Bowdun Offshore Wind Farm, Offshore EIA Report

Volume 2, Chapter 17: Major Accidents and Disasters

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Glossary

Defined Term	Definition
Additional Mitigation	Also referred to as secondary mitigation which is defined by The Institute of Sustainability and Environmental Professionals (ISEP) (formerly Institute of Environmental Management and Assessment (IEMA)) as: Actions that will require further activity in order to achieve the anticipated outcome. These may be imposed as part of the planning consent, or through inclusion in the Environmental Impact Assessment (EIA) Report (sic).
Applicant (the)	Bowdun Offshore Wind Farm Limited (BOWFL).
Array Area	The Array Area is the area in which the Offshore Generation Assets will be located.
Bowdun Offshore Wind Farm Limited (BOWFL)	A Special Purpose Vehicle (SPV) (legal entity) for the purpose of developing the Project. BOWFL are the Applicant for the Offshore Application.
Benthic	Living on or in the seabed.
Civil Aviation Publication (CAP)	Guidance material and policies for the aviation industry, ensuring the safe conduct of aircraft operations. CAPs include detailed information on various aspects of aviation, such as procedures, standards, best practices, and regulatory requirements. They address both technical and operational matters.
Collision (Shipping and Navigation)	Collision refers to the impact between two moving vessels, or a vessel and an object in motion. It differs from allision, which involves a moving vessel striking a stationary object.
Commercial Fishing	Any form of fishing activity legally undertaken where the catch is sold for taxable profit.
Crown Estate Scotland (CES)	Public corporation accountable to Scottish Government, responsible for the management of land and property, including marine assets in Scotland owned by the monarch.
Cumulative Effects	The effects of the Proposed Development assessed together with effects from the Onshore Infrastructure forming the Project as well as one or more different projects on the same receptor/resource.
Danger Area	Airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.
Effect	Term used to express the consequence of an impact (i.e. the result of change or changes on specific environmental resources or receptors). 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.

Defined Term	Definition
Embedded Mitigation	Measures that are adopted as part of the Proposed Development and therefore assessed within the EIA. The proposed approach for the EIA for the Proposed Development is that Embedded Mitigation includes both primary mitigation and tertiary mitigation. These are defined by the ISEP as follows: Primary: Modifications to the location or design of the development made during the pre-application phase that are an inherent part of the project, and do not require additional action to be taken. Tertiary: Actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects.
Environmental Impact Assessment (EIA)	Process for the assessment of likely significant environmental effects of a project on the physical, biological and human environment during construction, Operation and Maintenance (O&M) and decommissioning.
Environmental Impact Assessment Regulations (EIA Regulations)	Terminology used in this Offshore EIA Report to refer to three sets of regulations: • 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.
Exclusive Economic Zone (EEZ)	An area from the outer limit of the territorial sea up to 200 nm from the coastal baseline, over which a sovereign state has rights regarding marine resources.
Export Cable Corridor	The area seaward of MHWS which connects the Array Area with the Landfall within which the Offshore Export Cables will be installed.
Helicopter Main Route Indicator (HMRI)	Used over the North Sea and in Morecambe Bay to provide a network of offshore routes utilised by civilian helicopters operating between the UK mainland and offshore installations.
Impact	A change caused by an action that occurs during a project's lifetime.
Instrument Flight Procedure (IFP)	A published procedure used by aircraft flying in accordance with the instrument flight rules which is designed to achieve and maintain an acceptable level of safety in operations and includes an instrument approach procedure and a standard instrument departure.
Inter-Array Cables (IAC)	Cables which link the Wind Turbines to each other and with the OSPs.
Inter-Related Effects	The potential effects of multiple impacts from the construction, O&M and decommissioning of the Project, affecting one receptor.
Interconnector Cables	Cables which will connect individual OSPs to each other to provide redundancy against cable failure elsewhere.

Defined Term	Definition
Landfall	The area in which the Offshore Export Cables make landfall and is also the transitional area between the Offshore Transmission Assets and the Onshore Transmission Assets. Located in the Intertidal Area at Benholm.
Major Accident	Events that threaten immediate or delayed serious environmental effects to human health, welfare and/or the environment and require the use of resources beyond those of the client or its appointed representatives (i.e. contractors) to manage. For example, effects that cause a fatality, multiple fatalities or permanent injury, or widespread irreversible harm or damage. Major Accidents can be caused by disasters resulting from both man-made and natural hazards (IEMA, 2020).
Marine Directorate (MD)	The Marine Directorate of the Scottish Government, formerly known as Marine Scotland. The planning and licensing authority for Scotland's seas and custodian of Scotland's National Marine Plan (NMP). The Marine Directorate - Licensing Operations Team (MD-LOT) are specifically responsible for managing Section 36 Consent and Marine Licence Applications seaward of MHWS.
Marine Licence	A Marine Licence permits the undertaking of different activities in the marine environment, including construction, the deposition or removal of substances or objects, and dredging. The Marine (Scotland) Act 2010 requires Marine Licences to be obtained for licensable activities taking place within Scottish Territorial Seas (MHWS to 12 nm). The Marine and Coastal Access Act (MCAA) 2009 requires a Marine Licence to be obtained for licensable marine activities within the Scottish offshore region (12 nm – 200 nm).
Mitigation	Measures to avoid, prevent, reduce or control effects on the environment. See also definitions for Embedded Mitigation and Additional Mitigation.
National Grid	The national electricity transmission network.
Offshore Environmental Impact Assessment (EIA) Report (hereafter, 'Offshore EIA Report')	Document prepared to report the findings of the EIA for the Proposed Development and produced in accordance with the EIA Regulations. The Offshore EIA Report is submitted to support the Offshore Application for the Proposed Development, and to comply with EIA Regulations.
Offshore Export Cables	Subsea cables used to transmit electricity generated offshore by the Wind Turbines from the OSPs to shore. The Transition Joint Bay (TJB) is the location where the Offshore Export Cables terminate, and the onshore cabling begins.
Offshore Infrastructure	All of the Offshore Infrastructure associated with the Proposed Development that is located seaward of MHWS, comprising the Offshore Generation Assets and the Offshore Transmission Assets.
Offshore Scoping Report	The report that presents the findings of the EIA scoping process undertaken for the Proposed Development with the purpose of obtaining a Scoping Opinion. The Offshore Scoping Report defines what is intended to be assessed and reported as part of the EIA.
Offshore Substation Platform(s) (OSPs)	OSPs comprise the support structure, topside and electrical components used for collecting and/or converting electricity generated by the Wind Turbines for transmission by the Offshore Export Cables.

Defined Term	Definition
Operation and Maintenance (O&M)	The phase of the Proposed Development following completion of construction. This phase of development includes routine inspections, repairs and replacement of infrastructure and equipment (including Interconnector Cables and IACs), Scour Protection replenishment or replacement, major component replacement, painting and/or other coating works, removal of marine growth, and replacement of access ladders.
Pathway	Describes the means or route by which a receptor (such as the seabed) can be affected by an identified impact source (such as Wind Turbine foundations).
Project (the)	An overarching term for the Bowdun Offshore Wind Farm (Bowdun OWF) comprising the offshore and onshore infrastructure required to generate and transmit electricity from the Array Area to the onshore GCP. The Project includes the Offshore Generation Assets, the Offshore Transmission Assets and the Onshore Transmission Assets.
Proposed Development	Term used to define the Offshore Infrastructure associated with the Project seaward of MHWS for which consent is being sought. Further details of the parameters are included in Volume 1, Chapter 3: Project Description.
Safety Zones	An area extending a maximum of 500 m from the central point of a subsea installation in which other vessels are prohibited from entering, except in circumstances outlined within Section 96 of the Energy Act, 2004.
Scoping Opinion	A document produced by MD-LOT which is issued in response to submission and review of the Offshore Scoping Report. The Scoping Opinion is supported with feedback and advice from consultees, which details what is expected to be included in the Offshore EIA Report and what can be scoped out of the EIA process.
Scottish Ministers (the)	The decision makers with regard to Marine Licence(s) and Section 36 Consent applications in Scottish Offshore Waters and Scottish Marine Area.
ScotWind Leasing Round	A seabed leasing round run by CES to grant property rights for the seabed in Scottish waters for new commercial scale offshore wind project development. ScotWind Leasing must be sited within POA of the SMP.
Scour Protection	Protective materials installed to avoid sediment being eroded away from the base of the foundations and/or buried subsea cable due to the flow of water.
Significance	Effect factor that is determined by the magnitude of impact along with the sensitivity of the receptor.
Study Area	For each environmental topic, the baseline environment will be characterised, and the potential environmental impacts will be described within a topic-specific study area. Specific study areas are defined for each topic and are based on the maximum spatial extent across which potential impacts of the Project may be experienced by the relevant receptors (i.e. Zone of Influence).
Thistle Wind Partners (TWP)	Company established for the development of the Project.
Wind Turbines	Structures comprising of a tubular tower, rotor blades, and a nacelle which houses the Wind Turbine generator.

Acronyms

Acronym	Definition
ALARP	As Low as Reasonably Practicable
ATC	Air Traffic Control
ATS	Air Traffic Services
BOWFL	Bowdun Offshore Wind Farm Limited
CAA	Civil Aviation Authority
CAP	Civil Aviation Publication
CDM	Construction (Design and Management)
DfT	Department for Transport
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
ERCoP	Emergency Response Cooperation Plan
EU	European Union
FL	Flight Level
HM	His Majesty's
HMRI	Helicopter Main Route Indicator
HSWA	Health and Safety at Work etc Act 1974
ICES	International Council for the Exploration of the Sea
IEMA	Institute of Environmental Management and Assessment
IFP	Instrument Flight Procedure
ISEP	The Institute of Sustainability and Environmental Professionals
MADs	Major Accidents and Disasters
MCA	Maritime and Coastguard Agency
MD-LOT	Marine Directorate-Licensing Operations Team
MoD	Ministry of Defence
MPS	Marine Policy Statement
NATS	National Air Traffic Services
NEQ	Net Explosive Quantity
NMP	National Marine Plan
NMP2	National Marine Plan 2
OSP	Offshore Substation Platform
OWF	Offshore Wind Farm
O&M	Operation and Maintenance
PEXA	Practice and Exercise Area
PSR	Primary Surveillance Radar
RLoS	Radar Line of Sight
RYA	Royal Yachting Association
SAR	Search and Rescue

Acronym	Definition
TCA	Trade and Cooperation Agreement
UK	United Kingdom
UXO	Unexploded Ordnance

Table of Units

Units	Definition
%	Percent
£	Great British Pounds
ft	Feet
GW	GigaWatt
J/m^3	Joule per cubic metre
kg	Kilogram
km	Kilometre
km^2	Square kilometre
m	Metre
m/s	Metre per second
nm	Nautical miles

17 Major Accidents and Disasters

17.1 Introduction

17.1.1 This chapter of the Offshore Environmental Impact Assessment (EIA) Report presents the assessment of the potential likely significant environmental effects deriving from the vulnerability of the Proposed Development to Major Accidents and Disasters (MADs) during the construction, Operations and Maintenance (O&M) and decommissioning phases.

17.1.2 The main risks presented by Offshore Wind Farms (OWFs) are related to the safety of personnel (with fire accidents a particular focus), failure of infrastructure (such as corrosion or blade failure) and equipment and obstructions to navigation. Other key risks to OWFs are related to the weather (such as gale-force winds and lightning strikes), shipping disruption, and interactions with subsea cables (Mou *et al.*, 2021). The risk of sabotage/act of terrorism event, although remote, is also considered.

17.1.3 This chapter adopts a proportionate approach by focusing only on those residual risks or cascading effects that have not been captured elsewhere within the individual Offshore EIA topic chapters. This avoids duplication and ensures that the assessment remains targeted and effective in identifying any additional vulnerabilities arising from low likelihood, high consequence events.

17.1.4 The structure of this MADs chapter is guided by The Institute of Sustainability and Environmental Professionals (ISEP) (formerly the Institute of Environmental Management and Assessment (IEMA)) 'Major Accidents and Disasters in EIA: A Primer' (ISEP, 2020). In accordance with this:

- a 'Major Accident' is an event that threatens immediate or delayed serious environmental effects to human health, welfare and/or the environment and requires the use of resources beyond those of the Applicant or its appointed representatives (i.e. contractors) to manage. For example, effects that cause a fatality, multiple fatalities or permanent injury, or widespread irreversible harm or damage to the environment. Major accidents can be caused by disasters resulting from both man-made and natural hazards;
- a 'Disaster' is a man-made/external hazard (such as an act of terrorism) or a natural hazard (such as an earthquake) with the potential to cause an event or situation that meets the definition of a major accident as described above; and
- a 'Significant Environmental Effect' is defined as major accident and/or disaster that could include the loss of life, permanent injury and temporary or permanent destruction of an environmental receptor which cannot be restored through minor clean-up and restoration.

17.1.5 There are two main areas of vulnerability for the Proposed Development. These include:

- internal project risks: relating to the Proposed Development's potential to cause a major accident and/or disaster; and
- external project risks: relating to the vulnerability of the Proposed Development to a potential major accident and/or disaster.

17.1.6 These risks have been identified for the Proposed Development and have been considered within this chapter. This chapter outlines the procedures and safeguards that will be in place to prevent a major accident and/or disaster, and to reduce the impact of any risks identified to As Low as Reasonably Practicable (ALARP). In most cases, the identified risks have been assessed in other sections of this Offshore EIA Report, and where applicable, references to those assessments are provided.

17.2 Major Accidents and Disasters Study Area

17.2.1 The Proposed Development will be located off the north-east coast of Scotland, with the Array Area located approximately 38 km (20.52 nm) off the Aberdeenshire coast at the closest point to the mainland. The Offshore Export Cables will reach Landfall at Benholm, Aberdeenshire. Additional details about the location of the Proposed Development can be found in Volume 1, Chapter 3: Project Description.

17.2.2 The considered risks of MADs relevant to offshore energy projects include existing and possible future infrastructure and activities such as offshore cables, OWFs, Carbon Capture and Storage, natural gas storage and underground gasification, oil and gas infrastructure, commercial fisheries, civil and military aviation, and shipping and navigation. The consideration of MADs utilises baseline information drawn from specific technical topics included within the Offshore EIA Report:

- Volume 2, Chapter 7: Physical Processes;
- Volume 2, Chapter 13: Commercial Fisheries;
- Volume 2, Chapter 14: Shipping and Navigation;
- Volume 2, Chapter 15: Aviation and Radar;
- Volume 2, Chapter 16: Infrastructure and Other Users; and
- Volume 3, Technical Appendix 19.2: Unexploded Ordnance Technical Report.

17.2.3 The Study Areas for these baseline topics differ from each other due to the varying ranges of different receptors for which impacts must be considered. However, despite these differences, all relevant study areas are appropriate for the consideration of MADs.

17.2.4 It should be noted that Volume 1, Chapter 3: Project Description has also been used to inform Paragraph 17.6.50 through to Paragraph 17.6.53 to provide an overview of Unexploded Ordnance (UXO) in proximity to the Proposed Development.

17.3 Legislative and Policy Context

17.3.1 The overarching policy and legislation applicable to the Proposed Development is presented in Volume 1, Chapter 2: Policy and Legislation. Policy and legislation specific to MADs, is contained in the Marine Works (EIA) (Scotland) Regulations 2017 (His Majesty's (HM) Government, 2017) and the Health and Safety at Work etc Act 1974 (HSWA) (HM Government, 1974) and regulations made thereunder. A summary of the legislative provisions relevant to MADs are provided in Table 17.1 below, and the National Policy relevant to MADs are detailed in Table 17.2.

Table 17.1: Summary of Legislation Relevant to MADs

Summary of Relevant Legislation	How and Where Considered in this Offshore EIA Report
The Marine Works (EIA) (Scotland) Regulations 2017 (HM Government, 2017)	
The Marine Works (EIA) (Scotland) Regulations 2017 require that significant effects arising from the vulnerability of the Project to major accidents or disasters are considered in the decision making process for that project. **Regulation 5 (2) outlines receptors that *"the Environmental Impact Assessment must identify, describe and assess in an appropriate manner, in light of the circumstances relating to the proposed works, the direct and indirect significant effects of the proposed works"* and this includes MADS. Regulation 5 (4) outlines the requirement to *"include the expected effects deriving from the vulnerability of the works to risks, so far as relevant to the works, of major accidents and disasters."*** **Paragraph 9 of Schedule 4 of the EIA Regulations also require that an EIA report must include a "*description of the expected significant adverse effects of the works on the environment deriving from the vulnerability of the works to risks of major accidents and/or disasters which are relevant to the project concerned"*. Furthermore, that relevant information available and obtained through risk assessments pursuant to European Union (EU) legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or United Kingdom (UK) environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.**	This chapter provides an overview of the potential MADs that could occur, along with the measures in place to ensure that associated risks are reduced to a level that is ALARP, as detailed in Section 17.10.

Summary of Relevant Legislation	How and Where Considered in this Offshore EIA Report
Health and Safety at Work etc. Act 1974 (HM Government, 1974)	
The HSWA is the primary legislation covering workplace health and safety in the UK. The HSWA establishes various obligations to ensure, so far as is reasonably practicable, that persons are not exposed to risks to their health and safety whilst at work. **Several regulations made under the HSWA (e.g. Control of Major Accident Hazards Regulations 2015) place general duties on employers to assess risks and to implement controls. The overriding principle is that foreseeable risks to persons shall be reduced so far as is reasonably practicable and that adequate evidence shall be produced to demonstrate that this has been done.**	Section 17.8 of this chapter outlines that the Proposed Development has suitable designed in measures and robust processes in place to manage risks to individuals, ensuring they are reduced to a level that is ALARP, in accordance with established best practices in risk management.
Construction (Design and Management) (CDM) 2015 Regulations (HM Government, 2015)	
The CDM Regulations place specific duties on clients, designers, contractors and workers, so that health and safety is considered throughout the life of a construction project from its inception to its subsequent final demolition and removal. **Under the CDM Regulations, designers must avoid foreseeable risks so far as reasonably practicable by eliminating hazards from the construction, cleaning, maintenance, and proposed use and demolition of a structure; reducing risks from any remaining hazard; and giving collective safety measures priority over individual measures.**	The measures outlined in Section 17.8 of this chapter illustrate how the Proposed Development is designed to meet the requirements of the CDM Regulations, including the effective management of construction risks to a level that is ALARP.

Table 17.2: Summary of National Policy relevant to MADs

Summary of Relevant Policy	How and Where Considered in this Offshore EIA Report
Scotland's National Marine Plan (NMP) (Marine Scotland, 2015)	
Sets out strategic policies for the sustainable development of Scotland's marine resources and is compatible with the UK National Policy Statement and existing Marine Plans across the UK.	The NMP is applicable to the Proposed Development as it considers potential interactions between renewable energy developments and other marine users. It also establishes several baseline requirements, including: • achieving a sustainable marine economy; • ensuring a strong, healthy and just society; • living within environmental limits; • promoting good governance; and • using sound science responsibility. Section 17.6 of this chapter addresses the interactions between the Proposed Development and other marine users, providing a summary of the more detailed assessment found in Volume 2, Chapter 16: Infrastructure and Other Users. It is also noted that work is underway to develop Scotland's National Marine Plan 2 (NMP2). A Planning Position Statement has been published for consultation, outlining proposed high-level objectives and policy directions for the updated plan (Scottish Government, 2024a).
UK Marine Policy Statement (MPS) (HM Government, 2011)	
Provides a framework for marine spatial planning, specifically for the preparation of Marine Plans and to ensure that marine resources are used in a sustainable way.	The MPS confirms that all public authorities, in examining and determining applications for all energy infrastructure, the relevant marine policy statement must be followed, and the following must be considered: • the national level of need for energy infrastructure; • the positive wider environmental, societal and economic benefits of low carbon electricity generation; • that renewable energy resources can only be exploited where the resource exists and where economically feasible; and • the potential for inward investment on energy related manufacturing and deployment activity and employment opportunities and regeneration of local national economies, supporting the objective of developing the UK's low carbon manufacturing capability. The MPS also confirms that the level of assessment undertaken for any project should be proportionate to the scale and potential impact of the Project, as well as the sensitivity of the environment concerned and in accordance with the EIA Directive, where applicable. This chapter considers the potential vulnerability to and of the Proposed Development to cause or be impacted by MADs in Section 17.10.
National Planning Framework 4 (Scottish Government, 2024b)	
Adopted in 2023, this long term strategy expresses plans for development, and investment, in	It considers the potential impacts of renewable energy developments alongside proposed mitigation measures. In evaluating both the benefits and adverse effects,

Summary of Relevant Policy	How and Where Considered in this Offshore EIA Report
infrastructure to meet the 2045 net zero targets.	decision makers should also take into account any cumulative impacts in conjunction with other existing or planned projects and activities. The Embedded Mitigation in place have been extracted from the relevant chapters and are detailed in Section 17.9 of this chapter. No assessment of the Cumulative Effects has taken place as it was concluded that the Proposed Development is not likely to lead to any MADs.

17.4 Consultation

17.4.1 The approach to consultation for the Proposed Development is set out in Volume 1, Chapter 5: Consultation and Engagement. A summary of the issues raised during consultation activities undertaken to date specific to MADs is presented in Table 17.3, together with how these issues have been considered in the production of this chapter. Further detail is presented within Volume 1, Chapter 5: Consultation and Engagement, Volume 3, Technical Appendix 5.1: Consultation Log and Volume 3, Technical Appendix 5.2: Pre-Application Consultation Report.

Table 17.3: Summary of Key Consultation Issues Raised During Consultation Activities Undertaken for the Proposed Development Relevant to MADs

Date	Consultee and Type of Consultation	Summary of Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
16/09/2024	Maritime and Coastguard Association (MCA) Scoping Opinion	*"Any additional navigation safety and/or Search and Rescue requirements, as per Marine Guidance Note 654 Annex 5, will be agreed at the approval stage. Particular consideration will need to be given to the implications of the site size and location on Search and Rescue (SAR) resources and Emergency Response Cooperation Plans (ERCoP)."*	The Applicant will continue engagement with the MCA in development of the ERCoP. Details are presented in Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments.
18/11/2024	Marine Directorate - Licensing Operations Team (MD-LOT) Scoping Opinion	MD-LOT advise *"that the EIA Report(s) must include a description and assessment of the LSE deriving from the vulnerability of the Proposed Development to major accidents and disasters."*	This chapter has been developed as per feedback received as part of the Scoping Opinion to include a description of the vulnerability of the Proposed Development to a potential accident or disaster and the Proposed Development's potential to cause an accident or disaster. This assessment is summarised in Table 17.5.
		The Scottish Ministers advise that *"The Developer should make use of appropriate guidance, including the recent Institute of Environmental Management and Assessment ("IEMA1") 'Major Accidents and Disasters in EIA: A Primer,' to better understand the likelihood of an occurrence and the Proposed Development susceptibility to potential major accidents and hazards."*	This chapter has been developed following the approach set out within ISEP 'Major Accidents and Disasters in EIA: A Primer'' (ISEP, 2020).
		Scottish Ministers advise that *"existing sources of risk assessment or other relevant studies should be used to establish the baseline rather than collecting survey data and note the IEMA Primer provides further advice on this".*	The baseline in this chapter is derived from the information presented in other chapters of the Offshore EIA Report as referenced in Paragraph 17.2.2.

[1] The Institute of Sustainability and Environmental Professionals (ISEP), formerly IEMA, underwent organisation rebrand in July 2025.

Date	Consultee and Type of Consultation	Summary of Issue(s) Raised	Response to Issue Raised and/or Where Considered in this Chapter
		Scottish Ministers require that *"the assessment must detail how significance has been defined and detail the inclusions and exclusions within the assessment. Any mitigation measures that will be employed to prevent, reduce, or control significant effects should be included in the EIA Report."*	This chapter has been developed following the approach set out within 'Major Accidents and Disasters in EIA: A Primer' (ISEP, 2020), therefore differing from other chapters in this Offshore EIA Report. However, this chapter presents an approach to assessment in line with relevant guidance including the consideration of Embedded Mitigation to reduce and/or control risk (see Section 17.9). Significant environmental effects have been assessed in Section 17.10.

17.5 Data Sources

Desktop Study

17.5.1 The baseline applicable to MADs is based on a description of the information derived through a detailed desktop review of existing studies and datasets for the following chapters:

- Volume 2, Chapter 7: Physical Processes;
- Volume 2, Chapter 13: Commercial Fisheries;
- Volume 2, Chapter 14: Shipping and Navigation;
- Volume 2, Chapter 15: Aviation and Radar;
- Volume 2, Chapter 16: Infrastructure and Other Users; and
- Volume 3, Technical Appendix 19.2: Unexploded Ordnance Technical Report.

17.5.2 Each chapter above provides a detailed overview of the desktop sources, with a summary being included in this chapter.

Site-Specific Surveys

17.5.3 Site-specific surveys relevant to this chapter include vessel traffic surveys as detailed within Volume 2, Chapter 14: Shipping and Navigation, geophysical survey campaigns, benthic subtidal survey and an intertidal survey, as detailed within Volume 2, Chapter 8: Benthic Ecology.

17.5.4 No surveys were conducted specifically for the MADs assessment, as receptor information and topic-related data were efficiently obtained through desktop studies and engagement with relevant stakeholders captured within topic-specific chapters outlined in Paragraph 17.5.1. This was supported by the availability of Scotland-wide suitable data, which was refined to cover the north-east Scotland region.

17.6 Baseline Environment

Overview of Baseline Environment

17.6.1 In accordance with the approach set out within the ISEP primer (ISEP, 2020) and the recommendations outlined in the Bowdun Scoping Opinion (MD-LOT, 2024), the baseline environment described in this chapter draws upon both existing information sources and site-specific survey data. While the MADs assessment primarily relies on established datasets and desktop studies to identify relevant hazards (e.g. the National Risk Register (HM Government, 2025) and the Community Risk Register for North Scotland (Regional Resilience Partnership, 2024), new survey data collected for other EIA topics, such as Shipping and Navigation and Physical Processes, has also been used where appropriate to inform the understanding of potential major accident and disaster risks associated with the Proposed Development.

17.6.2 The following sections summarise the baseline environment relevant to MADs, these include:

- Physical Processes;
- Commercial Fisheries;
- Shipping and Navigation;
- Aviation and Radar;
- Infrastructure and Other Users; and
- UXO.

17.6.3 It is acknowledged that the Study Areas for the various baseline topics differ, reflecting the distinct receptors involved and the varying spatial extents over which potential impacts must be assessed. Nevertheless, all identified Study Areas are considered appropriate for the purposes of this assessment.

Physical Processes

17.6.4 This section provides an overview of the existing environmental baseline of the Proposed Development, as described in Volume 2, Chapter 7: Physical Processes.

17.6.5 The baseline environment for physical processes includes: hydrodynamics, waves, stratification, seabed sediments, seabed and coastal geomorphology.

Hydrodynamics

17.6.6 The Array Area is situated within a semi-diurnal tidal environment with tidal range increasing from north-east to south-west. Within the Array Area, the mean spring tidal range is typically between 2.7 m and 3.0 m, with a mean neap range of approximately 1.5 m. Tidal currents are generally of moderate strength, with mean spring peak current speeds typically less than approximately 0.7 m/s. Some of the strongest currents are found just to the north of the Landfall, with peak current speeds on spring tide reaching ~0.8 m/s.

Waves

17.6.7 Waves are a combination of locally generated wind waves and waves generated elsewhere in the North Sea. Within the Array Area, waves predominantly come from south-westerly through south-south-easterly directions, although waves from northerly directional sectors are also common. Wave heights in the Array Area are typically 1 m to 3 m, tending to reduce with proximity to the coast, owing to decreasing water depth, decreasing fetch length in the predominant wind direction, and generally greater protection from waves generated elsewhere in the North Sea.

Stratification and Frontal Systems

17.6.8 Stratification is a naturally occurring seasonal hydrodynamic feature related to the vertical and horizontal distribution of sea water temperature and salinity, which influences the availability of nutrients, and the distribution and growth rates of pelagic flora and fauna. During the winter months (October to April), reduced solar heating and increased turbulent mixing from wind and waves

result in well-mixed waters in the Array Area, characterised by homogeneous temperature and density profiles, with Potential Energy Anomaly values around 10 J/m³ to 15 J/m³. With the onset of spring and summer, calmer weather and longer, warmer days enhance stratification, overcoming the mixing effects of tides. From May to September, this leads to a vertical temperature gradient.

17.6.9 Fronts are relatively widespread features within the North Sea and (at certain times during the year) may extend for a distance of several hundred kilometres. During the summer months, elevated chlorophyll-a concentrations (likely linked to a tidal mixing front) are observed east of the Array Area. This is consistent across all years analysed (2010 to 2023) and suggests that higher primary productivity is occurring at the boundary between the more strongly stratified waters located further offshore, as opposed to the weakly stratified waters in the Array Area. In the Array Area, stratification appears to be a more transient feature, leading to lower and less sustained phytoplankton growth compared to the stable stratification further offshore.

Sediments and Geology

17.6.10 Seabed sediments across the Physical Processes Study Area are dominated by coarse-grained material, with sands and gravels encountered in most areas. Muddy sand is present in places. Close to the coast (including at the Landfall), exposed rock is encountered. Approximately half of the Array Area is composed of sand and silty sand. Boulders cover around 20% of the area, particularly in the northern and central regions. The Export Cable Corridor is similarly dominated by sand and silty sand, with occurrences of outcropping glacial till and boulders.

Seabed Geomorphology

17.6.11 A range of active and relict (i.e. no longer active) bedforms and geomorphological features are present within the Physical Processes Study Area, reflecting contemporary seabed processes and past glacial and geological activity. Extensive (relict) glacial moraine complexes have been mapped within the Physical Processes Study Area, as well as tunnel valleys. Active bedforms - namely sandwaves and megaripples - comprising mobile Holocene sediments are also present, including locally within the Array Area and Export Cable Corridor where they can exceed 6 m in height. Ripple and smaller megaripple features are known to be mobile within the Array Area and Export Cable Corridor, as demonstrated through bathymetric comparisons in areas with overlapping survey data collected during the 2023 to 2024 geophysical survey campaign. However, a comparison between the recent (2023 to 2024) survey data and older (2009) UK Hydrographic Office survey data has not shown clear evidence for consistent migration of the larger sandwave features.

Coastal Geomorphology

17.6.12 The coastline within the Physical Processes Study Area extends from Auchmithie (in the south) to Boddam (in the north). Large stretches are characterised by the presence of erosion resistant rock although beaches with dune systems are also present. In several areas where these softer, erodible sediments front urban areas (such as Montrose and Aberdeen), coastal

defences are present. However, most of the coastline within the Physical Processes Study Area is undefended, reflecting a combination of generally low rates of erosion and a sparsely populated coastal zone. Owing to the erosion resistant nature of the coastline, relatively little change is expected at the Landfall over the lifetime of the Proposed Development and the position of the Mean High Water Springs contour is predicted to remain largely unaltered.

Commercial Fisheries

17.6.13 This section provides an overview of the commercial fisheries in proximity to the Proposed Development, as described in Volume 2, Chapter 13: Commercial Fisheries.

17.6.14 The Local Commercial Fisheries Study Area focuses on the overlap of the Proposed Development with International Council for the Exploration of the Sea (ICES) rectangles 42E7, 42E8 and 43E8. The Regional Commercial Fisheries Study Area includes those ICES rectangles that overlap the Proposed Development, together with those immediately adjacent to the Local Commercial Fisheries Study Area (rectangles 41E7 to 41E9, 42E7 to 42E9, 43E7 to 43E9 and 44E8 to 44E9). Both study areas are presented within Figure 13.1 in Volume 2, Chapter 13: Commercial Fisheries.

Overview of Landings

17.6.15 An annual average value of £6.5 million was landed by all UK vessels across the years 2020 to 2024 in the Local Commercial Fisheries Study Area, compared to an average of £7 million across the years 2013 to 2018. The statistics indicate that lobster *Homarus gammarus*, king scallop *Pecten maximus*, brown crab *Cancer Pagurus* and haddock *Melanogrammus aeglefinus* are the most economically important species as demonstrated by landed value (with an annual average landed value of £2 million, £1.3 million, £966,000 and £817,000 respectively across 2020 to 2024). Landings of these species have varied annually across the 2010 to 2024 time series.

17.6.16 Key gears expected to be actively deployed within the Proposed Development are pots, demersal otter trawls and scallop dredges.

Pots

17.6.17 Larger potters working further offshore make fishing trips lasting around two days. Vivier vessels capable of storing live crab on board in their holds may make week-long trips. Smaller potters under 10 m in length operate as day boats, returning to port after hauling, emptying, baiting and re-setting fleets of pots. Potting vessels may target a single or multiple shellfish species.

17.6.18 Seasonality for the potters operating across the Local Commercial Fisheries Study Area indicates landings throughout the year with relative peaks in summer and December.

Demersal Otter Trawl Fishery

17.6.19 The demersal otter trawl fisheries within the Local Commercial Fisheries Study Area predominantly target demersal whitefish such as haddock, and Nephrops *Nephrops norvegicus*. Data also indicates some squid *Loligo* spp landings.

17.6.20 Demersal trawlers operating across the Regional Commercial Fisheries Study Area tend to tow in directions which are in line with natural seabed contours.

17.6.21 Seasonality for the demersal otter trawl vessels operating across the Local Commercial Fisheries Study Area indicates highest landings across late spring and summer. Prominent spikes in landings occurred in 2023 in May, June and July due to an increase in haddock landings.

Scallop Dredge Fishery

17.6.22 Scallop dredging is an activity which is generally engaged by larger vessels (> 10 m vessel length) due to the engine capacity required to tow this heavy fishing gear.

17.6.23 Seasonality for the dredge vessels operating across the Local Commercial Fisheries Study Area indicates highest landings across spring and summer months.

Shipping and Navigation

17.6.24 This section provides an overview of the shipping and navigation activity in proximity to the Proposed Development, as described in Volume 2, Chapter 14: Shipping and Navigation. The shipping and navigation chapter provides a description of existing navigational features within a 10 nm buffer around the Array Area and a 3 nm buffer of the Export Cable Corridor, which forms the Shipping and Navigation Study Area presented within Figure 14.1 in Volume 2, Chapter 14: Shipping and Navigation.

Description of the Marine Environment

17.6.25 Key navigational features near the Proposed Development include nearby ports such as Aberdeen, Montrose, and Peterhead. These are all located to the west of the Shipping and Navigation Study Area. There are no active aggregate extraction licence areas, dredge disposal sites, anchorages, or International Maritime Organization traffic schemes within the Shipping and Navigation Study Area. The Proposed Development is not within any UK Military Practice and Exercise Areas (PEXAs), nor are there any operational offshore renewable projects located within the Shipping and Navigation Study Area or oil and gas fields.

Vessel Traffic

17.6.26 Vessel traffic surveys were conducted over four periods: one summer survey from July 2023, one winter survey from January 2024, one summer survey from July 2025 and one winter survey from December 2025. The 2023 summer survey of the Bowdun Array Area and a 10 nm buffer recorded 328 vessel transits, and winter of January 2024 recorded 241 transits for the same area. The July 2025 survey recorded 380 transits, averaging 25.3 per day, and the December 2025 survey recorded 137 transits, averaging 9.8 per day.

17.6.27 During all survey periods, tug and service vessels were the most frequently recorded vessel type. A total of 197 transits were observed in summer 2023, followed by 132 in winter 2024 and 136 in summer 2025. In winter 2025, however,

cargo vessels became the most frequently recorded, with 64 transits compared to 52 from tug and service vessels.

Aviation and Radar

17.6.28 This section provides an overview of the aviation and radar activity in proximity to the Proposed Development, as described in Volume 2, Chapter 15: Aviation and Radar, and, Volume 3, Technical Appendix 15.1: Aviation and Radar.

Airspace Structure

17.6.29 The Proposed Development's Array Area is situated in an area of Class G uncontrolled airspace which is established from the surface up to Flight Level (FL) 195 (19,500 ft). Above FL 195, the airspace is Class C controlled airspace which extends from FL 195 to FL 245 (24,500 ft) and forms Temporary Reserved Area 007B which exists to aid, and provide flexibility to, military training and operations.

17.6.30 Class C controlled airspace then continues above FL 245 (24,500 ft) and contains upper air routes mainly utilised by aircraft routeing between Europe and North America. In Class C and G airspace, the following Air Traffic Services (ATS) rules apply:

- Class C airspace: Aircraft operating within Class C controlled airspace (i.e. above FL 195) must be in receipt of an ATS from National Air Traffic Services (NATS) En-Route Public Limited Company or a separate authorised military service provider; and
- Class G airspace: Aircraft can operate in this area of uncontrolled airspace without mandatory requirement to be in communication with, or receive a radar service from, an Air Traffic Control (ATC) unit. Pilots of aircraft operating under Very High Frequency in Class G airspace are ultimately responsible for seeing and avoiding other aircraft and obstructions.

Civil Airports Instrument Flight Procedures (IFPs)

17.6.31 The nearest major civil airport to the Array Area is Aberdeen Airport located 27 nm (50 km) to the north-west which is operated by NATS. The published obstacle safeguarding area (as outlined in Civil Aviation Publication (CAP) 764 (Civil Aviation Authority (CAA), 2016) for airports/aerodromes of this nature is 30 nm (56 km); therefore, the Proposed Development is inside the safeguarding area for Aberdeen Airport's IFPs.

17.6.32 The Export Cable Corridor and Landfall location are outside the physical safeguarding areas of any aviation communication, navigation and surveillance infrastructure.

Military Aerodrome IFPs

17.6.33 The nearest military aerodrome to the Array Area is Leuchars Station located 56 nm (104 km) to the south-west. The published obstacle safeguarding area for aerodromes of this nature is 30 nm (56 km), therefore the Proposed Development is outside the safeguarding area of any military aerodromes and no military aerodrome IFPs will be affected by the Proposed Development's Wind Turbines.

Civil ATC Radars

17.6.34 The nearest civil ATC radars to the Array Area are the NATS Perwinnes Primary Surveillance Radar (PSR) located 26 nm (48 km) to the north-west and the Allanshill PSR located 43 nm (80 km) to the north-west. The proposed Wind Turbines are highly likely to be in Radar Line of Sight (RLoS) of both PSRs. There are no other civil ATC radars that can be affected by the Proposed Development's Wind Turbines.

Military ATC Radars

17.6.35 The nearest military ATC radar to the Array Area is the Leuchars Station PSR located 56 nm (104 km) to the south-west. The operating range of the Leuchars PSR is 60 nm (111 km) therefore it is highly unlikely that the proposed Wind Turbines will be in RLoS of the radar. This was confirmed by the Ministry of Defence (MoD) in their scoping response which is contained within the Scoping Opinion and addressed in Table 15.4 of Volume 2, Chapter 15: Aviation and Radar. Consequently, no military ATC radars will be affected by the Proposed Development's Wind Turbines.

Military Air Defence Radars

17.6.36 The nearest military air defence radar to the Array Area is located at Buchan 28 nm (52 km) to the north-west. The proposed Wind Turbines are highly likely to be in RLoS of the Buchan Air Defence PSR. This was confirmed by MoD in their scoping response which is contained within the Scoping Opinion and addressed in Table 15.4 of Volume 2, Chapter 15: Aviation and Radar.

Military Low Flying and SAR Helicopter Operations

17.6.37 The Array Area is located more than 12 nm (22 km) from the UK coastline and, therefore, is technically outside the UK Military Low Flying System; however, it is recognised that military aircraft may still be required to operate at low-level in the vicinity of the Proposed Development. Installation and presence of Wind Turbines can pose a physical obstruction to aviation operations and can be difficult to see from the air, particularly in poor meteorological conditions, leading to a potential increase in obstacle collision risk. Furthermore, during the construction phase, the presence and movement of installation vessels (with onboard cranes) may also present a potential obstacle collision risk to aircraft operations. Military aircraft can operate down to 100 ft above surface level over the sea.

17.6.38 UK SAR helicopters conducting operational missions are not constrained by the normal rules of the air and operate in accordance with their Aircraft Operator Certificate, which allows them flexibility to manoeuvre, as required, for the particular mission being carried out. Assessment of potential impacts on SAR operations will be included within the Offshore EIA Report. An ERCoP will be developed in consultation with the MCA.

Helicopter Main Route Indicators (HMRIs)

17.6.39 HMRIs are established to support the transport of personnel and logistics to offshore oil and gas installations. HMRIs provide a network of offshore routes used by civilian helicopters to facilitate an obstacle free zone for safe flight when in-flight Visual Meteorological Conditions cannot be met. The HMRI structure therefore provides both an identification of common flight paths and a safe means of traffic flow. HMRI 116 is the nearest HMRI to the Array Area and is located approximately 3 nm (5.55 km) to the north; it is primarily used for helicopter flights from Aberdeen Airport to the offshore oil and gas installations in the North Sea.

17.6.40 Construction of turbines within 2 nm (3.80 km) either side of an HMRI would have the potential to restrict operations below the routine operational altitudes when icing conditions exist. The ability of a helicopter to operate at the expected altitudes would be dependent upon the icing level (the 0° isotherm). In this situation, helicopters operating on HMRIs need an 'escape-route' if icing conditions are encountered unexpectedly; this would inevitably involve a descent. However, as outlined in CAP 764 (CAA, 2016), CAA guidance is that, provided there are no Wind Turbines within 2 nm (3.8 km) on one side of an HMRI, then helicopter operations should not be affected. Consequently, no HMRIs will be affected by the Proposed Development's Wind Turbines.

Offshore Helicopter Installations (Oil and Gas Platforms)

17.6.41 CAP 764 (CAA, 2016) recommends that wind farm developers consult with the owners/operators of offshore helicopter installations when a development is within 9 nm (17 km) of any helicopter installation. The nearest offshore helicopter installation to the Array Area is the Buzzard platform which is located approximately 45 nm (84 km) to the north-north-east. Due to the distancing, the proposed Wind Turbines will not adversely impact helicopter operations at any offshore helicopter installations. Consequently, no offshore helicopter installations will be affected by the Proposed Development's Wind Turbines.

Local Airspace Restrictions (Prohibited/Restricted/Danger Areas and Military PEXA

17.6.42 The Array Area lies within the lateral boundaries of Danger Area D613A which is activated periodically by MoD by means of the Notice to Aviation system. It is activated from FL 100 (10,000 ft) up to FL 550 (55,000 ft) and is used for military air combat training and supersonic flight. Although the Array Area is located within the lateral boundaries of D613A, military operations only commence from 10,000 ft above the Proposed Development. Consequently, military operations in D613A will not be affected by the Proposed Development.

Meteorological Office Radar

17.6.43 The closest Met Office radar system is located at Hill of Dudwick near Ellon, Aberdeenshire. It is located 30 nm (56 km) to the north-west of the Array Area which is outside the 11 nm (20 km) safeguarding area for radars of this nature. Due to the distancing, the proposed Wind Turbines will not be in RLoS of the

nearest met radar. Consequently, no met radars will be affected by the Proposed Development's Wind Turbines.

Infrastructure and Other Users

17.6.44 This section provides an overview of the offshore energy projects and offshore cables in proximity to the Proposed Development, as described in Volume 2, Chapter 16: Infrastructure and Other Users.

Offshore Energy Projects

17.6.45 The nearest operational OWF is Kincardine OWF, located 20.14 km (10.87 nm) to the west of the Proposed Array Area. The nearest at the pre-planning stage is Morven North OWF located 10.03 km (5.42 nm) to the south-east of the Proposed Development and the nearest OWF in planning is Ossian OWF, located 25.36 km (13.69 nm) from the Array Area. Further details about the proximity and stage of other OWFs in vicinity of the Proposed Development can be found in Volume 2, Chapter 16: Infrastructure and Other Users.

17.6.46 There are no wave or tidal projects, marine aggregate extraction sites, marine disposal sites, natural gas storage or carbon capture sites within the boundary of the Proposed Development.

Oil and Gas

17.6.47 There is one decommissioned well located within the Local Infrastructure and Other Users Study Area, specifically within the Array Area. This is well top hole 26/04-1 owned by Shell U.K. Limited originally licensed for exploration and has been decommissioned since 2005. The closest active licensed hydrocarbon blocks are Block 20/28 and Block 27/3a operated by North Sea Natural Resources Limited located approximately 34.84 km (18.81 nm) and 34.83 km (18.80 nm) east of the Array Area.

Offshore Cables and Pipelines

17.6.48 There are no operational cables or pipelines located within the Local Infrastructure and Other Users Study Area.

17.6.49 The Eastern Green Link 2 cable is currently under construction and crosses both the Array Area and the Local Infrastructure and Other Users Study Area. Eastern Green Link 2 is a 505 km, 2 GW connecting Peterhead to Drax, operated by Scottish and Southern Electricity Networks and National Grid Electricity Transmission. Construction began in late 2024 and is due to be complete in 2029.

UXO

17.6.50 This section of the MADs assessment provides an overview of UXO in proximity to the Proposed Development, as detailed in Volume 1, Chapter 3: Project Description and Volume 3, Technical Appendix 19.2: Unexploded Ordnance Technical Report.

17.6.51 UXO originating from World War I, World War II, or military training exercises may be present within the Array Area and Export Cable Corridor. Due to the health and safety risks posed by UXO, and potential interactions with planned

locations of installed infrastructure and vessel activities, it is necessary for UXO to be surveyed and managed carefully before the construction phase and installation of Offshore Infrastructure commences.

17.6.52 Due to the health and safety risks that UXOs pose, the Applicant would seek to either avoid UXOs entirely, avoid UXOs via micrositing, or relocate UXO where practicable. If methods cannot be employed to avoid or relocate UXOs, a specialist contractor will clear UXOs in advance of construction taking place. The preferred clearance method for UXO is use of a low order technique with a single donor charge of 0.25 kg Net Explosive Quantity (NEQ) for each clearance event. Up to 0.5 kg NEQ clearance shot will be required for neutralisation of residual explosive material at each location. Detailed design work would be required to confirm planned locations of infrastructure, prior to conducting any UXO surveys. The Applicant has estimated that up to 40 UXOs may require clearance based upon the desk-based study. As a risk remains that unintended high order detonation may occur, all of the clearance events have been assumed to have the potential to result in high order detonation, as this would result in the greatest impact.

17.6.53 Further details on the Embedded Mitigation related to UXO can be found in Volume 2, Chapter 10: Marine Mammals.

Future Baseline Scenario

17.6.54 The EIA Regulations require that '*a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort, on the basis of the availability of environmental information and scientific knowledge*' is included within the Offshore EIA Report.

17.6.55 If the Proposed Development does not come forward, an assessment of the 'without development' future baseline conditions have also been carried out and is described within this section.

Physical Processes

17.6.56 The baseline environment for physical processes is expected to vary and evolve in response to natural variation (e.g. lunar nodal cycle, North Atlantic Oscillation etc.), wider changes in climate expected over the lifetime of the Proposed Development, and anthropogenic management of the coast.

17.6.57 It is predicted that by 2065, relative sea level may have risen by approximately 0.35 m above present-day (2025) levels (Representative Concentration Pathway 8.5, 95th percentile) at the Landfall with rates of change increasing over time. It is found that UK Climate Projections 2018 projections of change in extreme coastal water levels are dominated by the increases in mean sea level, with only a minor (< 10%) additional contribution due to atmospheric storminess changes over the 21st Century (Palmer *et al.*, 2018).

17.6.58 Model projections suggest that by 2100, the thermal stratification period in UK shelf seas will extend by approximately two weeks (Sharples *et al.*, 2022). The northern North Sea will also experience greater surface-to-bottom temperature

differences as the seasonal heating cycle intensifies (Tinker *et al.*, 2016), resulting in stronger stratification.

17.6.59 These changes are unlikely to significantly alter tidal patterns and sediment transport regimes offshore in the Array Area. However, a rise in sea level may allow larger waves, and therefore more wave energy, to reach the coast in certain conditions and consequently result in an increase in local rates or patterns of erosion and the equilibrium position of coastal features. There is substantial uncertainty in projecting future changes of wave climates within the North Sea.

Commercial Fisheries

17.6.60 Commercial fisheries patterns change and fluctuate based on a range of natural and management-controlled factors. These factors include the following:

- market demand;
- market prices;
- stock abundance;
- fisheries management;
- environmental management;
- sustainability;
- spawning times; and
- weather.

17.6.61 Following withdrawal, the UK and the EU have agreed to a Trade and Cooperation Agreement (TCA), applicable on a provisional basis from 01 January 2021. The TCA sets out fisheries rights and confirms that from 01 January 2021, and during a transition period until 30 June 2026, UK and EU vessels will continue to access respective Exclusive Economic Zones (EEZs) (12 nm to 200 nm) to fish. In this period, EU vessels will also be able to fish in specified parts of UK waters between 6 nm to 12 nm.

17.6.62 Twenty five percent of the EU's fisheries quota in UK waters will be transferred to the UK over the five-year transition period; most of this quota has already been transferred and distributed across the four nations of the UK. After the five-year transition there will be annual discussions on fisheries opportunities.

17.6.63 In May 2025, the UK and EU reached a new agreement extending reciprocal fishing access until 30 June 2038. This 12-year extension maintains the status quo, allowing EU vessels continued access to UK waters, including the 6 to 12 nautical mile zone, based on historical catch data from 2012 to 2016. The initial 25% quota transfer from the EU to the UK, as stipulated in the TCA, is still set to complete by 30 June 2026. While the new agreement extends access rights, it is expected that annual negotiations on specific quotas and fishing opportunities will continue, similar to the current framework.

17.6.64 Market changes have the potential to impact fishing activity in the Regional Commercial Fisheries Study Area; some of the catch landed by UK vessels is exported to EU markets (e.g. brown crab) and potential tariff/non-tariff barriers could affect which species are targeted and to what extent.

17.6.65 A recent example of how fisheries management can change the baseline relates to sandeel *Ammodytes marinus*; the sandeel fishery has significantly reduced in the UK EEZ over the past five years, with very low quotas relevant for this area (i.e. sandeel area 4). It is noted that the UK Government has prohibited UK vessels from catching sandeel from the North Sea from the period 2021 to 2023. As of 2024, catching sandeel from the North Sea has been prohibited for all UK and non-UK vessels in the UK EEZ[2].

17.6.66 Further information is presented in Volume 2, Chapter 13: Commercial Fisheries.

Shipping and Navigation

Commercial Traffic

17.6.67 Analysis of the future case traffic profile has been undertaken within the Volume 3, Technical Appendix 14.1: Shipping and Navigation Navigational Risk Assessment. Overall, port traffic is forecast to remain relatively flat in the short term but grow slightly in the long term (ten years and beyond), with total UK port traffic projected to be 7.8% higher in 2050 compared to 2023 (Department for Transport (DfT), 2024a). This long-term growth is driven predominantly by significant increases in unitised and dry bulk freight, which compensates for decreases in liquid bulk traffic.

17.6.68 An overall gradual decline in annual freight since the early 2010s is evident in the DfT data (DfT, 2024b) for local ports closer in proximity to the Proposed Development which can provide insight into local vessel traffic. The ports of Montrose, Aberdeen and Peterhead have all experienced overall declines in annual freight tonnage over the past two decades, with Montrose falling by 44% since 2003 and Peterhead showing a steady decrease since its 2015 peak.

[2] In Scottish waters this is imposed via The Sandeel (Prohibition of Fishing) (Scotland) Order 2024; in English waters this is applied via Government-imposed closure/quota withdrawal rather than via a statutory instrument.

Aberdeen remains the busiest port in the region, and although annual tonnage has begun to rise again since 2022, vessel call numbers have remained relatively stable, indicating an increase in vessel size or carrying capacity. It is assumed commercial freight traffic may remain steady or see a slight increase as per UK-wide projections.

Passenger Traffic

17.6.69 The majority of passenger vessel traffic through the study area is generated by the cruise industry. The cruise vessel activity near the Proposed Development is likely to increase, continuing recent upward trends at the Port of Aberdeen. From 2022 there has been a steady increase in cruise calls up to 70 calls in 2025 between April and October (typical cruise season). By 2027, the Port of Aberdeen is anticipating more than 100 cruise calls annually (Port of Aberdeen, 2024). The berths at the Port of Aberdeen can accommodate vessels up to 300 m in length overall, such as the 290 m cruise vessel Costa Favolosa which first visited in July 2024.

17.6.70 Although NorthLink and Caledonian MacBrayne both operate ferries that intersected the Shipping and Navigation Study Area, these were outside of their respective operational routes and therefore do not greatly contribute to the local passenger traffic profile.

Fishing

17.6.71 It is anticipated that fishing activity is unlikely to change over the next five years, with both UK and non-UK vessels continuing to be active in the region as per the TCA agreed to by the UK upon exit from the EU and applicable from January 2021. In May 2025, it is understood that the EU-UK deal will permit EU fishing in UK waters, keeping the current status quo, giving EU boats continued access to UK waters until 2038. More detail on expected future changes according to different fishing types can be found in Volume 2, Chapter13: Commercial Fisheries.

17.6.72 It is noted that fisheries patterns can change based on a range of factors, including market demand and prices, abundance of stock and sustainability. However, given that the main fishing activities that take place in proximity to the Study Area are well-established it is therefore envisaged that fishing activity levels will remain constant.

17.6.73 More detail on expected future changes according to different fishing types can be found in Volume 2, Chapter 13: Commercial Fisheries.

Recreational

17.6.74 The Royal Yachting Association (RYA) Water Sports Participation Survey conducted in 2019 (RYA, 2019) found that the proportion of adults participating in boating activities has fluctuated between 6% and 8% between 2002 and 2018. Between 2008 and 2018, the proportion participating in yacht cruising, motor boating and power boating have remained consistent at 0.8%, 1.1% and 0.7% respectively. More recent data published in the 2021 Water Sports Participation Survey is greatly influenced by COVID-19 with a considerable variation between 2020 and 2022 due to national/local lockdowns (RYA, 2022).

17.6.75 Therefore, it is unlikely that there will be an appreciable change in the number of recreational users due to macro trends.

17.6.76 Furthermore, the Proposed Development is located approximately 21 nm (38.9 km) offshore so little recreational activity is expected.

Decommissioning Activities

17.6.77 Decommissioning of oil and gas in the wider North Sea region is ongoing, which coupled with redevelopments of adjacent fields, could result in sporadic increases in oil and gas vessel activity navigating the Shipping and Navigation Study Area during active decommissioning phases.

17.6.78 Further details are presented in Volume 2, Chapter 14: Shipping and Navigation.

Aviation and Radar

17.6.79 There are currently no anticipated changes to the airspace environment that would impact the future aviation and radar baseline. As such, the future baseline is expected to remain consistent with the current conditions outlined in Volume 2, Chapter 15: Aviation and Radar.

Infrastructure and Other Users

17.6.80 There is potential for significant growth in offshore wind energy within Scotland, with the Scottish Government setting out plans to increase offshore wind capacity to 40 GW of energy installed by 2040 (Scottish Government, 2026). In June 2020, Crown Estate Scotland launched the first ScotWind Leasing Round for commercial scale offshore wind energy projects within Scottish waters (Scottish Government, 2020). Further details and an overview of the ScotWind Leasing Round can be found in Volume 1, Chapter 6: Site Selection and Consideration of Reasonable Alternatives. As part of the ScotWind Leasing Round, 20 potential development sites, including the Proposed Development, were awarded Agreements for Lease, with a total generating capacity of just under 27.6 GW. Other renewable sources, such as wave and tidal energy devices, are in their early research and development stage.

17.6.81 Oil and gas are vital to Scotland and were responsible for nearly 90% of the country's primary energy in 2015 (Scottish Government, 2021). Although the sector is seen as a critical and integral component to the economy, support for oil and gas programs moving forward will be conditional on the sector's actions to facilitate sustainable energy transitions for the future (Scottish Government 2021). Additionally, a new leasing initiative known as the Innovation and Targeted Oil and Gas leasing round was launched in August 2022. Its purpose is to support the decarbonisation of energy used by oil and gas platforms and infrastructure in the North Sea through the development of new offshore wind leases (Offshore Wind Scotland, 2023). Therefore, as there is a shift towards more utilisation of renewable sources of energy, the baseline environment for oil and gas activity in the vicinity of the Proposed Development is unlikely to increase as reliance on oil and gas operations is expected to decrease as the production of renewable energy increases.

17.6.82 The future baseline scenario for offshore cables, natural gas storage and underground coal gasification is subject to gradual change as new projects and/or sites are further identified.

17.6.83 Further information is presented in Volume 2, Chapter 16: Infrastructure and Other Users.

Data Limitations and Assumptions

17.6.84 The data sources referenced in this chapter are derived from existing studies, datasets, and the limitations outlined in the chapters identified in Paragraph 17.2.2.

17.6.85 The information presented in this chapter reflects the most current publicly available data, sourced from the relevant references cited in the corresponding chapters. As such, the data is subject to the availability and accessibility of information at the time of preparing this chapter. Nevertheless, it is considered that the data used in this assessment is robust and appropriate for evaluating the identified effects.

17.7 Key Parameters for Assessment

Scope of the Assessment

17.7.1 The ISEP guidance (2020) sets out an approach for determining when a topic should be scoped into the MADs assessment. A risk-based assessment, following this guidance, has been undertaken to evaluate the vulnerability of the Proposed Development to MADs, and to consider whether the development itself could give rise to a major accident and/or disaster. Table 17.4 details the risk event scoped out of the assessment for MADs and the justification for its exclusion.

Table 17.4: Risk Event Scoped out of the Assessment for MADs

Risk Event	Justification
Risk of accident: oil and gas infrastructure	There are no oil and gas exploration blocks within the Infrastructure and Other Users Regional Study Area (Volume 2, Chapter 16: Infrastructure and Other Users). As such, there is no impact receptor pathway to lead to a MADs.

17.7.2 A range of potential hazards have been identified which may occur during the construction, O&M and decommissioning phases of the Proposed Development. All identified hazards have been assessed within the respective technical topic chapters in the Offshore EIA Report or will be managed via adherence to industry requirements, Risk Assessment Method Statements, and/or management plans.

17.7.3 Following advice from MD-LOT within their Scoping Opinion (MD-LOT, 2024), an assessment has been presented which summarises the findings from these technical topic chapters and sets out the potential likely significant

environmental effects associated with the vulnerability of the Proposed Development to MADs. This is listed below and presented in Table 17.5.

17.7.4 Vulnerability of the Proposed Development to Existing Accidents/Disasters:

- Collision risk: shipping and navigation;
- Collision risk: aviation and radar;
- Snagging risk: commercial fisheries;
- Risk of accident: cables and pipelines;
- Risk of accidents: extreme weather (and storm surge);
- Pollution of the marine environment (structures); and,
- Sabotage/Act of Terrorism events.

17.7.5 Potential for the Proposed Development to Cause Accidents/Disasters:

- Physical impacts (collision, allision);
- UXOs;
- Pollution of the marine environment (vessels);
- Fire at Wind Turbine/Offshore Substation Platforms (OSPs) including from third-party interference);
- Snagging risk – commercial fisheries; and
- Collision risk – aviation (military and civil).

17.7.6 This approach reflects best practice and regulatory expectations even when the likelihood of significant environmental effects is low. It helps demonstrate that risks have been systematically identified, assessed, and managed. The purpose is to ensure that all credible hazards have been fully considered, and that appropriate safeguards are in place, even if a full EIA-level impact assessment is not warranted.

17.8 Methodology for Assessment of Effects

Overview

17.8.1 The MADs assessment of effects has followed the methodology set out in in the following ISEP primer:

- Major Accidents and Disasters in EIA: A Primer (ISEP, 2020).

17.8.2 The approach to assess risk events within the scope of major accidents and/or disasters categorises them based on their likelihood of occurrence and the severity of their potential environmental consequences. It distinguishes between events that fall outside the scope of the assessment and those that require detailed evaluation and mitigation to ensure risks are managed to a level that is ALARP.

17.8.3 This approach directs the assessment to focus on low likelihood but potentially high consequence events such as a major spill, explosion, fire, etc. Smaller

incidents (spills, sediment loss, etc.) are addressed elsewhere in the Offshore EIA Report in the relevant topic chapters and this chapter therefore focuses on major events only. In accordance with ISEP (2020), this included identifying the reasonably foreseeable worst-case environmental consequence, defined as the worst plausible and challenging manifestation of a scenario, after highly implausible outcomes have been excluded. This ensures that assessment focuses on events capable of producing serious environmental effects, rather than minor, low-consequence incidents.

17.8.4 The assessment of Significance in relation to MADs, set out in Table 17.5, is based on the assessment conclusions from each relevant EIA chapter where the risk event has originated. This approach has been taken as all potential impacts were scoped out of further assessment in the Bowdun Offshore Scoping Report (Bowdun Offshore Wind Farm Limited (BOWFL), 2024)) and the Embedded Mitigation manages each respective risk event to ALARP.

17.8.5 This section has reported that all risk events identified have been managed to ALARP through appropriate Embedded Mitigation and there is no likely significant environmental effect in EIA terms. From an assessment methodology perspective, should an unmitigated risk event be identified, further assessment and mitigation or secondary control measures would be considered to reduce the risk event to ALARP.

17.8.6 In addition, the MADs assessment of effects would consider the legislative framework as defined by HSWA 1974 and its relevant statutory provisions, although it should be noted that under the UK's health and safety legislation, Health and Safety Executive does not have a role in examining risk or hazard assessments unless the circumstances are covered by specific regulations.

17.9 Embedded Mitigation

17.9.1 As part of the Proposed Development design process, a number of Embedded Mitigation measures have been proposed to reduce the potential for impacts within the following chapters and are detailed in Volume 3, Technical Appendix 4.6: Enhancement, Mitigation and Monitoring Commitments.

- Volume 2, Chapter 7: Physical Processes;
- Volume 2, Chapter 10: Marine Mammals;
- Volume 2, Chapter 13: Commercial Fisheries;
- Volume 2, Chapter 14: Shipping and Navigation;
- Volume 2, Chapter 15: Aviation and Radar;
- Volume 2, Chapter 16: Infrastructure and Other Users; and
- Volume 2, Chapter 22: Climatic Change.

17.9.2 They are considered at every stage of the Proposed Development through design and best practice, and as there is a commitment to implementing these measures within each chapter listed above, these have been considered in the assessment presented in Section 17.10. These Embedded Mitigation are considered standard industry practice for this type of development.

17.10 Assessment

17.10.1 All risk events that were scoped out in the Bowdun Offshore Scoping Report (BOWFL, 2024) have been considered, both in terms of the Proposed Development's potential vulnerability to existing MADs and in terms of its potential to cause a MAD following the approach identified in the ISEP primer (ISEP, 2020). In accordance with MD-LOT's Scoping Opinion (MD-LOT, 2024), all potential risk events have been evaluated and summarised within Table 17.5 of their potential significant environmental effects deriving from the Proposed Development's vulnerability to MADs. As part of this evaluation process, the 'conclusion' column in Table 17.5 was introduced to align with the potential significant environmental effects terminology requested by MD-LOT in the Scoping Opinion (MD-LOT, 2024).

17.10.2 Multidiscipline impacts, Embedded Mitigation and the potential requirement of Additional Mitigation are considered in assessing whether each potential risk event is being managed to an acceptable level.

17.10.3 Table 17.5 details the assessment of the vulnerability of and potential for the Proposed Development to be impacted or cause major accidents and/or disasters across all phases (construction, O&M and decommissioning). The assessment of vulnerability of and potential for the Proposed Development to be impacted or cause MADs with the Embedded Mitigation in place does not present an effect which is significant in EIA terms.

Table 17.5: Assessment of Vulnerability of and Potential for the Proposed Development to be Impacted or Cause Accidents and/or Disasters Across All Phases

Risk Event	Source and/or Pathways	Receptor(s)	Source Document	Reasonable Worst Consequence if Event Did Occur	Are Cross Disciplinary Impacts Likely if Event Did Occur?	Embedded Mitigation	Could this Reasonably[3] Lead to a Major Accident and/or Natural Disaster with Existing Control Measures in Place?	Is the Reasonable Worst Consequence Managed to an Acceptable Level with Existing Control Measures in Place?	If no, What Secondary Control Measures are Required to Reach an Acceptable Level?	Conclusion
Vulnerability of the Proposed Development to Existing Accidents/Disasters										
Collision risk: shipping and navigation	Source: other vessels Pathway: overlapping marine environment (shipping routes/commercial fishing areas/recreational users)	Proposed Development vessels and infrastructure	Volume 2, Chapter 14: Shipping and Navigation	Severe damage to vessel(s), personnel injury/death, and loss of fuel/cargo inventory to marine environment	Yes – inventory loss could result in impact to various marine disciplines	As detailed in Volume 2, Chapter 14: Shipping and Navigation and Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments.	No	Yes	Not required	No likely significant environmental effects
Collision risk: aviation and radar	Source: low flying aircraft Pathway: collision with Wind Turbine infrastructure/vessels e.g. jack-up barges	Proposed Development vessels and infrastructure	Volume 2, Chapter 15: Aviation and Radar	Severe damage to surface infrastructure e.g. Wind Turbines	No	As detailed in Volume 2, Chapter 15: Aviation and Radar and Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments.	No	Yes	Not required	No likely significant environmental effects
Snagging risk: commercial fisheries	Source: commercial fishing vessels Pathway: overlapping areas for commercial fishing	Proposed Development subsea infrastructure	Volume 2, Chapter 13: Commercial Fisheries	Severing of cable connection	No	As detailed in Volume 2, Chapter 13: Commercial Fisheries and Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments	No	Yes	Not required	No likely significant environmental effects
Risk of accident: cables and pipelines	Source: other vessels Pathway: overlapping cable and pipeline routes	Proposed Development vessels and subsea infrastructure	Volume 2, Chapter 16: Infrastructure and Other Users	Severing of cable connection, damage to cable	No	As detailed in Volume 2, Chapter 16: Infrastructure and Other Users, and Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments	No	Yes	Not required	No likely significant environmental effects
Risk of accidents: extreme	Source: wider environment Pathway: overlapping marine environment	Proposed Development infrastructure	Volume 2, Chapter 22: Climatic Change	Severe damage to surface infrastructure	No	As detailed in Volume 2, Chapter 22: Climate Change, and Volume 3, Technical Appendix 4.6: Schedule of	No	Yes	Not required	No likely significant environmental effects

[3] The reasonable worst-case scenario anticipated, considering the likely severity and duration. A reasonable worst-case scenario is a challenging manifestation of the scenario after highly implausible scenarios are excluded.

Risk Event	Source and/or Pathways	Receptor(s)	Source Document	Reasonable Worst Consequence if Event Did Occur	Are Cross Disciplinary Impacts Likely if Event Did Occur?	Embedded Mitigation	Could this Reasonably[3] Lead to a Major Accident and/or Natural Disaster with Existing Control Measures in Place?	Is the Reasonable Worst Consequence Managed to an Acceptable Level with Existing Control Measures in Place?	If no, What Secondary Control Measures are Required to Reach an Acceptable Level?	Conclusion
weather (and storm surge)				e.g. Wind Turbines		Mitigation and Commitments				
Pollution of the marine environment (structures)	Source: marine infrastructure Pathway: overlapping marine environment	Marine mammals Fish and shellfish Benthic ecology Water quality	Volume 2, Chapter 14: Shipping and Navigation	Short term, localised impact to water quality	Yes – inventory loss (fuel/cargo) could result in impacts to marine life and water quality	As detailed in Volume 2, Chapter 16: Infrastructure and Other Users, and Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments, alongside adherence to Environmental Management Plan (EMP), Marine Pollution Contingency Plan (MPCP) and ERCoP. (Volume 4, Appendix 24: Outline Environmental Management Plan, Volume 4, Appendix 25: Marine Pollution Contingency Plan, and ERCoP).	No	Yes	Not required	No likely significant environmental effects
Sabotage/Act of Terrorism events	Source: wider environment/random Pathway: overlapping marine environment	Proposed Development infrastructure	Bowdun Offshore Scoping Report (BOWFL, 2024)	Severe damage to surface and subsea infrastructure	Yes – inventory loss (fuel/cargo) could result in impact to marine life and water quality	As detailed in Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments All potential sabotage/act of terrorism events were scoped out of further assessment (BOWFL, 2024).	No	Yes	Not required	No likely significant environmental effects
Potential for the Proposed Development to Cause Accidents/Disasters										
Physical impacts (collision, allision)	Source: Project vessels/infrastructure Pathway: overlapping marine environment	Other vessels	Volume 2, Chapter 14: Shipping and Navigation	Severe damage to or loss of vessel and loss of fuel/cargo inventory to marine environment	Yes – inventory loss (fuel/cargo) could result in impact to marine life	As detailed in Volume 2, Chapter 14: Shipping and Navigation, and Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments.	No	Yes	Not required	No likely significant environmental effects

Risk Event	Source and/or Pathways	Receptor(s)	Source Document	Reasonable Worst Consequence if Event Did Occur	Are Cross Disciplinary Impacts Likely if Event Did Occur?	Embedded Mitigation	Could this Reasonably[3] Lead to a Major Accident and/or Natural Disaster with Existing Control Measures in Place?	Is the Reasonable Worst Consequence Managed to an Acceptable Level with Existing Control Measures in Place?	If no, What Secondary Control Measures are Required to Reach an Acceptable Level?	Conclusion
					and water quality					
UXOs	Source: ordnance detonation Pathway: overlapping marine environment	Proposed Development personnel, vessels and infrastructure	Volume 1, Chapter 3: Project Description Volume 2, Chapter 10: Marine Mammals	Injury to personnel during UXO detonation Injury and disturbance to marine mammals, fish and shellfish and benthic ecology from elevated underwater noise during UXO detonation	Yes - Injury and disturbance to marine mammals, fish and shellfish and benthic ecology	As detailed in Volume 2, Chapter 10: Marine Mammals, and Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments. Should UXOs be identified within the Proposed Development which require detonation specific procedures and risk assessments will be undertaken to mitigate risk to personnel and infrastructure.	No	Yes	Not required	No likely significant environmental effects
Pollution of the marine environment (vessels)	Source: Project vessels Pathway: overlapping marine environment	Marine mammals Fish and shellfish Benthic ecology Water quality	Volume 2, Chapter 14: Shipping and Navigation	Severe damage to vessel and loss of fuel/cargo inventory to marine environment	Yes – inventory loss (fuel/cargo) could result in impact to marine life and water quality	As detailed in Volume 2, Chapter 14: Shipping and Navigation, and Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments, alongside adherence to an EMP, MPCP and ERCoP. (Volume 4, Appendix 24: Outline Environmental Management Plan, Volume 4, Appendix 25: Marine Pollution Contingency Plan, and ERCoP)	No	Yes	Not required	No likely significant environmental effects
Fire at Wind Turbine/OSPs including from third-party interference)	Source: OSP/Offshore convertor station platform fire Pathway: overlapping marine environment and atmosphere	Water quality Air quality	Bowdun Offshore Scoping Report (BOWFL, 2024) Volume 3, Technical	Short term, localised impact to air and water quality Measurable atmospheric emissions	Yes – fire could result in impacts to air and water quality	All potential air quality impacts were scoped out of further assessment (BOWFL, 2024) Volume 3, Technical Appendix4.6: Schedule of	No	Yes	Not required	No likely significant environmental effects

Risk Event	Source and/or Pathways	Receptor(s)	Source Document	Reasonable Worst Consequence if Event Did Occur	Are Cross Disciplinary Impacts Likely if Event Did Occur?	Embedded Mitigation	Could this Reasonably[3] Lead to a Major Accident and/or Natural Disaster with Existing Control Measures in Place?	Is the Reasonable Worst Consequence Managed to an Acceptable Level with Existing Control Measures in Place?	If no, What Secondary Control Measures are Required to Reach an Acceptable Level?	Conclusion
			Appendix7.5: Water Framework Directive Volume 2, Chapter 22: Climatic Change			Mitigation and Commitments.				
Snagging risk – commercial fisheries	Source: Array subsea infrastructure Pathway: overlapping marine environment	Commercial fishing vessels	Volume 2, Chapter 13: Commercial Fisheries	Severe damage to or loss of fishing equipment and personal injury	No	As detailed in Volume 2, Chapter 13: Commercial Fisheries, and Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments	No	Yes	Not required	No likely significant environmental effects
Collision risk – aviation (military and civil)	Source: Low flying aircraft Pathway: overlapping airspace in Project area	Low flying aircraft	Volume 2, Chapter 15: Aviation and Radar	Loss of single aircraft, loss of life and damage to project infrastructure	No	As detailed in Volume 2, Chapter 15: Aviation and Radar, and Volume 3, Technical Appendix 4.6: Schedule of Mitigation and Commitments	No	Yes	Not required	No likely significant environmental effects

17.11 Cumulative, Transboundary and Inter-Related Effects

17.11.1 As it has been concluded that the Project will not reasonably lead to a major accidents and/or disasters after consideration of the Embedded Mitigation adopted, no assessment of Inter-Related Effects, cumulative, or transboundary effects has been undertaken.

17.12 Summary of Impacts, Mitigation, Likely Significant Environmental Effects and Monitoring

17.12.1 Information on MADs was collected through desktop review of the following chapters, and the Bowdun Offshore Scoping Report, to establish the baseline:

- Volume 2, Chapter 7: Physical Processes;
- Volume 2, Chapter 13: Commercial Fisheries;
- Volume 2, Chapter 14: Shipping and Navigation;
- Volume 2, Chapter 15: Aviation and Radar;
- Volume 2, Chapter 16: Infrastructure and Other Users; and
- Volume 3, Technical Appendix 19.2: Unexploded Ordnance Technical Report.

17.12.2 Table 17.5 details the assessment of the vulnerability of and potential for the Proposed Development to be impacted or cause MADs. With the application of Embedded Mitigation, the assessment concludes that no MADs risk events are anticipated, and therefore, no significant adverse effects are expected to arise.

17.12.3 As no reasonable MADs risk events were identified, no Inter-Related Effects, cumulative, or transboundary effects assessment was required.

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