Salamander Offshore Wind Farm

Offshore EIA Report

Volume ER.A.2, Chapter 6: EIA Methodology

SALAMANDER

Powered by Ørsted and
Simply Blue Group

Document Title:	EIA Methodology
Document no:	08253958
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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Glossary

Term	Definition
Applicant	Salamander Wind Project Company Limited (formerly called Simply Blue Energy (Scotland) Limited), a joint venture between Ørsted, Simply Blue Group, and Subsea7.
Cumulative effects	The combined effect of the Salamander Project with the effects from a number of different projects, on the same single receptor/resource.
Cumulative impact	Impacts that result from changes caused by other past, present or reasonably foreseeable actions together with the Salamander Project.
Design Envelope	A description of the range of possible elements that make up the Salamander Project design options under consideration, as set out in detail in the project description. This envelope is used to define the Salamander Project for Environmental Impact Assessment (EIA) purposes when the exact engineering parameters are not yet known.
Effect	Term used to express the consequence of an impact. The significance of an effect is determined by correlating the magnitude of the impact with the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria.
Environmental Impact Assessment (EIA)	A statutory process by which the likely significant effects of certain projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the Environmental Impact Assessment (Scotland) Regulations (2017), including the publication of an Environmental Impact Assessment Report (EIAR).
Environmental Impact Assessment Report (EIAR)	A document reporting the findings of the EIA and produced in accordance with the EIA Regulations.
EIA Regulations	The regulations that apply to this project are the Electricity Works (EIA) (Scotland) Regulations 2017, the Marine Works (EIA) (Scotland) Regulations 2017, and the Marine Works (EIA) Regulations 2007.
EIA Study Area	A topic specific Study Area that will be considered, assessed and presented within the EIA.
Habitats Regulations Appraisal (HRA)	A process which helps determine likely significant effects and (where appropriate) assesses adverse impacts on the integrity of European conservation sites and Ramsar sites (when these are also a Special Protection Area or Special Area of Conservation). The process consists of a multi stage assessment which

Term	Definition
	incorporates screening, appropriate assessment, assessment of alternative solutions and assessment of imperative reasons of over-riding public interest (IROPI) and compensatory measures.
Impact	An impact is considered to be the change to the baseline as a result of an activity or event related to the Salamander Project. Impacts can be both adverse or beneficial impacts on the environment and be either temporary or permanent.
Inter-Related Effect (or Inter Relationships)	The likely effects of multiple impacts from the proposed development on one receptor. For example, noise and air quality together could have a greater effect on a residential receptor than each impact considered separately.
INTOG Leasing Round	The Innovation and Targeted Oil and Gas (INTOG) leasing round where developers apply for the rights to build offshore wind farms specifically for small scale, innovative projects of less than 100MW and for the purpose of providing low carbon electricity to power oil and gas installations and help to decarbonise the sector.
Landfall	The generic term applied to the entire landfall corridor between Mean Low Water Spring (MLWS) tide and the Transition Joint Bay (TJB) inclusive of all construction works, including the offshore and onshore Export Cable Corridor, and landfall compound, where the offshore cables come ashore north of Peterhead.
Offshore Array Area	The offshore area within which the wind turbine generators, foundations, mooring lines and anchors, and inter-array cables and associated infrastructure will be located.
Offshore Development	The entire Offshore Development, including all offshore components of the Project (Wind Turbine Generators, Inter-array Cables and Offshore Export Cable(s), floating substructures, mooring lines and anchors, and all other associated offshore infrastructure) required across all Project phases from development to decommissioning, for which the Applicant is seeking consent.
Offshore Development Area	The total area comprising the Offshore Array Area and the Offshore Export Cable Corridor.
Offshore Export Cable(s)	The export cable(s) that will bring electricity from the Offshore Array Area to the Landfall. The cable(s) will include fibre optic cable(s).
Offshore Export Cable Corridor	The area that will contain the Offshore Export Cable(s) between the boundary of the Offshore Array Area and Mean High Water Springs (MHWS).
Receptor	Any physical, biological or anthropogenic element of the environment that may be affected or impacted by the Salamander Project. Receptors can include natural

Term	Definition
	features such as the seabed and wildlife habitats as well as man-made features like fishing vessels and cultural heritage sites.
Salamander Project	The proposed Salamander Offshore Wind Farm. The term covers all elements of both the offshore and onshore aspects of the project.
Scoping	An early part of the EIA process by which the key potential significant impacts of the Salamander Project are identified, and methodologies identified for how these should be assessed. This process gives the relevant authorities and key consultees opportunity to comment and define the scope and level of detail to be provided as part of the EIAR – which can also then be tailored through the consultation process.
Wind Turbine Generator (WTG)	All the components of a wind turbine, including the tower, nacelle, and rotor.

Acronyms

Term	Definition
ABPmer	Associated British Ports Marine Environmental Research
CEA	Cumulative Effects Assessment
EcIA	Ecological Impact Assessment
EEA	European Economic Area
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
ERM	Environmental Resources Management Limited
EU	European Union
HRA	Habitats Regulations Appraisal
IEMA	Institute of Environmental Management and Assessment
INTOG	Innovation and Targeted Oil and Gas

Term	Definition
JV	Joint Venture
MCA	Maritime and Coastguard Agency
MW	Megawatts
MD-LOT	Marine Directorate – Licensing Operations Team
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MPA	Marine Protected Area
NLB	Northern Lighthouse Board
NPS	National Policy Statement
OPEN	Optimised Environments Limited
PAC	Pre-application Consultation
RIAA	Report to Inform the Appropriate Assessment
RUK	RenewableUK
SWPC	Salamander Wind Project Company Limited (formerly called SBES)
SFF	Scottish Fishermen's Federation
SMRU	Sea Mammal Research Unit Consulting
SWFPA	Scottish White Fish Producers Association
UK	United Kingdom
WTG	Wind Turbine Generator

6 Environmental Impact Assessment Methodology

6.1 Introduction

6.1.1.1 The Applicant, Salamander Wind Project Company Limited (SWPC), a joint venture (JV) partnership between Ørsted, Simply Blue Group and Subsea7, is proposing the development of the Salamander Offshore Wind Farm (hereafter 'Salamander Project'). The Salamander Project will consist of the installation of a floating offshore wind farm (up to 100 megawatts (MW) capacity) approximately 35 kilometres (km) east of Peterhead. It will consist of both offshore and onshore infrastructure, including an offshore generating station (wind farm), export cables to landfall, and connection to the onshore substation (please see **Volume ER.A.2, Chapter 4: Project Description** for full details on the Salamander Project Design).

6.1.1.2 This chapter of the Offshore Environmental Impact Assessment (EIA) Report (EIAR) outlines the assessment methodology followed in the EIA for the Offshore Development, in support of the application for consent. EIA is the process of systematically identifying the potential impacts that the Salamander Project could have on the environment. The process involved developing a detailed understanding of both the Salamander Project (e.g. proposed installation, operation and decommissioning activities), and the environment within which the Salamander Project will be located. The potential impacts of the Salamander Project were then evaluated to determine how the Salamander Project will affect the environmental receptors and assigned significance of effects. Where potential effects are likely to be significant, specific measures will need to be taken to reduce or remove such effects.

6.2 Requirement for an Environmental Impact Assessment

6.2.1.1 Requirements for EIA are defined in the European Union (EU) EIA Directive (85/337/EEC), which was transposed into Scottish law by the EIA Regulations. In accordance with the EIA Regulations, an EIA is required as follows.

6.2.1.2 Under Schedule 2 of the Electricity Works (EIA) (Scotland) Regulations 2017 for the carrying out of development to provide a generating station. Where works fall within the scope of Schedule 2, an EIA is required if they are likely to have significant effects on the environment.

6.2.1.3 Under Schedule 2 of the Marine Works (EIA) (Scotland) Regulations 2017 for installations for the harnessing of wind power for energy production (wind farms) if:

- The development involves the installation of more than two Wind Turbine Generators (WTGs);

  or

- The hub height of any WTG or height of any other structure exceeds 15 m.

6.2.1.4 Schedule 3 of these regulations is then used to understand whether the Salamander Project is likely to have significant effects on the environment. Matters requiring consideration include the characteristics (e.g. size, design, waste, pollution, risks etc.) and location (e.g. environmentally sensitive areas) of the Salamander Project as well as the types and characteristics of the potential impact (e.g. magnitude and spatial extent).

6.2.1.5 Further details on the requirements for EIA are presented in **Volume ER.A.2**, **Chapter 2: Legislative Context and Regulatory Requirements**.

6.2.1.6 Information required within the EIAR is set out in the following regulations and in **Table 6-1**:

- Regulation 4 of the Electricity Works (EIA) (Scotland) Regulations 2017;
- Regulation 5 (2) of the Electricity Works (EIA) (Scotland) Regulations 2017;

- Regulation 5 of the Marine Works (EIA) (Scotland) Regulations 2017; and
- Regulation 6 (2) of the Marine Works (EIA) (Scotland) Regulations 2017.

Table 6-1 Information required within the Environmental Impact Assessment Report as set out in the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 and Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017

Information Required within the EIAR	EIAR Reference
Regulation 5 (2) of the Electricity Works (EIA) (Scotland) Regulations 2017 and Regulation 6 (2) of the Marine Works (EIA) (Scotland) Regulations 2017	
(a) a description of the development comprising information on the site, design, size and other relevant features of the development;	**Volume ER.A.2, Chapter 4: Project Description.**
(b) a description of the potentially significant effects of the development on the environment;	**Volume ER.A.3: Technical Chapters 7 to 21**
(c) a description of the features of the development and any measures envisaged in order to avoid, prevent or reduce and, if possible, offset potentially significant adverse effects on the environment;	**Volume ER.A.3: Technical Chapters 7 to 21**
(d) a description of the reasonable alternatives studied by the developer, which are relevant to the development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;	**Volume ER.A.2, Chapter 3: Site Selection and Consideration of Alternatives**
(e) non-technical summary of the information referred to in sub-paragraphs (a) to (d);	**Volume ER.A.1: Non-Technical Summary**
(f) any other information specified in schedule 4 relevant to the specific characteristics of the development and to the environmental features likely to be affected.	**Volume ER.A.3: Technical Chapters 7 to 21**
Regulation 4 of the Electricity Works (EIA) (Scotland) Regulations 2017 and Regulation 5 of the Marine Works (EIA) (Scotland) Regulations 2017	
(2) The environmental impact assessment must identify, describe and assess in an appropriate manner, in light of the circumstances relating to the proposed development, the direct and indirect significant effects of the proposed development (including, where the proposed development will have operational effects, such operational effects) on the factors specified in paragraph (3) and the interaction between those factors:	**Volume ER.A.3, Chapter 19: Socio-Economics, Recreation and Tourism;** **Volume ER.A.3, Chapter 20: Climate Change and Carbon.**

Information Required within the EIAR	EIAR Reference
(a) population and human health;	
(b) biodiversity, and in particular species and habitats protected under Council Directive 92/43/EEC on the conservation of natural habits and wild flora and Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds;	**Volume ER.A.3, Chapter 9: Benthic and Intertidal Ecology;** **Volume ER.A.3, Chapter 10: Fish and Shellfish Ecology;** **Volume ER.A.3, Chapter 11: Marine Mammals;** **Volume ER.A.3, Chapter 12: Offshore and Intertidal Ornithology.**
(c) land, soil, water, air and climate;	**Volume ER.A.3, Chapter 8: Water and Sediment Quality;** **Volume ER.A.3, Chapter 20: Climate Change and Carbon.**
(d) material assets, cultural heritage and the landscape;	**Volume ER.A.3, Chapter 16: Seascape, Landscape and Visual Amenity;** **Volume ER.A.3, Chapter 17: Marine Archaeology and Cultural Heritage.**
(4) The effects to be identified, described and assessed under paragraph (2) include the expected effects deriving from the vulnerability of the development to risks, so far as relevant to the development, of major accidents and disasters.	**Volume ER.A.3, Chapter 21: Major Accidents and Disasters.**

6.3 Environmental Impact Assessment Guidance and Best Practice

6.3.1.1 The EIA methodology adopted and applied within this EIAR was developed based on the experience of EIA technical experts in consideration of EIA principles and industry best practice guidance. The specific guidance utilised is detailed within the relevant technical chapters of this document. Some of the key guidance and best practice documents used to inform the EIA include:

- OSPAR Commission (2008), Assessment of the Environmental Impact of Offshore Wind Farms;
- Scottish Natural Heritage (now NatureScot) (2018), A handbook on environmental impact assessment: Guidance for competent authorities, consultees and others involved in the Environmental Impact Assessment process in Scotland;
- Institute of Environmental Management and Assessment (IEMA), (2017) Delivering Proportionate EIA: A Collaborative Strategy for Enhancing Environmental Impact Assessment Practice;
- IEMA (2016), Environmental Impact Assessment Guide to Delivering Quality Development;
- IEMA (2020), Impact Assessment Outlook Journal-Volume 7: Demystifying Cumulative Effects;
- Chartered Institute of Ecology and Environmental Management (2022), Guidelines for Ecological Impact Assessment (EcIA) in the UK and Ireland; and
- Scottish Government (2022a), Good Practice Guidance for Applications under Section 36 and 37 of the Electricity Act 1989.

6.4 Consultation

6.4.1 Overview

6.4.1.1 Consultation is a key part of the application process. It has played an important part in ensuring that the baseline characterisation and impact assessment for the Salamander Project is appropriate to the scale of development as well as meeting the requirements of the regulators and their advisors.

6.4.1.2 **Volume ER.A.2, Chapter 5: Stakeholder Consultation** outlines the consultation process in more detail. The issues raised during consultation specific to each topic are outlined in each chapter, including consideration of where the issues have been addressed within the EIAR.

6.4.2 Scoping

6.4.2.1 The Salamander EIA Scoping Report (SBES, 2023) for the Salamander Project was submitted to the Marine Directorate – Licensing and Operations Team (MD-LOT) in February 2023. The Salamander EIA Scoping Report (SBES, 2023) identified the key sensitive receptors to be considered in the EIA. Within the Salamander EIA Scoping Report (SBES, 2023), a number of environmental and human receptors were identified, and the predicted impacts of the Salamander Project were considered. Receptors were scoped in or out of the report through an analysis of available data for the Salamander Project, lessons learned from previous Scoping Opinions for offshore wind farms, and through pre-scoping consultation workshops.

6.4.2.2 The EIA Scoping Report was submitted by MD-LOT and an EIA Scoping Opinion was received in June 2023 from the Scottish Ministers with stakeholders input (MD-LOT, 2023). Further information on the EIA Scoping Opinion consultation responses is discussed in the relevant topic chapters. Where impacts have been scoped out, these are outlined in each chapter.

6.4.3 Pre-application consultation

6.4.3.1 Pre-application consultation is a key part of the EIA process. Early and ongoing consultation throughout the lifecycle of the Salamander Project is important in allowing integration of stakeholder feedback / data into the decision-making and design processes, and for the Applicant to communicate progress. A detailed description of the consultation process and consultation carried out to date is set out in **Volume ER.A.2, Chapter 5: Stakeholder Consultation**.

6.4.3.2 The Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013 and Sections 22 to 24 of the Marine (Scotland) Act 2010 require Pre-application Consultation (PAC) to be undertaken in respect of developments of a certain scale or involving particular works. The process provides opportunities to receive feedback from the public and third sector organisations that can then be addressed in the application and supporting EIAR.

6.4.3.3 In line with the Applicant's stakeholder engagement plan and the Offshore Array Area selection approach, the Applicant undertook informal discussions with regulators and statutory consultees at an early stage to inform the site selection process. The Applicant invited a number of stakeholders to attend the early-stage discussions, which took place between 2 - 8 July 2020 through video conference using Microsoft Teams.

6.4.3.4 The Applicant undertook formal consultation on the offshore ornithology survey methodology on 27 August 2020. The objective of this consultation was to provide an update on the Salamander Project, introduce the Area of Search and seek initial opinions on the scope and preferred method of the ornithology survey to be developed for the Salamander Project. The Applicant undertook formal consultation on the benthic survey methodology on 15 December 2021 to discuss the geophysical and benthic survey strategy.

6.4.3.5 The Applicant organised formal Scoping workshops that were held in November 2022. During the meetings, consultees were asked to comment on a high-level baseline, the Scoping methodology (including embedded mitigation and an overview of the impacts scoped in and out), and the EIA methodology. The advice / guidance received during the meetings was then incorporated into the relevant sections of the Salamander EIA Scoping Report (SBES, 2023).

6.4.3.6 In addition to the Scoping workshops, a meeting was held with the Maritime and Coastguard Agency (MCA) and Northern Lighthouse Board (NLB) on 30 November 2022 to discuss the Salamander Project, proposed Scoping and EIA methodologies. Both the MCA and NLB were content with the Study Areas outlined, proposed data sources and assessment approach.

6.4.3.7 Throughout the EIA process, the Applicant has held regular quarterly update meetings with MD-LOT, NatureScot, Aberdeenshire Council and regular meetings with the Scottish Fishermen's Federation (SFF) and the Scottish White Fish Producers Association (SWFPA) from summer 2022.

6.4.3.8 The Applicant has held public consultation events which represent the formal PAC events to meet the requirements of the Marine Licensing (PAC) (Scotland) Regulations 2013. A PAC Report has been prepared and submitted with the consent application (**Volume RP.A.4.1, Report 1: Pre-Application Consultation (PAC) Report**).

6.5 Design Envelope

6.5.1.1 The Design Envelope approach has been adopted for the Salamander Project's EIA. The Design Envelope presents a series of maximum extents for the Salamander Project for which significant effects can be established and meaningful assessments undertaken, while retaining reasonable flexibility for future project design. To avoid excessive conservatism, the parameters considered throughout are not necessarily a combination of the maximum design parameters for each component. This approach is standard practice

in Scotland and the United Kingdom (UK) for large scale-developments where the exact project requirements cannot be confirmed at the pre-application stage.

6.5.1.2 The Salamander Project requires flexibility in choice of WTG, foundation and mooring options, transmission technology, specific siting of infrastructure and construction methodologies, to ensure that anticipated changes in available technology and project economics can be accommodated within the design. The final Salamander Project design will depend on factors including ground conditions, wave and tidal conditions, economics and procurement approach, as well as findings of the EIA and Habitats Regulations Appraisal (HRA).

6.5.1.3 Innovations being developed as part of the Salamander Project and included within the Innovation and Targeted Oil and Gas (INTOG) bid application process, all fall within the Design Envelope presented within this EIAR. Innovations fall broadly within the following categories:

- Offshore innovations increasing local fabrication potential and lowering costs and risk;
- Innovations to maximize coexistence and co-location;
- Innovations to improve the environmental footprint of offshore wind; and
- Knowledge sharing partners to support skill development and job creation.

6.5.1.4 Where relevant to the receptors considered within the EIAR these innovations will be further described in each technical chapter.

6.5.1.5 On the specific issue of the WTGs, impacts are not linked directly to the capacity of the WTG, but rather its physical dimensions such as tip height and rotor diameter. It is therefore not considered necessary to constrain the Design Envelope based on individual WTG capacity and as such this is not referred to within the Salamander Project Description (**Volume ER.A.2, Chapter 4: Project Description**).

6.5.1.6 Under the Design Envelope approach, the assessment for each receptor and potential impact is based on the Salamander Project design parameters likely to result in the maximum adverse effect (i.e. the worst-case scenario) to a given receptor. Given that the realistic worst-case scenario is based on the design option (or combination of options) that represents the greatest potential for impact, as set out in **Volume ER.A.2, Chapter 4: Project Description**, a confidence can be taken that development of any alternative options within the Salamander Project Design Envelope parameters will give rise to no effects greater or worse than those assessed in this impact assessment. Each technical chapter outlines the worst-case scenarios assessed for each impact.

6.5.1.7 Such an approach follows current best practice and is in accordance with the recently updated National Policy Statement ((NPS) EN-3, paragraph 3.8.87), which recognises that: *"Owing to the complex nature of offshore wind farm development, many of the details of a proposed scheme may be unknown to the applicant at the time of the application to the Secretary of State"* (Department for Energy Security and Net Zero, 2023). This approach also aligns with the recently updated 'Scottish Government Good Practice Guidance for Applications under Section 36 and 37 of the Electricity Act 1989' (Scottish Government, 2022a) and the 'Guidance for applicants on using the design envelope for applications under section 36 of the Electricity Act 1989' (Scottish Government, 2022b).

6.6 Characterisation of the Baseline Environment

6.6.1.1 Characterisation of the existing environment has been undertaken to determine the baseline conditions in the area covered by the offshore components of the Salamander Project, including relevant surrounding EIA Study Areas for those issues scoped into the EIA. Data has been reviewed to ensure it is robust and can

be used with sufficient confidence to allow the required level of assessment to determine the significance of any potential effect. Characterisation of the baseline environment for each EIA receptor has involved the following steps:

- EIA Study Areas defined for each receptor based on the relevant characteristics of the receptor (e.g. mobility/range);
- Review available information;
- Review likely or potential impacts that might be expected to arise from the Salamander Project;
- Determine if there is sufficient data to make the EIA judgements with sufficient confidence;
- If further data is required, ensure data gathered is targeted and directed at answering the key question and filling key data gaps; and
- Review information gathered to ensure the environmental baseline can be sufficiently characterised in appropriate detail.

6.6.1.2 The approach to the baseline characterisation has also been informed by feedback from the EIA Scoping Opinion and stakeholder engagement. Each technical chapter outlines the specific approach to establishing a robust baseline, which involves using publicly available data and literature and, where relevant, site-specific data. Specific data sources are detailed in each technical chapter and annex. Key data limitations with the baseline data and their ability to materially influence the outcome of the EIA are noted and commented on.

6.6.1.3 The future baseline is described as the likely evolution of the baseline scenario without implementation of the Salamander Project, as far as natural changes from the baseline scenario can be assessed, with reasonable effort, on the basis of the availability of relevant information and scientific knowledge. This includes the future receiving environment based on the climate change projection scenarios selected for the Salamander Project and is described in each technical chapter.

6.7 Assessment Methodology

6.7.1.1 This chapter provides a general framework for identifying impacts and assessing the significance of their effects. An overview of the impact assessment process is outlined in **Figure 6-1**.

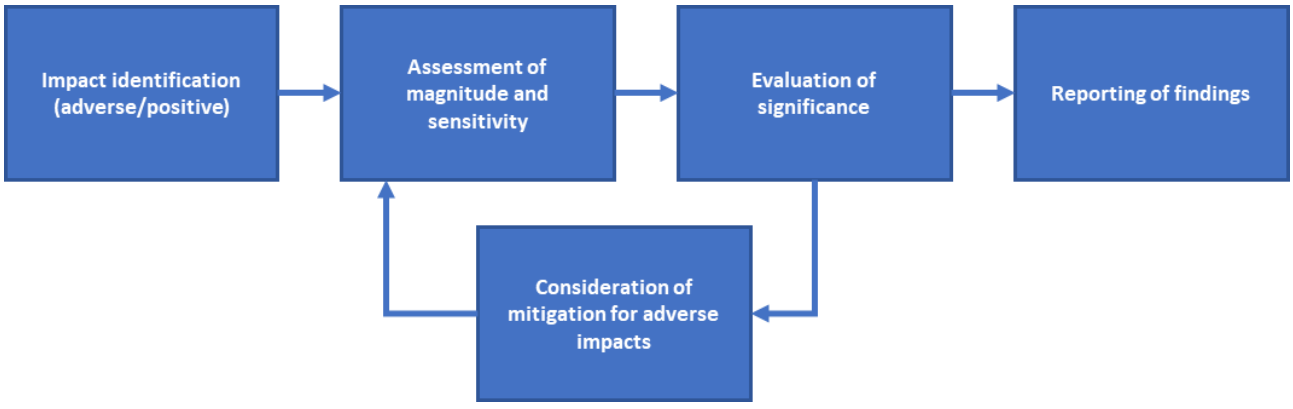


Figure 6-1 Impact Assessment Process

6.7.1.2 In practice the approaches and criteria applied across different topics varies due to, for example, specific guidance / practices endorsed by professional accreditation organisations and consultees. Deviations from the standard approach are detailed and explained within the relevant technical chapters and where specific guidance exists for impact assessment criteria (e.g. for Navigational Risk Assessment) these will be followed. These definitions are fully detailed in each technical chapter.

6.7.1.3 For the purposes of this EIA, an 'impact' is considered to result in an 'effect' if a pathway to a receptor exists. The 'source-pathway-receptor' model, as outlined in **Figure 6-2** is central to the identification and assessment of the potential effects; if no pathway exists, an impact is screened out.

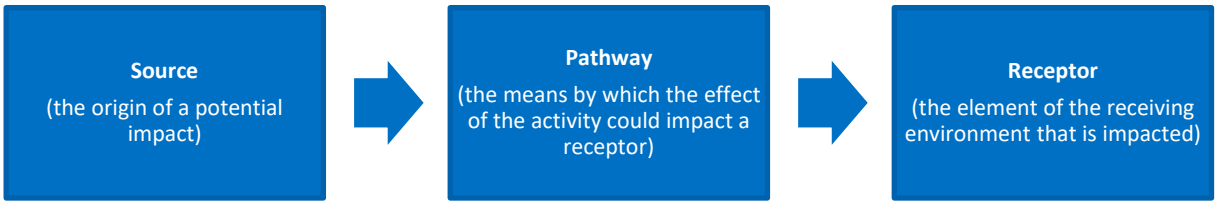


Figure 6-2 Source-pathway-receptor model

6.7.1.4 An 'impact' is considered to be the change to the baseline as a result of an activity or event related to the Salamander Project. There is the potential for the Salamander Project to result in both adverse or beneficial impacts on the environment and be either temporary or permanent. An 'effect' is considered to be the consequence of the impact on a receptor. This is set out in each technical chapter.

6.7.1.5 The assessment process considers the potential magnitude of the change to the baseline conditions arising from the Salamander Project and the sensitivity of the particular receptor under consideration. The significance of an effect is established by combining magnitude and sensitivity.

6.7.1.6 Embedded mitigation measures are considered those that are built into the Salamander Project concept, either through design (primary mitigation) or implementation of industry best practice (tertiary mitigation); these definitions are outlined in **2**. Embedded mitigation measures are detailed in **Volume ER.A.4, Annex 6.1: Commitments and Mitigations Register**.

Table 6-2 Approach to mitigation which has been followed for the Environmental Impact Assessment process

Term	Definition
Primary mitigation	Design decisions taken by the Salamander Project Team which are an inherent part of the Salamander Project). Primary mitigation is embedded into the design of the Salamander Project and should be considered in the pre-mitigation assessment.
Secondary mitigation	Mitigation to reduce impacts to acceptable levels. Secondary mitigation measures are developed and considered to be additional, and typically require additional action post-consent to be implemented. These are only considered in the residual effects assessment (if secondary mitigation is required).
Tertiary mitigation	Best practice mitigation that would need to be implemented with or without the EIA. These mitigation measures have a certainty of being implemented and should be considered in the pre-mitigation assessment. This includes plans such as Code of Construction Practice, Construction Logistics Plans, Environment Management Plan etc.

6.7.2 Defining Impact Magnitude

6.7.2.1 The impact magnitude is determined by the interaction of how the following factors will impact the baseline conditions:

- Spatial extent - the area over which the impact will occur;
- Duration - the period of time over which the impact will occur;
- Likelihood - the probability that the impact will occur and the probability that the receptor will be present;
- Frequency - the number of times the impact will occur over the Salamander Project's life-cycle;
- Intensity - the severity of the impact; and
- Reversibility - the ability for the receiving environment / exposed receptor to return to baseline conditions.

6.7.2.2 The magnitude has been based on these factors and expert judgement. The categorisation of magnitude varies for specific pathways / receptors / technical assessments but broadly follows the criteria outlined in **Table 6-3**.

6.7.2.3 For topics where there is the potential for adverse and beneficial impacts, magnitude definitions are defined for both beneficial and adverse impacts.

Table 6-3 Impact Magnitude Criteria

Magnitude	Criteria
High	Total change or major alteration to key elements/features of the baseline conditions: Occurs over a large spatial extent, resulting in widespread, long-term, or permanent changes of the baseline conditions, or affects a large proportion of a receptor population. The impact is very likely to occur and/or will occur at a high frequency or intensity.
Medium	Partial change or alteration to one or more key elements / features of the baseline conditions: The impact occurs over a local to medium extent with a short- to medium-term change to baseline conditions, or affects a moderate proportion of a receptor population. The impact is likely to occur and/or will occur at a moderate frequency or intensity.
Low	Minor shift away from the baseline conditions: The impact is localised and temporary or short-term, leading to a detectable change in baseline conditions or a noticeable effect on a small proportion of a receptor population. The impact is unlikely to occur or may occur but at low frequency or intensity.
Negligible	Very slight change from baseline conditions: The impact is highly localised and short-term, with full rapid recovery expected to result in very slight or imperceptible changes to baseline conditions or a receptor population. The impact is very unlikely to occur; if it does, it will occur at a very low frequency or intensity.
No change	No change from baseline conditions.

6.7.3 Defining Receptor Sensitivity

6.7.3.1 The specific scale of sensitivity for a receptor is dependent on the EIA topic / receptor in question, but in general it may be defined in terms of quality, value, rarity or importance of the receptor being assessed. The ability of a receptor to adapt to change, tolerate, and / or recover from potential impacts will be key in assessing its sensitivity to the impact under consideration. The scale of sensitivity will be classed as 'negligible, low, medium or high', as described in **Table 6-4**.

6.7.3.2 In carrying out topic specific assessments, a more specific scale of increasing sensitivity has been defined where this is appropriate. Guidance has also been taken from the value attributed to elements through designation or protection under law. Expert judgement is particularly important when determining the sensitivity of receptors.

Table 6-4 Receptor sensitivity

Receptor Sensitivity	Definition
High	The receptor has a very low capacity to accommodate a particular effect with a low ability to recover or adapt.
Medium	The receptor has a low capacity to accommodate a particular effect with a low ability to recover or adapt.
Low	The receptor has some tolerance to accommodate a particular effect or will be able to recover or adapt.
Negligible	The receptor is generally tolerant and can accommodate a particular effect without the need to recover or adapt.

6.7.4 Evaluation of Significance

6.7.4.1 The consideration of magnitude of a potential impact and sensitivity of the receptor determines an expression, which may be quantitative or qualitative and often informed by expert judgement, for the significance of the beneficial or adverse effects. **Table 6-5** sets out how the magnitude of impact and the sensitivity of the receptor have been combined to provide an assessment of effect significance. Where a topic has deviated from this significance of effect matrix it is outlined in the relevant technical chapter; these have been informed by expert judgement, latest guidance and specific input from consultation.

Table 6-5 Significance of Effect Matrix

Significance of effect		Receptor Sensitivity			
		Negligible	*Low*	*Medium*	*High*
Magnitude of effect	*Negligible*	Negligible	Negligible	Negligible	Negligible
	Low	Negligible	Negligible	Minor	Minor
	Medium	Negligible	Minor	Moderate	Moderate
	High	Negligible	Minor	Moderate	Major

6.7.4.2 Definitions of significance of effect are outlined in **Table 6-6**, noting that effects can be both beneficial or adverse. Unless otherwise described as beneficial or negligible, all effects reported on within this EIAR are adverse. For the purposes of this EIA, where effects are identified as minor or negligible they are deemed to be not significant in EIA terms. Major and moderate effects are deemed to be significant in EIA terms and additional mitigation may be required; in the case where further mitigation is not possible, a residual significant effect may remain.

Table 6-6 Definition of Significance of Effect

Category	Definition of significance of effect
Negligible	No detectable change to the environment or receptor resulting in no significant effect.
Minor	A detectable but non-material change to the environment or receptor resulting in no significant effect or small-scale temporary changes.
Moderate	A material but non-fundamental change to the environment or receptor, resulting in a possible significant effect.
Major	A fundamental change to the environment or receptor, resulting in a significant effect.

6.7.5 Mitigation

6.7.5.1 Where the impact assessment identifies that an aspect of the Salamander Project is likely to give rise to significant adverse environmental effects, mitigation measures, above and beyond any primary or tertiary mitigation have been incorporated into the assessment process to avoid impacts or reduce them to acceptable levels. At this point the impact is reassessed, considering these secondary mitigation measures to determine the residual effect, as outlined in the following section. The different levels of mitigation have been defined in **Table 6-2**. Additional mitigation measures are detailed in **Volume ER.A.4, Annex 6.1, Commitments and Mitigations Register**.

6.7.6 Residual Effects

6.7.6.1 Residual effects remain the same if the impact does not require additional mitigation or where no additional mitigation is possible. Where additional mitigation measures are identified due to a significant effect, impacts have been re-assessed, and the residual effects should be reduced. In the eventuality where significant effects remain, an explanation is provided in the relevant technical chapter. It is the role of the regulator to weigh these effects against the positive benefits of the Salamander Project when considering the application for consent.

6.7.7 Environmental Management and Monitoring

6.7.7.1 In certain circumstances, it may be pertinent to implement monitoring of any identified residual effects. Details of any post-consent management and monitoring proposed for the Salamander Project are set out within the relevant technical assessment chapters. This includes, where appropriate, proposals to measure the effectiveness of identified mitigation measures. Monitoring proposals will be discussed and agreed upon with relevant stakeholders prior to implementation.

6.8 Cumulative Effect Assessment

6.8.1.1 The Cumulative Effects Assessment (CEA) is a key component of the overall EIA process. Cumulative effects are defined as those effects on a receptor that may arise when the development is considered together with other projects. This includes all projects that result in a comparative effect that is not intrinsically considered as part of the baseline environment. The approach to the CEA is described in more detail in **Volume ER.A.4, Annex 6.2: Cumulative Effects Assessment Technical Annex**.

6.8.1.2 The EIA Regulations state that cumulative effects should be addressed within an EIAR. MD-LOT guidance (Marine Directorate, 2018) states projects for consideration will include those that are:

- Already constructed;
- Under construction;
- Permitted application (s), but not yet implemented;
- Submitted application (s) not yet determined; and
- Plans and projects which are "reasonably foreseeable" (i.e., developments for which there is sufficient design information in the public domain, for example, offshore renewable energy projects that have submitted scoping reports).

6.8.1.3 Projects to be included in the CEA are located within the zone of influence of the Salamander Project, which is receptor specific. Projects are only included where it requires an EIA.

6.8.1.4 The list of cumulative projects was agreed upon, where appropriate, through consultation with MD-LOT and other statutory consultee bodies and takes into account appropriate industry-specific guidance. It was agreed with MD-LOT that the Salamander Project's cumulative assessment will not consider projects which do not have detailed impact data available at scoping or projects which have not submitted scoping requests or consent applications up to six months before Salamander's application submission.

6.8.1.5 The list of cumulative projects identified for each receptor and agreed upon through consultation is provided in each topic chapter. **Figure 6-3**, **Figure 6-4** and **Figure 6-5** present the Scottish projects considered within the Salamander Project cumulative assessment. A full list of all projects considered is included within **Volume ER.A.4, Annex 6.2: Cumulative Effects Assessment Technical Annex**.

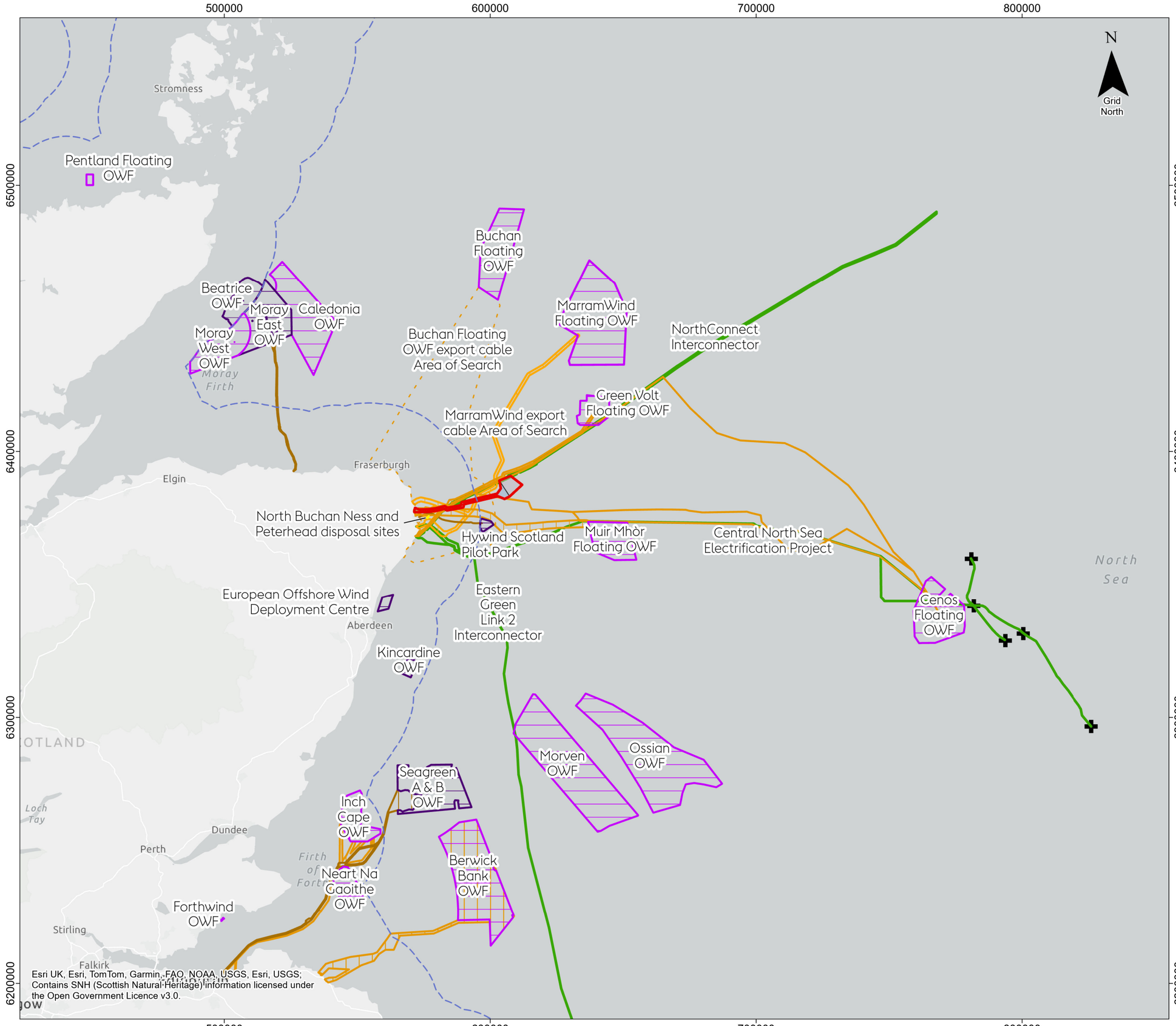
6.8.1.6 Each technical chapter, excluding Major Accidents and Disasters, has undertaken a topic specific CEA. Once the relevant receptors and data sources have been identified, the pathways linking the receptor and data are identified. Where no pathway between a source (other than as a direct result of the Salamander Project) and a receptor can be identified, the potential for cumulative impacts arising can be excluded and assessment is not required. This process allowed the Salamander Project receptors to be refined and inform the spatial extent of the CEA.

6.8.1.7 This approach is in accordance with NatureScot Guidance – Assessing the cumulative landscape and visual impact of onshore wind energy developments (NatureScot, 2021), the RenewableUK (RUK) Cumulative Impact Assessment Guidelines (RUK, 2013), and Marine Scotland (now Marine Directorate) Consenting and Licensing Guidance for Offshore Wind, Wave and Tidal Energy Applications (Marine Scotland (now Marine Directorate), 2018).

Salamander

Figure 6-3

Far-field cumulative projects identified for assessment



Legend

- Offshore Development Area
- Offshore Array Area
- Offshore Export Cable Corridor
- Offshore Wind Farms - Operational
- Offshore Wind Farms - Planned
- Offshore Wind Farm Export Cables - Operational
- Offshore Wind Farm Export Cable Corridors - Planned
- Buchan Offshore Wind Farm export cable Area of Search
- Subsea Cables
- Disposal Sites
- 12nm limit

Coordinate System: WGS 1984 UTM Zone 30N

Scale @ A3 : 1:1,400,000

0 40 80 Kilometers

0 10 20 40 Nautical Miles

Rev	Description	Date
00	Final Issues	15/04/2024
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Doc. Title : Far-field cumulative projects identified for assessment
Doc. No : SWF01ER0260
Created by : BO
Checked by : AN
Approved by : RM

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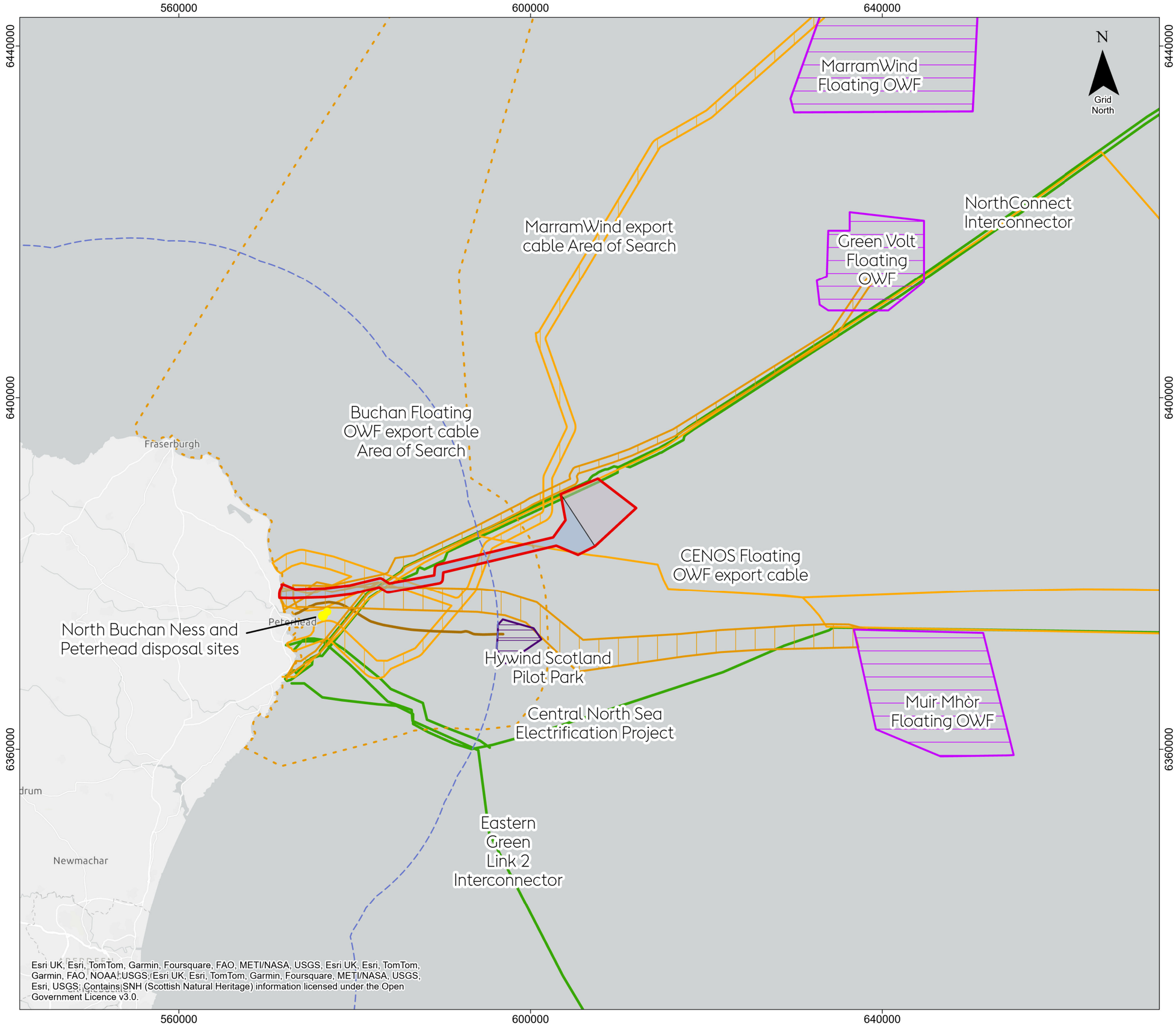
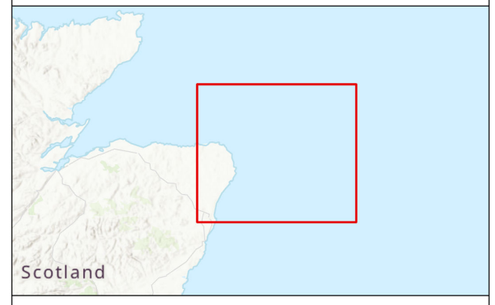
Figure 6-4

Mid-field cumulative projects identified for assessment



Legend

- Offshore Development Area
- Offshore Array Area
- Offshore Export Cable Corridor
- Offshore Wind Farms - Operational
- Offshore Wind Farms - Planned
- Offshore Wind Farm Export Cables- Operational
- Offshore Wind Farm Export Cable Corridors - Planned
- Buchan Offshore Wind Farm export cable Area of Search
- Subsea Cables
- Disposal Sites
- 12nm limit



Coordinate System: WGS 1984 UTM Zone 30N

Scale @ A3 : 1:420,000

0 10 20 Kilometers

0 3.25 6.5 13 Nautical Miles

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00	Final Issue	15/04/2024
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Doc. Title : Near-field cumulative projects identified for assessment
Doc. No : SWF01ER0261
Created by : BO
Checked by : AN
Approved by : RM

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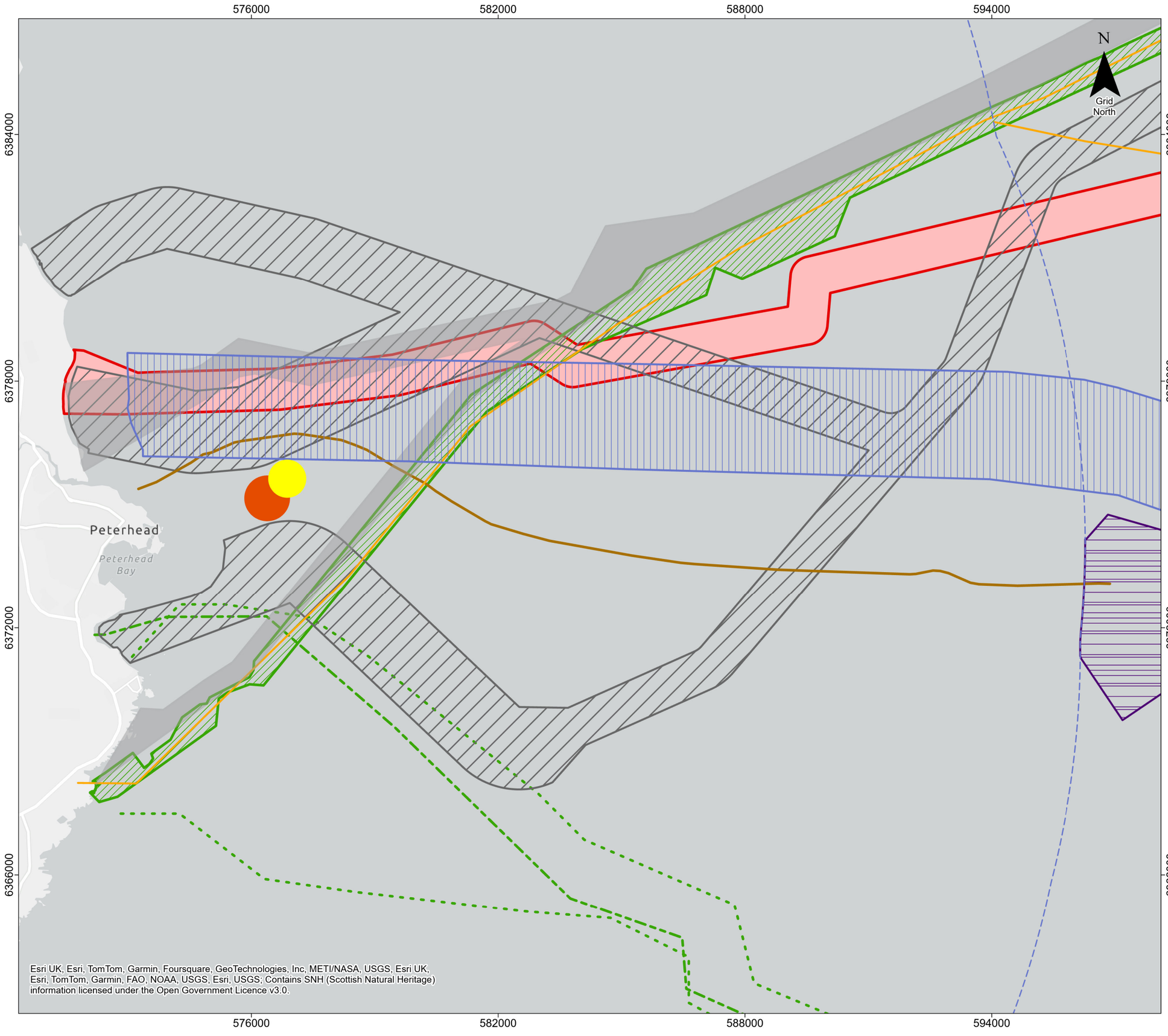
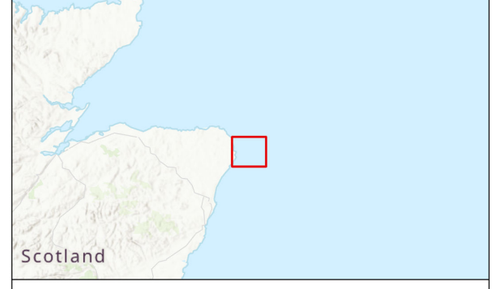
Figure 6-5

Near-field cumulative projects identified for assessment



Legend

- Offshore Export Cable Corridor
- Hywind Scotland Pilot Park
- Hywind Scotland Pilot Park Export Cable (Operational)
- Muir Mhòr Export Cable Corridor
- MarramWind Export Cable Corridor Area of Search
- Green Volt Export Cable Corridor
- NorthConnect Corridor Route
- Cenos Export Cable routes
- Central North Sea Electrification Project Cable Routes
- Eastern Green Link 2
- North Buchan Ness disposal site
- Peterhead disposal site
- 12nm limit



Coordinate System: WGS 1984 UTM Zone 30N

Scale @ A3 : 1:90,000

0 2.5 5 Kilometers

0 0.5 1 2 Nautical Miles

Rev	Description	Date
00	Final Issue	15/04/2024
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Doc. Title : Near-field cumulative projects identified for assessment
Doc. No : SWF01ER0383
Created by : BO
Checked by : AN
Approved by : RM

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6.9 Transboundary Effects

6.9.1.1 Transboundary effects are defined as effects that arise when impacts from a development extend into other European Economic Area (EEA) states. These may occur from the Salamander Project alone, or cumulatively with other plans or projects. The EIA Directive, which was transposed into Scottish law through domestic legislation prior to the UK's withdrawal from the EU, requires the assessment of transboundary effects.

6.9.1.2 The United Nations Economic Commission for Europe Convention on EIA in a Transboundary Context (commonly referred to as the 'Espoo Convention') also requires consideration of transboundary environmental effects. The Convention requires that assessments are extended across borders between Parties of the Convention when a planned activity may cause significant adverse transboundary effects.

6.9.1.3 A screening process was undertaken, as presented in the Salamander EIA Scoping Report (SBES, 2023) and confirmed which technical aspects could result in transboundary effects. Where there is potential for transboundary effects to occur, it is assessed within the relevant technical chapter.

6.10 Assessment of Impacts Cumulatively with the Onshore Development

6.10.1.1 The Salamander Project is comprised of both Onshore and Offshore Developments; the latter is the focus of this document. Consents / permissions for each component are being sought separately under different planning regimes: this EIAR is being submitted to MD-LOT to obtain consent for the Offshore Development and a separate consent application will be submitted to Aberdeenshire Council for the Onshore Development.

6.10.1.2 In consideration of this, an assessment of the potential cumulative impacts of the Offshore Development with the Onshore Development, on specific topic receptors, is presented within each technical assessment chapter of this EIAR. The intent is to provide a holistic overview of the cumulative impacts and associated effects of Project activities on the receptors assessed for the Offshore Development. This ensures that the Salamander Project's impacts and effects are understood and that neither the Offshore Development nor Onshore Development is considered in isolation.

6.10.1.3 For the vast majority of receptors assessed in this EIAR, no pathway exists for Onshore Development activities to cause an impact and result in cumulative effects with the Offshore Development. However, potential pathways may exist for assessment topics which are not wholly marine or terrestrial (e.g. Ornithology), which creates the possibility for these assessment topics to be affected by Onshore Development activities. As such, a high-level assessment of the cumulative effects of Onshore Development activities is presented, where appropriate, within the technical assessment chapters of this EIAR.

6.11 Inter-related Effects

6.11.1.1 Potential inter-related effects describe the interactions of all effects on a receptor which may interact to create a more significant impact on a receptor than when considered in isolation. Inter-related effects may have a spatial or temporal element.

6.11.1.2 The EIA considers the potential for inter-related effects to arise across the three Project phases (i.e. Construction (inclusive of pre-construction activities), Operation and Maintenance, and Decommissioning) and the interaction of multiple effects on a receptor (i.e. receptor-led effects). These two different categories of inter-related effects are described below:

- Project lifetime effects are considered to be effects that occur throughout more than one phase of the Salamander Project to interact to potentially create a more significant effect on a receptor, than if just assessed in isolation in the three key Project stages (e.g. Construction (inclusive of pre-construction activities), Operation and Maintenance and Decommissioning). For example,

increased sedimentation across all three phases may combine to create an additive effect of greater significance than when each impact is considered in each discrete Project phase.

- Receptor-led effects involve spatially or temporal interaction of effects, to create inter-related effects on a receptor or receptor group. Receptor-led effects might be short term, temporary or transient effects, or incorporate longer term effects. For example, underwater noise and increased sedimentation may combine to cause a greater effect significance on fish ecology than when each impact is considered in isolation.

6.11.1.3 It is important to note that the inter-related effects assessment considers only effects produced by the elements of the Salamander Project and not from other projects, which are identified within **Volume ER.A.4, Annex 6.2: Cumulative Effects Assessment Technical Annex**.

6.11.1.4 A descriptive assessment of the scope for individual effects to interact to create a different or greater effect has then been undertaken within each technical chapter. The assessment incorporates qualitative and, where reasonably possible, quantitative assessments. It should be noted that the assessments do not assign significance of effect for inter-related effects; rather, any inter-related effects that may be of greater significance than the individual effects acting in isolation on a given receptor are identified and discussed.

6.12 Habitats Regulations Appraisal

6.12.1.1 Whilst not specifically a part of the EIA process, a HRA has been carried out for the Offshore Development, in line with Article 6 of the Habitats Directive (92/43/EEC), HRA Case Law, and best practice guidance.

6.12.1.2 For the HRA process, a Report to Inform the Appropriate Assessment (RIAA) has been prepared and submitted with this application. The RIAA considers whether the potential exists for adverse effects from the Offshore Development on the conservation objectives and integrity of the relevant European sites (Special Area of Conservation, Special Protection Area, and Ramsar Sites) where Likely Significant Effects could not be ruled out at screening. Scottish Ministers, as Competent Authority, will undertake an Appropriate Assessment based on these findings and must be satisfied that the Offshore Development will not result in LSE on these European sites before granting consent.

6.12.1.3 Whilst there is likely to be some repetition of information between the RIAA, and this Offshore EIAR, the RIAA does not form part of the EIA process and therefore is only mentioned to provide additional context and information. Designated sites, including Marine Protected Areas (MPAs), etc., are considered within each of the relevant technical assessment chapters of this Offshore EIAR, **Volume ER.A.3, Chapters 7 to 21**.

6.13 Competent Experts

6.13.1.1 The technical assessments are led by a technical author who is a specialist professional with significant experience in the undertaking of impact assessments; technical authors are usually supported by multiple consultants. Technical authors are often a recognized expert in their field and or a chartered member of a relevant professional body. Authorship of each chapter is detailed in **Volume ER.A.4, Annex 1.1: Details of the Project Team**. Technical authors lead on the quality of data collected, the assessment methodology, impact assessments and any proposed mitigation measures.

6.13.1.2 The Applicant is being supported by Environmental Resources Management (ERM) as the EIA Lead (and author of multiple EIA chapters), with additional support from several specialist technical organisations, that are experienced in assessing the environmental impacts from offshore wind farms. Where a chapter or technical report has not been led by ERM, these are listed below:

- Associated British Ports Marine Environmental Research (ABPmer) Ltd.– **Volume ER.A.3, Chapter 7: Marine Physical Processes**;

- MSDS Marine Ltd. – **Volume ER.A.3, Chapter 17: Marine Archaeology and Cultural Heritage**;
- Sea Mammal Research Unit (SMRU) Consulting – **Volume ER.A.3, Chapter 11: Marine Mammals**;
- Subacoustech Environmental Ltd. – **Volume ER.A.4, Annex 4.1: Underwater Noise Impact Assessment**;
- HiDef Aerial Surveying Ltd. – **Volume ER.A.4, Appendix 12.1: Marine Ornithology Baseline Data**;
- Anatec Ltd. – **Volume ER.A.3, Chapter 14: Shipping and Navigation**;
- Osprey – **Volume ER.A.3, Chapter 15: Aviation and Radar**; and
- Optimised Environments (OPEN) Ltd. – **Volume ER.A.3, Chapter 16: Seascape, Landscape and Visual Amenity.**

6.14 References

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The Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013.

The United Nations Economic Commission for Europe Convention on EIA in a Transboundary Context (commonly referred to as the 'Espoo Convention') 1991.