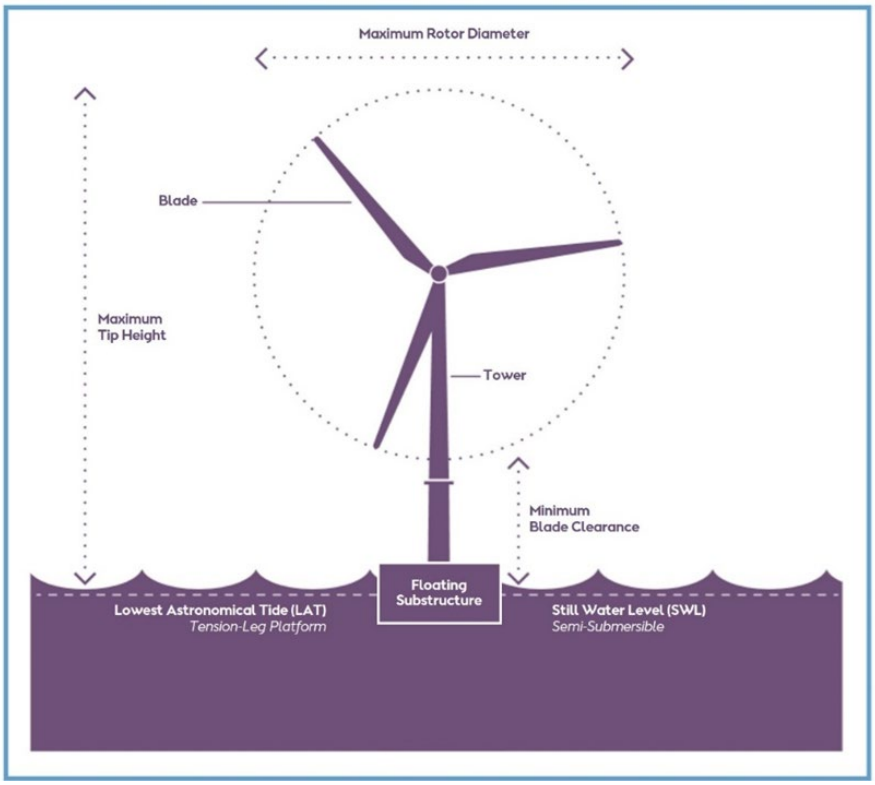

Figure 2-3: Indicative Floating Wind Turbine Generator

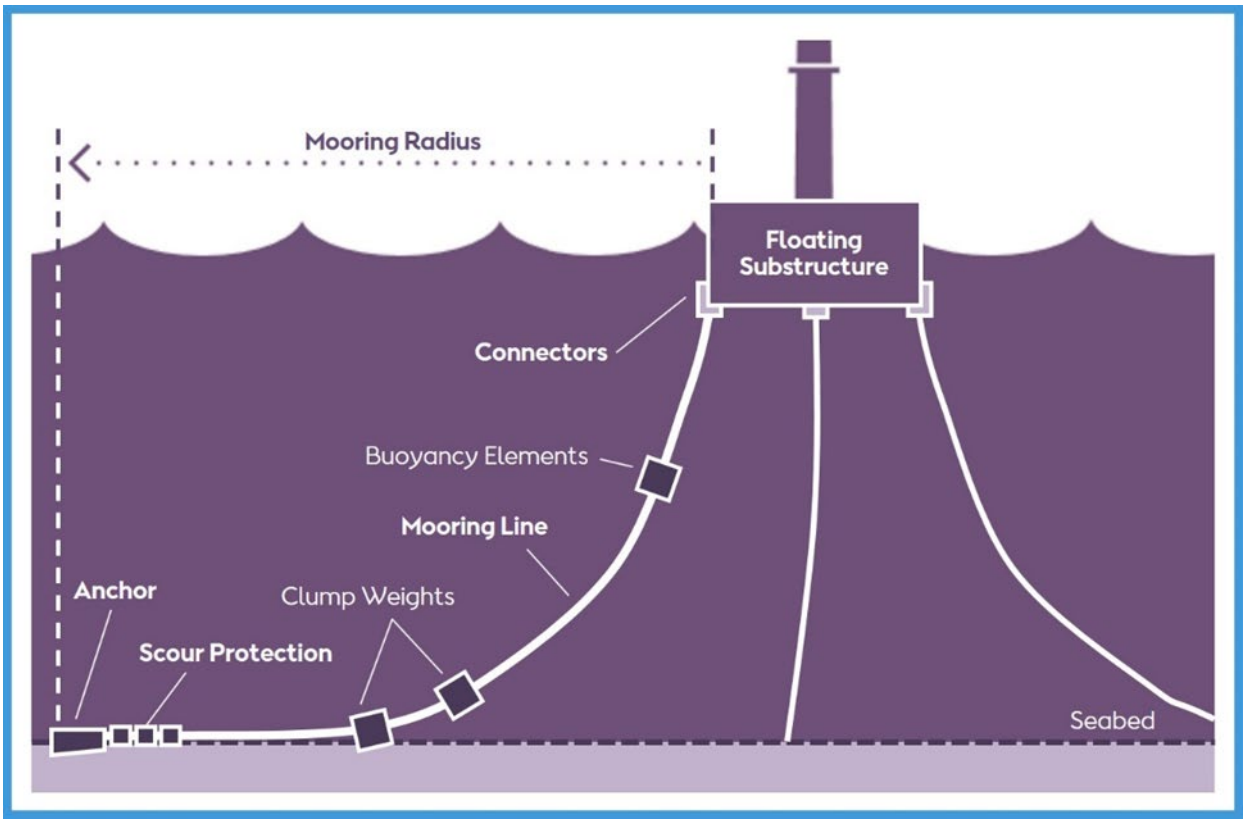

Figure 2-4: Components of the Mooring System

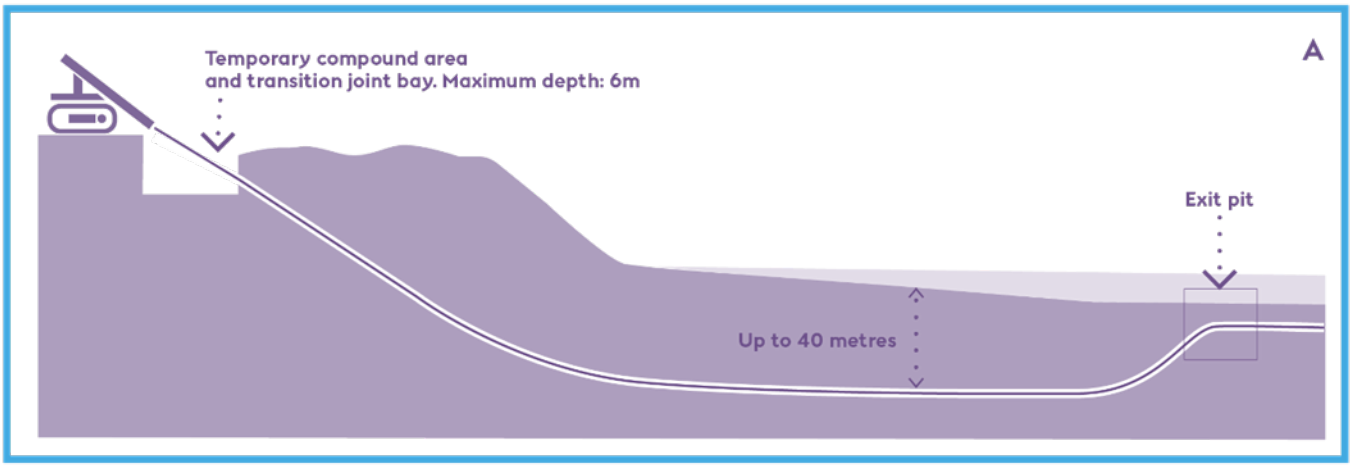

Figure 2-5: Indicative Trenchless Installation Arrangement

2.4.1 Construction

The Salamander Project's WTGs comprise of the tower atop a floating foundation, with a nacelle at its top housing the electrical equipment and generator. The turbine blades are attached to the front of the nacelle and capture energy from the wind, transforming it into electricity via the generator. The blade tips will be no taller than 310 m and the clearance between the blades and MSL will be no less than 22 m. Floating substructures, will be either Semi-Submersible (barge / buoy / hybrid) or Tension Leg Platform structures, as depicted in **Figure 2-6** . The mooring system is responsible for maintaining the position of the WTGs and floating substructure even during the most extreme events or energetic storms. The Salamander Project will use between three and eight mooring lines attached to each floating substructure. The mooring system will be either catenary, semi-taut, taut or tension moorings, depending on the specifics of the chosen floating substructure, anchor type and site characteristics (**Figure 2-7**). The end of each mooring line connects to an anchor, up to eight anchors for each floating substructure may be required, the type of anchor used will depend on the floating foundation type and seabed conditions.

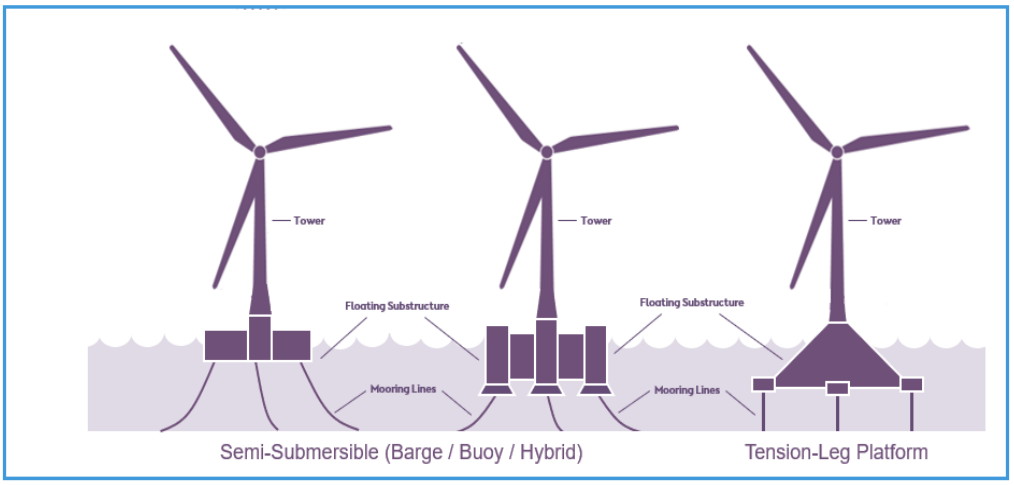

Figure 2-6: Indicative Schematic of Floating Substructures

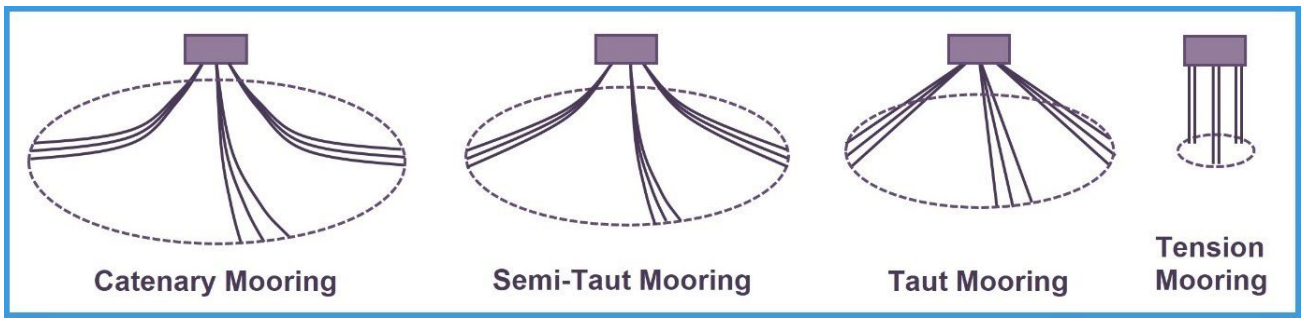

Figure 2-7: Schematic of Possible Mooring Configurations

Assembly of WTGs will depend upon the type of WTG and installation method, as well as choice and location of ports and fabrication yards. Installation works will involve the use of specialist installation vessels which may be assisted by a range of offshore construction, support, and transport vessels. These are typically smaller vessels that may be tugs, guard vessels, anchor handling vessels, or similar. These vessels will primarily make the same movements to, from and around, the Offshore Array Area as the installation vessels they are supporting.

Subsea cables are required to transmit electricity generated by the wind turbines to the landfall. Due to the use of floating substructures, the Salamander Project will require the use of dynamic cables for all or part of the inter-array connections between WTGs. Dynamic cables are able to accommodate movement of the floating substructures

without imparting excessive loads on the cables. The dynamic cables between WTGs will be suspended within the water column before 'touching down' on to the seabed and becoming static subsea cables. The preferred method of protecting static subsea cables will be to bury them within the sea floor. Where burial of cable is not possible, cable protection such as rock placement may be required on the seabed. Cable protection will also be used where cables are required to cross existing cables or pipelines on the seabed. Cable installation will involve the use of an installation vessel laying cable on the seabed as it goes and for inter-array cables, the second end of the cable is then deployed and pulled and secured into another floating substructure.

A detailed construction programme will be developed as design and procurement activities progress. The earliest anticipated date that onshore construction could commence is January 2027 and the expected start of offshore construction to be a year later in Q2 of 2028. Anticipated timeline for construction is depicted in **Figure 2-8**. The anticipated maximum total construction duration (onshore and offshore) is three years, where it is anticipated that construction of the Offshore Development alone will occur for up to a maximum of 18 months. The Offshore Array is anticipated to be commissioned and operational by the end of 2029. The offshore export cables and inter-array cables may be installed in either the first or second year of offshore construction. These expected construction periods may vary depending on the final sequencing of construction activities, or if there are any delays in the installation programme due to weather or other unforeseen circumstances. However, overall anticipated timescales for project works will remain the same.

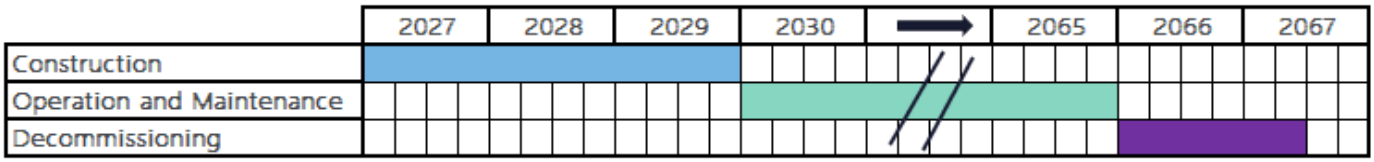

Figure 2-8: Anticipated Construction Programme Timeline

2.4.2 Operation and Maintenance

The Salamander Project application is for an anticipated operational life of 35 years. Once construction is complete and the wind farm is fully commissioned the Salamander Project will enter its operation and maintenance phase. Upkeep of the infrastructure at sea may include routine servicing, component replacements, repairs, remedial works, and painting and cleaning. A variety of vessel types are likely to be required depending on the maintenance. For repairs that cannot reasonably be completed at the Offshore Array Area, the WTGs may be towed to port for repair. Relevant licenses and permits will be obtained as required.

2.4.3 Decommissioning

In line with the Scottish Government's position on the decommissioning of Offshore Renewable Energy Installations, at the end of the operational lifetime of the Salamander Project it is anticipated that all structures above the seabed will be completely removed, whilst recognising that this will be subject to technical and environmental assessments and consultation closer to the time of decommissioning.

A Decommissioning Programme will be submitted to MD-LOT for consultation and approval by the Scottish Ministers, a draft of which will be submitted prior to the construction of the Salamander Project. The Decommissioning Programme will be updated during the Salamander Project's lifespan to take account of changing best practice and new technologies, and will be compliant with the legislation and policy requirements at the time of decommissioning.

2.5 Who has been consulted on the Salamander Project?

The Salamander Project Team has undertaken pre-application consultation with the following consultee groups:

- MD-LOT;
- Statutory and non-statutory consultees;
- Aberdeenshire Council and local community councils;
- Owners and tenants and occupiers of the affected land, community and other organisations in the vicinity of the Salamander Project that may be affected both directly and indirectly by the project; and
- Wider communities and organisations.

Key stakeholder meetings, as well as other forms of engagement, were undertaken across three phases: Pre-scoping, Scoping and EIA. Pre-scoping and Scoping discussions with stakeholders identify, through a scoping opinion from MD-LOT, what should be included in the EIA assessments to be presented in the EIAR. Conversations have been ongoing throughout the consenting process and will continue into the construction and operational phases. The stakeholder consultation that has been undertaken has ensured that all statutory and legislative requirements have been met, and key feedback has been considered and incorporated within the EIAR.

Two rounds of in-person public consultation have been held during the pre-application stage, to allow people the opportunity to view information on the Salamander Project, ask the team questions and provide their feedback. The following Pre-Application Consultation (PAC) events were held in Peterhead and Crimond:

- 1st PAC event – June 2023; and
- 2nd PAC event – November 2023.

For each PAC event, a virtual consultation room was set up, so those who could not attend the in-person events could still view the consultation materials and submit their feedback (**Figure 2-9**).

Figure 2-9: In-person PAC Events and Virtual Consultation Room

3 EIA Methodology

The EIA methodology used in this assessment was developed based on the experience of EIA technical experts and in consideration of EIA principles and industry best practice guidance, such as the **Scottish Government Good Practice Guidance for Applications under Sections 36 and 37 of the Electricity Act 1989 (2022)** and guidance published by the **Institute of Environmental Management and Assessment (IEMA).**

The assessment process considers potential impacts that may occur on the biological, human and physical environment as a result of the Salamander Project. These impacts are assessed in consideration of the sensitivity of different receptors to a given impact, the duration of the impact, and how widespread the impact is expected to be. These considerations are then combined to produce an overall 'significance of effect' rating which determines whether or not the impact is likely to result in significant effects.

Embedded mitigation measures (i.e. measures that have already been incorporated into concept design of the Salamander Project, or measures that are standard best practice construction or operation methods) are also taken into consideration during this assessment.

For all EIA topics assessed, the potential impacts of the Offshore Development were assessed based on the 'realistic worst-case' scenario. The 'realistic worst-case' scenario is based on the design option (or combination of options) that represents the greatest potential for impacts on the environment. By assessing the worst-case scenario, this aims to make sure that the Salamander Project will not give rise to impacts that are greater or worse than those assessed within the EIAR.

Where the impact assessment identifies that an aspect of the Salamander Project is likely to give rise to significant negative environmental effects (as shown in **Figure 3-1**), additional mitigation measures, above and beyond any embedded mitigation, are incorporated into the assessment process to avoid or reduce impacts to acceptable levels. In certain circumstances, it may be pertinent to implement monitoring of any identified outstanding significant effects.

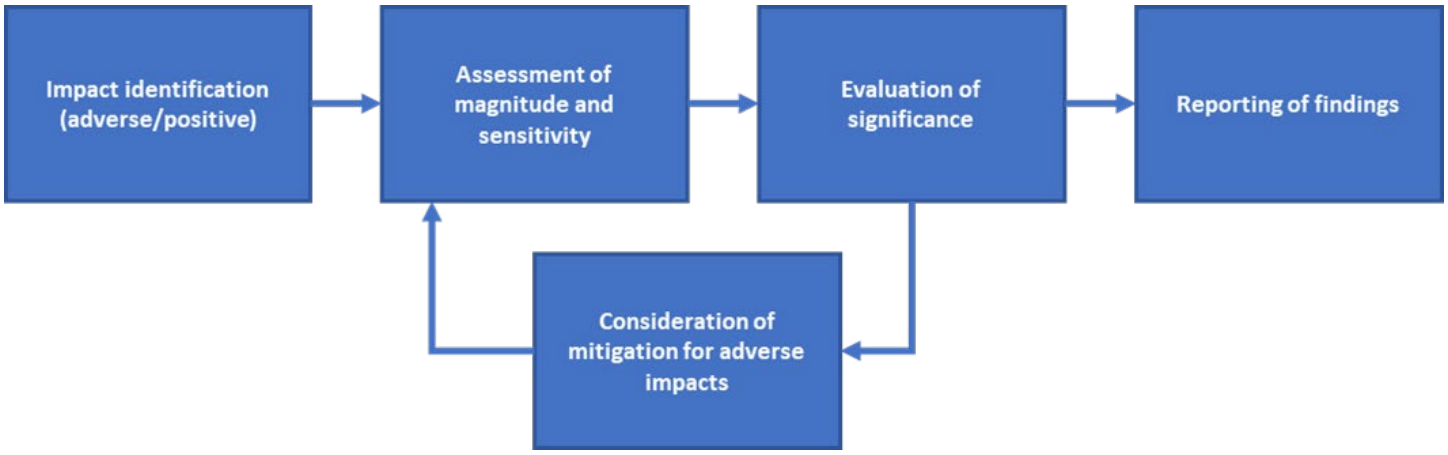

Figure 3-1: Impact Assessment Process

Once impacts were assessed for the Salamander Project alone, a Cumulative Effects Assessment (CEA) was undertaken to assess impacts on the environment in consideration of the Salamander Project along with other plans and/or projects.

An assessment of the potential cumulative impacts of the Offshore Development with the proposed Onshore Development was also assessed. This ensured that the Salamander Project's impacts and effects are understood and that the Offshore Development has not been considered in isolation. The assessment of impacts cumulatively with the Onshore Development identified no additional impacts on any of the receptors, therefore, no significant effects were predicted.

In addition, the EIA considered the potential for inter-related and transboundary effects to occur. Inter-related assessments consider the likely effects of multiple impacts from the proposed development on one receptor, as well as effects that occur throughout more than one phase of the Salamander Project. The inter-related assessment identified no significant inter-related effects. Transboundary assessment are effects that occur when the impacts from a development extend into other European Economic Area (EEA) states. The transboundary assessment for the Salamander Project identified no impacts on any of the receptors, therefore, no significant transboundary effects are expected.

4 Impact Assessment Results

4.1 Physical Environment

4.1.1 Marine Physical Processes

The Marine Physical Processes assessment considered potential impacts of the Salamander Project on physical processes such as currents, sediments and geology, seabed formations and coastal characteristics.

The results of geophysical and environmental surveys showed sediments of the Offshore Array Area and Offshore ECC to be characterised by sand and gravelly mud. These surface sediments were typically found to be between 0 and 2 m thick. Tidal currents are strongest close to the coastline and become weaker further offshore with waves within the Offshore Array Area typically from north and south, whilst waves within the Offshore ECC were generally from a southeasterly direction.

The Marine Physical Processes assessment also took into consideration the objectives of the Southern Trench Marine Protected Area (MPA), to maintain the favourable conditions of this site. The Southern Trench MPA is an important geologically diverse feature of glacial origin, which covers some of the Offshore ECC close to shore. It was determined that the localised nature of works will be small relative to the overall extent of features of the Southern Trench MPA and therefore these favourable conditions should be maintained.

The potential for changes to the tidal, wave and sedimentary regimes resulting from the proposed Salamander Project were assessed for all phases of the project. Potential impacts were generally considered to be localised and result in short-term changes to sediment transport, increased suspended sediment concentrations (SSC), changes to coastal morphology or water column mixing. Impacts from the construction and decommissioning phase, such as increased suspended sediments from cable burial, and impacts during the operation and maintenance phase, including changes to currents due to the physical presence of the Offshore Array were assessed. The Marine Physical Processes project alone impact assessment predicted **no significant effects**, as such **no additional mitigation** measures have been proposed.

Cumulative effects of the Salamander Project with other plans and projects were also assessed. The potential for cumulative increases in SSC, changes to the coastline and water column mixing were considered. As per the impact assessment of the Salamander Project alone, **no significant cumulative effects** were identified during the CEA for Marine Physical Processes.

4.1.2 Water and Sediment Quality

The Water and Sediment Quality assessment considered potential impacts of the Salamander Project on physical and chemical properties of water and sediments.

Geophysical and environmental surveys were undertaken to collect data on the physical and chemical properties of the water and sediments. These surveys informed the baseline environment for the impact assessment.

Generally, the water and sediments surveyed were indicative of 'good' quality and did not show signs of pollution. Elevated levels of chemical compounds were also not recorded. The Offshore ECC is highlighted to intersect two water bodies designated under the Water Framework Directive (WFD): the Ugie Estuary to Buchan Ness (Peterhead) and Cairnbulg Point to the Ugie Estuary water bodies. This directive sets out legal requirements which encourage the sustainable use of water in order to protect and improve its quality and so these designated water bodies must maintain their 'High' and 'Good' statuses, respectively.

Potential impacts during the construction, operation and maintenance, and decommissioning phases, such as increased suspended sediments from installation and maintenance works and accidental release of pollutants from vessels were assessed. The Water and Sediment Quality impact assessment for the project alone predicted **no significant effects** and **no additional mitigation** measures have been proposed.

Cumulative effects of the Salamander Project with other plans and projects were also assessed. The potential for cumulative increases in suspended sediments and accidental release of pollutants were considered. As per the impact assessment of the Salamander Project alone, **no significant cumulative effects** were identified during the CEA for Water and Sediment Quality.

4.2 Biological Environment

4.2.1 Benthic and Intertidal Ecology

The Benthic and Intertidal Ecology assessment considered the potential impacts of the Salamander Project on seabed (benthic) species and habitats.

Geophysical and environmental surveys in the intertidal and subtidal environment identified the Salamander Project study area to have habitats typical of the wider environment, characterised largely by subtidal sands offshore and a combination of sedimentary and rock habitats towards the coast. A number of sensitive features were also identified, including Annex 1 stony reef habitats, potential presence of kelp beds and a number of species defined as threatened and/or declining, such as sea pens and ocean quahog (edible clam), thus requiring special consideration within the impact assessment.

The Benthic and Intertidal Ecology assessment also took into consideration the objectives of The Southern Trench MPA, which hosts a wide variety of marine species, like Norway lobster, crabs and sea pens. 'Burrowed mud' is identified as a benthic protected feature of this MPA. However, as this feature is not located within the Benthic and Intertidal Study Area there will be limited and insignificant interactions with this protected habitat.

Potential impacts during the construction, operation and maintenance and decommissioning phases such as temporary and long-term habitat loss, increased risk of introducing invasive non-native species (INNS), disturbance of contaminated sediments, colonisation of hard structures and the impact of cable thermal load or electromagnetic fields (EMF) on benthic ecology were assessed. In general, potential impacts were deemed to be highly localised and relative to the overall species or habitat, population impacts were considered to be low or negligible. As such, the Benthic and Intertidal Ecology impact assessment project alone concluded **no significant effects**, and **no additional mitigations** have been proposed.

Cumulative effects of the Salamander Project with other plans and projects were also assessed. The potential for cumulative temporary and long-term habitat loss, increased risk of introducing INNS and disturbance of contaminated sediments were considered. As per the impact assessment of the Salamander Project alone, **no significant cumulative effects** were identified during the CEA for Benthic and Intertidal Ecology.

4.2.2 Fish and Shellfish Ecology

The fish communities identified in the vicinity of the Salamander Project, through peer reviewed literature and publicly available data sources, are considered typical of the wider area and include species such as blonde rays, cuckoo rays, Atlantic herring, haddock and Atlantic cod. Sandeel habitat was also noted to provide a key food resource for birds and highlighted as being at risk to habitat loss and/or disturbance from the Salamander Project. The impact assessment considered underwater noise, temporary and long-term habitat loss, increased suspended sediments and effects of Electromagnetic Frequencies (EMF) from subsea and dynamic cables on sensitive species were assessed for the construction, operation and maintenance and decommissioning phases of the Salamander Project.

In order to manage underwater noise impacts, a commitment has been made to limit piled anchor installations to four within 24 hours. Other commitments include the burying of cables under the seabed wherever possible to reduce the need for additional cable protection. Due to the high mobility of fish and shellfish species, particularly migratory species which pass through the study area like Atlantic salmon and European eel, and overall small percentage loss of habitat relative to the total area, **no significant effects** were predicted for the Salamander Project alone as a result of the Fish and Shellfish Ecology assessment. Therefore, **no additional mitigation** measures have been proposed.

Some fish and shellfish species, namely sharks and rays, can also sense electrical impulses. Electrical transmission cables associated with the project produce both electrical and magnetic fields, collectively defined as EMF. Any behavioural responses to EMF are likely to occur within metres of the source, and as sharks and rays are highly mobile species, **no significant EMF effects** were predicted.

Cumulative effects of the Salamander Project with other plans and projects were also assessed. During construction the cumulative impact of disturbance or damage to sensitive species due to underwater noise generated from piling activities was assessed to be significant due to the potential for piling schedules of the Offshore Development and other projects to overlap. The Salamander Project will work with the other developers active in this region to avoid, where reasonably practicable, potential overlap of piling activities between projects in order to minimise cumulative disturbance or damage to sensitive species due to underwater noise generated from temporary construction activities. Successful implementation of this mitigation measure is considered to reduce this impact to an overall **non-significant effect**.

4.2.3 Marine Mammals

The marine mammals most likely to occur in the vicinity of the Salamander Project are harbour porpoise, bottlenose dolphin, beaked dolphin, minke whale, harbour and grey seals.

The Marine Mammals assessment also took into consideration the objectives of The Southern Trench MPA, which is a prominent feeding ground for minke whales. Minke whales are known to occur within the region of the Salamander Project; however, their density is low. Therefore, it is considered that there is a minimal potential for this conservation feature (minke whale) to interact with the Salamander Project.

Digital video aerial surveys were undertaken of the Offshore Array area over two years to quantify the abundance and distribution of marine mammal species to inform the baseline environment and impact assessment of Marine Mammals. Potential impacts such as disturbance, impacts from underwater noise, risk of entanglement with mooring lines or cables, displacement or barrier effects due to physical presence of infrastructure, and indirect impacts to prey species were assessed for the construction, operation and maintenance and decommissioning phases of the Salamander Project. Based on behavioural avoidance responses, acoustic modelling results and the generalist feeding nature of marine mammals, the Marine Mammal impact assessment predicted overall **no significant effects**. Therefore, **no additional mitigation** measures have been proposed.

Cumulative effects of the Salamander Project with other plans and projects were also assessed. The potential for cumulative underwater noise and risk of entanglement with other floating offshore wind farms were considered. As per the impact assessment of the Salamander Project alone, **no significant cumulative effects** were identified during the CEA for Marine Mammals.

4.2.4 Offshore and Intertidal Ornithology

The Offshore and Intertidal Ornithology assessment considered potential impacts of the Salamander Project on offshore bird species, shorebirds and breeding bird colonies.

A total of 19 bird species were identified from digital video aerial surveys undertaken on a monthly basis for two years in order to quantify the abundance and distribution of bird species present in the Salamander Projects Offshore Array Area. Key species recorded in the greatest number being auks, including guillemot, razorbill, and puffin, as the most common bird group, whilst numbers of skua and terns were comparatively low. Gulls were also abundant within the Offshore Array Area, of which kittiwake were the most common species. Surveys were also undertaken in the beach area (intertidal) in the vicinity of where the export cable comes to shore. Species observed during the intertidal surveys included barnacle goose and common eider. Although birds are sensitive to disturbance, operations in the intertidal zone are only associated with the Offshore ECC and therefore will be temporary and limited to a small area. As such **no significant effects** were determined for intertidal bird species.

A number of Special Protection Areas (SPAs) designated to protect birds have been identified as having potential relevance for the Salamander Project, the closest being the Buchan Ness to Collieston Coast SPA and the Troup, Pennan and Lion's Heads SPA. Potential adverse effects on these internationally designated sites are considered through the Habitats Regulations Appraisal (HRA) process.

The impact assessment considered displacement and behavioural responses of bird species (i.e. blocking of flight paths and distribution of birds around the development) during construction, operation and maintenance and decommissioning, as well as collision and entanglement during operation. In light of consultation comments received from the Royal Society for the Protection of Birds (RSPB), specific approaches were developed to assess population impacts whilst ensuring specific species sensitivities were also accounted for, over the lifetime of the development.

The black legged kittiwake, great black backed gull, European herring gull and northern gannet were identified as highly sensitive to collision risk during the operation and maintenance phase. However, in consideration of regional population estimates and foraging areas only a small number of these species relative to their overall population would be at risk to collision related impacts. Similarly, the maximum extent of habitat loss due to the Salamander Project represents a low proportion of the total habitat available within the region. Disturbance impacts would also occur across similar spatial extents but were assessed to be localised and only have a limited interaction with bird species. Therefore, the Offshore and Intertidal Ornithology impact assessment predicted **no significant effects**, and consequently **no additional mitigation** measures have been proposed.

Cumulative effects of the Salamander Project with other plans and projects were also assessed. The potential for cumulative collision and distributional responses were considered. As per the impact assessment of the Salamander Project alone, **no significant cumulative effects** were identified during the CEA for Offshore and Intertidal Ornithology.

4.3 Human Environment

4.3.1 Commercial Fisheries

The Salamander Project lies within a wider region where a variety of commercial fisheries operate. A desk review of publicly available data sources and consultation with local fisheries organisations were used to inform the baseline. Commercial fisheries using otter trawls, pots and traps and dredges were identified to fish within the Offshore Development Area. Static gear fisheries mainly targeted shellfish species such as lobster and crab, whilst mobile otter trawlers targeted demersal species such as whitefish, nephrops and squid. Dredge gear types specifically targeting scallops was also highlighted to be a particularly important fishery for the region and the ports of Buckie, Macduff and Peterhead.

The Commercial Fisheries assessment considered potential impacts of the Salamander Project on potters, handliners, scallop dredgers, otter trawls and pelagic trawls, and assessed the loss of, and/or restricted access to fishing grounds, displacement, loss or damage to gear, increased steaming times, and impacts to commercially important fish and shellfish groups during the construction, operation and maintenance and decommissioning phases of the Salamander Project.

The main commitments relevant to commercial fisheries are **ongoing liaison with the fisheries industry** through the appointment of a Fisheries Liaison Officer (FLO) and Fisheries Industry Representative (FIR), and development of a Fisheries Management and Mitigation Strategy (FMMS). Impacts assessed primarily relate to the loss of, or exclusion from established fishing grounds due to construction activities and the presence of the wind farm during operation. With the above-mentioned commitments in place, the assessed impacts for the project alone were found to only affect a limited proportion of the fishing groups' commercial annual value or landings. As such, the Commercial Fisheries impact assessment for the project alone predicted **no significant effects** and accordingly, **no additional mitigation** measures have been proposed.

Cumulative effects of the Salamander Project with other plans and projects were also assessed. The potential for cumulative loss of restricted access to fishing grounds, displacement, loss or damage to gear, increased steaming times, and impacts to commercial important fish and shellfish groups were considered. During construction, cumulative impacts of loss or restricted access to fishing grounds, displacement and increased vessel traffic on potters within the Offshore ECC were assessed to be significant due to the number of other project works set to potentially occur simultaneously or sequentially with the Salamander Project's export cable installation works within the nearshore region (i.e. landwards of the 12 nm limit). **Close engagement** with other project developers to develop a coordinated approach to construction in the nearshore region of the Offshore ECC, liaison with fisheries via the appointed FLO and adherence to their guidance, as well as the development of a **joint Fisheries Management and Mitigation Strategy (FMMS)** are considered to reduce these cumulative impacts to **an overall non-significant effect**.

All other cumulative effects were assessed as **not significant**.

4.3.2 Shipping and Navigation

The Shipping and Navigation assessment considered potential impacts of the Salamander Project on vessel routing, fishing vessels, recreational vessels, other service vessels for offshore energy and cargo and tanker vessels.

Peterhead is the main port in the vicinity of the Offshore Development, located approximately 2 nm from the southern boundary of the Offshore ECC. Other key ports include Aberdeen and Montrose, which vessels in the area commonly transit to/from based on vessel traffic assessment. Vessel traffic surveys during the winter and summer were undertaken and Automatic Information System (AIS) and Vessel Monitoring System (VMS) data were analysed to characterise the baseline environment and inform Shipping and Navigation impact assessment. The Navigational Risk Assessment (NRA) within which vessel routing analysis was investigated illustrated a low number of vessels transiting through the Offshore Array Area. Low numbers of larger tanker and cargo vessels were also identified to pass in close proximity to Offshore Array Area.

Potential impacts such as vessel displacement, increased collision risk, reduced access to local ports and emergency response capabilities were assessed for the construction, operation and maintenance and decommissioning phases of the Salamander Project. Based on vessel routing analysis within the NRA, the frequency and occurrence of displacement and collision risks are considered to be within broadly acceptable limits given the low number of vessel routes and vessel deviations expected to occur. The Shipping and Navigation impact assessment project alone predicted **no significant effects** and accordingly, **no additional mitigation** measures are proposed.

Cumulative effects of the Salamander Project with other plans and projects were also assessed. The potential for cumulative vessel displacement and collision risks were considered. As per the impact assessment of the Salamander Project alone, **no significant cumulative effects** were identified during the CEA for Shipping and Navigation.

4.3.3 Aviation and Radar

The Aviation and Radar assessment considered potential impacts of the Salamander Project on civil aviation, air defence and military aviation and Met Office radar.

Operational wind turbines can affect civil aviation, air defence and military aviation and Met Office radar. The impact assessment considered commercial helicopter and search and rescue operations in the region supporting oil and gas exploitation in the North Sea, civil aviation radar systems located at Allanshill and Perwinnes, and military radar systems located at Buchan, Aberdeenshire. In addition, the assessment also considered the meteorological radar is located at Hill of Dudwick, Aberdeenshire.

Potential impacts such as the creation of a physical obstacle to aircraft and interference to radar systems were assessed for the construction, operation and maintenance and decommissioning phases of the Salamander Project. A significant effect on civil and military radar systems as a result of interference from wind turbines during the operation and maintenance phase was predicted. In order to reduce this effect, additional mitigation, such as **commercial agreements** and other technical solutions, are proposed. To mitigate effects on the Met Office radar system the **maximum wind turbine blade tip height has been limited to 310 m .**

After taking mitigation into account the Aviation and Radar assessment predicted **no significant effects**.

Cumulative effects of the Salamander Project with other plans and projects were also assessed including the potential for cumulative physical obstacles to aircraft and interference to radar systems. It is noted that mitigation plans for other offshore wind farms are already in place or in development to minimise impacts to aviation. As such, **no significant cumulative effects** were identified during the CEA for Aviation and Radar.

4.3.4 Seascape, Landscape and Visual Amenity

The existing seascape can be described as open sea with occasional offshore structures including Rattray lighthouse and Hywind Offshore Wind Farm with St Fergus Gas Terminal on the coast. The Seascape, Landscape and Visual Amenity assessment considered potential impacts of the Salamander Project on coastal and landscape character areas, viewpoints, landscape designations, settlements and recreational routes from the Offshore Array Area approximately 35 km offshore. Landscape areas and designations identified include: The North Aberdeenshire Coast Special Landscape Area (SLA), North East Aberdeenshire Coast SLA, Cairness Garden and Designed Landscape (GDL), Crimonmogate GDL and Haddo GDL. The coastal landscape is predominantly defined by cliffs and rocky coasts as well as beaches, dunes, coastal farmland, valleys and agricultural areas which host recreational routes including the Formartine and Buchan Way and the Aberdeenshire Coastal trail.

Viewpoint photography during the day and night was undertaken to collect baseline data associated with views of the Offshore Development.

Potential impacts on visual amenity and characteristics and quality of coastal and landscape were assessed for the construction, operation and maintenance and decommissioning phases of the Salamander Project. The assessment predicted that the Offshore Array will appear relatively small within the large scale open expansive seascape, and be seen as a horizon development rather than being viewed within the seascape. The assessment of the project alone predicted **no significant effects**, and **no additional mitigation** measures have been proposed.

Cumulative effects of the Salamander Project with other plans and projects were also assessed. The potential for cumulative impacts to visual amenity and coastal and landscape characteristics were considered. As per the impact assessment of the Salamander Project alone, **no significant cumulative effects** were identified during the CEA for Seascape, Landscape and Visual Amenity.

4.3.5 Marine Archaeology and Cultural Heritage

The Marine Archaeology and Cultural Heritage assessment considered potential impacts of the Salamander Project on heritage assets, coastal and maritime archaeology and aviation archaeology.

A total of 15 wreck sites were identified through geophysical data acquisition and review of archaeological records, and no designated heritage assets were identified within the Offshore Development Area. Adjacent to the Offshore Development Area, three Second World War concrete pillboxes and two concrete anti-tank block formations were observed during walkover surveys.

Potential impacts such as direct damage to known or unknown archaeological assets, visual impacts to onshore heritage assets and removal or deposits of archaeological interest were assessed for the construction, operation and maintenance and decommissioning phases of the Salamander Project. The Salamander Project has made a number of commitments relating to marine archaeology, notably to microsite infrastructure to avoid any wrecks or items of potential archaeological interest, as well as to develop a process to ensure archaeology is adequately considered throughout all activities. With these commitments in place, the project alone assessment predicted that there will be **no significant effects** on marine archaeology.

Impacts on the setting of archaeological and cultural heritage monuments due to the presence of physical infrastructure were also considered. As notable features visible to people are located on land and the Offshore Array Area approximately 35 km offshore, **no significant effects** to the setting of heritage assets were determined.

Cumulative effects of the Salamander Project with other plans and projects were also assessed. The potential for cumulative direct and indirect physical impacts to marine archaeology receptors and impacts to onshore cultural settings were considered. As it is recognised that other plans and projects will commit to industry recognised mitigation and best practice guidance on a project-by-project basis, **no significant cumulative effects** were identified during the CEA for Marine Archaeology and Cultural Heritage.

4.3.6 Other Users of the Marine Environment

The Other Users of the Marine Environment assessment considered potential impacts of the Salamander Project on subsea cables and pipelines, oil and gas infrastructure, other offshore wind projects and recreational marine users.

Seven active pipelines associated with oil and gas activities which make landfall at St Fergus and several proposed subsea cables were highlighted as key sensitivities through review of publicly available baseline data sources. As well as this the operational Hywind Scotland Pilot Park located southwest of the Offshore Array Area was also identified. Recreational activities were identified to be limited to coastal areas and therefore their interaction with the Offshore Array is considered to be low.

Potential impacts relating to obstruction of vessels and activities associated with other marine users were assessed for the construction, operation and maintenance and decommissioning phases of the Salamander Project. In general, spatial overlap of other marine user activities with the Salamander Project was considered to be limited to small spatial extents and be intermittent and short-term in duration. Where permanent cable crossings have the potential to occur, cable crossing agreements will be developed and implemented for the project. Therefore, the Other Users of the Marine Environment impact assessment project along predicted **no significant effects** and **no additional mitigation** measures have been proposed.

Cumulative effects of the Salamander Project with other plans and projects were also assessed. Most notably, several offshore wind farms are currently proposed under the ScotWind leasing round, such as MarramWind and Muir Mhór, and the Innovation and Targeted Oil and Gas (INTOG) leasing round. The potential for cumulative impacts relating to obstruction of vessels and activities associated with other marine users were considered. It is recognised that other plans and projects will also commit to similar industry recognised mitigation and best practice guidelines. Therefore, as per the impact assessment of the Salamander Project alone, **no significant cumulative effects** were identified during the cumulative effects assessment for Other Users of the Marine Environment.

4.3.7 Socio-economics, Tourism and Recreation

The Socio-economics, Tourism and Recreation assessment considered potential impacts of the Salamander Project on residents, local business, tourists, recreational users, job creation, supply chain opportunities and Salamander Project workers informed by data sources from local authorities on demographics, economy and employment and recreation. The closest economic areas to the Salamander Project are Aberdeenshire and Aberdeen City.

The local economy has a growing renewable energy sector and there is potential for Aberdeenshire and Aberdeen City to benefit from the procurement of activities (both onshore and offshore) that will support job and economic activities locally, the scale of the impact will be related to the location of the port used to support offshore activities.

Potential impacts to employment, demographics, economic productivity, visitor/tourism access and the need for healthcare, education and housing were assessed for the construction, operation and maintenance and decommissioning phases of the Salamander Project. A number of minor beneficial impacts, such as increased economic productivity and occupancy of tourist accommodation were assessed as a result of an increased work force in the area due to the Salamander Project. Overall, the Socio-economics, Tourism and Recreation impact assessment project alone predicted **no significant effects** to residents, local business, tourists, recreational users and Salamander Project workers.

Cumulative effects of the Salamander Project with other plans and projects were also assessed. The potential for cumulative socio-economic impacts and socio-cultural effects were considered. It was determined that, similar to the Salamander Project alone, much of the employment and influx of workers will be temporary for other plans and projects. Employment and economic effects may be distributed more widely under cumulative effects, however overall, **no significant cumulative effects** were identified during the CEA for Socio-economics, Tourism and Recreation.

4.3.8 Climate Change and Carbon

Scotland and the wider UK are experiencing increased temperatures due to global climate change. This consistent pattern of long-term warming is supported by a number of climate projection scenarios. As well as increased temperatures, the number of extreme events, such as heavy rainfall, periods of drought and winter storminess, are also increasing in frequency and severity. These effects of global climate change have the potential to cause changes in the distribution of all wildlife and commercially important fish, and increase coastal erosion and flooding affecting homes and businesses. The Climate Change and Carbon assessment has been informed by a number of climatic projections, and publicly available and peer reviewed literature sources.

The impact assessment has considered potential impacts of the Salamander Project on greenhouse gas (GHG) emissions, blue (marine) and terrestrial carbon and climate resilience. The blue and terrestrial carbon assessments aim to review the potential loss of 'stored' carbon within the marine and terrestrial environments as a result of disturbance and habitat loss during the Salamander Project development.

By producing electricity from offshore wind, the Salamander Project will provide benefit to the UK's net zero strategy and can be seen as having a beneficial effect on the risk of climate change by avoiding GHG release, when compared to a scenario where non-renewable energy sources are used for energy generation in the UK. Furthermore, there is a national requirement to balance the peaks and troughs associated with electricity supply and demands, to avoid strains on transmission and distribution networks, and to try to keep the electricity system stable. The Salamander Project plans to include EBI within the Onshore Development which will provide support for the stability and reliability of renewable energy generation.

Carbon can be released from terrestrial or marine sediments when they are disturbed, such as during construction works. The construction works can also cause habitat loss which can affect how much carbon can be 'captured' and thus removed from the atmosphere by the affected area. As the potential release of carbon from terrestrial and marine environments from onshore and offshore works, respectively, were deemed to be small scale relative to the total habitat area, **no significant effects** were identified within the assessment of terrestrial and blue carbon.

As greenhouse gas emissions result in impacts on a global scale, potential impacts are cumulative in nature and therefore the effects of the Salamander Project with other plans and projects was not undertaken. Instead, an in-combination climate impact assessment was undertaken, which considered all potential receptors susceptible to the Salamander Project within the context of future climate change. As climate change events occur over large timescales and impacts from the Salamander Project are largely deemed to be small scale, localised and infrequent relative to the global picture, **no significant in-combination effects** were identified to occur.

The climate and resilience review process also considers the potential impacts that climate change may have on the Salamander Project, as well as the ability of the Salamander Project to withstand and/or recover from those impacts. The physical infrastructure of the Salamander Project, the ability of the Salamander Project to generate energy and human health and safety were considered in this review. Based on future climate projects there is a low likelihood that future climatic events will have a significant impact on the Salamander Project, as such **no significant effects** are predicted to occur to the above-mentioned receptors.

4.3.9 Major Accidents and Disasters

During the lifetime of the Salamander Project the risk of major accidents and disasters will be influenced by global climate changes causing more frequent and extreme weather events. Additionally, the number of other plans and projects are expected to increase in the region, posing a greater risk to navigation. Technology may also progress throughout the lifetime of the Salamander Project leading to increased safety and environmental protection; however, the introduction of new technologies also poses unknown risks. The Major Accidents and Disasters assessment considered potential impacts of the Salamander Project on site personnel and other mariners at sea, the environment and components of the Offshore Development.

The assessment criteria for Major Accidents and Disasters took into consideration the likelihood and consequence of potential risk events associated with the Salamander Project. Potential risks including major fires, system failures, accidental detonation of Unexploded Ordinance (UXO), interference of subsea assets and launching and recovering equipment were assessed for the construction, operation and maintenance and decommissioning phases of the Salamander Project. Risks such as accidental detonation of UXO, major system failure and major fires were considered to have the greatest consequence to the environment and personnel, however the likelihood of such events occurring was considered to be low. When **project management plans, protocols** and **adherence to best practice protocols** across all project phases were considered the Major Accidents and Disasters impact assessment project alone predicted that **no significant effects** would occur to site personnel and other mariners at sea, the environment and components of the Offshore Development.

5 Further Information and Contacts

The Offshore EIAR has been submitted to MD-LOT to support the application for **Section 36 Consent** and associated **Marine Licences** for the Offshore Development. Once the application has been formally registered, MD-LOT will undertake consultation and invite public representations on the proposals before reaching a decision on behalf of the Scottish Ministers.

The Offshore EIAR comprises six volumes:

- Volume 1: Non-Technical Summary (this document)
- Volume 2: Main Report – Introduction Chapters
- Volume 3: Main Report – Technical Chapters
- Volume 4: Annexes
- Volume 5: Visual Materials
- Volume 6: Outline Management Plans

The Offshore EIAR, including this NTS, all figures, technical appendices, and accompanying documents, are available to view and download on the Salamander Project website at: https://salamanderfloatingwind.com.

The application documents are also available via the Marine Directorate website at: https://marine.gov.scot/marine-licence-applications.

Physical copies of the EIAR and application documents will be available to view at local publicly accessible locations, which will be stated on the Salamander Project website at https://salamanderfloatingwind.com. If required, individual physical copies may be obtained from SWPC at a reasonable charge reflecting the cost of making the relevant information available. To request a copy of the application submission please contact: info@salamanderwind.com.

If you wish to comment on the Offshore EIAR or make representations to MD-LOT, these must be submitted to MD-LOT within the deadlines set out in the notice advertising the application and EIAR. Please provide written comments to MD-LOT via email on ms.marinerenewables@gov.scot or write to:

Scottish Government, Marine Directorate - Licensing Operations Team, 375 Victoria Road, Aberdeen, AB11 9DB.