Environmental Impact Assessment Report
Volume 1, Chapter 15: Shipping and Navigation

MarramWind Offshore Wind Farm

December 2025

MarramWind

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15. Shipping and Navigation

15.1 Introduction

15.1.1.1 This Chapter of the Environmental Impact Assessment (EIA) Report presents the results of the assessment of the likely significant effects on commercial vessels, commercial fishing vessels in transit, recreational vessels, local ports and services, and emergency responders that may arise from the construction, operation and maintenance (O&M) and decommissioning of the offshore Project seaward of Mean High Water Springs (MHWS). It should be read in conjunction with the project description provided in **Chapter 4: Project Description** and the relevant parts of the following chapters and appendices:

- **Chapter 14: Commercial Fisheries:** Considers likely significant effects on commercial fishing vessels engaged in fishing activities.
- **Chapter 18: Infrastructure and Other Marine Users**: Considers activities (such as use of vessels) that cross over with the shipping and navigation assessment and therefore should be considered together
- **Chapter 30**: **Socio-Economics:** Considers socio-economic impacts relating to the use of ports by the Project.
- **Chapter 31: Civil and Military Aviation:** Considers likely significant effects specific to oil and gas activities.

15.1.1.2 This Chapter describes:

- the legislation, planning policy, guidance and other documentation that has informed the assessment (**Section 15.2: Relevant legislative and policy context and technical guidance**);
- the outcome of consultation and engagement that has been undertaken to date, including how matters relating to shipping and navigation have been addressed (**Section 15.3: Consultation and engagement**);
- the scope of the assessment for shipping and navigation (**Section 15.4: Scope of the assessment**);
- the data sources and methods used for gathering baseline data including surveys where appropriate (**Section 15.5: Methodology for baseline data gathering**);
- the overall environmental baseline (**Section 15.6: Baseline conditions**);
- the basis for the EIA Report (**Section 15.7: Basis for the EIA Report**);
- methodology for EIA Report (**Section 15.8 Methodology for EIA Report**);
- the assessment of shipping and navigation effects (**Section 15.9: Assessment of effects: Construction stage**; **Section 15.10: Assessment of effects: Operation and Maintenance stage**; **Section 15.11: Assessment of effects: Decommissioning stage**);
- summary of effects (**Section 15.12: Summary of effects**);
- consideration of transboundary effects (**Section 15.13: Transboundary effects**);
- consideration of inter-related effects and cumulative effects (**Section 15.14: Inter-related effects** and **Section 15.15: Assessment of cumulative effects**);

- a summary of residual effects for shipping and navigation (**Section 15.16: Summary of residual likely** significant effects);
- a reference list is provided (**Section 15.17: References**); and
- a glossary of terms and abbreviations (**Section 15.18: Glossary of terms and abbreviations**).

15.1.1.3 This Chapter is also supported by the following appendices in **Volume 3**:

- **Volume 3, Appendix 15.1: Navigational Risk Assessment**.

15.1.1.4 This Chapter is also supported by the following documents:

- **Volume 4: Outline Lighting and Marking Plan**;
- **Volume 4: Outline Vessel Management and Navigational Safety Plan**; and
- **Safety Zone Statement**.

15.2 Relevant legislative and policy context and technical guidance

15.2.1 Legislative and policy context

15.2.1.1 This Section identifies the relevant legislation and policy context that has informed the scope of the shipping and navigation assessment. Further information on policies relevant to the EIA and their status is set out in **Chapter 2: Legislative and Policy Context**, which provides an overview of the relevant legislative and policy context for the Project. **Chapter 2** is supported by **Volume 3, Appendix 2.1: Planning Policy Framework**, which provides a detailed summary of international, national, marine and local planning policies of relevance to the EIA. Individual policies of specific relevance to this assessment and associated appendices have been taken into account.

15.2.1.2 This summary provides a foundation for understanding the specific requirements that this Chapter must address in terms of assessing and mitigating impacts on receptors and relevant environmental issues.

15.2.1.3 The legislation and international agreements relevant to shipping and navigation include:

- United Nations Convention on the Law of the Sea (UNCLOS) (United Nations (UN), 1982;
- International Regulations for the Safety of Life at Sea (SOLAS) (IMO, 1974); and
- International Regulations for the Prevention of Collisions at Sea (COLREGs) (International Maritime Organisation (IMO), 1972/77).

15.2.1.4 The policy relevant to shipping and navigation include:

- Draft Updated Sectoral Marine Plan for Offshore Wind Energy (Scottish Government, 2025);
- Sectoral Marine Plan for Offshore Wind Energy (Scottish Government, 2020);
- Scotland's National Marine Plan (Scottish Government, 2015); and
- Marine Policy Statement 2011 (HM Government, 2011 (updated 2020)).

15.2.2 Relevant technical guidance

15.2.2.1 Other information and technical guidance relevant to the assessment undertaken for shipping and navigation include:

- IALA Guideline G1185 Enhancing the Safety and Efficiency of Navigation around Offshore Renewable Energy Installations (IALA, 2024);
- MGN 372 Amendment 1 (Merchant and Fishing) OREI Guidance to Mariners Operating in the Vicinity of UK OREIs (MCA, 2022);
- Marine Guidance Note (MGN) 654 (Merchant and Fishing) Safety of Navigation: Offshore Renewable Energy Installations (OREIs) – Guidance on UK Navigational Practice, Safety and Emergency Response and its annexes (Maritime and Coastguard Agency (MCA), 2021);
- International Organization for Marine Aids to Navigation and Lighthouse Authorities (IALA) Recommendation O-139 on The Marking of Man-Made Offshore Structures (IALA, 2021a);
- IALA Guideline G1162 The Marking of Offshore Man-Made Structures Edition 1.1. (IALA, 2021b);
- The Royal Yachting Association's (RYA) Position on Offshore Renewable Energy Developments: Paper 1 (of 4) – Wind Energy (RYA, 2019);
- Revised Guidelines for Formal Safety Assessment (FSA) for Use in the Rule-Making Process (IMO, 2018); and
- Regulatory Expectations on Moorings for Floating Wind and Marine Devices (MCA and Health and Safety Executive (HSE), 2017).

15.3 Consultation and engagement

15.3.1 Overview

15.3.1.1 This Section describes the consultation and stakeholder engagement undertaken on the Project in relation to shipping and navigation. This includes early engagement, the outcome of and response to the Scoping Opinions (Scottish Government, 2023; Aberdeenshire Council, 2023). in relation to the shipping and navigation assessment, non-statutory consultation inclusive of the dedicated Hazard Workshop, and the findings of the Project's Statutory Consultation. An overview of engagement undertaken for the Project as a whole can be found in **Section 5.5** of **Chapter 5: Approach to the EIA**.

15.3.2 Key issues

15.3.2.1 A summary of the key issues raised during statutory and non-statutory consultation, specific to shipping and navigation, is outlined below in **Table 15.1**, together with how these issues have been considered in the production of this EIA Report.

Table 15.1 Stakeholder issues responses – shipping and navigation

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
NatureScot	223	29 September 2023, Meeting, Scoping Workshop.	*"Any data currently available to reduce cumulative impact of multiple boats in and out of Peterhead?"*	Port access is included in the assessment of effects for shipping and navigation, inclusive of Peterhead Port, in **Sections 15.8.2** to **15.11**.
MD-LOT	353	12 May 2025 MD-LOT Scoping Opinion (Scottish Government, 2023).	*"With regards to baseline data listed in Table 5.10.5 of the Scoping Report, the Scottish Ministers direct the Developer to the representation from the UK Chamber of Shipping. The Scottish Ministers advise that Marine Accident Investigation Branch (MAIB) data included in the EIA Report should be increased from 10 years to 20 years. should be extended to cover a 20-year period to fully assess trends and historic incidents. Additionally, The Scottish Ministers recommend, in line with UK Chamber of Shipping representation, that a range of scenarios should be modelled, noting the large increase in renewable activity planned for the area with resulting project and third-party project traffic."*	20-years of MAIB incident data is included in the assessment of historical maritime incidents detailed in **Table 15.5**. A 10% and 20% increase has also been applied to all vessel types in the future case vessel traffic assessment which was agreed with Stakeholders at the Hazard Workshop outlined in **Section 15.6.2**.
MD-LOT	354	12 May 2025 MD-LOT Scoping Opinion (Scottish Government, 2023).	*"In line with the MCA representation, The Scottish Ministers are content that two separate 14-day periods of Automatic Identification System ("AIS") data set out in the Scoping Report meets the standard MGN 654. The Scottish Ministers highlight the advice from the UK Chamber of Shipping that an additional full 12 months of AIS data should be included in the EIA Report. The Scottish Ministers advise that the Developer must engage further with the MCA and UK Chamber of Shipping to reach a suitable agreement on the provision of AIS data and document the rationale for the final approach within the EIA Report. However, in line with UK Chamber of Shipping representation, the Scottish Ministers strongly advise that this is extended to show 12 months of continuous AIS data to allow*	An additional 12-month AIS only data set was used as validation to the vessel traffic survey data, in agreement with MCA, as detailed in **Table 15.5**.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
			for seasonal variation and smoothing given the scale of development."	
UK Chamber of Shipping	579	12 May 2025 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"The development presently appears to only be proposing 28 days of shipping activity to be studied as part of the NRA. Whilst perhaps in accordance with MGN 654 as a minimum, given the scale of the development the Chamber strongly advises and recommends that a full 12 month AIS data is obtained for seasonal variation and smoothing. The data is widely available, needn't be backed up with Radio Detection and Ranging (Radar) and Visual Data and is now a commonplace inclusion in NRAs for other proposed developments."*	
MD-LOT	355	12 May 2025 MD-LOT Scoping Opinion (Scottish Government, 2023).	*"Table 5.10.7 of the Scoping Report summarises the potential impacts to Shipping and Navigation for each phase of the Proposed Development which the Developer proposed to scope into and out of the EIA Report. The Scottish Ministers broadly agree with the impacts scoped in and out however, advise that interference with navigation, communications, and position fixing equipment (including potential effects of electromagnetic interference) and reduction of Search and Rescue ("SAR") capability due to surface infrastructure should be scoped in for all phases. This is in line with the UK Chamber of Shipping representation."*	Interference with navigation, communications, and position fixing equipment (including potential effects of electromagnetic interference) is assessed in **Section 15** of the **Navigational Risk Assessment (NRA)** (**Volume 3, Appendix 15.1**) in terms of frequency of occurrence and severity of consequence and significance of effect was determined to be Broady Acceptable and so not significant in EIA terms. Consideration have been given to construction and decommissioning for emergency response and SAR access in **Section 15.9** and **Section 15.11**.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
MD-LOT	356	12 May 2025 MD-LOT Scoping Opinion (Scottish Government, 2023).	*"With regards to cabling routes and cable burial, the Scottish Ministers confirm that a Burial Protection Index should be completed, and, subject to traffic volumes, an anchor penetration study may also be necessary. The Scottish Ministers advise that this should be fully addressed in the EIA Report and highlight the MCA advice on a maximum 5% reduction in surrounding depth referenced to Chart Datum if cable protection measures are required and where depths are decreasing towards the shore."*	This is already covered by MGN 654 compliance (M-045) in **Table 15.9**.
MD-LOT	358	12 May 2025 MD-LOT Scoping Opinion (Scottish Government, 2023).	*"The Scottish Ministers also highlight the MCA representation regarding SAR, Emergency Response Co-operation Plans, levels of radar surveillance, AIS, and shore-based Very High Frequency radio coverage. The Scottish Minsters advise that the MCA representation must be fully addressed in the EIA Report and that a SAR checklist must be completed by the Developers in consultation with the MCA."*	
MD-LOT	359	12 May 2025 MD-LOT Scoping Opinion (Scottish Government, 2023).	*"The Developer should note that compliance with regulatory expectations on moorings for floating wind and marine devices (HSE and MCA, 2017), as identified in Table 5.10.6 of the Scoping Report, is required and Third-Party Verification of mooring arrangements will also be required. This is in line with MCA representation."*	
Maritime and Coastguard Agency	432	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"In Table 5.10.6, M-044, compliance with regulatory expectations on moorings for floating wind and marine devices (HSE and MCA, 2017) is identified as a potential mitigation for floating infrastructure. This guidance should be followed, and a Third-Party Verification of mooring arrangements will be required."*	

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Maritime and Coastguard Agency	434	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"MGN 654 Annex 4 requires that hydrographic surveys should fulfil the requirements of the International Hydrographic Organisation (IHO) Order 1a standard, with the final data supplied as a digital full density data set, and survey report to the MCA Hydrography Manager. Failure to report the survey or conduct it to Order 1a might invalidate the Navigational Risk Assessment if it was deemed not fit for purpose."*	
MD-LOT	357	12 May 2025 MD-LOT Scoping Opinion (Scottish Government, 2023).	*"The Scottish Ministers advise that the Developer must give consideration within the EIA Report for the potential effect of electromagnetic deviation on ships' compasses should High-Voltage Direct Current transmission infrastructure be installed. The Scottish Ministers highlight the advice from the MCA a three-degree deviation for 95% of the cable route would be acceptable, and that for the remaining 5% of the cable route, no more than five degrees will be attained."*	A desk-based study is included in Section 15 of the **NRA** (**Volume 3, Appendix 15.1**) under the assessment of navigation, communication, and position fixing equipment.
MD-LOT	360	12 May 2025 MD-LOT Scoping Opinion (Scottish Government, 2023).	*5.11.8* *"The Scottish Ministers highlight, in line with MCA representation, that the development area carries a moderate amount of traffic and several important commercial shipping routes to/from UK ports and the North Sea. This requires that careful attention is paid to routing, particularly in heavy weather, so that vessels can continue to make safe passage without large-scale deviations."*	Adverse weather and vessel deviations are considered in Section 12 of the **NRA** (**Volume 3, Appendix 15.1**) with careful consideration to adverse weather routes if present.
MD-LOT	361	12 May 2025 MD-LOT Scoping Opinion (Scottish Government, 2023).	*5.11.9* *"Regarding mitigation, The Scottish Ministers confirm that, in line with MCA representation, the Developer will be required to submit a navigational risk assessment in accordance with MGN 654, accompanied by a detailed MGN 654 checklist. The MCA, NLB (Northern Lighthouse Board) and RYA representations regarding the Navigational Risk Assessment, Design Specification and Layout Plan (DSLP), Lighting and marking*	The **NRA** (**Volume 3, Appendix 15.1**) is submitted in line with MGN 654 requirements, inclusive of a MGN 654 Checklist.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
			Plan and Navigational Safety Plan should be addressed by the Developer in the EIA Report."	
Maritime and Coastguard Agency	426	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"The MCA has reviewed the scoping report provided by The Project as detailed in your correspondence of 15th February 2023 and would comment as follows:* *The Environmental Impact Report should supply detail on the possible impact on navigational issues for both commercial and recreational craft, specifically:* ● *Collision Risk.* ● *Navigational Safety.* ● *Visual intrusion and noise.* ● *Risk Management and Emergency response.* ● *Marking and lighting of site and information to mariners.* ● *Effect on small craft navigational and communication equipment.* ● *The risk to drifting recreational craft in adverse weather or tidal conditions.* ● *The likely squeeze of small craft into the routes of larger commercial vessels."*	

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Maritime and Coastguard Agency	429	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"A Navigational Risk Assessment will need to be submitted in accordance with MGN 654. This NRA should be accompanied by a detailed MGN 654 Checklist which can be found at https://www.gov.uk/guidance/offshore-renewable-energy-installations-impact-on-shipping"*	
Maritime and Coastguard Agency	433	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"Particular consideration will need to be given to the implications of the site size and location on SAR resources and Emergency Response Co-operation Plans (ERCoP). The report must recognise the level of radar surveillance, AIS and shore-based VHF radio coverage and give due consideration for appropriate mitigation such as radar, AIS receivers and in-field, Marine Band VHF radio communications aerial(s) (VHF voice with Digital Selective Calling (DSC)). A SAR checklist will also need to be completed in consultation with MCA, as per MGN 654 Annex 5 SAR requirements."*	
MD-LOT	362	12 May 2025 MD-LOT Scoping Opinion (Scottish Government, 2023).	*"The Scottish Ministers confirm that cumulative and in combination effects on shipping routes must be considered. This should consider the proximity to other offshore renewable development, other infrastructure, and the impact on navigable sea room. This is in line with MCA and UK CoS representation. Coordination with other projects may be necessary to avoid vessel deviation far as possible. The Scottish Ministers advise in line with the UK CoS representation that the potential cumulative impacts identified in section 7.4.25 of the Scoping Report should also include a reduction in SAR capability and cumulative displacement of vessels."*	This is covered by the standard **NRA** (**Volume 3, Appendix 15.1**) process with cumulative effects considered in Section 21 of the NRA.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
MD-LOT	375	12 May 2025 MD-LOT Scoping Opinion (Scottish Government, 2023).	*5.15.3* *"Marine traffic is considered in section 5.11 Shipping and Navigation and section 5.14 Infrastructure and Other Marine Users."*	N/A (no response required).
Maritime and Coastguard Agency	427	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"A vessel traffic survey will be undertaken to the standard of MGN 654 – at least 28 days which is to include seasonal data (two x 14-day surveys) collected from a vessel-based survey using AIS, radar and visual observations to capture all vessels navigating in the study area. We understand from the information presented in table 5.10.5 that the summer vessel survey carried out from 29th July- 14th August 2022 was to the MGN 654 standard. It is also noted that the data presented in figure 5.10.2 in Appendix 1a will be updated further once the project-specific winter vessel traffic survey has been completed in 2023."*	As a standard requirement of the NRA process, seasonal vessel traffic survey data has been included in agreement with the MCA and outlined in **Table 15.6**.
Maritime and Coastguard Agency	428	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"The development area carries a moderate amount of traffic with several important commercial shipping routes to/from UK ports and the North Sea. Attention needs to be paid to routing, particularly in heavy weather so that vessels can continue to make safe passage without large-scale deviations. The likely cumulative and in combination effects on shipping routes should be considered for this project. It should consider the proximity to other windfarm developments, other infrastructure, and the impact on safe navigable sea room."*	Adverse weather and vessel deviations are considered in Section 12 and Section 14 of the **NRA** (**Volume 3, Appendix 15.1**) with careful consideration to adverse weather routes if present.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Maritime and Coastguard Agency	430	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"The DSLP referred to in Table 5.10.6, M-043, will require MCA approval prior to construction to minimise the risks to surface vessels, including rescue boats, and Search and Rescue aircraft operating within the site. Any additional navigation safety and / or Search and Rescue requirements, as per MGN 654 Annex 5, will be agreed at the approval stage."*	The DSLP (M-043) is included in the table of embedded environmental measures (**Table 15.9**) and approval will be obtained by the MCA post consent prior to construction.
Maritime and Coastguard Agency	435	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"It is noted that High Voltage Alternating Current (HVAC) and High Voltage Direct Current (HVDC) transmission infrastructure maybe installed. In the case of HVDC installation, consideration must be given to electromagnetic deviation on ships' compasses. The MCA would be willing to accept a three-degree deviation for 95% of the cable route. For the remaining 5% of the cable route no more than five degrees will be attained. The MCA would however expect a deviation survey post the cable being laid; this will confirm conformity with the consent condition. The developer should then provide this data to UKHO via a hydrographic note (H102), as they may want a precautionary notation on the appropriate Admiralty Charts."*	A desk-based study is included in Section 15 of the **NRA** (**Volume 3, Appendix 15.1**) under the assessment of navigation, communication, and position fixing equipment.
Maritime and Coastguard Agency	436	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"On the understanding that the Shipping and Navigation aspects are undertaken in accordance with MGN 654 and its annexes, along with a completed MGN checklist, MCA is likely to be content with the approach."*	N/A (no response required).

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Northern Lighthouse Board	550	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"NLB note the inclusion of Section 5.10 – Shipping and Navigation within the report, with particular reference to Table 5.10.6, detailing the Environmental Measures Proposed to ensure safety of navigation throughout the lifetime of the project. This includes the development of a Lighting and Marking Plan (LMP) and Navigational Safety Plan (NSP)."*	N/A (no response required).
Royal Yachting Association	552	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"I agree that navigation should be scoped in and that recreational boating should be included. RYA Scotland will be happy to take part in the Navigational Risk Assessment. Rather few recreational craft pass through the lease area and these will be on passage between Scotland and Scandinavia and vice versa. I estimate that about a quarter of them will transmit an AIS signal and that rather more will be able to receive one. In the open sea, as here, the tracks of AIS transmitting craft are expected to be typical of the tracks of all recreational craft. The routes taken will depend inter alia on the wind direction and so may vary from year to year. Recreational craft can be difficult to spot using radar, particularly in rough seas. It is unclear to me that much will be gained by trying to gain an accurate assessment of the number of recreational craft passing through the lease area. It can be safely assumed that a small number will do so each year. However, skippers of recreational craft in these waters will be used to navigating in proximity to oil and gas installations."*	Baseline recreational vessel traffic in proximity to the Project has been assessed in Section 10 of the **NRA** (**Volume 3, Appendix 15.1**).

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Royal Yachting Association	554	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"Over the past few years there has been a surprisingly large number of cases where lights or signals from wind farm installations have failed and it has often taken several weeks for a repair to be made due to adverse weather. Thus following NLB prescriptions for marking and lighting is necessary but not sufficient mitigation. It is important that there is a mechanism to ensure that failures are remedied quickly, perhaps by installing duplicate systems. It is often assumed in risk assessments that factors are independent. However, the same storm that damages the lights will also make repairing them quickly difficult and may also have washed away the navigational aerials on a yacht."*	The Aids to Navigation Management Plan which will be completed post consent will consider protocol in the event of aid to navigation failure in consultation with NLB.
Royal Yachting Association	555	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"I do not expect there to be any issues related to the landfall in the neighbourhood of Peterhead provided that normal best practice is followed. However, RYA Scotland will be happy to confirm whether that is the case with the developer once the location has been decided."*	The refined offshore export cable corridor has been assessed in the **NRA** (**Volume 3, Appendix 15.1**) and no comments have been raised by RYA Scotland.
UK Chamber of Shipping	578	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"The Chamber would strongly agree with the MCA's raining that the Project (once operational) could have cumulative vessel route impacts in the north to south direction and also out of the Moray Firth and their recommendation that coordination with other projects to avoid vessel deviation as much as possible would be essential."*	Cumulative re-routeing of main commercial routes is assessed in Section 14.6 of the **NRA** (**Volume 3, Appendix 15.1**) and detailed where necessary in the cumulative assessment of effects in Section 21 of the **NRA** (**Volume 3, Appendix 15.1**).

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
UK Chamber of Shipping	580	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"The Chamber strongly advocates for examination of a longer period of MAIB than a single 10-year period. The Chamber, having consulted with the MAIB and been informed that digital spatial data exists and is accessible for developers dating back to 1992. The Chamber considers that a single 10-year period to be an unnecessarily short period for accident data to be used and that it may not accurately reflect historic accidents and safety to navigation, in particular given the scoping report states that the full lease agreement runs until 2080. It is now customary for developers to examine a 20-year period of which the Chamber would be more satisfied."*	20-years of MAIB incident data in included in the assessment of historical maritime incidents detailed in **Table 15.5**.
UK Chamber of Shipping	582	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"Future baseline as discussed within 7.4.13 refers to conservative increase following discussion with stakeholders. The Chamber would strongly advocate for a range of scenarios to be modelled in particular noting the large increase in renewable activity planned for the area with resulting project and third party project traffic."*	A 10% and 20% increase has also been applied to all vessel types in the future case vessel traffic assessment which was agreed with Stakeholders at the Hazard Workshop outlined in **Section 15.6.2**.
UK Chamber of Shipping	583	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"The Chamber would assert that the below two activities should not only be scoped in during operation and maintenance phase but across all phases as there is potential to be significant impact to navigation.* *1. Interference with navigation, communications and position fixing equipment during the operation / maintenance phases (includes potential effects of electromagnetic interference)* *2. Reduction of Search and Rescue capability during operation / maintenance due to surface infrastructure."*	Interference with navigation, communications, and position fixing equipment (including potential effects of electromagnetic interference) is assessed in Section 15 of the **NRA** (**Volume 3, Appendix 15.1**) in terms of frequency of occurrence and severity of consequence and significance of effect was determined to be Broady Acceptable and so not significant in EIA terms. Consideration has been given to construction and decommissioning for emergency response and SAR access in **Section 15.9** and **Section 15.11**.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
UK Chamber of Shipping	584	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"Paragraph 7.4.25 fails to include reduction in SAR capability as an impact from the Project that has the potential to act cumulatively with impacts from other developments to contribute to cumulative effects and should be included. Furthermore under 7.4.25, whilst it is also correct that there is increased vessel to vessel collision risk resulting from cumulative displacement, it is also true that cumulative displacement from multiple developments result in potentially significant impacts to vessel's deviation, and accordingly scheduling, environmental impact and economic/business cost basis and should be fully considered. This is especially true given the proximity of oil and gas fields adjacent to the proposed developments and their respective decommissioning schedules if relevant."*	Acknowledged in the cumulative assessment of effects for shipping and navigation (see Section 21 of the **NRA** (**Volume 3, Appendix 15.1**).
UK Chamber of Shipping	585	12 May 2023 MD-LOT Scoping Opinion Appendix 1: Consultation Responses & Advice (Scottish Government, 2023).	*"The Chamber trusts these comments will be factored in and offers its ongoing assistance to MS and the developers to ensure minimum impact upon navigational safety for commercial shipping."*	N/A (no response required).
Ministry of Defence	690	12 September 2023 MD-LOT Scoping Opinion Addendum.	*"The Ministry of Defence (MOD) has highly surveyed routes within the locality of the development area which may be relevant to the installation of wind turbines, export cables & associated infrastructure. These routes are retained by the MOD to support national defence requirements and are not defined in the public domain. Highly surveyed routes must not be obstructed or impeded by offshore developments such as wind turbines. At this time, we are unable to advise if the development will impede any highly surveyed routes in the area. An assessment to determine any impact has been*	It was confirmed via email on 12 November 2024 that the MOD has no concerns regarding highly surveyed routes for the Project.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
			requested and we will share the results with you as soon as we are able to."	
Maritime and Coastguard Agency	716	20 September 2023, Meeting.	The MCA has expressed that if the submission date of the EIA goes beyond 4 to 6 weeks past the 2 year vessel traffic validity, then the MCA would expect another summer vessel traffic survey."	Two additional seasonal vessel traffic surveys have been undertaken for the Project to comply with the requirements of MGN 654, see **Table 15.6**.
Maritime and Coastguard Agency	719	20 September 2023, Meeting.	The Project questions whether ERCoP is now not required at the consenting stage, but for post-consent. The MCA confirmed that various conditions will come from the MCA, such as ERCoP.	N/A (no response required).
MD-LOT	856	19 September 2023, Meeting.	The Project outlined that they have been advised by their shipping and navigation subcontractor to include both the Vessel Management and Navigation Safety plans in one overall plan. MD-LOT confirmed it is acceptable to include both plans in one document, if the overall plan meets the regulatory requirements of each individual plan.	**Volume 4: Outline Vessel Management and Navigational Safety Plan** has been submitted as part of the application.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Maritime and Coastguard Agency	906	18 March 2025, Email.	The Project emailed the MCA regarding the consideration of the implementation of a RCP into the design envelope, which will be located approximately halfway along the offshore export cable corridor. The Project reached out to query if an offshore dedicated vessel traffic survey would be required for the RCP NRA, or whether AIS only assessment would be sufficient The MCA responded*: "Thank you for your query regarding the potential addition of a RCP into the design envelope for the Project. MCA can confirm that we would be content with an AIS only assessment on this occasion. This AIS data should consist of at least 28 days which is to include seasonal data (2 x 14-day surveys) representing winter and summer periods.* *The AIS data should be as up to date as possible. Consideration should be given to a full 12-month AIS data set for the fullest picture of traffic movements in the area."*	12-months AIS only data covering the RCP search area study area for the entirety of 2024 has been used for the analysis of the RCP search area for Shipping in Navigation in the **NRA** (**Volume 3, Appendix 15.1**) and detailed in **Table 15.5**.
Maritime and Coastguard Agency	917	20 May 2025, Meeting.	Discussions will need to be had with NLB regarding lighting and marking requirements, in particular with the phased build out approach.	During the construction and decommissioning stages, buoyed construction and decommissioning areas will be established and marked, where required, in accordance with NLB requirements based on the IALA Maritime Buoyage System (M-118). In addition, where advised by NLB, additional marking on structures may also be applied. Marking during the O&M stage will be agreed in consultation with NLB once the final array layout has been selected post consent (M-038). This is outlined in the **NRA** (**Volume 3, Appendix 15.1**).

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Maritime and Coastguard Agency	918	20 May 2025, Meeting.	The MCA have no concern over the proximity of the Green Volt offshore wind farm to the Project.	Acknowledged in the cumulative assessment of effects for shipping and navigation (see Section 21 of the NRA (**Volume 3, Appendix 15.1**).
Maritime and Coastguard Agency	919	20 May 2025, Meeting.	The MCA noted that third-party towing of wind turbines generators (WTGs) may need to be accounted for.	Third-party towage operations are highlighted in the cumulative assessment of effects for shipping and navigation (see Section 21 of the NRA (**Volume 3, Appendix 15.1**).
Maritime and Coastguard Agency	920	20 May 2025, Meeting.	The MCA raised recent UK-EU fishing agreement and could be worth discussing any relevant effects with fisheries liaison officer and commercial fisheries specialists.	Acknowledged in the increases in commercial fishing activity in the future case vessel traffic (Section **15.6.2**).
Maritime and Coastguard Agency	921	20 May 2025, Meeting.	The MCA noted recent instances of non-events being assessed in hazard logs and preference to assess low impacts events and would like to see the inclusion of loss of buoyage assessed.	Further discussions were had at the Hazard Workshop and is reflected in the Hazard Log included in Appendix B of the **NRA** (**Volume 3, Appendix 15.1**).
UK Chamber of Shipping	922	3 July 2025, Hazard Workshop.	The UK Chamber of Shipping was in agreement with the placements of the Offshore substations and the RCP as a worst-case for the shipping and navigation assessments.	The indicative locations of the offshore substations and the RCP are illustrated in the Project Design Envelope Relevant to shipping and navigation in Section 6 of the **NRA** (**Volume 3, Appendix 15.1**). These have been selected as the worst-case locations for the shipping and navigation assessment to maximise passing vessel allision risk while still being realistic. The Maximum design scenario is included in **Table 15.8**.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Northern Lighthouse Board	923	3 July 2025, Hazard Workshop.	Concerns were raised by NLB regarding lighting and marking of each phase of the layout during construction.	Lighting and marking in agreement with NLB is considered under **Volume 3, Appendix 5.2: Commitments Register** for shipping and navigation. During the construction and decommissioning stages, buoyed construction and decommissioning areas will be established and marked, where required, in accordance with NLB requirements based on the IALA Maritime Buoyage System (M-118). In addition, where advised by NLB, additional marking on structures may also be applied. Marking during the O&M stage will be agreed in consultation with NLB once the final array layout has been selected post consent (M-038). This is outlined in the **NRA** (**Volume 3, Appendix 15.1**).
Scottish Fishermen's Federation	924	3 July 2025, Hazard Workshop.	Concerns were raised by the SFF regarding the phased build out of the layout and requests it is done in such a way to reduce impacts on fishing activity.	It is not feasible to confirm the manner of the phased build out at this stage but it is intended they will be continuous in nature and follow a systematic approach over the course of the construction stage such that fishing activity could continue in areas not currently under construction.
UK Chamber of Shipping	925	3 July 2025, Hazard Workshop.	The UK Chamber of Shipping queried the consideration of a single line of orientation (SLoO) and appreciates the grid layout.	The layout is currently indicative and the Project is looking to develop a grid layout. If a SLoO is being considered, a safety justification would be carried out in line with MGN 654 requirements.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
UK Chamber of Shipping	926	3 July 2025, Hazard Workshop.	The UK Chamber of Shipping was in agreement that shared anchors should be assumed for the loss of station impact.	Shared anchors have been assumed for the loss of station impact in the assessment of effects for shipping and navigation in **Sections 15.8.2** to**15.11**.
Scottish Fishermen's Federation	927	3 July 2025, Hazard Workshop.	SFF noted that fishing vessels would be unlikely to utilise the 1.6km gap within the layout for navigation but would be master preference.	Acknowledged in discussion of internal transits of small craft in the vessel displacement impact in **Section**s **15.9** to **15.11**.
Scottish Fishermen's Federation	928	3 July 2025, Hazard Workshop.	SFF noted allision incidents occur more often than what is being reported and would expect to see the frequency reflected as such for fishing vessels. Additionally, the chances of multiple fatalities should be considered higher.	Consideration has been taken when ranking impacts for fishing vessels and is reflected in the Hazard Log included in Appendix B of the **NRA** (**Volume 3, Appendix 15.1**).
UK Chamber of Shipping	929	3 July 2025, Hazard Workshop.	The UK Chamber of Shipping suggested that the 1nm mean passing distance be revisited for floating projects due to presence of mooring lines.	Consideration has been included in the methodology for future case vessel traffic. There is no precedent for typical passing distances for large scale floating developments and therefore there is limited evidence to refine the existing methodology used. It is confirmed that all mooring lines are within the Offshore Red Line Boundary which will be charted and it is anticipated that mariners will base their deviations on the charted boundary. The deviated main commercial routes are assessed in the future case vessel traffic in Section 14 of the **NRA** (**Volume 3, Appendix 15.1**).

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Fraserburgh Harbour	930	3 July 2025, Hazard Workshop.	It was confirmed that although Fraserburgh Harbour had submitted the Scoping for the harbour development, they are still awaiting funding and so there is no further update or progress on the expansion.	Increase in commercial vessel activity, including future port developments is acknowledged under the future vessel traffic assessment in Section 14 of the **NRA** (**Volume 3, Appendix 15.1**).
Peterhead Port	931	3 July 2025, Hazard Workshop.	Peterhead Port stated that vessel traffic would increase with the developments at Peterhead Port, as there are plans to extend the quays and agreed that a 20% increase of vessel traffic is realistic if planned developments went ahead.	Increase in commercial vessel activity, including at future port developments in acknowledged under the future vessel traffic assessment in Section 14 of the **NRA** (**Volume 3, Appendix 15.1**).
Northern Lighthouse Board	932	3 July 2025, Hazard Workshop.	NLB queried the maintenance strategy and whether O&M movements are considered in the future case scenarios given there will be an increase in Project vessels in the area.	The presence of Project vessels is assessed in the assessment of effects for shipping and navigation both for the Project in isolation and cumulatively in **Sections 15.9** to **15.11** and in the **NRA** (**Volume 3, Appendix 15.1**). Post-consent plans will also contain more detail on the O&M strategy. An Offshore O&M Plan is also included in the relevant commitments registered for shipping and navigation (M-122). Outline plans will be submitted at EIA.
UK Chamber of Shipping	933	3 July 2025, Hazard Workshop.	The UK Chamber of Shipping highlighted the loss of sea space and how towing objects will further increase risk.	Towage operations are highlighted in the assessment of effects for shipping and navigation both for the Project in isolation and cumulative, along with loss of sea room in **Sections 15.9** to **15.11** and in the **NRA** (**Volume 3, Appendix 15.1**).

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Northern Lighthouse Board	934	3 July 2025, Hazard Workshop.	NLB highlighted the future interlink cables that are planned to make landfall in a similar location to the offshore export cable corridor which will increase complexity including relevant Eastern Green Link interconnectors.	Cumulative developments including relevant subsea cables are screened in where relevant based on the cumulative screening criteria for shipping and navigation. Those screened in are included in the cumulative assessment of effects. See Section 21 of the **NRA** (**Volume 3, Appendix 15.1**).
Maritime and Coastguard Agency	935	3 July 2025, Hazard Workshop.	The MCA confirmed there is no need to include a navigational corridor safety case on this basis and the volume of traffic but advises the MCA Shipping Route Template is considered.	The Shipping Route Template has been included as consideration in the cumulative assessment of effects. See Section 21 of the **NRA** (**Volume 3, Appendix 15.1**).
Maritime and Coastguard Agency	936	3 July 2025, Hazard Workshop.	The MCA and NLB both confirmed it was useful to see how vessel traffic routeing around the currently operational floating Hywind Scotland Pilot Park and this is beneficial to understand future case vessel patterns.	Wind farm vessel traffic around Hywind Scotland Pilot Park is illustrated and assessed in the baseline vessel traffic movement within the RCP search area study area within the **NRA** (**Volume 3, Appendix 15.1**).
UK Chamber of Shipping	937	3 July 2025, Hazard Workshop.	The UK Chamber of Shipping raised concern of deviating other commercial vessels closer to oil and gas infrastructure.	Deviated main commercial routes maintain at least 1nm from any existing oil and gas infrastructure. Throughout the assessment of effects for shipping and navigation (**Section 15.9** to **15.11**) displacement will be the focus as well as allision risk and a 50nm buffer will be utilised for the cumulative assessment (see Section 21 of the **NRA** (**Volume 3, Appendix 15.1**).

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Brown & May	938	3 July 2025, Hazard Workshop.	Brown & May noted that 6 knot cut-off used for fishing vessel figures is not the most accurate and would be better to breakdown individual track points rather than taking the average and that fishing vessels have higher level of relevance to the array than commercial vessels, as these vessels will likely be exposed to the hazard for longer.	Concerns were acknowledged in the assessment of baseline fishing vessel activity in the NRA. In regard to fishing vessels relevance to the OAA, this has been considered in the Hazard Log in Appendix B of the **NRA** (**Volume 3, Appendix 15.1**) as well as highlighted in the assessment of effects.
Scottish Fishermen's Federation	939	3 July 2025, Hazard Workshop.	SFF noted oil and gas vessels may deviate into fishing grounds leading to potential interaction or displacement of fishing vessels and noted the potential of non-compliance so not to rely on AIS. Additional data sources may be required to validate fishing activity for the OAA and offshore export cable corridor. No additional data is required for the RCP search area.	In addition to the AIS, Radar, and visual observation data used to analyse vessel traffic in proximity to the OAA, a plot of vessel monitoring system (VMS) data covering the entirety of 2024 has been included to highlight any fishing vessel activity not covered by the vessel traffic surveys detailed in **Table 15.5** and presented in Section 10 of the **NRA** (**Volume 3, Appendix 15.1**). VMS data is also included covering the offshore export cable corridor study area also.
Maritime and Coastguard Agency	940	3 July 2025, Hazard Workshop.	The MCA noted that the shallowest draught (12m) for project infrastructure occurs next to the foundation so it will unlikely pose a risk to under keel clearance and most vessels will likely avoid array transits	Acknowledged in the assessment of under keel clearance risk for shipping and navigation in **Section 15.10**.
Maritime and Coastguard Agency	941	3 July 2025, Hazard Workshop.	The MCA noted traffic monitoring may be required as a mitigation but would be on a case-by-case basis after discussions with MD-LOT; therefore not necessary to incorporate as an embedded mitigation measure.	MCAs feedback has been acknowledged in the **NRA** (**Volume 3, Appendix 15.1**).

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Northern Lighthouse Board	942	3 July 2025, Hazard Workshop.	NLB highlighted that they have responsibility for wreck response and the project will need to consider how this will be managed. Failure modes for the WTGs will also need consideration, particularly regarding lit peripheral structures.	The Emergency Response Cooperation Plan (ERCoP) (**Volume 3, Appendix 5.2**) will address wreck response and the Aids to Navigation Management Plan will consider protocol in the event of aid to navigation failure in consultation with NLB.
Maritime and Coastguard Agency	943	3 July 2025, Hazard Workshop.	The MCA noted that engagement with Serco NorthLink Ferries would be needed to understand how they may be affected, though unlikely to be an issue cumulatively as there is plenty of sea room.	A follow-up meeting to the Hazard Workshop was undertaken with Serco NorthLink Ferries to discuss the impact of the Project on their vessels specifically.
Maritime and Coastguard Agency	944	3 July 2025, Hazard Workshop.	The MCA raised concern that Salamander may produce similar deviations and should be included high on the cumulative tier list. However, for the scale of the RCP, including in the presence of Salamander, there is ample sea room.	Methodology for cumulative tiering of other offshore wind farm developments has been included in Section 13 of the **NRA** (**Volume 3, Appendix 15.1**) with concerns being taken into consideration. Salamander has been screened in for the quantitative re-routing as a Tier 1 development.
Scottish Fishermen's Federation	945	3 July 2025, Hazard Workshop.	SFF noted fishing vessels in proximity to the RCP search area will likely be in transit and that vessels may transit close to the RCP as there is no legal obligation to avoid.	Acknowledged in the assessment of allision risk for the RCP in **Sections 15.9** to **15.11**.
Northern Lighthouse Board	946	3 July 2025, Hazard Workshop.	NLB clarified the RCP would be lit and marked as a single structure and be based on existing bridge-linked structures as mariners already familiar with them from oil and gas industry. GB highlighted the importance of resilience and back-up systems when planning and offered that NLB can aid in resilience plans.	The Aids to Navigation Management Plan will capture requirement and will be undertaken post consent in further consultation with NLB.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Maritime and Coastguard Agency	947	3 July 2025, Hazard Workshop.	The MCA noted standard MGN 654 requirements for reduction in navigate water depth and highlighted that charting magnetic anomalies may be needed should compass deviations exceed MCA tolerances. A desk-based study would be suitable for assessing this.	A desk-based study is included in Section 15 the **NRA** (**Volume 3, Appendix 15.1**) under the assessment of Navigation, Communication, and Position Fixing Equipment.
Peterhead Port	948	3 July 2025, Hazard Workshop.	Peterhead Port stated port access issues will be on a case-by-case basis but acknowledged that there is good existing working relationship with the Project from previous survey work and Peterhead Port will coordinate with the Project as appropriate.	Acknowledged in the assessment of effects for port access in **Sections 15.9** to **15.11**.
***Serco* NorthLink Ferries**	949	21 July 2025, Hazard Workshop	Serco NorthLink Ferries confirmed that vessel transits to the west of the of the Project were instances of adverse weather – near Rattray Head can be particularly rough and so passing further offshore is more comfortable and ensures a good angle for waves and wind. Transits in proximity to RCP search area are similar adverse weather routeing to avoid proximity to Rattray Head, particularly in southeasterly weather which may cause rolling.	Adverse weather vessel traffic movements is detailed in Section 12 of the NRA (**Volume 3, Appendix 15.1**) and included in the assessment of effects where relevant in **Sections 15.9** to **15.11**.
Serco NorthLink Ferries	950	21 July 2025, Meeting.	Serco NorthLink Ferries confirmed at the point of RCP installation, new stabilised freight ferries will be in use (by 2029) which should reduce the frequency of such offshore routeing, passenger ferries already have such stabilisers.	Adverse weather vessel traffic movements is detailed in Section 12 of the **NRA** (**Volume 3**, **Appendix 15.1**) and included in the assessment of effects where relevant in Sections **15.9** to **15.11**.
Serco NorthLink Ferries	951	21 July 2025, Meeting.	Serco NorthLink Ferries had a general agreement that the array posed no material concern and RCP is of no material concern with appropriate lighting.	Acknowledged in the assessment of effects where relevant in **Sections 15.9** to **15.11**. Appropriate lighting of the RCP will be agreed with NLB post consent.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Serco NorthLink Ferries	952	21 July 2025, Meeting.	Serco NorthLink Ferries notes in the cumulative scenario, there is potential for displacement of traffic towards remaining open sea areas.	Acknowledged in the cumulative assessment of effects where relevant (see Section 21 of the **NRA** (**Volume 3, Appendix 15.1**).
Serco NorthLink Ferries	953	21 July 2025, Meeting.	Serco NorthLink Ferries noted export cables may lead to some disruption but good communications as to when and where lay activity is planned should mitigate any issues.	Advance notice of project activities and promulgation of information (M-030) is included in the commitments registered for shipping and navigation in **Table 15.9**.
Tidewater Marine	954	17 June 2025, Regular Operator Outreach Email Response.	A response from a vessel master operated by Tidewater Marine noted that their specific oil and gas route may use adverse weather routes, but this mostly applies to the winter season.	Adverse weather vessel traffic movements is detailed in Section 12 of the **NRA** (**Volume 3, Appendix 15.1**) and included in the assessment of effects where relevant in **Sections 15.9** to **15.11**.
TorCargo	955	18 June 2025, Regular Operator Outreach Email Response.	TorCargo noted that with the presence of the Project, their routes may be extended by 5-10nm. Internal transits within the OAA are not considered and floating offshore wind farms are considered the same as fixed in regard to vessel safety and navigation.	Vessel deviations and internal transiting is considered in the assessment of effects in **Sections 15.9** to **15.11**.
Sentinel Marine	956	17 June 2025, Regular Operator Outreach Email Response.	Two response from vessel masters operated by Sentinel Marine noted that on one occasion, no impact is considered for their vessel and the other noted that their vessel only encroaches on the area and wont take much of an alteration/change of passage plan to avoid.	Acknowledged in the assessment of vessel deviations in the assessment of effects in **Sections 15.9** to **15.11**.
Gardline (Boskalis)	957	19 June 2025, Regular Operator Outreach Email Response.	Gardline responded on behalf of Boskalis noting that due to the nature of the services Gardline undertakes vessels do not rely on specific routes and therefore the project is unlikely to impact future routeing of any specific vessels. No internal transits would be proposed and there is no overall safety concerns with regard to the Project.	Acknowledged in the assessment of vessel deviations in the assessment of effects in **Sections 15.9** to **15.11**.

Stakeholder	Stakeholder issue ID	Date, document, forum	Stakeholder comment	How is this addressed in the EIA Report
Fletcher Group	958	17 June 2025, Regular Operator Outreach Email Response.	Fletcher Group noted their vessels change charter and routes change regularly but any vessels routeing from Aberdeen or Peterhead may have to change routes when development begins but vessels and crews are used to navigating through and around the various oil and gas assets already in the North Sea although planned windfarm developments are likely to be much larger areas so may necessitate larger deviations from the shortest route, leading to increased fuel burn. This would be exacerbated during bad weather when vessels may adjust their course / speed to reduce the effects of the weather. No internal transits of the OAA would be considered.	Acknowledged in the assessment of vessel deviations in the assessment of effects in **Sections 15.9** to **15.11**.

15.4 Scope of the assessment

15.4.1 Overview

15.4.1.1 This Section sets out the scope of the EIA for shipping and navigation. This scope has been developed as the Project's design has evolved and responds to stakeholder feedback received to-date, as set out in **Section 15.3**.

15.4.2 Spatial scope and study area

15.4.2.1 The spatial scope of the shipping and navigation assessment is defined across three separate study areas:

- a 10nm (18.5km) buffer around the OAA;
- a 10nm (18.5km) buffer around the RCP search area; and
- a 2nm (3.7km) buffer around the offshore export cable corridor.

15.4.2.2 These study areas used for the shipping and navigation assessment are considered industry standard and sufficient for assessing vessel traffic activity within and in proximity to each offshore aspect of the Project. These study areas have been agreed with shipping and navigation stakeholders. The shipping and navigation study areas are presented in **Volume 2, Figure 15.1: Overview of all shipping and navigation study areas**. A 50nm (92.6km) buffer has been applied for the approach to cumulative screening for the shipping and navigation cumulative effects assessment as detailed in Section 21 of the **NRA** (**Volume 3, Appendix 15.1**) and summarised in **Chapter 33: Cumulative Effects Assessment**.

15.4.3 Temporal scope

15.4.3.1 The temporal scope of the assessment of shipping and navigation is the entire lifetime of the Project, which therefore covers the construction, O&M, and decommissioning stages. It is anticipated that the construction of the Project will commence in 2030, with the first phase becoming fully operational by 2037. It is anticipated that the second phase of the Project would become fully operational by 2040 and the third phase by 2043. The operational lifetime of the Project for each phase is expected to be 35 years.

15.4.4 Identified receptors

15.4.4.1 The spatial and temporal scope of the assessment enables the identification of receptors that may experience a change as a result of the Project. The receptors identified that may experience likely significantly effects for shipping and navigation are outlined in **Table 15.2**.

Table 15.2 Identified receptors requiring assessment for Shipping and Navigation

Receptor group	Receptors included within group
Commercial vessels	Cargo vessels, tankers, passenger vessels, oil and gas related vessels, and wind farm related vessels.
Commercial fishing vessels	Commercial fishing vessels in transit.
Recreational vessels	Non-commercial marine users including non-commercial vessels with 2.4 and 24 metres (m) length.
Military vessels	Military vessels in transit.
Port related services	Vessels associated with local ports and harbours.
Emergency responders	Royal National Lifeboat Institution (RNLI) lifeboats, Search and Rescue (SAR) helicopters on behalf of the MCA and marine pollution responders.

15.4.5 Potential effects

15.4.5.1 Potential effects on shipping and navigation receptors that have been scoped in for assessment are summarised in **Table 15.3**.

Table 15.3 Potential effects for Shipping and Navigation

Receptor	Activity or impact	Potential effect
Construction stage		
All vessels	Vessel displacement.	Increased vessel to vessel collision risk between third-party vessels.
All vessels	Presence of Project vessels operating in proximity to transiting third-party vessels.	Vessel to vessel collision risk between a third-party vessel and a Project vessel
All vessels and port related services	Presence of Project vessels operating within and in proximity to ports, harbours and marinas including towage operations.	Reduced access to local ports, harbours and marinas.
All vessels	Failure of mooring system for wind turbine generators (WTG) floating unit.	Loss of station.
O&M stage		
All vessels	Vessel displacement.	Increased vessel to vessel collision risk between third-party vessels.

Receptor	Activity or impact	Potential effect
All vessels	Presence of Project vessels operating in proximity to transiting third-party vessels.	Vessel to vessel collision risk between a third-party vessel and a Project vessel
All vessels and port related services	Presence of Project vessels operating within and in proximity to ports, harbours and marinas including towage operations.	Reduced access to local ports, harbours and marinas.
All vessels	Failure of mooring system for WTG floating unit.	Loss of station.
All vessels	Presence of surface piercing structures in proximity to transiting or drifting third-party vessels.	Creation of vessel to structure allision risk (including powered, drifting and internal).
All vessels	Presence of subsea infrastructure.	Reduction of under keel clearance as a result of cable protection, dynamic cables and mooring lines.
All vessels	Presence of mooring lines and subsea cables in proximity to anchoring third-party vessels.	Anchor interaction with mooring lines and subsea cables.
All vessels and emergency responders	Incident occurs requiring emergency response or access to a casualty is restricted by the presence of surface piercing structures.	Reduction of emergency response capability including SAR access.
Decommissioning stage		
All vessels	Vessel displacement.	Increased vessel to vessel collision risk between third-party vessels.
All vessels	Presence of Project vessels operating in proximity to transiting third-party vessels.	Vessel to vessel collision risk between a third-party vessel and a Project vessel
All vessels and port related services	Presence of Project vessels operating within and in proximity to ports, harbours and marinas including towage operations.	Reduced access to local ports, harbours and marinas.
All vessels	Failure of mooring system for WTG floating unit.	Loss of station.

15.4.6 Effects scoped out of assessment

15.4.6.1 One potential effect has been scoped out from further assessment, resulting from a conclusion of no likely significant effect. This conclusions has been made based on the knowledge of the baseline environment, the nature of planned works and the professional

judgement on the potential for impact from such projects more widely. The conclusion follows (in a site-based context) existing best practice. The scoped out activity or impact is presented in **Table 15.4.**

Table 15.4 Activities or effects scoped out of assessment

Activity or impact	Rational for scoping out
Interference with navigation, communications and position fixing equipment	A technical assessment has been undertaken in Section 15 of **Volume 3, Appendix 15.1** and concluded that all topics associated with this impact are Broadly Acceptable and As Low as Reasonably Practicable (ALARP). Therefore, it is not considered necessary to provide further assessment in this Chapter.

15.4.7 Consideration of the Draft Updated Sectoral Marine Plan

15.4.7.1 This Chapter has considered the content of the draft Updated Sectoral Marine Plan in relation to shipping and navigation. A Social and Economic Impact Assessment (SEIA) (Scottish Government, 2025) was produced as a supporting document to the Updated Sectoral Marine Plan.

15.4.7.2 It is noted that the SEIA makes reference to "*a large volume of shipping in the North East region*", and that "*NE7 had three main routes intersecting the site, with an average length of 46 km (through the OA plus 10 km buffer), with total annual transits of 20 (passenger), 592 (cargo) and 182 (tanker)"*.

15.4.7.3 Based on the project-level baseline data collected (see **Section 15.6**) the level of vessel traffic within and in proximity to the OAA is considered to be low to moderate, with relatively few main commercial routes featuring more than one vessel per day. Where vessels are anticipated to be displaced by the OAA, these vessels are primarily from the oil and gas sector and face minor deviations which would not substantially affect passage times or fuel costs. This is supported by consultation undertaken with regular operators in the region, which indicated no substantive concerns relating to disruption to existing commercial routeing.

15.4.7.4 The SEIA advised that the planning of the OAA to include design of shipping lanes, in accordance with MCA guidance in MGN 654, will reduce diversions required to transit the region and compliance with IALA lighting guidance will reduce navigational safety risks.

15.5 Methodology for baseline data gathering

15.5.1 Overview

15.5.1.1 Baseline data collection has been undertaken to obtain information over the study area described in **Section 15.4**. The current and future baseline conditions are presented in **Section 15.6**.

15.5.2 Desk study

15.5.2.1 The data sources that have been collected and used to inform this shipping and navigation assessment are summarised in **Table 15.5**.

Table 15.5 Data sources used to inform the shipping and navigation Chapter

Source	Date	Summary	Coverage of study area
Marine Accident Investigation Branch (MAIB)	2004 to 2023.	Data for marine incidents reported to the MAIB.	Full coverage of all study areas.
RNLI	2014 to 2023.	Data for marine incidents responded to by the RNLI.	Full coverage of all study areas.
Department for Transport	2015 to 2024.	Data for SAR helicopter taskings.	Full coverage of all study areas.
United Kingdom Hydrographic Office (UKHO)	2022	Admiralty Sailing Directions North Coast of Scotland Pilot, NP52 (UKHO, 2022).	Full coverage of all study areas and the wider Scottish east coast.
Andy Carnduff and Forth Yacht Clubs Association	2023	East Coast of Scotland Sailing Directions (Andy Carnduff and Forth Yacht Clubs Association, 2023).	Coverage of the nearshore portion of the offshore export cable corridor study area.
Anatec	2024	AIS data covering a 12-month period.	Full coverage of the OAA and RCP search area study areas.
Anatec	2024	AIS covering a 28-day period consisting of 14 days between 19 July to 1 August 2024 (Summer) and 14 days between 6 to 19 November 2024 (Winter).	Full coverage of the offshore export cable corridor study area.
Scottish Government	2024	Vessel Monitoring System data covering a 12-month period.	Full coverage of the OAA and offshore export cable corridor study areas.
Anatec	2025	ShipRoutes database.	Full coverage of all study areas and the wider Scottish east coast.
UKHO	2025	Admiralty Charts 115, 213, 291, 278, 1409, 1438 and 2182B.	Full coverage of all study areas and the wider Scottish east coast.

15.5.3 Site surveys

15.5.3.1 The site surveys that have been conducted and used to inform this shipping and navigation assessment are summarised in **Table 15.6**.

Table 15.6 Site surveys undertaken

Survey type	Scope of survey	Coverage of study area
Vessel traffic survey for Summer 2022	AIS, Radar and visual observations recorded from an onsite survey vessel over 14 days between 28 July to 15 August 2022. This survey has been superseded by the vessel traffic survey for Summer 2024 but is still considered as a secondary source.	Full coverage of the OAA study area.
Vessel traffic survey for Winter 2023	AIS, Radar and visual observations recorded from an onsite survey vessel over 14 days between 10 to 24 January 2023. This survey has been superseded by the vessel traffic survey for Winter 2024 but is still considered as a secondary source.	Full coverage of the OAA study area.
Vessel traffic survey for Summer 2024	AIS, Radar and visual observations recorded from an onsite survey vessel over 14 days between 19 July to 2 August 2024. This survey fulfils the requirements of MGN 654 (MCA, 2021).	Full coverage of the OAA study area.
Vessel traffic survey for Winter 2024	AIS, Radar and visual observations recorded from an onsite survey vessel over 14 days between 6 to 19 November 2024. This survey fulfils the requirements of MGN 654 (MCA, 2021).	Full coverage of the OAA study area.

15.5.4 Data limitations

Vessel traffic data

15.5.4.1 It has been assumed that all vessels under an obligation to broadcast information via AIS have done so, both in the vessel traffic surveys and long-term vessel traffic data. It has also been assumed that the details broadcast via AIS (such as vessel type and size information) are accurate unless clear evidence to the contrary was identified during Anatec's thorough quality assurance of the data. Additionally, the collection of radar data during the vessel traffic surveys captures any smaller vessels that may not broadcast on AIS.

Maritime incidents

15.5.4.2 Although all UK commercial vessels are required to report accidents to the MAIB, this is not mandatory for non-UK vessels unless they are in a UK port, within 12nm (22.2km) of territorial waters or carrying passengers to a UK port. There are also no requirements for a non-commercial recreational craft to report accidents to the MAIB.

15.5.4.3 The RNLI incident data cannot be considered comprehensive of all incidents in the study area. Although hoaxes and false alarms are excluded, any incident to which RNLI resources were not mobilised has not been accounted for in this dataset.

Admiralty Charts

15.5.4.4 The UKHO Admiralty Charts are updated periodically, and therefore the information shown may not reflect the real-time features within the region with total accuracy. For aids to navigation (AtoN), only those charted and considered key to establishing the shipping and navigation baseline are shown.

15.5.4.5 During consultation, input has been sought from relevant stakeholders regarding the navigational features baseline. Navigational features are based upon the most recently available UKHO Admiralty Charts and Sailing Directions at the time of writing.

15.6 Baseline conditions

15.6.1 Current baseline

15.6.1.1 This Section summarises the current baseline environment relating to shipping and navigation with a detailed overview provided in the **NRA** (**Volume 3, Appendix 15.1**).

Navigational features

15.6.1.2 Key navigational features located in the region are presented in **Volume 2, Figure 15.2: Navigational features in proximity to the Project** relative to the offshore Project.

Option Agreement Area

15.6.1.3 The closest operational offshore wind farm to the OAA is the Hywind Scotland Pilot Park located approximately 35nm (64.8km) southwest. Hywind Scotland Pilot Park has been operational since 2017. All other offshore wind farms located closer to the OAA than Hywind Scotland Pilot Park are not yet operational or under construction and are therefore considered only in the cumulative effects assessment in Section 21 of the **NRA** (**Volume 3, Appendix 15.1**) and summarised in **Chapter 33: Cumulative Effects Assessment**.

15.6.1.4 There are various oil and gas infrastructure present in proximity to the OAA. The closest surface platform is the Golden Eagle, located approximately 5nm (9.3km) southwest. The Claymore surface platform is the second closest at approximately 12.5nm (23.2km) northeast. A subsea pipeline between Golden Eagle and Claymore is the only subsea pipeline intersecting the OAA. To the east of the OAA there are also two oil and gas decommissioning areas: one at the Tartan Oil Field and the other at the Buchan Oil Field. At the time of writing these were undergoing decommissioning and as noted on the relevant Admiralty Chart "*during the works, aids to navigation may be unreliable and certain features may not be as shown. Consult local notices to mariners issued by oil / gas field operators for details of decommissioning process*" (UKHO, 2025).

15.6.1.5 The closest AtoN to the OAA at the time of writing is the AIS transmitting Floating Light Detection and Ranging (FLiDAR) buoys approximately 6.5nm (12.0km) south. These are associated with the Green Volt Offshore Wind Farm and consist of two FLiDARs and an associated wave buoy. These buoys are temporary and were deployed in May 2024 with optionality or extension of deployment until June 2026.

15.6.1.6 There are three charted wrecks located within the OAA with the shallowest at 90m below Chart Datum (CD).

15.6.1.7 The Western European Tanker Reporting System (WETREP) is located approximately 8nm (14.8km) north of the OAA and is noted on the relevant Admiralty Chart: "*Tankers of more than 600 DWT carrying heavy crude oil, heavy fuel oil or bitumen and tar and their emulsions are required to participate in the WETREP*" (UKHO, 2025).

Offshore export cable corridor

15.6.1.8 The closest operational offshore wind farm to the offshore export cable corridor is the Hywind Scotland Pilot Park located approximately 2.5nm (4.6km) south.

15.6.1.9 A total of nine subsea pipelines intersect the offshore export cable corridor with two pipelines crossing at two separate locations. An active subsea cable crosses the southern landfall option, and a foul ground is located approximately 0.7nm (1.3km) south of the same area.

15.6.1.10 There are various AtoNs located to the south of the southern landfall option including the significant all round light on the north breakwater on approach to Peterhead Port and the Peterhead Lighthouse on the south breakwater.

15.6.1.11 There are four wrecks and one obstruction located within the offshore export cable corridor with the shallowest at 39m below CD.

Reactive compensation platform search area

15.6.1.12 The closest operational offshore wind farm to the RCP search area is the Hywind Scotland Pilot Park located approximately 7nm (13.0km) south.

15.6.1.13 The closest surface oil and gas infrastructure is the Buzzard platform located approximately 7.7nm (14.3km) east. Six subsea pipelines intersect the RCP search area, all of which make landfall at the Saint Fergus Terminal north of Peterhead. The *Bleo Holm* Floating Production, Storage and Offloading (FPSO) stationary vessel is situated 16nm (29.6km) north of the RCP search area.

15.6.1.14 There are no AtoNs in close proximity to the RCP search area.

15.6.1.15 There are four wrecks and one obstruction located within the RCP search area with the shallowest at 70m below CD.

15.6.1.16 A Military Practice and Exercise Area is located approximately 20nm (37.0km) west of the RCP search area. As noted on the relevant Admiralty Chart: "*No restrictions are placed on the right to transit the firing practice areas at any time. The firing practice areas are operated using a clear range procedure; exercises and firing only take place when the areas are considered to be clear of all shipping*" (UKHO, 2025).

Vessel traffic movements

Option Agreement Area

15.6.1.17 A plot of the vessel tracks recorded during the 28-day survey period, colour-coded by vessel type and excluding any temporary traffic (see **Volume 3, Appendix 15.1**) is presented in **Volume 2, Figure 15.3: 28-day vessel traffic survey data by vessel type within the study area (Summer and Winter, 2024)**.

15.6.1.18 For the 14 days analysed during the Summer survey period, there was an average of 27 unique vessels recorded per day within the study area. In terms of vessels intersecting the OAA itself, there was an average of 11 unique vessels per day recorded during the survey

period, or approximately 40% of unique vessel tracks recorded within the study area intersected the OAA.

15.6.1.19 For the 14 days analysed during the Winter survey period, there was an average of 24 unique vessels recorded per day within the study area. In terms of vessels intersecting the OAA itself, there was an average of seven to eight unique vessels per day recorded during the survey period, or approximately 32% of unique vessel tracks recorded within the study area intersected the OAA.

15.6.1.20 Throughout the Summer survey period, the main vessel types within the study area were oil and gas vessels which accounted for 45% of all vessels recorded and fishing vessels which accounted for 37%. Cargo vessels (8%) were the only other type to account for more than 5% of all vessels recorded. These was a similar trend in vessel types intersecting the OAA itself with fishing vessels (49%), oil and gas vessels (34%), and cargo vessels (8%) being the most commonly recorded.

15.6.1.21 Throughout the Winter survey period, the main vessel types within the study area were again oil and gas vessels which accounted for 50% of all vessels recorded and fishing vessels which accounted for 42%. Cargo vessels (6%) were the only other type to account for more than 5% of all vessels recorded. There was a similar trend in vessel types intersecting the OAA with oil and gas vessels (52%), fishing vessels (31%), and cargo vessels (13%) being the most commonly recorded. It is noted that no recreational vessels were recorded during the Winter survey period. This is expected given the distance offshore and unfavourable weather conditions.

15.6.1.22 Vessel length was available for approximately 97% of vessels recorded throughout the 28-day survey period. Of vessels with a valid length, the average recorded was 77m, ranging from 10m for a recreational vessel to 300m for a container vessel routeing to the south-west of the study area.

15.6.1.23 Vessel draught was available for approximately 85% of vessels recorded throughout the 28-day survey period. Of vessels broadcasting a valid draught, the average recorded was 5.7m, ranging from 0.2m for a fishing vessel to 13.9m for a crude oil tanker routeing to the northeast of the study area. The deepest draught to intersect the OAA was 13.5m for a container vessel.

15.6.1.24 Anchored vessels can be identified based upon a combination of AIS navigational status, speed and track behaviour. Following a review of these criteria, no vessels were deemed to be at anchor within the study area during the 28-day survey period.

15.6.1.25 A total of 19 main commercial routes were identified within the study area from the vessel traffic survey data using the principles set out in MGN 654 (MCA, 2021). These main commercial routes and corresponding 90th percentiles are shown relative to the OAA in **Volume 2, Figure 15.4: Pre-wind farm main commercial routes – OAA**. A description of each route is provided in **Table 15.7**.

Table 15.7 Main commercial routes

Route number	Average vessels per week	Area of interest	Description
1	10	OAA and RCP search area.	Aberdeen – Penguin / Cormorant Oil Fields. Oil and gas vessels.
2	10	OAA and RCP search area.	Aberdeen – Alywin / Ninian Oil Fields. Oil and gas vessels.

Route number	Average vessels per week	Area of interest	Description
3	9	OAA and RCP search area.	Peterhead – Mariner Oil Field. Oil and gas vessels.
4a and 4b	8	OAA and RCP search area.	Aberdeen – Gryphon / Harding Oil Fields. Primarily oil and gas vessels. This route typically routes north of the Golden Eagle platform (Route 4a with 66% vessels) but on occasion would also route south of the platform (Route 4b, 33% of vessels).
5	8	OAA only.	Baltic ports – US / Canadian / Irish / northwest UK ports via Pentland Firth. Commercial vessels.
6	7	OAA and RCP search area.	Peterhead – Heather / Thistle / Magnus Oil Fields. Oil and gas vessels.
7	7	OAA and RCP search area.	Aberdeen – Brae Oil Field. Primarily oil and gas vessels.
8	6	OAA only.	German / Dutch ports – Northern Isle ports. Commercial vessels.
9	4 to 5	OAA and RCP search area.	Aberdeen – Mariner / Beryl Oil Fields. Primarily oil and gas vessels.
10	4 to 5	OAA and RCP search area.	Peterhead – Scott Oil Field. Oil and gas vessels. This route typically routes south of the Golden Eagle Platform (Route 10a with 80% vessels) but on occasion would also route north of the platform (Route 10ba, 20% of vessels).
11	4 to 5	OAA and RCP search area.	Aberdeen – Claymore Oil Field. Oil and gas vessels.
12	4	OAA and RCP search area.	Aberdeen – Kraken Oil Field (Armada FPSO). Oil and gas vessels.
13	4	OAA and RCP search area.	Aberdeen – Piper Oil Field. Oil and gas vessels.
14	3 to 4	OAA and RCP search area.	Peterhead – Global Producer III (Dumbarton / Balloch / Lochranza Oil Fields). Primarily oil and gas vessels.
15	2 to 3	OAA and RCP search area.	Aberdeen – Scott Oil Field. Primarily oil and gas vessels.
16	1 to 2	OAA only.	Dutch ports – Icelandic / Faroese ports. Commercial vessels.
17	1 to 2	OAA only.	Baltic ports – Irish ports. Cargo vessels.
18	12	RCP search area only.	Aberdeen – Kirkwall – Lerwick. Serco NorthLink Ferries Roll-On/Roll-Off Cargo (RoRo) and Roll-On/Roll-Off Passenger (RoPax) route.

Route number	Average vessels per week	Area of interest	Description
19	8	RCP search area only.	Germany – US / Canada. Primarily cargo vessels.
20	8	RCP search area only.	Dutch ports – Icelandic ports. Commercial vessels.
21	6 to 7	RCP search area only.	Peterhead – Hywind Scotland Pilot Park. Wind farm vessels.
22	6	RCP search area only.	Moray Firth ports – Forth Ports. Commercial vessels with high volume of seasonal cruise liners.
23	5 to 6	RCP search area only.	The Netherlands Ports – Glensanda. Commercial vessels.
24	5	RCP search area only.	Inverness – Humber Ports. Commercial vessels.
25	4	RCP search area only.	Aberdeen – Clair Oil Field. Primarily oil and gas vessels.
26	3	RCP search area only.	Peterhead – Alba Oil Field. Primarily oil and gas vessels.
27	3	RCP search area only.	Isle of Grain – Glensanda. Commercial vessels.
28	2 to 3	RCP search area only.	Rotterdam / Belgian ports – Irish / Canadian / north-west UK ports via Pentland Firth. Commercial vessels.
29	2 to 3	RCP search area only.	Inverness – Scandinavian ports. Primarily cargo vessels.
30	2	RCP search area only.	German ports – Cromarty Firth ports. Commercial vessels with seasonal cruise liners.
31	2	RCP search area only.	Rotterdam – Faroese / Icelandic Ports. Commercial vessels.
32	2	RCP search area only.	Aberdeen – Bleo Holm FPSO (Ross Oil Field). Oil and gas vessels.
33	1 to 2	RCP search area only.	Cromarty Firth ports – Scandinavian Ports. Commercial vessels.

Offshore export cable corridor

15.6.1.26 A plot of the vessel tracks recorded during the 28-day data period, colour-coded by vessel type and excluding any temporary traffic (see **Volume 3, Appendix 15.1**) is presented in **Volume 2, Figure 15.5: 28-day vessel traffic survey data by vessel type within the offshore export cable corridor study area (Summer and Winter, 2024)**.

15.6.1.27 For the 14 days analysed during the Summer data period, there was an average of 64 unique vessels recorded per day within the offshore export cable corridor study area. In terms of vessels intersecting the offshore export cable corridor area itself, there was an average of 48 unique vessels per day recorded during the data period, or approximately 75% of unique vessel tracks recorded within the offshore export cable corridor study area intersected the offshore export cable corridor.

15.6.1.28 For the 14 days analysed during the Winter data period, there was an average of 47 unique vessels recorded per day within the offshore export cable corridor study area. In terms of vessels intersecting the offshore export cable corridor area itself, there was an average of 34 unique vessels per day recorded during the data period, or approximately 72% of unique vessel tracks recorded within the offshore export cable corridor study area intersected the offshore export cable corridor.

15.6.1.29 Throughout the Summer data period, the main vessel types within the offshore export cable corridor study area were fishing vessels which accounted for 38% of all vessels recorded and oil and gas which accounted for 21%. Cargo vessels (13%), recreational vessels (10%), and passenger vessels (5%) were the only other types to account for more than 5% of all vessels recorded. There was a similar trend in vessel types intersecting the offshore export cable corridor with fishing vessels (36%), oil and gas vessels (22%), and cargo vessels (17%) being the most commonly recorded.

15.6.1.30 Throughout the Winter data period, the main vessel types within the offshore export cable corridor study area were again fishing vessels which accounted for 48% of all vessels recorded and oil and gas which accounted for 23%. Cargo vessels (15%) and tankers vessels (5%) were the only other types to account for more than 5% of all vessels recorded. There was a similar trend in vessel types intersecting the offshore export cable corridor with fishing vessels (46%), oil and gas vessels (22%), and cargo vessels (19%) being the most commonly recorded. It is noted that only two recreational transits were recorded during the Winter data period (less than 1%).

15.6.1.31 Vessel length was available for approximately 98% of vessels recorded throughout the 28-day data period. Of vessels with a valid length, the average recorded was 66m, ranging from 5m for a fishing vessel to 333m for a cruise liner.

15.6.1.32 Vessel draught was available for approximately 66% of vessels recorded throughout the 28-day data period. Of vessels broadcasting a valid draught, the average recorded was 5.1m, ranging from 0.2m for a fishing vessel to 14.7m for a bulk carrier. The deepest draught to intersect the offshore export cable corridor was 13.5m for a container vessel.

15.6.1.33 No vessels were deemed to be at anchor within the offshore export cable corridor study area during the 28-day data period.

Reactive compensation platform search area

15.6.1.34 A plot of the vessel tracks recorded during the 12-month data period, colour-coded by vessel type and excluding any temporary traffic (see **Volume 3, Appendix 15.1**) is presented in **Volume 2, Figure 15.6: 12-months AIS vessel traffic data by vessel type within the RCP search area study area (2024)**.

15.6.1.35 There was an overall average of 35 unique vessels recorded per day within the RCP search area study area. In terms of the RCP search area itself, there was an average of 12 unique vessels per day recorded during the data period.

15.6.1.36 Throughout the 12-month data period, the most common vessel types within the RCP search area study area were fishing vessels (39%) and oil and gas vessels (29%). Cargo vessels (16%) and wind farm vessels (5%) were the only other types to account for more than 5% of all vessels recorded.

15.6.1.37 Vessel length was available for more than 99% of vessels recorded throughout the 12-month data period. Of vessels with a valid length, the average recorded was 75m, ranging from 4m for a SAR daughter craft to 345m for a cruise liner routeing to the south-west of the RCP search area study area.

15.6.1.38 Vessel draught was available for approximately 86% of vessels recorded throughout the 12-month data period. Of vessels broadcasting a valid draught, the average recorded was 5.2m, ranging from 0.2m for various fishing vessels to 16.2m for a bulk carrier intersecting the north of the RCP search area.

15.6.1.39 No vessels were deemed to be at anchor within the RCP search area study area during the 28-day data period.

15.6.1.40 A total of 31 main commercial routes was identified within the RCP search area study area from the long-term vessel traffic data using the principles set out in MGN 654 (MCA, 2021). These main commercial routes and corresponding 90th percentiles are shown relative to the OAA in **Volume 2, Figure 15.7: Pre-wind farm main commercial routes – RCP search area**. A description of each route is provided in **Table 15.7**.

Historical maritime incidents

15.6.1.41 A total of 41 unique incidents were reported to the MAIB within the combined study areas between 2014 and 2023. This corresponds to an average of four incidents per year. Of these incidents, 54% were recorded within 3nm (5.6km) of the coastline. The most common incident types recorded were "*machinery failure*" (31%), "*accident to person*" (29%), and "*fire / explosion*" (15%). The most common casualty type recorded was fishing vessels (59%) and 'other' vessels (24%). One incident was recorded within the OAA in 2022 consisting of an accident to person onboard a fishing trawler with no fatalities or damage to the vessel.

15.6.1.42 A total of 78 unique incidents were reported to the RNLI within the combined study areas between 2014 and 2023. This corresponds to an average of eight incidents per year; however, it is noted that the majority of incidents (approximately 78%) were recorded within 3nm (5.6km) of the coastline, with only two being recorded further offshore in the study area. Of the incidents recorded, 49% had unspecified incident types. Machinery failure accounted for 21% of incidents and person in danger for 19% of incidents. As for casualty types, unspecified casualties accounted for 29%. Fishing vessels accounted for 24% and powered recreational vessels for 19% of casualties. No incidents were recorded within the OAA, seven within the offshore export cable corridor (four unspecified and three machinery failures), and one (unspecified) within the RCP search area.

15.6.1.43 A total of 35 SAR taskings were undertaken within the combined study areas between April 2015 and March 2024. This corresponds to an average of three to four SAR taskings per year. Of these, "*Rescue / recovery*" accounted for 74%, with "*Search*" accounting for 20% and "*Support*" accounting for 6%. No taskings occurred within the OAA or RCP search area and two occurred within the offshore export cable in proximity to the coast ("*Rescue / recovery*" and "*Support*").

15.6.2 Future baseline

15.6.2.1 Given future commercial traffic trends are dependent on various factors, and hence are difficult to predict, the assessment has assumed potential increases of 10% and 20% within the commercial traffic allision and collision modelling. The consideration of a range of conservative values is considered as covering potential increases over the course of the Project's operational lifespan. These values were proposed during the Hazard Workshop in

July 2025 and no concerns were raised; Peterhead Port agreed that the 20% increase would be realistic if any port developments in the area go ahead.

15.6.2.2 These values also consider that oil and gas vessels may decrease over time due to the decommissioning of oil and gas structures in the North Sea but oil and gas vessels may be repurposed across the offshore wind industry and can balance out the reduction in oil and gas movements.

15.6.2.3 Indicative 10% and 20% increases in commercial fishing vessel transits have been considered in the modelling undertaken within the NRA. These values are used due to there again being limited reliable information on future activity levels upon which any firm assumption can be made. It is noted that additional information on commercial fishing trends is contained within **Chapter 14: Commercial Fisheries**.

15.6.2.4 As raised during consultation by the MCA, it has been acknowledged that the long-term agreement by The Specialised Committee on Fisheries to allow European Union vessels to have continued access to UK waters has been extended until 2038.

15.6.2.5 There are no known developments which would increase the activity of recreational vessels within the area. Therefore, as with commercial fishing activity, given the lack of reliable information relating to future trends, 10% and 20% increases are considered conservative, and have therefore been applied.

15.7 Basis for the EIA Report

15.7.1 Maximum design scenario

15.7.1.1 The process of assessing using a parameter-based design envelope approach means that the assessment considers a maximum design scenario whilst allowing the flexibility to make improvements in the future in ways that cannot be predicted at the time of submission of the planning application, marine licences applications and Section 36 (s.36) consent.

15.7.1.2 The assessment of the maximum adverse scenario for each receptor establishes the maximum potential adverse effect and as a result effects of greater adverse significance would not arise should any other scenario (as described in **Chapter 4: Project Description**) to that assessed within this Chapter be taken forward in the final scheme design.

15.7.1.3 The maximum design scenario parameters that have been identified to be relevant to infrastructure and other marine users are outlined in **Table 15.8** and are in line with the project design envelope (**Chapter 4: Project Description**). The maximum design scenario layout and RCP location is presented in **Volume 2, Figure 15.8: Maximum design scenario OAA layout for shipping and navigation** and **Volume 2, Figure 15.9: Indicative reactive compensation platform location**, respectively.

Table 15.8 Maximum design scenario for impacts on shipping and navigation

Impact / activity	Maximum design scenario parameter	Justification
Construction		
Impact C1: Increased vessel to vessel collision risk between third-party vessels	• maximum extent of buoyed construction area; • use of 500m construction safety zones and 50m pre-commissioning safety zones; • maximum of five offshore export cable trenches of 76nm (140km) in length, with each trench potentially containing multiple cables; • peak of 10 construction vessels offshore and total of 3,838 individual vessels transits (each representing a one-way journey between port and worksite); and • continuous phased offshore construction of approximately 12 years.	Largest possible extent of infrastructure, greatest number of simultaneous vessel activities and greatest duration resulting in the maximum spatial and temporal effect on vessel displacement and subsequent vessel to vessel collision risk.
Impact C2: Vessel to vessel collision risk between a third-party vessel and a Project vessel	Refer to impact C1.	Largest possible extent of infrastructure, greatest number of simultaneous vessel activities and greatest duration resulting in the maximum spatial and temporal effect on vessel to vessel collision risk involving a third-party vessel and a Project vessel.
Impact C3: Reduced access to local ports, harbours and marinas	Refer to impact C1.	Largest possible extent, greatest number of vessel activities associated with the Project and greatest duration resulting in the maximum spatial and temporal effect on access to local ports.
Impact C4: Loss of station	• maximum extent of buoyed construction area; • up to 225 WTGs and WTG floating units; • minimum of three mooring lines per WTG floating unit; • taut mooring lines; • WTG floating unit surface dimensions of up to 100 x 120m; and • continuous phased offshore construction of approximately 12 years.	Maximum number of WTGs with greatest surface dimensions and greatest duration resulting in the maximum spatial and temporal effect on loss of station risk.

Impact / activity	Maximum design scenario parameter	Justification
O&M		
Impact O1: Increased vessel to vessel collision risk between third-party vessels.	• full buildout of OAA; • up to 225 WTGs and WTG floating units; • WTG floating unit surface dimensions of up to 100m x 120m; • up to four fixed offshore substations with topside dimensions of up to 106m x 70m; • up to two RCPs connected via bridge link with a maximum dimension of 250m × 50m; • up to 367nm (680km) of array cables including use of dynamic cable sections; • peak of up to seven O&M vessels offshore with up to 364 round trips to port per year; • use of 500m major maintenance safety zones; and • operational life of 35 years per phase.	Largest possible extent of infrastructure, greatest number of simultaneous vessel activities and greatest duration resulting in the maximum spatial and temporal effect on vessel displacement and subsequent vessel to vessel collision risk.
Impact O2: Vessel to vessel collision risk between a third-party vessel and a Project vessel	Refer to Impact O1.	Largest possible extent of infrastructure, greatest number of simultaneous vessel activities and greatest duration resulting in the maximum spatial and temporal effect on vessel to vessel collision risk involving a third-party vessel and a Project vessel.
Impact O3: Reduced access to local ports, harbours and marinas	• full buildout of the OAA; • maximum of five offshore export cable trenches of 76nm (140km) in length, with each trench potentially containing multiple cables; • up to two RCPs connected via bridge link with a maximum dimension of 250m × 50m; • use of 500m major maintenance safety zones; • peak of seven O&M vessels offshore with up to 364 round trips to port per year; and • operational life of 35 years per phase.	Largest possible extent, greatest number of vessel activities associated with the Project and greatest duration resulting in the maximum spatial and temporal effect on access to local ports.
Impact O4: Loss of station	• full buildout of OAA; • up to 225 WTGs and WTG floating units;	Maximum number of WTGs with greatest surface dimensions and greatest duration

Impact / activity	Maximum design scenario parameter	Justification
	• minimum of three mooring lines per substructure; • taut mooring lines; • WTG floating unit surface dimensions of up to 100 x 120m; and • operational life of 35 years per phase.	resulting in the maximum spatial and temporal effect on loss of station risk.
Impact O5: Creation of vessel to structure allision risk (including powered, drifting and internal)	• full buildout of OAA; • up to 225 WTGs and WTG floating units; • WTG floating unit surface dimensions of up to 100 x 120m; • up to four fixed offshore substations with topside dimensions of up to 106 x 70m; • up to two RCP connected via bridge link with a maximum dimension of 250 × 50m; • use of 500m major maintenance safety zones; • minimum spacing of 800m between WTGs and 500m between WTGs and offshore substation topsides; and • operational life of 35 years per phase.	Largest possible extent of surface infrastructure, greatest number of surface structures and greatest duration resulting in the maximum spatial and temporal effect on vessel to structure allision risk.
Impact O6: Reduction of under keel clearance as a result of cable protection, dynamic cables and mooring lines	• full buildout of OAA; • up to 225 WTGs and WTG floating units; • WTG floating unit surface dimensions of up to 100 x 120m; • maximum of eight taut mooring lines per WTG floating unit; • up to 367nm (680km) of array cables including use of dynamic cable sections with six assumed cable crossings and a touchdown of 250m; • array cable lazy wave at depth of 30m at 35m from the WTG floating unit; • maximum of five offshore export cable trenches of 76nm (140km) in length, with each trench potentially containing multiple cables, with up to 16 known cable crossings and six additional; • typical burial depth of 1.0 to 2.0m for non-dynamic cable sections; • external protection where needed, with a height of up to 2m; • up to 45 subsea distribution centres (SDC) with a height of 5m above seabed; • up to four fixed offshore substations with topside dimensions of up to 106 x 70;	Largest possible extent of subsea infrastructure and greatest duration resulting in the maximum spatial and temporal effect on under keel clearance.

Impact / activity	Maximum design scenario parameter	Justification
	• up to two RCPs connected via bridge link with a maximum dimension of 250 × 50m; • use of 500m major maintenance safety zones; • minimum spacing of 800m between WTGs and 500m between WTGs and offshore substation topsides; and • operational life of 35 years per phase.	
Impact O7: Anchor interaction with mooring lines and subsea cables	• full buildout of OAA; • up to 225 WTGs and WTG floating units; • maximum of eight taut mooring lines per WTG floating unit; • mooring line radius up to 800m; • Maximum of five offshore export cable trenches of 76nm (140km) in length, with each trench potentially containing multiple cables, with up to 16 known cable crossings and six additional; • up to 367nm (680km) of array cables including use of dynamic cable sections with six cable crossings and a touchdown of 250m; • array cable lazy wave at depth of 30m at 35m from the WTG floating unit; • typical burial depth of 1.0 to 2.0m for non-dynamic cable sections; • external protection where needed, with a height of up to 2m; and • operational life of 35 years per phase.	Largest possible extent of subsea infrastructure and greatest duration resulting in the maximum spatial and temporal effect on anchor interaction with subsea cables.
Impact O8: Reduction of emergency response capability including SAR access	• full buildout of OAA; • up to 225 WTGs and WTG floating units; • maximum of eight mooring lines per WTG floating unit; • WTG floating unit surface dimensions of up to 100 x 120m; • up to four fixed offshore substations with topside dimensions of up to 106 x 70m; • up to two RCP connected via bridge link with a maximum dimension of 250 × 50m; • peak of seven maintenance vessels offshore with up to 364 round trips to port per year; and • operational life of 35 years per phase.	Largest possible extent, greatest number of surface structures, greatest number of simultaneous vessel activities and greatest duration resulting in the maximum spatial and temporal effect on emergency response capability.

Impact / activity	Maximum design scenario parameter	Justification
Decommissioning		
Impact D1: Increased vessel to vessel collision risk between third-party vessels	• maximum extent of buoyed decommissioning area; • Maximum of five offshore export cable trenches of 76nm (140km) in length, with each trench potentially containing multiple cables; • peak of 42 decommissioning vessels offshore; and • continuous phased offshore decommissioning of approximately 12 years.	Largest possible extent of infrastructure, greatest number of simultaneous vessel activities and greatest duration resulting in the maximum spatial and temporal effect on vessel displacement and subsequent vessel to vessel collision risk.
Impact D2: Vessel to vessel collision risk between a third-party vessel and a Project vessel	Refer to Impact D1.	Largest possible extent of infrastructure, greatest number of simultaneous vessel activities and greatest duration resulting in the maximum spatial and temporal effect on vessel to vessel collision risk involving a third-party vessel and a Project vessel.
Impact D3: Reduced access to local ports, harbours and marinas	• maximum extent of buoyed decommissioning area; • use of 500m construction safety zones and 50m pre-commissioning safety zones; • maximum of five offshore export cable trenches of 76nm (140km) in length, with each trench potentially containing multiple cables; • peak of 42 decommissioning vessels offshore; and • continuous phased offshore decommissioning of approximately 12 years.	Largest possible extent, greatest number of vessel activities associated with the Project and greatest duration resulting in the maximum spatial and temporal effect on access to local ports.
Impact D4: Loss of station	• maximum extent of buoyed decommissioning area; • up to 225 WTGs and WTG floating units; • minimum of three mooring lines per WTG floating unit; • taut mooring lines; • WTG floating unit surface dimensions of up to 100 x 120m; and • continuous phased offshore decommissioning of approximately 12 years.	Maximum number of WTGs with greatest surface dimensions and greatest duration resulting in the maximum spatial and temporal effect on loss of station risk.

15.7.2 Embedded environmental measures

15.7.2.1 As part of the Project design process, a number of embedded environmental measures have been adopted to reduce the potential for adverse impacts on shipping and navigation. These embedded environmental measures have evolved over the development process as the EIA has progressed and in response to consultation.

15.7.2.2 These measures also include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements. As there is a commitment to implementing these embedded environmental measures, and also to various standard sectoral practices and procedures, they are considered inherently part of the design of the Project and are set out in the EIA Report.

15.7.2.3 **Table 15.9** sets out the relevant embedded environmental measures within the design and how these affect the shipping and navigation assessment.

15.7.2.4 Further detail on the embedded environmental measures in **Table 15.9** is provided in the **Volume 3, Appendix 5.2**, which sets out how and where particular embedded environmental measures would be implemented and secured.

Table 15.9 Relevant shipping and navigation embedded environmental measures

ID	Environmental measure proposed	Project stage measure introduced	How the environmental measures would be secured	Relevance to shipping and navigation assessment
M-029	An **Outline Cable Plan** (CaP) has been submitted within this Application (**Volume 4**), and includes details of the need, type, quantity and installation methods for cabling. A Final Cable Plan will be completed prior to construction commencing and submitted to MD-LOT for approval. The Final CaP will include: a) the vessel types, location, duration and cable laying techniques for export and array cables; b) the finalised location of the export cable corridor; c) the results of monitoring or data collection work (including geophysical, geotechnical and benthic surveys) d) Technical specification of the cables, including a desk based assessment of attenuation of electromagnetic field strengths and shielding; e) A Cable Burial Risk Assessment (CBRA), to ascertain burial depths and where necessary alternative protection measures; f) Methods to be used to mitigate the effects of Electromagnetic Fields (EMF); g) Methodologies and timetable for post-construction and operational surveys (including inspection, over trawl, post-lay) for the cables through its operational life; h) Measures to address and report to the Licensing Authority any exposure of cables or risk to users of the sea from cables; and g) Methodologies for cable inspection with measures to address and report to Scottish Minister, any exposure of array cables.	Scoping Amended at EIA Report.	s.36 conditions and marine licences conditions.	Ensures risk associated with presence of subsea cables (including anchor interaction and reduced under keel clearance) is minimised.
M-030	Advance warning and accurate location details of construction, maintenance and decommissioning operations, associated Safety Zones and advisory passing distances will be given via Notices to Mariners and Kingfisher Bulletins.	Scoping	s.36 conditions and marine licences conditions.	Promulgation of information allows mariners to appropriately passage planning.

ID	Environmental measure proposed	Project stage measure introduced	How the environmental measures would be secured	Relevance to shipping and navigation assessment
M-031	A **Safety Zone Statement** has been submitted with this Application. An application for and use of rolling Safety Zones of up to 500m during construction and O&M stages will be submitted to MD-LOT for approval. No permanent operational safety zone is proposed. The safety zone application will include the following: - pre-commissioning safety zones: 50m - construction stage: 500m safety zones around active construction works and evidenced by the presence of a construction vessel; - construction stage: 50m safety zones around partially or fully completed structure prior to the overall wind farm commissioning; and - O&M stage: 500m safety zone around the site of major maintenance works. No safety zones are currently proposed for the decommissioning stage, a separate application would be made prior to decommissioning where considered necessary. Where appropriate, guard vessels will also be used to ensure adherence with Safety Zones or advisory passing distances, as defined by risk assessment, to mitigate any impact that poses a risk to surface navigation during construction, maintenance and decommissioning stages. Such impacts may include partially installed structures or cables, extinguished navigation lights or other unmarked hazards.	Scoping Amended at EIA Report.	s.36 conditions and marine licences conditions.	Safety zones would help protect Project vessels undertaking construction and major maintenance activity and help ensure third-party vessels awareness of activity is maximised.
M-033	An **Outline Marine Pollution Contingency Plan** (MPCP) (Appendix to the Environmental Management Plan (EMP)) has been submitted with this Application (**Volume 4**). This Outline MPCP outlines details of procedures to protect personnel working and to safeguard the marine environment and mitigation measures in the event of an accidental pollution event arising from offshore operations relating to the Project. The Final MPCP will be completed prior to construction commencing and submitted to MD-LOT for approval and will include relevant key emergency contact details.	Scoping Amended at EIA Report.	s.36 conditions and marine licences conditions.	Implementation of the MPCP would ensure environmental effects resulting from a marine pollution incident are minimised.

ID	Environmental measure proposed	Project stage measure introduced	How the environmental measures would be secured	Relevance to shipping and navigation assessment
M-038	An **Outline Lighting and Marking Plan** (LMP) has been submitted with this Application (**Volume 4**). The Final LMP will be completed prior to construction commencing and submitted to MD-LOT for approval. The LMP will confirm compliance with NLB requirements and in Line with IALA Recommendation G1162 (IALA, 2021) with regards to shipping, navigation and aviation marking and lighting during construction and O&M stage of the works.	Scoping Amended at EIA Report.	s.36 conditions and marine licences conditions.	Lighting and marking of structures provides AtoNs to mariners operating in proximity to the OAA and RCPs.
M-039	An **Outline Vessel Management and Navigational Safety Plan** has been submitted with this Application (**Volume 4**). The Final Vessel Management and Navigation Safety Plan will be completed prior to construction commencing and submitted to MD-LOT for approval. The Final Plan will confirm the types and numbers of vessels that will be engaged on the Project; consider vessel coordination including indicative transit route planning; describe measures put in place by the Project related to navigational safety, including information on Safety Zones, charting construction buoyage, temporary lighting and marking; and means of notification of Project activity to other sea users (for example, via Notice to Mariners).	Scoping Amended at EIA Report.	s.36 conditions and marine licences conditions.	Ensures active and safe management of navigational activities to minimise risk of adverse shipping and navigation effects on receptors.
M-040	Marine coordination and communication to manage Project vessel movements. Proactive Kingfisher notifications and other navigational warnings in a timely manner in addition to distribution to the UKHO.	Scoping	Company Marine Operations Manual and AtoN Plan, inclusion in Admiralty charts by KHO; condition on the s.36 consent and / or marine licences.	Coordination and communication of Project vessel movements minimises disruption to third-party receptors.
M-043	Development of and adherence to a Development Specification and Layout Plan, which will confirm the Project's layout and design parameters. This will be submitted to MD-LOT for approval post-consent.	Scoping Amended at EIA Report.	Company Marine Operations Manual and AtoN Plan, inclusion in Admiralty	Ensures the final layout is compliant with MGN 654 in consultation with the MCA and NLB.

ID	Environmental measure proposed	Project stage measure introduced	How the environmental measures would be secured	Relevance to shipping and navigation assessment
			charts by KHO; condition on the s.36 consent and / or marine licences.	
M-044	Compliance with regulatory expectations on moorings for floating wind and marine devices (HSE and MCA, 2017).	Scoping Amended at EIA Report.	s.36 conditions and marine licence conditions.	Minimises potential for loss of station for WTG floating units.
M-045	Compliance with MCA MGN 654 (MCA, 2021) and its annexes where applicable. MGN 654 includes the completion of a Search and Rescue Checklist.	Scoping Amended at EIA Report.	s.36 conditions and marine licences conditions.	MGN 654 sets out considerations when assessing the impact on navigational safety and emergency response caused by OREIs.
M-046	There will be a minimum blade tip clearance of at least 22m above mean high water springs.	Scoping	s.36 conditions and marine licences conditions.	Minimises allision risk for recreational vessels with a mast.
M-047	Appropriate marking of the Project on Admiralty and aeronautical charts. This will include provision of the positions and heights of structures to the UKHO, Civil Aviation Authority, Ministry of Defence and Defence Geographic Centre.	Scoping Amended at EIA Report.	s.36 conditions and marine licences conditions.	Will aid mariners with passage planning and navigating in proximity to the Project.
M-048	An **Outline Fisheries Monitoring, Management and Mitigation Strategy** (FMMMS) has been submitted with this Application (**Volume 4**). The Final FMMMS will be completed prior to construction commencing and submitted to MD-LOT for approval. The Final FMMMS will set out the means of ongoing fisheries liaison through construction and O&M stages of the Project and detail any mitigation measures to be put in place to limit effects on commercial fisheries activity. This will include the following	Scoping Amended at EIA Report.	s.36 conditions and marine licences conditions.	Maximises awareness of the Project and related activities for commercial fishing vessels.

ID	Environmental measure proposed	Project stage measure introduced	How the environmental measures would be secured	Relevance to shipping and navigation assessment
	project policies: Fisheries Liaison Policy and Engagement Schedule, Conflict Avoidance Policy and Incident Response Policy.			
M-049	An **Outline Project Environmental Monitoring Programme** (PEMP) has been submitted with this Application (**Volume 4**). The Final PEMP will be completed prior to construction commencing and submitted to MD-LOT for approval. The Final PEMP will set out commitments to environmental monitoring in pre-, during and post-construction stages of the Project.	Scoping Amended at EIA Report.	s.36 conditions and marine licences conditions.	Hydrographic surveys are required under MGN 654 and vessel traffic monitoring may be implemented to verify the effectiveness of existing environmental measures.
M-054	A detailed CBRA will be undertaken to enable informed judgements about burial depth. This should reduce the risk of buried cables reemerging whilst also limiting the amount of sediment disturbance to that which is necessary. The array and export cables will typically be buried at a target burial depth between 1m to 2m below the seabed surface. The final depth of the cable will be dependent on the seabed mobility and CBRA. The CBRA will manage and mitigate risks from loading and sediment transport across the seabed. The CBRA will be included within the Final Cable Plan.	Scoping Amended at EIA Report.	s.36 conditions and marine licences conditions.	Ensures risk associated with presence of subsea cables (including anchor interaction and reduced under keel clearance) is minimised.
M-106	The development of and adherence to a Decommissioning Programme. The Decommissioning Programme will outline measures for the decommissioning of the Project. The Decommissioning Programme would be submitted prior to construction commencing to MD-LOT and approved by Scottish Ministers prior to construction.	Scoping Amended at EIA Report.	Required under Sections 105 (Energy Act 2004) and marine licence consent conditions.	All shipping and navigation related impacts assessed for the construction stage are also assessed for the decommissioning stage.
M-118	The construction area will be buoyed, as described in the Lighting and Marking Plan. Buoyage will be defined in consultation with the MCA and the NLB.	Scoping Amended at EIA Report.	s.36 conditions and marine licences conditions.	Use of construction buoyage would assist mariners navigating in proximity to the OAA and minimise third-party

ID	Environmental measure proposed	Project stage measure introduced	How the environmental measures would be secured	Relevance to shipping and navigation assessment
				navigation within the OAA during construction.
M-120	An **Outline Construction Method Statement** (CMS) has been submitted with this Application (**Volume 4**). The Final CMS will be completed prior to construction commencing and submitted to MD-LOT for approval. The Final CMS will include: a) details of the commence dates, duration and phasing of key elements of construction, working areas, the construction procedures and good working practices; b) details of the roles and responsibilities; and c) details of how the construction related mitigation step proposed are to be delivered.	EIA Report	s.36 conditions and marine licences conditions.	Will ensure Project vessels are compliant with relevant international marine regulations to minimise disruption to third-party vessels.
M-122	Development of and adherence to a Offshore Operations and Maintenance Plan, which will confirm the Project's operations and maintenance activities. This will be submitted to MD-LOT for approval post-consent.	EIA Report	s.36 conditions and marine licences conditions.	Will ensure Project vessels and activities are undertaken in a manner limiting disruption to third-party vessels and the likelihood of a need for emergency response.

15.8 Methodology for the EIA Report

15.8.1 Introduction

15.8.1.1 The project-wide approach to assessment is set out in **Chapter 5: Approach to EIA**. Under MGN 654 (MCA, 2021), it is necessary for the shipping and navigation assessment to apply a bespoke methodology consistent with that outlined in the Scoping Report. This methodology was agreed with stakeholders during the Hazard Workshop in July 2025.

15.8.1.2 Under the MCA methodology (Annex 1 to MGN 654), and in line with international marine risk assessment standards, the IMO FSA (IMO, 2018) approach has been taken for the impact assessment. The FSA methodology is centred on risk control and assesses each impact in terms of its frequency of occurrence, severity of consequence in order that its significance can be determined as 'broadly acceptable', 'tolerable with mitigation' or 'unacceptable'. Details pertaining to this approach are provided in **Section 15.8.2**.

15.8.2 Significance evaluation methodology

Frequency of occurrence

15.8.2.1 The likelihood of an impact occurring is determined based on the criteria outlined in **Table 15.10.**

Table 15.10 Frequency of occurrence criteria for shipping and navigation

Severity of consequence	Definition
Major	More than one fatality, total loss of property, tier 3 national assistance required and international reputational effects.
Serious	Multiple serious injuries or single fatality, damage resulting in critical impact on operations, tier 2 regional assistance required, and national reputational effects.
Moderate	Multiple minor or single serious injury, damage not critical to operations, tier 2 limited external assistance required, and local reputational effects.
Minor	Slight injury to people, minor damage to property, tier 1 local assistance required, and minor reputational effects limited to receptors.
Negligible	No perceptible effect.

Severity of consequence

15.8.2.2 The potential outcome should an impact occur is determined based on the criteria outlined in **Table 15.11** with an aggregate taken of four separate criteria: risks to people, property, environment, and business.

Table 15.11 Severity of consequence criteria for shipping and navigation

Frequency of occurrence	Definition
Frequent	Yearly
Reasonably probable	One occurrence per 1 to 10 years.
Remote	One occurrence per 10 to 100 years.
Extremely unlikely	One occurrence per 100 to 10,000 years.
Negligible	Less than one occurrence per 10,000 years.

Significant evaluation

15.8.2.3 The significance of effect associated with an impact is determined based on a risk matrix taking an aggregate of the frequency of occurrence and severity of consequence as shown in **Table 15.12**.

Table 15.12 Risk matrix for shipping and navigation

		Frequency				
		Negligible	**Extremely unlikely**	**Remote**	**Reasonably probable**	**Frequent**
Consequence	**Major**	Tolerable with mitigation	Tolerable with mitigation	Unacceptable	Unacceptable	Unacceptable
	Serious	Broadly acceptable	Tolerable with mitigation	Tolerable with mitigation	Unacceptable	Unacceptable
	Moderate	Broadly acceptable	Broadly acceptable	Tolerable with mitigation	Tolerable with mitigation	Unacceptable
	Minor	Broadly acceptable	Broadly acceptable	Broadly acceptable	Tolerable with mitigation	Tolerable with mitigation
	Negligible	Broadly acceptable	Broadly acceptable	Broadly acceptable	Broadly acceptable	Tolerable with mitigation

15.8.2.4 For the purposes of the shipping and navigation impact assessment, a level of effect determined as being unacceptable is considered significant in EIA terms and not ALARP. Effects determined to be tolerable with mitigation or broadly acceptable are not significant in EIA terms and are ALARP.

15.8.2.5 It is noted that **Volume 3, Appendix 15.1** uses FSA terminology as required under MGN 654 (MCA, 2021). Differences in terminology are detailed in **Table 15.13**, with this Chapter adopting the EIA terminology but using the framework of the FSA methodology.

Table 15.13 Summary of terminology differences between EIA and NRA

EIA term	NRA term	Definition
Impact	Hazard	A potential to threaten human life, health, property or the environment.
Embedded environmental measure	Embedded mitigation measure	A means controlling a single element of an impact which is embedded (standard or good practice measure utilised or in place).
Effect	Risk	The combination of the frequency of occurrence and severity of consequence of an impact which results in a statement of significance.
Receptor	User	Sufferer of an effect.

15.9 Assessment of effects: Construction stage

15.9.1 Vessel displacement and increased vessel to vessel collision risk between third-party vessels

15.9.1.1 Activities associated with the installation of structures and subsea cables may displace third-party vessels from their existing routes or activity, increasing the collision risk with other third-party vessels.

Option Agreement Area

Main commercial route displacement

15.9.1.2 During the construction stage, a buoyed construction area would be deployed around the OAA in agreement with NLB. Although there would be no restrictions on entry into the buoyed construction area, other than through active safety zones, based on experience at previously under construction offshore wind farms and consultation, it is anticipated that the majority of commercial vessels would choose not to navigate internally within the buoyed construction area and therefore some main route deviations would be required.

15.9.1.3 Main commercial routes have been identified in line with the principles set out in MGN 654 (MCA, 2021) based primarily on vessel traffic survey data collected during dedicated surveys (28 days in Summer and Winter 2024), the long-term vessel traffic data (2024), and Anatec's ShipRoutes database. Further details of the methodology for main commercial route identification are provided in Section 11.1 of the **NRA** (**Volume 3, Appendix 15.1**), noting that the vessel traffic survey data has been agreed as appropriate by the MCA. As part of the future case considerations, increases in 10% and 20% of all traffic including commercial vessels is assumed with these values being agreed with stakeholders during the Hazard Workshop. Vessel displacement was not raised as a key concern during the Hazard Workshop.

15.9.1.4 The full methodology for main route deviations is provided in Section 14.5.1 of the **NRA** (**Volume 3, Appendix 15.1**), with deviations established in line with MGN 654 (MCA, 2021). Due to the presence of the OAA, a deviation would be required for seven of the 10 of the 35 main commercial routes identified across the Project.

15.9.1.5 The largest deviation of a route deviated by the OAA is anticipated to be 3.5nm associated with Route 11 (north-east south-west routeing of oil and gas vessels between Aberdeen and the Claymore Oil Field). This increase equates to a 3.6% increase in route length for the portion of the route deviating north around the OAA, noting that this route is particularly short in nature overall. Only one of the other deviated routes features a distance increase equal to or greater than 1% of the route length; Route 4b at 1.2% with an anticipated deviation of 2.2nm (north-east south-west routeing of oil and gas vessels between Aberdeen and the Gryphon and Harding Oil Fields).

15.9.1.6 The deviated route with the highest vessel traffic volumes was Route 3, with approximately one transit per day, i.e., deviations are expected to be a frequent occurrence. Regular RoRo and RoPax vessels – which are particularly sensitive to deviations given the timetabled services they provide – were only recorded on Route 1, which would not require a deviation due to the presence of the OAA.

15.9.1.7 The most likely consequences of vessel displacement would be increased journey times and distances for affected third-party vessels. The impact would occur over a local spatial extent given that the buoyed construction area would be deployed around the maximum extent of the OAA.

15.9.1.8 As a worst case, there could be disruption to schedules. However, no timetabled commercial ferry routes are impacted by the OAA and given the international nature of routeing in the region alongside the ability to passage plan, disruptions to schedule are expected to be minimal.

Adverse weather routeing

15.9.1.9 From the vessel traffic survey data, there were no instances of alternative routeing due to possible adverse weather were recorded, with no adverse weather conditions recorded in the weather logs during the survey periods.

15.9.1.10 During consultation with Serco NorthLink Ferries, they had confirmed that their vessels routeing between Aberdeen and the Northern Isles do on occasion route further offshore during periods of adverse weather in order to avoid particularly rough areas of sea, especially at Rattray Head. This allows the vessel to make passage more comfortably, ensuring a suitable angle for waves and wind is obtained, particularly in south-easterly winds which can cause the vessels to roll. This is particularly important for RoPax vessels containing higher volumes of passengers on board. Adverse weather transits were identified in the 12-month AIS data for vessels on this route on occasion reaching the study area, but no transits intersected the OAA and so the OAA is not anticipated to cause any concern or impact on these adverse weather routeing. This was confirmed by Serco NorthLink with passing further offshore than what has been identified in the vessel traffic data is unlikely given increased mileage, fuel use and that vessels are on timetabled routes.

15.9.1.11 Several Regular Operators responded to the consultation outreach highlighting adverse weather routeing in their response including Tidewater Marine and Fletcher Group. Tidewater Marine noted that in certain weather conditions the vessel may use alternative routes but would mostly apply to the Winter season. Fletcher Group noted in their response that their vessels are already used to navigating through and around various oil and gas assets in the North Sea and this can be exacerbated during adverse weather, but vessels may adjust course and / or their speed to combat the effects of the weather.

15.9.1.12 Both of these operators operate oil and gas vessels and as Fletcher Group has noted, vessels can be on charter and change routes regularly as well as regularly adjusting passage plans to meet new requirements and are used to adapting to new offshore installations. However, as noted by these operators as well as TorCargo also, vessels may be required to further deviate and this can lead to increase in fuel burn, which would be exacerbated during adverse weather.

Small craft displacement

15.9.1.13 Based on experience at previously under construction offshore wind farms, it is anticipated that fishing vessels and recreational vessels would also choose not to routinely navigate internally within the buoyed construction area. From the vessel traffic survey data (which incorporates Radar and visual observations in addition to AIS) regular transits by commercial fishing vessels were recorded through the OAA noting that displacement of commercial fishing vessels engaged in fishing activity is assessed in **Chapter 14: Commercial Fisheries**. During the Hazard Workshop, SFF confirmed that the survey data was representative of transiting fishing vessels this far offshore. SFF also noted that there is a possibility of commercial vessels being displaced into fishing grounds leading to the potential interaction and further displacement of fishing vessels.

15.9.1.14 For recreational vessels there is even less activity in proximity to the OAA with vessels only present in very small volumes during the Summer period on east west transits. It was raised by the RYA Scotland during the Scoping responses that these transits are irregular and would be on passage between Scotland and Scandinavia; however, routes taken would depend on the wind direction and so may vary from year to year, but these vessels are used to transiting in proximity to oil and gas infrastructure in the area. As aforementioned, the vessel traffic survey data incorporates Radar and visual observations in addition to AIS.

15.9.1.15 Any displacement of recreational vessels should also consider the increase of tiredness due to increased voyages. However, displacement would be limited and there is sufficient sea room around the OAA to accommodate any affected recreational vessels and any recreational vessels transiting this far offshore would be expected to undertake due diligence of their intended route (i.e., adequate passage planning) as noted by the NLB during the Hazard Workshop.

Collision risk

15.9.1.16 From historical incident data, no collision incidents between third-party vessels have occurred directly as a result of a UK offshore wind farm.

15.9.1.17 Post wind farm, the collision frequency was estimated at one in 688 years, representing a 71% increase on the pre wind farm scenario. With a future case vessel traffic growth of 20%, this return period increases to one in 485 years. Although this is a high increase, the likelihood of a collision incident remains relatively low and is a result of the convergence of main commercial routes due to the deviation being required for 10 routes due to the presence of the OAA. This in turn increases densities in the surrounding areas, which could lead to an increase in vessel to vessel encounters and therefore an increased risk of collision. The risk of collision was not raised as a key topic during consultation including at the Hazard Workshop.

15.9.1.18 The most likely consequences in the event of an encounter between two or more third-party vessels is the implementation of avoidance action in line with the COLREGs, with the vessels involved able to resume their respective passages with no long-term consequences.

15.9.1.19 Should an encounter develop into a collision incident, it is most likely to involve minor contact resulting in minor damage to the vessels with no harm to people and no substantial

reputational risks. As a worst case with very low frequency of occurrence one of the vessels could receive substantial damage or founder with Potential Loss of Life (PLL) and pollution, with this outcome more likely where one of the vessels is a small craft (e.g., fishing vessel, recreational vessel or crew transfer vessel (CTV)).

15.9.1.20 During the Hazard Workshop, the MCA acknowledged that any requirement to undertake vessel traffic monitoring will be determined on a case-by-case basis following their discussions with MD-LOT. It is acknowledged that if vessel traffic monitoring is to be undertaken throughout the construction stage, it would aid in the characterisation of identifying changes to routeing patterns. These would then be compared against anticipated deviations to allow a comprehensive review of the embedded environmental measures applied at the time.

15.9.1.21 From the vessel traffic survey data (which incorporates Radar and visual observations in addition to AIS) regular transits by commercial fishing vessels are frequent. In the event of a collision incident the likelihood of a worst case outcome (the small craft foundering with PLL and pollution) is greater due to the size and likely hull material of the small craft.

Promulgation of information and passage planning

15.9.1.22 All vessels operating in the area are expected to comply with international flag state regulations (including the COLREGs and SOLAS) and would have a raised level of awareness of construction and decommissioning activities given the promulgation of information relating to the Project including the charting of the construction areas on relevant nautical charts and the use of safety zones. The buoyed construction areas would also serve to maximise awareness.

15.9.1.23 All vessels are expected to comply with flag state regulations including Regulation 34 of SOLAS Chapter V – which states that "*the voyage plan shall identify a route which… anticipates all known navigational hazards and adverse weather conditions*" (IMO, 1974) – and IMO Resolution A.893(21) on the Guidelines for Voyage Planning (IMO, 1999). The promulgation of information relating to the Project would assist such passage planning.

Offshore export cable corridor

15.9.1.24 Given the location of the offshore export cable corridor, it is considered likely that cable installation will lead to displacement with many commercial vessels routeing north south, in particular to local ports (Peterhead and Aberdeen). However, no concerns were raised over displacement due to cable installation in regard to commercial vessels. Installation activities will be short-term and temporary in nature and cover only a small extent. Therefore, deviations will be manageable, particularly with the promulgation of information allowing mariners to passage plan accordingly.

15.9.1.25 Fishing vessels in transit to Peterhead Port may be affected if approaching from the north when installation activities are occurring. This is of importance as Peterhead Port is the largest fishing port in Europe, and it is vital that vessels are able to maintain landing schedules. Vessels departing Peterhead Port were either on transit to fishing grounds or back to home ports such as Fraserburgh. As raised during the Hazard Workshop by Brown & May Marine, inshore potting vessels are likely to be present in proximity to the offshore export cable corridor noting that displacement of commercial fishing vessels engaged in fishing activity is assessed in **Chapter 14: Commercial Fisheries**.

15.9.1.26 For recreational vessels, there are frequent crossings of the offshore export cable corridor in the Summer, and therefore some potential for displacement around installation activities. However, there is sufficient sea room available for this (east and west) and so disruption would be limited. RYA Scotland noted in the Scoping Opinion that the landfall area is not

expected to cause any issues for recreational traffic, and so it is unlikely that cable installation would pose any problems for recreational vessels as COLREGs will apply and recreational vessels would safely navigate around ongoing project works.

15.9.1.27 Again, as for commercial vessels, deviations would be manageable for small craft, particularly with the promulgation of information allowing mariners to passage plan accordingly.

15.9.1.28 The most likely consequences are anticipated to be similar for the offshore export cable corridor as they are for the OAA and RCP search area.

Reactive Compensation Platform search area

15.9.1.29 As mentioned in Section 6.2.6, the RCP(s) may only be required during Phase 2 of the construction of the Project and only if HVDC is utilised within the OAA.

15.9.1.30 During the construction of the RCP within the RCP search area, a buoyed construction area may be deployed around the installations. Although there would be no restrictions on entry into any buoyed construction area, it is anticipated that the majority of commercial vessels would choose not to navigate internally within a buoyed construction area and therefore some main route deviations would be required.

15.9.1.31 As with the OAA, main commercial routes in the vicinity of the RCP search area have been identified from 12-months of long-term AIS data as well as Anatec's ShipRoutes database (see **Section 15.6.1**).

15.9.1.32 Deviations would be required during construction of the RCP(s) for six main commercial routes. The greatest deviation of these six routes is associated with Route 11 which was detailed for the OAA. The majority of increase in route length is associated with the presence of the OAA. This is emphasised by the route deviations wholly associated with the RCP; Routes 28 and 29, which were only deviated by the RCP and their increase in route lengths were <0.1nm.

15.9.1.33 Both the absolute value of deviation, as well as the percentage deviation of the overall route length are relatively small when only considering the RCP and are not expected to materially affect journey times and distances for third-party vessels. Regular RoRo and RoPax vessels were identified on Route 1, but no deviation on this route is required due to the presence of the RCP.

15.9.1.34 As noted in the adverse weather routeing for the OAA, Serco NorthLink Ferries were recorded during periods of adverse weather routeing further offshore. Adverse weather transits were seen to pass further offshore and alter course by 90° before returning to the mean route position, with several of these transits intersecting the RCP search area. During periods of extreme adverse weather and when sailings are not deemed safe, these scheduled routes are often cancelled as outlined in Section 12.2.1 of the **NRA** (**Volume 3, Appendix 15.1**). Serco NorthLink also confirmed that at the time of the RCP installation, new stabilised freight ferries would be in use (by 2029) which should reduce the frequency of such offshore routeing, RoPax vessels already have such stabilisers and so it is not anticipated that the RCP would adversely impact vessels on this route and Serco NorthLink have confirmed this to be the case.

15.9.1.35 The most likely consequences of vessel displacement would be increased journey times and distances for affected third-party vessels, the same as proposed for the OAA. However, for the RCP search area, the impact would occur over a more refined local spatial extent and therefore be less substantial.

15.9.1.36 Post wind farm, the collision frequency was estimated at one in 806 years, representing a 3.7% increase on the pre wind farm scenario. With a future case vessel traffic growth of

20%, this return period increases to one in 568 years. This increase is due to the minor deviations required for the six main commercial routes – especially the convergence of Route 4 and Route 10 options – but overall remains low due to only being a single structure to deviate around. Like the OAA, the risk of collision was not raised as a key topic during consultation including at the Hazard Workshop.

15.9.1.37 The most likely consequences in the event of an encounter between two or more third-party vessels is the implementation of avoidance action in line with the COLREGs, with the vessels involved able to resume their respective passages with no long-term consequences, the same as proposed for the OAA.

Significance of effect

15.9.1.38 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from vessel displacement and third-party collision risk for each Project component is presented in **Table 15.14**.

Table 15.14 Significance of effect for vessel displacement and third-party collision risk (construction stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Increased journey time / distance which impacts on schedules or compliance with COLREGs, and collision incident occurs with vessel damage, PLL, and / or pollution.	Reasonably Probable	Moderate	Tolerable with Mitigation
Offshore export cable corridor		Remote	Moderate	Tolerable with Mitigation
RCP search area		Remote	Moderate	Tolerable with Mitigation

15.9.2 Increased vessel to vessel collision risk between a third-party vessel and a Project vessel

15.9.2.1 The presence of vessels associated with construction activities, may result in increased risk of a collision between a third-party vessel and a Project vessel.

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15.9.2.2 The construction stage may last for up to 12 years across three continuous phases. The locations of each of these phases are not yet known but will be detailed within the CMS, included as an embedded environmental measure.

15.9.2.3 Up to 10 Project vessels may be on site simultaneously during the construction stage making up to 3,838 individual vessel transits. This would include Restricted in Ability to Manoeuvre (RAM) vessels. It is assumed that construction vessels would be on-site throughout the duration of the construction stage.

15.9.2.4 Based on historical incident data, there has been one instance of a third-party vessel colliding with a Project vessel in the UK (Section 9.5). During this incident, which occurred in 2011, moderate vessel damage was reported with no harm to persons. Since then,

awareness of offshore wind developments and the application of embedded environmental measures has improved or been refined considerably in the interim, with no further collision incidents reported.

15.9.2.5 Project vessels would be managed by marine coordination through a VMNSP, **Volume 4: Outline Vessel Management and Navigational Safety Plan** It is also noted that Project vessels would carry AIS and comply with Flag State regulations including the COLREGs and SOLAS. This would be particularly important for Project vessels transiting to and from the OAA, noting that the base port(s) for construction are not yet known. This also refers to where Project vessels transiting between ports and the OAA are undertaking towage of a floating unit, as a failed towage operation could result in the floating unit being adrift and if occurring in a high risk area, there is an increase in collision risk. Towage of a floating unit to the OAA would be subject to a dedicated risk assessment at the time of the towage operation when full specifications relating to the operations is available and this will include consideration of upcoming MCA guidance relating to towage requirements for offshore floating structures.

15.9.2.6 In addition to the buoyed construction area, where Project vessels are undertaking construction activities associated with surface structures, safety zones are anticipated. An application for safety zones of 500m would be sought during the construction stage around structures where construction activity is ongoing (e.g., where a construction vessel is present). These would serve to protect Project vessels engaged in construction activities. Minimum advisory passing distances, as defined by risk assessment, may also be applied where safety zones do not apply (e.g., around cable installation vessels) with advanced warning and accurate locations of both safety zones and any minimum advisory passing distances provided by Notifications to Mariners and Kingfisher Bulletins.

15.9.2.7 Third-party vessels may experience restrictions on visually identifying Project vessels entering and exiting the array during reduced visibility; however, this impact would be mitigated by the application of the COLREGs (reduced speeds) in adverse weather conditions and require all vessels operating in reduced visibility to reduce speed to allow more time for reacting to encounters, thus minimising the collision risk.

15.9.2.8 The Project will exhibit lights, marks, sounds, signals and other aids to navigation as required by NLB and MCA, including the buoyed construction area. These navigational aids would further maximise mariner awareness when in proximity, both in day and night conditions including in poor visibility.

15.9.2.9 Should an encounter develop into a collision incident, the most likely consequences would be similar to that outlined for the case of a collision between two third-party vessels, it is likely to be very localised and occur for only a short duration. With collision avoidance action implemented in line with the COLREGs, the vessels involved would likely be able to resume their respective passages and / or activities with no long-term consequences.

15.9.2.10 As an unlikely worst case, one of the vessels could founder resulting in PLL and pollution, with this outcome more likely where one of the vessels is a small craft (e.g., fishing vessel, recreational vessel or CTV). If pollution were to occur in proximity to the Project or involving a Project vessel, then pollution planning protocols would be implemented to minimise the environmental effects.

Offshore export cable corridor

15.9.2.11 For the offshore export cable corridor, the impact on increased collision risk between third-party vessels and Project vessels is significantly less than other Project components as installation activities would cover a reduced area and be local in extent. Additionally, the open sea room in the vicinity of offshore export cable corridor would allow vessels to safely take avoiding action should an encounter situation arise. The greatest impact to vessels

would occur near the landfall location during construction. However, only small craft would likely be affected as larger commercial vessels would be unlikely to route that close to shore. Small craft transits were primarily north south over the offshore export cable corridor inshore and so the extent of exposure in which a vessel would be subject to construction activities is low.

15.9.2.12 As aforementioned, RYA Scotland noted in the Scoping Opinion that the landfall area is not expected to cause any issues for recreational traffic, and so it is unlikely that cable installation would pose any problems for recreational vessels as COLREGs will apply and recreational vessels would work around ongoing project works.

15.9.2.13 The most likely consequences are anticipated to be the same for the offshore export cable corridor as they are for the OAA and RCP search area.

Reactive compensation platform search area

15.9.2.14 As the RCP search area would include only a maximum of an overall single structure (if two RCPs required, they would be connected via a bridge-link), there would be relatively few Project vessels required on-site across the construction stage, associated only with the RCP(s). The likelihood of a Project vessel encountering a third-party vessel would therefore be lower in this area. Additionally, the open sea room in the vicinity of the RCP search area would allow vessels to safely take avoiding action should an encounter situation arise.

15.9.2.15 The same mitigations applied to the OAA would be relevant for the RCP search area also, inclusive of lights, marks, sounds, signals and other aids to navigation as required by NLB and MCA, and this may also include a buoyed construction area. These navigational aids will further maximise mariner awareness when in proximity, both in day and night conditions including in poor visibility.

15.9.2.16 The most likely consequences of collision risk between and third-party vessel and a Project vessel would be similar to that outlined for the case of a collision between two third-party vessels, it is likely to be very localised and occur for only a short duration, the same as the OAA. With collision avoidance action implemented in line with the COLREGs, the vessels involved will likely be able to resume their respective passages and / or activities with no long-term consequences.

Significance of effect

15.9.2.17 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from third-party to Project Vessel collision risk for each Project component is presented in **Table 15.15**.

Table 15.15 Significance of effect for increased third-party to Project vessel collision risk (construction stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Collision incident occurs with vessel damage, PLL, and / or pollution.	Remote	Moderate	Tolerable with Mitigation
Offshore export cable corridor		Extremely Unlikely	Moderate	Broadly Acceptable
RCP search area		Extremely Unlikely	Moderate	Broadly Acceptable

15.9.3 Reduced access to local ports and harbours

15.9.3.1 Construction activities associated with the installation of structures and cables may reduce access to local ports and harbours.

Option Agreement Area

15.9.3.2 Up to 10 construction vessels may be utilised across the construction stage and would include vessels that are RAM. Project vessels would be managed by marine coordination through a VMNSP, **Volume 4: Outline Vessel Management and Navigational Safety Plan**.

15.9.3.3 The closest port or harbour to the OAA is Fraserburgh Harbour, located approximately 42nm to the south-west. Given the relative distance to ports in the area and the anticipated deviations for the main commercial routes, it is not anticipated that there would be any substantial effect due to OAA construction activities on vessel approaches to and from any local ports beyond the deviations already outlined for impacts on vessel displacement (**Section 15.9.1**), especially since the ports associated with the construction of the Project are also not yet known.

15.9.3.4 However, it is recognised that towage operations for floating units between the assembly port and OAA may cause some disruption given the restricted nature of such activities. Towage operations would be subject to a dedicated risk assessment at the time of the towage operation when full specifications relating to the operations is available. The operation itself would be coordinated in liaison with the statutory harbour authority for the assembly port to ensure any access limitations were minimised.

Offshore export cable corridor

15.9.3.5 For offshore export cable corridor construction activities, there is a greater risk given the proximity to the entrance to Peterhead Port, which is located approximately 1nm south of the offshore export cable corridor. Where cable installation is ongoing vessel displacement is possible; this is particularly of importance to fishing vessels which, as highlighted in the vessel displacement impact (**Section 15.9.1**), are likely entering Peterhead Port to land and rely on berth availability and landing schedules. Installation activities for the offshore export cable corridor would be short-term and temporary in nature and cover only a small extent at any given time.

15.9.3.6 Peterhead Marina is a common stopping point for passing recreational vessels. RYA Scotland noted in the Scoping Opinion that the landfall area is not expected to cause any issues for recreational traffic, and so it is unlikely that cable installation would pose any problems for recreational vessels as COLREGs will apply and recreational vessels would work around ongoing project works.

15.9.3.7 A key element of the coordination would be in relation to pilotage activities, but it is noted that the pilot boarding station for Peterhead Port is located well clear of the offshore export cable corridor and during the vessel traffic surveys, and long-term vessel traffic data, no pilot vessels intersected the offshore export cable corridor. Additionally, the Peterhead Port Authority noted that vessel traffic would increase with the future developments at Peterhead Port, as there are plans to extend the quays. A 20% increase of vessel traffic proposed is realistic if planned developments went ahead. Peterhead Port also noted at the Hazard Workshop that port access issues would be on a case-by-case basis but acknowledged that there is good existing working relationship with the Project from previous survey work and Peterhead Port would coordinate with the Project as appropriate in relation to Project vessel movements.

15.9.3.8 No further concerns were raised in regard to local port and harbour access in the Hazard Workshop in relation to the offshore export cable corridor. Nevertheless, information would be promulgated prior to any construction activities to allow mariners to passage plan accordingly.

Reactive compensation platform search area

15.9.3.9 The closest port or harbour to the RCP search area is Peterhead Port, located approximately 16nm to the southwest. Like the OAA, given the relative distance to ports in the area and the anticipated deviations for the main commercial routes, it is not anticipated that there would be any substantial effect due to RCP construction activities on vessel approaches to and from any local ports beyond the deviations already outlined for impacts on vessel displacement (**Section 15.9.1**), especially since the ports associated with the construction of the Project are also not yet known.

Significance of effect

15.9.3.10 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from reduced access to local ports and harbours for each Project component is presented in **Table 15.16**.

Table 15.16 Significance of effect for reduced access to local ports and harbours (construction stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Presence of Project vessels operating within and in proximity to port or harbour restricts access and impacts on schedules and / or berth times.	Extremely Unlikely	Minor	Broadly Acceptable
Offshore export cable corridor		Reasonably Probable	Minor	Tolerable with Mitigation
RCP search area		Negligible	Minor	Broadly Acceptable

15.9.4 Loss of station

15.9.4.1 In the event that the mooring system holding a floating unit fails, the floating substructure may suffer loss of station and become a floating hazard to passing vessels.

15.9.4.2 As this impact is only relevant to the floating units associated within the OAA; this impact will only assess the OAA and not the RCP search area or the offshore export cable corridor.

Option Agreement Area

15.9.4.3 Towage of the floating unit to site would be subject to a dedicated risk assessment at the time of the towage operations when full specifications relating to the operations is available. This dedicated risk assessment should cover all elements of the towing operation including in port approaches.

15.9.4.4 The UK Chamber of Shipping noting shared anchors should be used to assess the worst-case scenario for loss of station. During the construction stage while located within the OAA, the OAA would be monitored by vessels on-site at all times ensuring all infrastructure remains in-situ. If a mooring line failure was to arise, a Project vessel would be able to respond in a timely manner ensuring a loss of station event does not occur and appropriate arrangements are taken which may include towing the floating unit off-site.

15.9.4.5 On this basis, a loss of station is considered likely to represent a low frequency event, noting that for a total loss of station, all moorings would be required to fail (each WTG would have a minimum of three).

15.9.4.6 The main consequence would be failure of a single mooring line leading to a temporary increase in the maximum excursion of the floating unit but without full loss of station.

15.9.4.7 As a worst-case, multiple shared anchor failures could lead to multiple floating units going off station, with potential for collision risk with third-party vessels.

Significance of effect

15.9.4.8 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from loss of station for the OAA is presented in **Table 15.17**.

Table 15.17 Significance of effect for loss of station (construction stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Total failure of mooring / shared anchor system or towage operation leads to drifting of multiple floating structures with risk of collision with vessels.	Extremely Unlikely	Moderate	Broadly Acceptable

15.10 Assessment of effects: Operation and maintenance stage

15.10.1 Vessel displacement and increased vessel to vessel collision risk between third-party vessels

15.10.1.1 The presence of structures as well as activities associated with the O&M of structures and subsea cables may displace third-party vessels from their existing routes or activity, increasing the collision risk with other third-party vessels.

Option Agreement Area

Main commercial route displacement

15.10.1.2 Based on experience at existing operational offshore wind farms (inclusive of floating offshore wind farms noting Hywind Scotland and Kincardine are currently the only operational UK floating offshore wind farms), it is anticipated that commercial vessels would choose not to navigate internally within the OAA and therefore the main route deviations established for the equivalent construction stage impact for vessel displacement in line with MGN 654 (MCA, 2021) are again applicable during the O&M stage of the Project (**Section 15.9.1**).

15.10.1.3 Subsequently, the nature of this impact for commercial vessels is expected to be broadly similar to that considered for the equivalent construction stage impact for vessel displacement (**Section 15.9.1**). The buoyed construction area would no longer serve to assist with guiding vessels around the OAA, but the operational lighting and marking of the array would serve this purpose.

15.10.1.4 Vessels using the deviated routes are typically smaller commercial oil and gas vessels whose master's would be experienced with navigating in close proximity to offshore installations. Therefore, there is potential that depending upon the final layout, these vessels may occasionally choose to navigate internally through the OAA noting that there would be no restrictions on entry, other than active O&M safety zones. However, this is unlikely as outlined by the oil and gas vessel operators response to the Regular Operator outreach (Section 4.3).

15.10.1.5 For fishing vessels and recreational vessels, internal navigation within the OAA is considered feasible during the O&M stage, noting that the minimum spacing is sufficient to accommodate transits by smaller vessels. Additionally, there would be no restrictions on entry into the OAA for any vessel other than through any active 500m major maintenance safety zones. SFF noted during the Hazard Workshop that large pelagic fishing vessels are unlikely to transit within the operational array but would be down to Master discretion, but if they do transit in proximity, the level of relevance to this impact would be greatest for fishing vessels as would be exposed to the hazard for longer. SFF highlighted if fishing vessels were to transit internally, they would likely do so due to the setback of WTGs in the centre of the OAA as a result of the presence of the subsea pipeline creating a 1.6km gap (noting this gap is not intended as a navigational corridor).

15.10.1.6 It should be expected that some recreational vessel transits could occur within the OAA during operation. Vessels may also enter if avoiding larger commercial vessels. Based on baseline characteristics of recreational vessels, noting RYA Scotland confirmed the vessel traffic survey data to be representative of activity in the area, recreational vessel volumes are very low, and any internal transits or deviations made by recreational vessels would be infrequent and these vessels on intercontinental routes would likely be used to transiting in proximity to developments and oil and gas infrastructure. Again, as noted during the

construction stage, any recreational vessels transiting this far offshore would be expected to undertake due diligence of the intended route.

15.10.1.7 The main consequences of vessel displacement during the O&M stage are also considered to be equivalent to the construction stage, in particular potential for increased journey times and distances (**Section 15.9.1**) No notable effects on navigational safety are anticipated.

Collision Risk

15.10.1.8 Increased third-party vessel to vessel collision for commercial vessels is expected to be broadly similar to that considered for the equivalent construction stage impact including embedded environmental measures (**Section 15.9.1**). Although the buoyed construction area would no longer serve to assist with guiding vessels around the OAA, the operational lighting and marking of the array would serve this purpose.

15.10.1.9 An additional factor during the O&M stage is the potential for the view of other vessels to be blocked or hindered due to the presence of structures, particularly for small craft which may choose to navigate internally within the OAA. However, the minimum spacing between WTGs is sufficient to ensure that any notable effects – which would likely arise only along a row of WTGs – occur only where the vessels involved are far apart, i.e., at opposite ends of the row of WTGs a concertina effect occurring along the row of WTGs. Any visual hindrance is very short-term in nature, especially as any vessels which would be visually obscured for the maximum length of time would be parallel to each other and so not on a collision course. As the distance between the vessels closes, any blocking effect would quickly reduce. In adverse weather conditions obtaining a visual of a crossing vessel may be more challenging, but it is anticipated that in such circumstances the COLREGs would be applied in terms of using reduced speeds in limited visibility.

15.10.1.10 This is the same for smaller craft, fishing vessels and recreational vessels, where internal transits within the operational array may be expected. There remains sufficient open sea room around the OAA during O&M activities to ensure that collision risk (including with a commercial vessel) is minimal.

15.10.1.11 Additionally, the promulgation of information relating to O&M activities and charting of infrastructure would allow vessel Masters (across all vessel types) to passage plan in advance, minimising any displacement and subsequent collision risk. Additionally, information for fishing vessels would be promulgated through ongoing liaison with fishing fleets and fisheries associations via a Fishing Industry Representative.

15.10.1.12 Again, the main consequence of increased third-party collision risk associated with the OAA is expected to be broadly similar to the equivalent construction stage impact, i.e., increased encounters (**Section 15.9.1**).

Offshore export cable corridor

15.10.1.13 The frequency of O&M activities associated with the offshore export cable corridor is expected to be limited, and so potential disruption associated with the offshore export cable corridor would again be limited and any deviations would be minimal and easily manageable with notice of any maintenance being promulgated.

15.10.1.14 Any displacement due to O&M activities within the offshore export cable corridor is not anticipated to affect available sea room such that the risk of a collision between third-party vessels is materially increased.

15.10.1.15 Again, the main consequences of vessel displacement and increased third-party collision risk during the O&M stage are also considered to be equivalent to the construction stage,

in particular potential for increased journey times and distances and increased encounters (**Section 15.9.1**). No notable effects on navigational safety are anticipated.

Reactive compensation platform search area

15.10.1.16 The frequency of O&M activities associated with the RCP(s) is expected to be limited, and so potential disruption associated within the RCP search area would be limited and any deviations would be minimal and easily manageable with notice of any maintenance being promulgated. The main route deviations established for the equivalent construction stage impact for vessel displacement due to the presence of the RCP(s) are again applicable during the O&M stage of the Project (**Section 15.9.1**).

15.10.1.17 Subsequently, the nature of this impact for commercial vessels is expected to be broadly similar to that considered for the equivalent construction stage impact for vessel displacement (**Section 15.9.1**). A buoyed construction area would no longer serve to assist with guiding vessels around the RCP(s), but the operational lighting and marking of the structures would serve this purpose. NLB confirmed during the Hazard Workshop that the RCP would be lit and marked as an isolated structure and be based on existing bridge-linked structures (should a bridge link be implemented) as mariners are already familiar with them from oil and gas industry.

15.10.1.18 Again, the main consequences of vessel displacement and increased third-party collision risk during the O&M stage are also considered to be equivalent to the construction stage, in particular potential for increased journey times and distances and increased encounters (**Section 15.9.1**). No notable effects on navigational safety are anticipated.

Significance of effect

15.10.1.19 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from vessel displacement and third-party collision risk for each Project component is presented in **Table 15.18**.

Table 15.18 Significance of effect for vessel displacement and third-party collision risk (O&M stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Increased journey time / distance which impacts on schedules or compliance with COLREGs, and collision incident occurs with vessel damage, PLL, and / or pollution.	Reasonably Probable	Moderate	Tolerable with Mitigation
Offshore export cable corridor		Extremely Unlikely	Moderate	Broadly Acceptable
RCP search area		Remote	Moderate	Tolerable with Mitigation

15.10.2 Increased vessel to vessel collision risk between a third-party vessel and a Project vessel

15.10.2.1 The presence of vessels associated with O&M activities may result in increased risk of a collision between a third-party vessel and a Project vessel.

Option Agreement Area

15.10.2.2 Up to 364 return trips per year by a peak of seven O&M vessels may be made throughout the O&M stage, including RAM vessels. It is assumed that O&M vessels will be on-site throughout the O&M stage. It is noted that the movement of Project vessels during the O&M represents a large decrease in movements in comparison to the construction stage.

15.10.2.3 As with the equivalent construction stage impact, encounter and collision risk involving a Project vessel would be well mitigated, including through marine coordination, carriage of AIS, compliance with Flag State regulations by Project vessels, and promulgation of information to fishing fleets. An application for safety zones of 500m radius would be sought during the O&M stage for any ongoing major maintenance within the OAA.

15.10.2.4 During the O&M stage, towage of floating units to and from the OAA for maintenance would be subject to a dedicated risk assessment at the time of the towage operation when full specifications relating to the operations is available. It is anticipated that a maximum of 364 return trips per year would be carried out for floating unit towage to port. This dedicated risk assessment should cover all elements of the towage operation including in port approaches and internally within the OAA.

15.10.2.5 As stated during the equivalent construction stage impact, based on historical incident data, there has been one instance of a third-party vessel colliding with a Project vessel in the UK (Section 9.5 of the **NRA** (**Volume 3, Appendix 15.1**)), with no further collision incidents reported since.

15.10.2.6 Again, third-party vessels may experience restrictions on visually identifying Project vessels entering and exiting the OAA during reduced visibility; however, this impact will be mitigated by the application of the COLREGs (reduced speeds) in adverse weather conditions and require all vessels operating in reduced visibility to reduce speed to allow more time for reacting to encounters, thus minimising the collision risk.

15.10.2.7 The main consequences between a third-party vessel and a Project vessel are expected to be broadly similar to the equivalent construction stage impact for third-party to Project vessel collision risk, noting that towage operations would occur less frequently (**Section 15.9.2**).

Offshore export cable corridor

15.10.2.8 The frequency of O&M activities associated with the offshore export cable corridor is expected to be limited.

15.10.2.9 Again, the main consequences between a third-party vessel and a Project vessel are expected to be broadly similar to the equivalent construction stage impact for third-party to Project vessel collision risk (**Section 15.9.2**).

Reactive compensation platform search area

15.10.2.10 The frequency of O&M activities associated with the RCP(s) is expected to be limited.

15.10.2.11 As with the equivalent construction stage impact, encounter and collision risk involving a Project vessel would be well mitigated, including through marine coordination, carriage of

AIS, compliance with Flag State regulations by Project vessels, and promulgation of information to fishing fleets.

15.10.2.12 Again, the main consequences between a third-party vessel and a Project vessel are expected to be broadly similar to the equivalent construction stage impact for third-party to Project vessel collision risk (**Section 15.9.2**).

Significance of effect

15.10.2.13 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from third-party to Project Vessel collision risk for each Project component is presented in **Table 15.19**.

Table 15.19 Significance of effect for increased third-party to Project vessel collision risk (O&M stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Collision incident occurs with vessel damage, PLL, and / or pollution.	Remote	Moderate	Tolerable with Mitigation
Offshore export cable corridor		Negligible	Moderate	Broadly Acceptable
RCP search area		Extremely Unlikely	Moderate	Broadly Acceptable

15.10.3 Reduced access to local ports and harbours

15.10.3.1 O&M activities associated with the O&M of structures and cables may reduce access to local ports and harbours.

Option Agreement Area

15.10.3.2 Up to 364 return trips per year by a peak of seven O&M vessels may be made throughout the O&M stage, including RAM vessels. It is assumed that O&M vessels would be on-site throughout the O&M stage. It is noted that the movement of Project vessels during the O&M represents a large decrease in movements in comparison to the construction stage. As per the construction stage, Project vessels will be managed by marine coordination through a VMNSP, **Volume 4: Outline Vessel Management and Navigational Safety Plan**.

15.10.3.3 Given the extent of the OAA would be similar to during the construction stage, this element of the impact is considered broadly similar. This includes in relation to any towage operations for floating units between a maintenance port and the OAA which may cause some disruption but would be coordinated in liaison with the statutory harbour authority to minimise access limitations.

15.10.3.4 The main consequences would be broadly similar to the equivalent construction stage impact for reduced access to local ports, harbours, and marinas (**Section 15.9.3**).

Offshore export cable corridor

15.10.3.5 As noted in the construction stage impact, there is a greater risk given the proximity to Peterhead Port and importance of access for fishing vessels. However, the frequency of O&M activities is expected to be limited, and so potential disruption would be further limited with information promulgated in advance to allow mariners to passage plan accordingly if required.

15.10.3.6 Again, the main consequences would be broadly similar to the equivalent construction stage impact for reduced access to local ports, harbours, and marinas (**Section 15.9.3**).

Reactive compensation platform search area

15.10.3.7 Given the extent of the RCP(s) would be similar to during the construction stage, this element of the impact is considered broadly similar.

15.10.3.8 Again, the main consequences would be broadly similar to the equivalent construction stage impact for reduced access to local ports, harbours, and marinas (**Section 15.9.3**).

Significance of effect

15.10.3.9 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from reduced access to local ports and harbours for each Project component is presented in **Table 15.20**.

Table 15.20 Significance of effect for reduced access to local ports and harbours (O&M stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Presence of Project vessels operating within and in proximity to port or harbour restricts access and impacts on schedules and / or berth times.	Extremely Unlikely	Minor	Broadly Acceptable
Offshore export cable corridor		Remote	Minor	Broadly Acceptable
RCP search area		Negligible	Minor	Broadly Acceptable

15.10.4 Loss of station

15.10.4.1 In the event that the mooring system holding a floating unit fails, the floating substructure may experience loss of station and become a floating hazard to passing vessels.

15.10.4.2 As this impact is only relevant to the floating units associated within the OAA; this impact will only assess the OAA and not the RCP search area or the offshore export cable corridor.

Option Agreement Area

15.10.4.3 The MCA require under their Regulatory Expectations on Moorings for Floating Wind and Marine Devices (MCA and HSE, 2017) that developers arrange third-party verification (TPV) of the mooring systems by an independent and competent person / body. The Regulatory Expectations state that TPV is a "*continuous activity*" and that should there be any

modifications to a system or if new information becomes available with regard to its reliability, additional TPV would be required.

15.10.4.4 The Regulatory Expectations also require the provision of continuous monitoring either by GPS or other suitable means. Each WTG should also have an alarm system in place, whereby an alert will be provided to the Marine Coordination Centre in the event that any floating substructure leaves a pre-defined ringfenced alarm zone. This means in the unlikely event that a floating unit suffers total loss of station and drifts outside of its alarm zone, MarramWind Limited (hereafter, referred to as 'the Applicant') would be made aware and be able to track its position and make the necessary emergency arrangements, which will depend upon the design of the floating unit and any predefined emergency response protocols. These protocols will also include recovery of a deliberately sunken floating unit should this be deemed a necessary option.

15.10.4.5 On the basis of compliance with the Regulatory Expectations, a loss of station is considered likely to represent a low frequency event, noting that for a total loss of station, all moorings would be required to fail (each WTG will have a minimum of three).

15.10.4.6 The main consequences will be broadly similar to the equivalent construction stage impact for loss of station (**Section 15.9.4**). There is also potential for the lighting and marking of the OAA to be compromised should a loss of station lead to the loss of a key AtoN as highlighted by NLB during consultation, especially for the peripheral structures. The LMP; **Volume 4: Outline Lighting and Marking Plan** will ensure that this issue is addressed appropriately, which may include deployment of a guard vessel. RYA Scotland also raised in response to the Hazard Workshop that loss of station should cover the loss of station by buoy. Again, the LMP; **Volume 4: Outline Lighting and Marking Plan** will ensure that this issue is addressed appropriately through monitoring and emergency procedures (via a set protocol) in the event of a loss of station.

Significance of effect

15.10.4.7 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from loss of station for the OAA is presented in **Table 15.21**.

Table 15.21 Significance of effect for loss of station (O&M stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Total failure of mooring / shared anchor system or towage operation leads to drifting of multiple floating structures with risk of collision with vessels.	Remote	Moderate	Tolerable with Mitigation

15.10.5 Creation of vessel to structure allision risk

15.10.5.1 The presence of structures within the OAA or RCP search area may lead to the creation of powered, drifting and internal allision risk for vessels.

15.10.5.2 This impact is only relevant to the surface structures associated within the OAA and RCP search area, this impact will only assess the OAA and RCP search area and not the offshore export cable corridor. Additionally, this impact is scoped out of the assessment of effects for the construction and decommissioning stages given the embedded mitigation measures which would be in place including the buoyed construction / decommissioning area. With this mitigation, the risk in these stages is considered to be ALARP.

Option Agreement Area

15.10.5.3 The spatial extent of the impact is small given that a vessel must be in close proximity to a surface structure for an allision incident to occur. Each allision element is considered in turn with the frequency of occurrence, severity of consequence, and resulting significance of effect across the various elements summarised at the end of the assessment. The forms of allision considered include:

- powered allision risk;
- drifting allision risk; and
- internal allision risk

Powered allision risk

15.10.5.4 Based on the quantitative assessment undertaken for the indicative OAA layout (Section 16.2.2.3), the base case annual powered vessel to structure allision return period was estimated to be one in 84 years. With a future case vessel traffic growth of 20%, this return period increases to one in 71 years. This return period is higher than the average recorded for powered allision risk in other UK offshore wind farm developments, due to the high volume of deviated vessel traffic routeing in proximity to the layout, overall number of structures.

15.10.5.5 Based on historical incident data, there have been two reported instances of a third-party vessel alliding with an operational offshore wind farm structure in the UK (in the Irish Sea and Southern North Sea). Both of these incidents involved a fishing vessel, with an RNLI lifeboat attending on both occasions and a helicopter deployed in one case.

15.10.5.6 Vessels are expected to comply with national and international flag state regulations (including the COLREGs and SOLAS) and would be able to passage plan a route which minimises risk given the promulgation of information relating to the Project, including the charting of infrastructure on relevant nautical charts. On approach, the operational marine lighting and marking on the structures (which would be agreed with the MCA and NLB) would also assist in maximising awareness. Furthermore, the final layout will be agreed post consent in consultation with MCA and NLB to ensure it is safe from a surface navigation perspective.

15.10.5.7 Should a powered allision occur, the consequences would depend on multiple factors including the energy of the contact, structural integrity of the vessel involved, and sea state at the time of the contact. Fishing vessels and recreational vessels are considered most vulnerable to the impact given the potential for a non-steel construction. With consideration of lessons learned the most likely consequences are minor damage with the vessel able to resume passage and undertake a full inspection at the next port of call. As an unlikely worst-case, the vessel could founder resulting in a PLL and pollution. If pollution were to occur, then the MPCP would be implemented; **Volume 4: Outline Marine Pollution Contingency Plan**.

Drifting allision risk

15.10.5.8 Based on the quantitative assessment undertaken for the indicative OAA layout (Section 16.2.2.4), the base case annual drifting vessel to structure allision frequency was estimated to be 1.84×10^{-4}, corresponding to a return period of approximately one in 5,422 years. With a future case vessel traffic growth of 20%, this return period increases to one in 4,591 years. This is a low return period compared to that estimated for other UK offshore wind farm developments and again reflects the low volume of deviated vessel traffic routeing in proximity to the layout at the south-west (the most frequent wind direction). The low return period is also reflected when considering future case traffic levels.

15.10.5.9 Based on historical incident data, there have been no instances of a third-party vessel alliding with an operational offshore wind farm structure whilst Not Under Command (NUC) (Section 9.5). The MAIB incident data reviewed in proximity to the Project indicates that three instances of machinery failure incidents occurred in proximity to the OAA over a 10-year period and so there is some potential for a vessel to be adrift in the area, although it should be noted that machinery failure incidents may not relate to the vessel being NUC.

15.10.5.10 A vessel adrift may only develop into an allision situation if in proximity to a surface structure. This is only the case where the adrift vessel is located internally within or in close proximity to the OAA and the direction of the wind and /or tide directs the vessel towards a structure.

15.10.5.11 In circumstances where a vessel drifts towards a structure in the OAA, there are actions which the vessel may take to prevent the drift incident developing into an allision situation. For powered vessels, the ideal and likely solution would be to regain power prior to reaching the OAA (i.e., by rectifying any fault). Failing this, the vessel's emergency response procedures would be implemented which may include an emergency anchoring event, following a check of the relevant nautical charts to ensure the deployment of the anchor would not lead to other risks (such as anchor snagging on a subsea cable or mooring line), or the use of thrusters (depending on availability and power supply).

15.10.5.12 Noting the considerable water depth within and in proximity to the OAA, deployment of the anchor may not be possible, particularly for small craft. In such circumstances, any Project vessels on-site may be able to render assistance in liaison with the MCA and in line with SOLAS obligations (IMO, 1974), particularly in the Summer months when O&M activities are likely to be more frequent. This response would be managed via His Majesty's (HM) Coastguard and marine coordination and depends on the type and capability of vessels on-site. This would be particularly relevant for sailing vessels relying on metocean conditions for propulsion, noting if the vessel becomes adrift in proximity to a structure there may be limited time to render assistance.

15.10.5.13 Should a drifting allision occur, the consequences would be similar to those noted for the case of a powered allision including the unlikely worst-case of foundering, PLL, and pollution. However, a drifting vessel is likely to be moving at a reduced speed compared to a powered vessel, thus reducing the energy of the impact, including in the case of a recreational vessel under sail.

Internal allision risk

15.10.5.14 As noted previously, based on experience at existing operational offshore wind farms, it is anticipated that commercial vessels would be unlikely to navigate internally within the OAA. Therefore, the likelihood of an internal allision involving a commercial vessel is anticipated to be negligible.

15.10.5.15 Fishing and recreational vessels may be more likely to transit through although are less likely to do so at a floating site such as the Project compared to fixed sites due to the presence of mooring infrastructure associated with floating units.

15.10.5.16 Based on the quantitative assessment undertaken for the indicative OAA layout (Section 16.2.2.4), the base case annual drifting vessel to structure allision frequency was estimated to be 4.9×10-1, corresponding to a return period of approximately one in 2.05 years. With a future case vessel traffic growth of 20%, this return period increases to one in 1.7 years. This is a high frequency and reflects the high level of fishing activity present within the OAA (See Section 10.1.2.2) and the conservative assumptions that all existing fishing vessel presence within the OAA remains and passing distances from structures are not increased. This is a very conservative assumption, particularly for a floating site, noting internal transits by larger pelagic fishing vessels are unlikely to occur based on consultation feedback from SFF at the Hazard Workshop as would be down to Master discretion.

15.10.5.17 The estimated return period also does not take account of the nature of any allision incident. The worst consequences reported for vessels involved in an allision incident involving a UK offshore wind farm development has been flooding, with no life-threatening injuries to persons reported (the model is calibrated against known incidents).

15.10.5.18 The minimum spacing between structures (500m between WTGS and offshore substations and 800m between WTGs) is considered sufficient for safe internal navigation, i.e., for vessels to keep clear of the offshore wind farm structures within the OAA. Moreover, the final layout – agreed with MCA and NLB post consent – would be compliant with the requirements of MGN 654 (MCA, 2021).

15.10.5.19 As with any passage, any vessel navigating within the OAA is expected to passage plan in accordance with SOLAS Chapter V (IMO, 1974) and promulgation of information by the Project would ensure that such vessels have good awareness of the presence of surface structures. Operational marine lighting and marking would be in place as required by, and agreed with, NLB and MCA. Given the size of the OAA, it is unlikely that a mariner would become disoriented when navigating internally; nevertheless, marking would include unique identification marking of each structure in an easily understandable pattern.

15.10.5.20 Should a recreational vessel under sail enter the proximity of a WTG, there is also potential for effects such as wind shear, masking and turbulence to occur. From previous studies of offshore wind developments, it has been concluded that WTGs do reduce wind velocity downwind of a WTG (MCA, 2008a) but that no negative effects on recreational craft have been reported on the basis of the limited spatial extent of the effect and its similarity to that experienced when passing a large vessel or close to other large structures (such as bridges) or the coastline. In addition, no practical issues have been raised by recreational users to date when operating in proximity to existing offshore wind developments. It was raised during the Hazard Workshop that recreational vessels may be at higher risk of allision as there is not always someone keeping a watch, especially in adverse weather conditions. However, at this stage in their journey and when transiting around surface structures, mariners should be alert and it is assumed that mariners are compliant with best practice i.e., passage planning and COLREGs.

15.10.5.21 For recreational vessels with a mast there is an additional allision risk when navigating internally within the array associated with the WTG blades. However, the minimum blade tip clearance of 22m above MHWS is what RYA Scotland recommend for minimising allision risk (RYA Scotland, 2019) and which is also noted in MGN 654 (MCA, 2021).

15.10.5.22 Should an internal allision occur, the consequences would be similar to those noted for the case of a powered allision, including the determining factors. However, as with a drifting allision, the speed at which the contact occurs would likely be lower than for an external allision (given that the vessel would knowingly be navigating in an area with allision hazards), resulting in reduced allision energy and a reduced likelihood of the worst-case consequences arising.

Reactive compensation platform search area

15.10.5.23 Based on the post wind farm modelling, the base case annual powered vessel to structure allision frequency was estimated at one every 116 years. With a future case vessel traffic growth of 20%, this return period increases to one in 97 years.

15.10.5.24 For the base case annual drifting vessel to structure allision this was one every 64,574 years. With a future case vessel traffic growth of 20%, this return period increases to one in 54,600 years.

15.10.5.25 For the base case annual fishing vessel to structure internal allision this was one every 158 years. With a future case vessel traffic growth of 20%, this return period increases to one in 131 years.

15.10.5.26 Again, allision risk is heavily dependent upon the number of surface piercing structures. With the RCP search area having a maximum of two individual RCPs connected via a bridge-link resulting in a single overall structure, the likelihood of an allision incident may be reduced. However, traffic volumes are generally greater in the region containing the RCP search area and a single structure is more exposed than a structure forming part of an array since there is no element of shielding by other structures or alternative aid to navigation presence in the event of a lighting failure.

15.10.5.27 Should a second RCP be required, and so a bridge-link present between RCPs, then there is an additional allision risk should a vessel choose to navigate under the bridge link and between platforms. Given the maximum separation and length of a bridge-link of 150m between platforms it is considered highly unlikely that a vessel would choose to navigate under a bridge-link, particularly given the height of the bridge-link of 20m above sea level. Additionally, the specific lighting and marking requirements for bridge links would be agreed with NLB to ensure that allision risk for vessels (including Project vessels and recreational vessels) is minimised. NLB confirmed at the Hazard Workshop that the RCPs would be lit and marked as a single structure and be based on existing bridge-linked structures as mariners are already familiar with them from the oil and gas industry.

15.10.5.28 SFF noted during the Hazard Workshop that fishing vessels would likely transit in proximity to the RCP since there is no legal obligation to avoid, potentially increasing allision risk. However, as previously it is assumed that mariners will be compliant with best practice i.e. passage planning and COLREGs.

15.10.5.29 The RCP search area carries increased allision risk and consequences due to the greater size and resistant force. Embedded mitigation measures applicable to the OAA are again relevant, including operational lighting (inclusive of availability standards in line with IALA guidance).

Significance of effect

15.10.5.30 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from creation of vessel to structure allision risk for each Project component is presented in **Table 15.22**.

Table 15.22 Significance of effect for the creation of vessel to structure allision risk (O&M stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Allision event occurs involving vessel damage, PLL and / or pollution.	Remote	Moderate	Tolerable with Mitigation
RCP		Remote	Moderate	Tolerable with Mitigation

15.10.6 Reduction of under keel clearance as a result of cable protection, dynamic cables, and mooring lines

15.10.6.1 The presence of mooring lines, buoyant array cables, or protection over subsea cables may reduce charted water depths leading to increased risk of under keel interaction for passing vessels.

15.10.6.2 The spatial extent of the impact is small given that a vessel must be in close proximity to a mooring line, array cable or subsea cable with cable protection for a reduction to occur. Since there are no subsea cables associated with the RCP search area (any subsea cables within this area would be export cables) this impact does not apply in this circumstance and only applies to the OAA and offshore export cable corridor.

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15.10.6.3 Vessels navigating in proximity to the floating units may be at risk of interaction with the mooring lines or array cables associated with floating units. The level of effect would depend on the clearance available above the subsea elements of the substructures.

15.10.6.4 There would be a maximum of nine mooring lines per floating unit used to secure the substructures to the seabed. The highest risk areas in terms of potential under keel clearance interaction would be the areas in the immediate vicinity of the floating substructures where the mooring lines are closest to the surface. As noted in the maximum design scenario for shipping and navigation (**Section 15.7.1**), the mooring lines will connect below the waterline at a minimum depth of 12m. All mooring arrangements inclusive of anchors, will be fully within the OAA boundary with a margin of space between arrangements and the perimeter.

15.10.6.5 As previously noted, it is unlikely that commercial vessels would enter the OAA. Moreover, experience indicates that commercial vessels frequently pass 1nm or more off established developments. On this basis, taking into consideration the baseline and anticipated post wind farm vessel routeing, it is considered highly unlikely that a commercial vessel would pass within the OAA let alone in sufficiently close proximity to the WTGs for an under keel interaction to arise as this would also create allision risk with the floating unit.

15.10.6.6 An analysis of under keel interaction for vessel draughts local to the area has been undertaken in Section 16.2.4 of the **NRA** (**Volume 3, Appendix 15.1**). This analysis found that as the connection point for the mooring line (12m) is deeper than both the average and maximum fishing vessel draughts recorded in the vessel traffic data (5.6m and 8.8m, respectively), there is not anticipated to be any under keel interaction with fishing vessels and the mooring lines. For commercial vessels, compared against the maximum draught recorded in the vessel traffic data (13.9m) – the horizontal distance over which an under-

keel interaction could occur associated with the mooring lines was 22.4m for commercial vessels. However, no commercial vessel would be expected to navigate this close proximity to a WTG given the allision risk associated with the WTG blades. The minimum blade length proposed would be 115m and at 115m from the WTG, the clearance depth is 24.8m and so it is not anticipated that any commercial vessel would experience any under keel clearance interaction.

15.10.6.7 The final design of mooring lines and array cables will be confirmed with MCA and NLB as part of the DSLP process. It would be necessary to confirm available under keel clearance from the mooring lines post installation, in particular if taut mooring lines are used. The confirmed available clearance should be discussed with the MCA and NLB post installation to determine if any additional mitigation is required. Nevertheless, based on feedback given by the MCA during the Hazard Workshop it is unlikely that that mooring lines or dynamic cables will pose a risk to under keel clearance.

15.10.6.8 For the array cables, as a worst-case, a hog bend may be incorporated into the design of the array cables. Even so, the minimum depth of the array cable below the sea surface would be 12m located at the connection point and the minimum depth of the hog bend is anticipated to be 30m, achieved at a maximum distance of 35m from the floating unit. The approximate descents of the array cables from the hog bend are not shallower than those parameters identified for the mooring lines. Therefore, any interaction with a vessel (commercial or fishing) is again considered highly unlikely.

15.10.6.9 Up to 225 array cables will be installed within the OAA with a maximum overall length of 367nm; final length dependant on final agreed layout post-consent. Array cables would have a maximum length of 1.6nm in the water column with a maximum of 570m of cable remaining on the seabed. Where available the primary means of cable protection would be by seabed burial. The extent and method by which the subsea cables would be buried would depend on the results of a detailed seabed survey of the final cable routes and associated CBRA. The array cables will have a typical burial depth of 1.0 to 2.0m. Where cable burial is not possible, alternative cable protection methods such as rock placement or mattresses may be deployed which would again be determined within the CBRA. The maximum height of any cable protection will be 2.0m. The minimum depth recorded in the OAA is 80 and so a reduction by 2.0m at the shallowest point (2.5% reduction in overall water depth) would not result in an under keel interaction and adheres to MGN 654 requirements of cable protection not changing the navigable water depth by more than 5%. It is also noted that there are up to six assumed subsea cable crossings for the array cables. Cable burial and protection is captured in the CaP.

15.10.6.10 There is the potential for between five and eight array cables to connect to a SDC with a maximum of 45 SDCs being installed within the OAA. Each SDC would be situated on the seabed within the OAA boundary and have a maximum height of 5m into the water column, thus reducing the minimum water depth to 75m (6.25% reduction). Although this does not adhere to MGN 654 requirements, based on the vessel draughts in the area this would not result in an under-keel interaction. If taken forward, this would be assessed further in the associated CBRA and discussed with the MCA and NLB should the navigable water depth be reduced by more than 5%.

15.10.6.11 There is limited experience of deployment of floating offshore wind projects in UK waters; however, to date there have been no reported under keel interactions between passing vessels and the components associated with such projects.

15.10.6.12 Details of the infrastructure would be promulgated to maximise awareness of the Project and any potential under keel interaction risk. The locations of the floating units will be clearly shown on appropriate nautical charts, and the Applicant will also provide the locations of the anchors and mooring lines to the UKHO for charting purposes.

15.10.6.13 Should an underwater allision occur, minor damage incurred is the most likely consequence, and foundering of the vessel resulting in a PLL and pollution are the unlikely worst case consequences, with the environmental risks of the latter minimised by the implementation of the pollution planning protocols.

Offshore export cable corridor

15.10.6.14 There is a greater risk of an under keel clearance interaction occurring within the offshore export cable corridor due to the reduced water depths, especially inshore near the landfall locations. At these reduced water depths, typically only small craft would be transiting over the export cables, and these vessels tend to have shallower draughts. These vessels were highlighted in the vessel traffic movements analysis (Section 10.3.2 of the **NRA** (**Volume 3, Appendix 15.1**)) to primarily be transiting the area in a north south bearing and so the exposure to the risk is minimised.

15.10.6.15 Up to five export cable trenches, each potentially containing more than one export cable, may be required each with a total length of up to 76nm and would be installed within the offshore export cable corridor.

15.10.6.16 Export cables would have a typical burial depth of 1.0 to 2.0m. As aforementioned, where cable burial is not possible, alternative cable protection methods may be deployed which will be determined within the CBRA. The maximum height of any cable protection will be 2.0m. It is noted that there are 16 known cable crossings and up to six additional anticipated for the offshore export cables. The Applicant intends to follow the guidance contained in MGN 654 in relation to cable protection, namely that cable protection would not change the charted water depth by more than 5%, unless otherwise agreed with the MCA and NLB. This aligns with the RYA Scotland's recommendation that the "*minimum safe under keel clearance over submerged structures and associated infrastructure should be determined in accordance with the methodology set out in MGN 543 [since superseded by MGN 654]"* (RYA Scotland, 2019). With this guidance adhered to, the likelihood of an underwater allision is considered very low.

15.10.6.17 Should this percentage be exceeded, further assessment including consultation with the MCA and NLB may be required to determine whether any additional mitigation measures (e.g., post consent lighting and marking, charting, etc.) are necessary to ensure the safety of navigation. Cable burial and protection is captured in the CaP.

15.10.6.18 Should an underwater allision occur, the consequences are the same as set out for cable protection associated with array cables, with grounding of the vessel more likely inshore. Minor damage incurred is the most likely consequence, and foundering of the vessel resulting in a PLL and pollution are the unlikely worst case consequences, with the environmental risks of the latter minimised by the implementation of the pollution planning protocols.

Significance of effect

15.10.6.19 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from reduction of under keel clearance as a result of cable protection, dynamic cables, and mooring lines is presented in **Table 15.23**.

Table 15.23 Significance of effect for reduction of under keel clearance as a result of cable protection, dynamic cables, and mooring lines (O&M stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Interaction with dynamic cable, mooring line, or cable protection resulting in vessel damage, injury to person and / or pollution (including spillage of potential hazardous cargo.	Negligible	Moderate	Broadly Acceptable
Offshore export cable corridor	Interaction with cable protection resulting in vessel damage, grounding, injury to person and / or pollution (including spillage of potential hazardous cargo.	Extremely Unlikely	Moderate	Broadly Acceptable

15.10.7 Anchor interaction with mooring lines and subsea cables

15.10.7.1 The presence of mooring lines and subsea cables may increase the risk of anchor interaction.

15.10.7.2 The spatial extent of the impact is small given that a vessel must be in close proximity to a mooring line or subsea cable for an interaction to occur. Since there are no subsea cables associated with the RCP search area (any subsea cables within this area would be export cables) this impact does not apply in this circumstance and only applies to the offshore export cable corridor.

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15.10.7.3 There are three anchoring scenarios which are considered for this impact:

- planned anchoring – most likely as a vessel awaits a berth to enter port but may also result from adverse weather conditions, machinery failure or subsea operations;
- unplanned anchoring – generally resulting from an emergency situation where the vessel has experienced steering failure; and
- anchor dragging – caused by anchor failure.

15.10.7.4 Although the second of these scenarios may involve limited decision-making time if drifting towards a hazard, in all three scenarios it is anticipated that the charting of infrastructure including the subsea cables and mooring lines (where scale of chart is appropriate) would inform the decision of a vessel to anchor, as per Regulation 34 of SOLAS (IMO, 1974).

15.10.7.5 No anchored vessels were observed within the study area for the OAA during the survey periods or long-term vessel traffic data. Risk of interaction with an array cable or mooring line on a planned anchoring or dragged anchoring basis is therefore anticipated to be

extremely low and is compounded by the limited number of third-party vessels anticipated to navigate internally within the OAA. In terms of emergency anchoring, this may be used as an option to avoid an allision incident with a WTG, although the water depths may be a limiting factor, particularly for small craft.

15.10.7.6 The most likely consequences in the event of a vessel anchoring over an array cable is that no interaction occurs given the protection applied to the cable (by burial or other means). Should an interaction occur, historical incident data suggests that the consequences would be negligible, with no damage caused to the vessel or subsea cable. As a worst case, a snagging incident could occur to a commercial fishing vessel with damage caused to the anchor and / or the cable, compromising the stability of the vessel as well as damage to the mooring line, compromising stability of the floating unit.

Offshore export cable corridor

15.10.7.7 The export cables may be crossed frequently by vessels on passage following the coastline as outlined in the vessel traffic movements analysis (Section 10.3.2 of the **NRA** (**Volume 3, Appendix 15.1**)). Given that an interaction risk exists only where the anchoring occurs in proximity to a subsea cable, the hazard is local in nature and has a short temporal overlap – vessels enroute would be located over the export cables for only a short period of time.

15.10.7.8 However, several in-situ subsea cables run parallel with the offshore export cable corridor in sections, with up to 16 known cable crossings and six additional anticipated. Therefore, the spatial extent of the interaction risk would be greater for these sections of the offshore export cable corridor.

15.10.7.9 Again, no anchored vessels were observed within the offshore export cable corridor study area during the data periods and there is no charted anchorage areas located in proximity to the offshore export cable corridor. The burial of the export cables and use of external cable protection as informed by the CBRA with a typical burial depth of 1.0 to 2.0m would minimise the likelihood of an interaction occurring. The CBRA would also account for traffic volume and sizes. Cable burial and protection is captured in the CaP.

15.10.7.10 It is anticipated that the charting of infrastructure including all subsea cables would inform the decision to anchor, as per Regulation 34 of SOLAS (IMO, 1974). This includes in an emergency situation with general feedback from mariners indicating that even where time for decision-making is limited a key priority for the bridge crew whilst the anchor is being readied would be to check charts.

15.10.7.11 Anchor dragging features a relatively wider extent than planned or unplanned anchoring. However, from the vessel traffic data, the likelihood of a vessel dragging anchor close enough to interact with a subsea cable is very low. In such a circumstance, it is likely that the anchor dragging would be stopped prior to any interaction with a subsea cable becoming possible.

15.10.7.12 Should an anchor interaction occur, the consequences are the same set out for the mooring lines and array cables, with the likelihood increased due to reduced water depths and exposure.

Significance of effect

15.10.7.13 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from anchor interaction with mooring lines and subsea cables is presented in **Table 15.24**.

Table 15.24 Significance of effect anchor interaction with mooring lines and subsea cables (O&M stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Vessel anchors on or drags anchor over a subsea cable or mooring line with interaction occurring resulting in damage to the cable, protection, mooring line, and / or anchor and affecting the stability of the vessel or floating unit.	Negligible	Minor	Broadly Acceptable
Offshore export cable corridor	Vessel anchors on or drags anchor over a subsea cable or with interaction occurring resulting in damage to the cable, protection, and / or anchor and affecting the stability of the vessel.	Extremely Unlikely	Minor	Broadly Acceptable

15.10.8 Reduction of emergency response capability including SAR access

15.10.8.1 The presence of surface structures and O&M activities associated with the Project may result in an increased likelihood of an incident occurring which requires an emergency response and may reduce access for surface and air responders, including SAR assets.

15.10.8.2 This impact has been assessed for the Project as a whole. For the construction and decommissioning stages, given the greater presence of Project vessels on site with self-help capability, as well as complying with SOLAS obligations (IMO, 1974), the likelihood of an incident occurring and requiring external emergency response resources is lower. Moreover, given third-party vessels are not anticipated to navigate within the buoyed construction/ decommissioning area the likelihood of SAR access being required within the OAA is also lower. In combination with the embedded mitigation measures described below for the O&M stage (which are applicable to the construction/ decommissioning stages) the significance of effect associated with this impact for the construction and decommissioning stages is considered to be ALARP.

Emergency response resources

15.10.8.3 The O&M stage may last for up to 35 years per phase with up to seven O&M vessels located on-site simultaneously and making up to 364 annual round trips. With a full build out of the OAA, these vessels would increase the likelihood of an incident requiring an emergency response and subsequently increase the likelihood of multiple incidents occurring simultaneously, diminishing emergency response capability.

15.10.8.4 However, with Project vessels to be managed through marine coordination and in compliance with Flag State regulations, the likelihood of an incident is minimised. Additionally, should an incident occur, Project vessels would likely be well equipped to assist, either through self-help capability or through SOLAS obligations (IMO, 1974), noting this would be undertaken in liaison with the MCA, most likely as the first responder given the distance offshore. This is reflected in past experience, with 12 known instances of a vessel (or persons on a vessel) being assisted by an industry vessel for a nearby UK offshore wind farm. For a pollution incident, the MPCP will also be implemented. Given the distance offshore, it is likely that in the event of an emergency response incident associated with the OAA a Project vessel would be the first responder.

15.10.8.5 There are various emergency response resources serving the region, including RNLI stations (closest at Fraserburgh approximately 43nm to the south-west) and SAR helicopter bases (closest at Sumburgh approximately 94nm to the north). Given the distances which would be travelled in the event of an emergency response incident in proximity to the OAA, this impact covers a regional spatial extent.

15.10.8.6 From historical incident data, there is a low rate of incidents in the region, with the likelihood of an incident relating to the Projects occurring at the same time being unlikely. Additionally, based on the number of collision and allision incidents associated with UK offshore wind farms reported to date, there is an average of one incident per 1,265 operational WTG years (as of September 2025). Therefore, the Project is not expected to result in a marked increase in the frequency of incidents requiring an emergency response.

15.10.8.7 The most likely consequences in the event of an incident in the region requiring an emergency response is that emergency responders are able to assist without any limitations on capability. As a worst case, there could be a delay to a response request due to a simultaneous incident associated with the Project leading to PLL, pollution, and vessel damage. However, this worst case scenario is highly unlikely.

Search and Rescue access

15.10.8.8 The physical presence of the Project may restrict access for SAR responders, especially within the OAA, due to the incident in question obstructing the most effective path to an incident (likely further offshore). Access issues are more likely to be a concern in adverse weather conditions. The Applicant would work within the parameters of MGN 654 to minimise risks.

15.10.8.9 From recent SAR helicopter taskings data, the frequency of UK SAR operations in proximity to the Project is low, with no SAR helicopter incidents occurring within the OAA and several of those incidents reported in proximity related to the Golden Eagle and Buzzard platforms which are located inshore of the OAA. Due to these being further offshore than the RCP search area, the presence of the RCP may hinder these platforms due to the necessity of a longer flight path. However, the possibility remains of a SAR responder being able to fly over or around a single structure, particularly in suitable weather conditions, with the overall increase in flight path remaining low. Consideration of third-party helicopter access to / from oil and gas platforms is given in **Chapter 31: Civil and Military Aviation**.

15.10.8.10 Given the distances that may be covered by air-based SAR support (the SAR helicopter base at Sumburgh is located approximately 94nm from the OAA) and the total area covered by the OAA being around 198nm^2, represents a relatively large area to search compared to other offshore wind farms, the spatial extent of this impact is considered large. It is unlikely that a SAR operation would require the full extent of the OAA to be searched; it is much more likely that a search could be restricted to a specific portion of the OAA depending upon the information available regarding the casualty location (inclusive of any assumptions on the drift of the casualty).

15.10.8.11 The minimum spacing between structures (500m between offshore substations and 800m between WTGs) is similar to many other consented offshore wind farms in the UK. The OAA layout includes a grid pattern with multiple lines of orientation but if a SLoO was taken forward, then a safety justification would be completed, including consideration of accessibility for SAR operations.

15.10.8.12 More fully, the final array layout would be agreed with the MCA and NLB post consent. However, the final array layout would be compliant with the requirements of MGN 654 (MCA, 2021), including:

- safety justification for a SLoO (if taken forward);
- inclusion of Helicopter Refuge Areas (HRA) as deemed necessary;
- completion of a SAR Checklist;
- completion of an ERCoP; and
- application of unique identification marking of structures in an easily identifiable pattern.

15.10.8.13 The ERCoP will remain live documents throughout the O&M stage.

15.10.8.14 The most likely consequences in the event of a SAR operation are that SAR assets are able to fulfil their objectives without any limitations on capability. As a worst case, it may not be possible to undertake an effective search. However, given compliance with MGN 654 for the final array layout, this is considered highly unlikely.

Existing aids to navigation

15.10.8.15 An indirect pathway to increasing the likelihood of an incident occurring which requires an emergency response is a risk to the use of existing AtoN due to the presence of the Project.

15.10.8.16 There are no existing AtoNs located within the OAA, RCP search area, or offshore export cable corridor. Any existing AtoNs in proximity to the Project are not anticipated to be obscured by the presence of the Project, noting there is also no surface piercing structures in the offshore export cable corridor which could hinder, and coastal AtoNs Peterhead Port also raised no concerns over their AtoNs in proximity to the offshore export cable corridor. This element of the impact is therefore not considered notable.

Significance of effect

15.10.8.17 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from reduction of emergency response capability including SAR access is presented in **Table 15.25**.

Table 15.25 Significance of reduction of emergency response capability including SAR access (O&M stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
The Project	Delay to emergency response request leading to vessel damage, PLL and /or pollution including due to cumulative developments.	Remote	Serious	Tolerable with Mitigation

15.11 Assessment of effects: Decommissioning stage

15.11.1 Vessel displacement and increased vessel to vessel collision risk between third-party vessels

15.11.1.1 Activities associated with the decommissioning of structures and subsea cables may displace third-party vessels from their existing routes or activity, increasing the collision risk with other third-party vessels.

All Project components

15.11.1.2 Since the methods used to remove structures and subsea cables are expected to be similar to those used to install them, the risk pathway for this impact is expected to be similar in nature to the equivalent construction stage impact for vessel displacement and third-party collision risk (**Section 15.9.1**) .This includes the use of a buoyed decommissioning area for the OAA and RCP search area.

15.11.1.3 Given the broadly similar nature of decommissioning activities when compared to construction activities, the main consequences of vessel displacement and third-party collision risk during the decommissioning stage for all Project Components are equivalent to that highlighted for the construction stage impact, in particular potential for increased journey times and distances and increased encounters, as well as the unlikely worst-case of foundering resulting in PLL and pollution. No notable effects on navigational safety are anticipated.

Significance of Effect

15.11.1.4 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from vessel displacement and third-party collision risk for each Project component is presented in **Table 15.26**.

Table 15.26 Significance of effect for vessel displacement and third-party collision risk (decommissioning stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Increased journey time / distance which impacts on schedules or compliance with COLREGs, and collision incident occurs with vessel damage, PLL, and / or pollution.	Reasonably Probable	Moderate	Tolerable with Mitigation
Offshore export cable corridor		Remote	Moderate	Tolerable with Mitigation
RCP search area		Remote	Moderate	Tolerable with Mitigation

15.11.2 Increased vessel to vessel collision risk between a third-party vessel and a Project vessel

15.11.2.1 735. The presence of vessels associated with decommissioning activities may result in increased risk of a collision between a third-party vessel and a Project vessel.

All Project components

15.11.2.2 Since the methods used to remove structures and subsea cables are expected to be similar to those used to install them, including the vessels involved, the risk pathway for this impact is expected to be similar in nature to the equivalent construction stage impact for third-party to Project vessel collision risk (**Section 15.9.2**), including the number of return trips by Project vessels and the use of a buoyed decommissioning area for the OAA and (if deemed necessary the) RCP search area.

15.11.2.3 Given the broadly similar nature of decommissioning activities when compared to construction activities, the main consequences in the event of an encounter or collision are considered to be equivalent to that highlighted for the construction stage impact for third-party to Project vessel collision risk, including a worst-case of foundering, PLL, and pollution.

Significance of effect

15.11.2.4 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from third-party to Project Vessel collision risk for each Project component is presented in **Table 15.27**.

Table 15.27 Significance of effect for increased third-party to Project vessel collision risk (decommissioning stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Collision incident occurs with vessel damage, PLL, and / or pollution.	Remote	Moderate	Tolerable with Mitigation
Offshore export cable corridor		Extremely Unlikely	Moderate	Broadly Acceptable
RCP search area		Extremely Unlikely	Moderate	Broadly Acceptable

15.11.3 Reduced access to local ports and harbours

15.11.3.1 Decommissioning activities associated with the removal of structures and cables may reduce access to local ports and harbours.

All Project components

15.11.3.2 Since the methods used to remove structures and subsea cables are expected to be similar to those used to install them, the risk pathway for this impact is expected to be similar in nature to the equivalent construction stage impact for reduced access to local ports and harbours (**Section 15.9.3**), including the number of return trips by decommissioning vessels.

15.11.3.3 Given the broadly similar nature of decommissioning activities when compared to construction activities, the main consequences during the decommissioning stage are considered to be equivalent to that highlighted for the construction stage impact for reduced access to local ports and harbours, in particular minor disruption to port access, particularly associated with the offshore export cable corridor and towage operations from the OAA.

Significance of effect

15.11.3.4 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from reduced access to local ports and harbours for each Project component is presented in **Table 15.28**.

Table 15.28 Significance of effect for reduced access to local ports and harbours (decommissioning stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Presence of Project vessels operating within and in proximity to port or harbour restricts access and impacts on schedules and / or berth times.	Extremely Unlikely	Minor	Broadly Acceptable
Offshore export cable corridor		Reasonably Probable	Minor	Tolerable with Mitigation
RCP search area		Negligible	Minor	Broadly Acceptable

15.11.4 Loss of station

15.11.4.1 In the event that the mooring system holding a floating substructure fails, the floating substructure may experience loss of station and become a floating hazard to passing vessels.

15.11.4.2 As this impact is only relevant to the floating units associated within the OAA; this impact will only assess the OAA and not the RCP search area or the offshore export cable corridor.

All Project components

15.11.4.3 Towage of the floating unit to site would be subject to a dedicated risk assessment at the time of the towage operations when full specifications relating to the operations is available. This dedicated risk assessment should cover all elements of the towing operation including in port approaches.

15.11.4.4 The UK Chamber of Shipping noting shared anchors should be used to assess the worst-case scenario for loss of station. During the construction stage while located within the OAA, the OAA would be monitored by vessels on-site at all times ensuring all infrastructure remains in-situ. If a mooring line failure was to arise, a Project vessel would be able to respond in a timely manner ensuring a loss of station event does not occur and appropriate arrangements are taken which may include towing the floating unit off-site.

15.11.4.5 On this basis, a loss of station is considered likely to represent a low frequency event, noting that for a total loss of station, all moorings would be required to fail (each WTG would have a minimum of three).

15.11.4.6 The main consequence would be failure of a single mooring line leading to a temporary increase in the maximum excursion of the floating unit but without full loss of station.

15.11.4.7 As a worst-case, multiple shared anchor failures could lead to multiple floating units going off station, with potential for collision risk with third-party vessels.

Significance of effect

15.11.4.8 The frequency of occurrence, severity of consequence, and resulting significance of effect resulting from loss of station for the OAA is presented in **Table 15.29**.

Table 15.29 Significance of effect for loss of station (decommissioning stage)

Project component	Worst case consequences	Frequency of occurrence	Severity of consequence	Significance of effect
OAA	Total failure of mooring / shared anchor system or towage operation leads to drifting of multiple floating structures with risk of collision with vessels.	Extremely Unlikely	Moderate	Broadly Acceptable

15.12 Summary of effects

15.12.1.1 A summary of the effects arising from the construction, O&M and decommissioning stages of the Project in relation to shipping and navigation are summarised in **Table 15.30**.

Table 15.30 Summary of effects during the construction, O&M and decommissioning stage of the Project on shipping and navigation

Receptor	Aspect of the Project	Activity and potential effect	Embedded environmental measures	Frequency of occurrence	Severity of consequence	Significance of effect
Construction						
All vessels	OAA	Increased vessel to vessel collision risk between third-party vessels.	M-029, M-030, M-031, M-033, M-038, M-039, M-043, M-045, M-047, M-048, M-049, M-054, M-118, M-120.	**Reasonably Probable**	**Moderate**	**Tolerable with Mitigation**
	Offshore export cable corridor.			**Remote**	**Moderate**	**Tolerable with Mitigation**
	RCP search area.			**Remote**	**Moderate**	**Tolerable with Mitigation**
All vessels	OAA	Vessel to vessel collision risk between a third-party vessel and a Project vessel.	M-029, M-030, M-031, M-033, M-038, M-039,M-040, M-043, M-045, M-047, M-048, M-049, M-054, M-118, M-120.	**Remote**	**Moderate**	**Tolerable with Mitigation**
	Offshore export cable corridor.			**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
	RCP search area.			**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
All vessels and port related services	OAA	Reduced access to local ports and harbours.	M-030, M-033, M-039, M-040, M-045, M-048, M-049, M-120.	**Extremely Unlikely**	**Minor**	**Broadly Acceptable**
	Offshore export cable corridor.			**Reasonably Probable**	**Minor**	**Tolerable with Mitigation**
	RCP search area.			**Negligible**	**Minor**	**Broadly Acceptable**

Receptor	Aspect of the Project	Activity and potential effect	Embedded environmental measures	Frequency of occurrence	Severity of consequence	Significance of effect
All vessels	OAA	Loss of station.	M-030, M-031, M-038, M-039, M-044, M-046, M-048, M-120.	**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
O&M						
All vessels	OAA	Increased vessel to vessel collision risk between third-party vessels.	M-029, M-030, M-031, M-033, M-038, M-039, M-043, M-045, M-047, M-048, M-049, M-054, M-122.	**Reasonably Probable**	**Moderate**	**Tolerable with Mitigation**
	Offshore export cable corridor.			**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
	RCP search area.			**Remote**	**Moderate**	**Tolerable with Mitigation**
All vessels	OAA	Vessel to vessel collision risk between a third-party vessel and a Project vessel.	M-029, M-030, M-031, M-033, M-038, M-039, M-040, M-043, M-045, M-047, M-048, M-049, M-054, M-122.	**Remote**	**Moderate**	**Tolerable with Mitigation**
	Offshore export cable corridor.			**Negligible**	**Moderate**	**Broadly Acceptable**
	RCP search area.			**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
All vessels and port related services	OAA	Reduced access to local ports and harbours.	M-030, M-033, M-039, M-040, M-045, M-048, M-049, M-122.	**Extremely Unlikely**	**Minor**	**Broadly Acceptable**
	Offshore export cable corridor.			**Remote**	**Minor**	**Broadly Acceptable**
	RCP search area.			**Negligible**	**Minor**	**Broadly Acceptable**

Receptor	Aspect of the Project	Activity and potential effect	Embedded environmental measures	Frequency of occurrence	Severity of consequence	Significance of effect
All vessels	OAA	Loss of station.	M-030, M-031, M-038, M-039, M-044, M-046, M-048, M-122.	**Remote**	**Moderate**	**Tolerable with Mitigation**
All vessels	OAA	Creation of vessel to structure allision risk (including powered, drifting and internal).	M-030, M-031, M-033, M-038, M-039, M-040, M-043, M-045, M-046, M-047, M-048, M-049, M-122.	**Remote**	**Moderate**	**Tolerable with Mitigation**
	RCP search area.			**Remote**	**Moderate**	**Tolerable with Mitigation**
All vessels	OAA	Reduction of under keel clearance as a result of cable protection, dynamic cables and mooring lines.	M-029, M-031, M-033, M-043, M-044, M-045, M-047, M-048, M-049, M-054, M-122.	**Negligible**	**Moderate**	**Broadly Acceptable**
	Offshore export cable corridor.			**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
All vessels	OAA	Anchor interaction with mooring lines and subsea cables.	M-029, M-030, M-031, M-033, M-039, M-043, M-044, M-045, M-047, M-048, M-049, M-054, M-122.	**Negligible**	**Minor**	**Broadly Acceptable**
	Offshore export cable corridor.			**Extremely Unlikely**	**Minor**	**Broadly Acceptable**
All vessels and emergency responders	Offshore Project as a whole.	Reduction of emergency response capability including SAR access.	M-033, M-038, M-039, M-040, M-043, M-045, M-047, M-049, M-122.	**Remote**	**Serious**	**Tolerable with Mitigation**
Decommissioning						
All vessels	OAA	Increased vessel to vessel collision risk between third-party vessels.	M-029, M-030, M-031, M-033, M-038, M-039, M-043, M-045, M-047, M-048, M-049, M-054, M-106, M-118.	**Reasonably Probable**	**Moderate**	**Tolerable with Mitigation**
	Offshore export cable corridor.			**Remote**	**Moderate**	**Tolerable with Mitigation**

Receptor	Aspect of the Project	Activity and potential effect	Embedded environmental measures	Frequency of occurrence	Severity of consequence	Significance of effect
	RCP search area			**Remote**	**Moderate**	**Tolerable with Mitigation**
All vessels	OAA	Vessel to vessel collision risk between a third-party vessel and a Project vessel.	M-029, M-030, M-031, M-033, M-038, M-039, M-040, M-043, M-045, M-047, M-048, M-049, M-054, M-106, M-118.	**Remote**	**Moderate**	**Tolerable with Mitigation**
	Offshore export cable corridor.			**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
	RCP search area.			**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
All vessels and port related services	OAA	Reduced access to local ports and harbours.	M-030, M-033, M-039, M-040, M-045, M-048, M-049, M-106.	**Extremely Unlikely**	**Minor**	**Broadly Acceptable**
	Offshore export cable corridor.			**Reasonably Probable**	**Minor**	**Tolerable with Mitigation**
	RCP search area.			**Negligible**	**Minor**	**Broadly Acceptable**
All vessels	OAA	Loss of station.	M-030, M-031, M-038, M-039, M-044, M-046, M-048, M-106.	**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**

15.13 Transboundary effects

15.13.1.1 Transboundary effects arise when impacts from a development with one European Economic Area (EEA) State affects the environment of another EEA State(s). A screening of transboundary effects have been carried out and is presented in Appendix 4B of the Scoping Report (MarramWind Ltd., 2023).

15.13.1.2 From this, the potential for transboundary effects associated with vessels transiting to / from outside the UK including transboundary ports has been identified. Such effects are considered as part of the assessment of effects in **Section 15.9** to **15.11**, given that the baseline for vessel traffic movements has principally been established using AIS whose carriage requirements are set by the IMO and apply across all EEAs. Subsequently, the commercial routeing defined in **Section 15.6** include destinations featuring transboundary ports.

15.14 Inter-related effects

15.14.1.1 A description and assessment of the likely inter-related effects arising from the Project on shipping and navigation is provided in **Chapter 32: Inter-Related effects**.

15.15 Assessment of cumulative effects

15.15.1.1 A description and assessment of the cumulative effects arising from the Project on shipping and navigation is provided in **Section 21** of the **NRA** (**Volume 3, Appendix 15.1**) and summarised in **Chapter 33: Cumulative Effects Assessment**.

15.16 Summary of residual likely significant effects

15.16.1.1 **Table 15.31** presents a summary of the residual likely significant effects on shipping and navigation receptors assessed in this Chapter.

Table 15.31 Summary of assessment of residual likely significant effects for shipping and navigation

Receptor	Aspect of the Project	Activity and potential effect	Embedded environmental measures	Frequency of occurrence	Severity of consequence	Assessment of residual likely significant effects
Construction						
All vessels	OAA	Increased vessel to vessel collision risk between third-party vessels.	M-029, M-030, M-031, M-033, M-038, M-039, M-043, M-045, M-047, M-048, M-049, M-054, M-118, M-120.	**Reasonably Probable**	**Moderate**	**Tolerable with Mitigation**
	Offshore export cable corridor.			**Remote**	**Moderate**	**Tolerable with Mitigation**
	RCP search area.			**Remote**	**Moderate**	**Tolerable with Mitigation**
All vessels	OAA	Vessel to vessel collision risk between a third-party vessel and a Project vessel.	M-029, M-030, M-031, M-033, M-038, M-039,M-040, M-043, M-045, M-047, M-048, M-049, M-054, M-118, M-120.	**Remote**	**Moderate**	**Tolerable with Mitigation**
	Offshore export cable corridor.			**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
	RCP search area.			**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
All vessels and port related services	OAA	Reduced access to local ports, harbours and marinas.	M-030, M-033, M-039, M-040, M-045, M-048, M-049, M-120.	**Extremely Unlikely**	**Minor**	**Broadly Acceptable**
	Offshore export cable corridor.			**Reasonably Probable**	**Minor**	**Tolerable with Mitigation**
	RCP search area.			**Negligible**	**Minor**	**Broadly Acceptable**

Receptor	Aspect of the Project	Activity and potential effect	Embedded environmental measures	Frequency of occurrence	Severity of consequence	Assessment of residual likely significant effects
All vessels	OAA	Loss of station.	M-030, M-031, M-038, M-039, M-044, M-046, M-048, M-120.	**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
O&M						
All vessels	OAA	Increased vessel to vessel collision risk between third-party vessels.	M-029, M-030, M-031, M-033, M-038, M-039, M-043, M-045, M-047, M-048, M-049, M-054, M-122.	**Reasonably Probable**	**Moderate**	**Tolerable with Mitigation**
	Offshore export cable corridor.			**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
	RCP search area.			**Remote**	**Moderate**	**Tolerable with Mitigation**
All vessels	OAA	Vessel to vessel collision risk between a third-party vessel and a Project vessel.	M-029, M-030, M-031, M-033, M-038, M-039, M-040, M-043, M-045, M-047, M-048, M-049, M-054, M-122.	**Remote**	**Moderate**	**Tolerable with Mitigation**
	Offshore export cable corridor.			**Negligible**	**Moderate**	**Broadly Acceptable**
	RCP search area.			**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
All vessels and port related services	OAA	Reduced access to local ports, harbours and marinas.	M-030, M-033, M-039, M-040, M-045, M-048, M-049, M-122.	**Extremely Unlikely**	**Minor**	**Broadly Acceptable**
	Offshore export cable corridor.			**Remote**	**Minor**	**Broadly Acceptable**
	RCP search area.			**Negligible**	**Minor**	**Broadly Acceptable**

Receptor	Aspect of the Project	Activity and potential effect	Embedded environmental measures	Frequency of occurrence	Severity of consequence	Assessment of residual likely significant effects
All vessels	OAA	Loss of station.	M-030, M-031, M-038, M-039, M-044, M-046, M-048, M-122.	**Remote**	**Moderate**	**Tolerable with Mitigation**
All vessels	OAA	Creation of vessel to structure allision risk (including powered, drifting and internal).	M-030, M-031, M-033, M-038, M-039, M-040, M-043, M-045, M-046, M-047, M-048, M-049, M-122.	**Remote**	**Moderate**	**Tolerable with Mitigation**
	RCP search area.			**Remote**	**Moderate**	**Tolerable with Mitigation**
All vessels	OAA	Reduction of under keel clearance as a result of cable protection, dynamic cables and mooring lines.	M-029, M-031, M-033, M-043, M-044, M-045, M-047, M-048, M-049, M-054, M-122.	**Negligible**	**Moderate**	**Broadly Acceptable**
	Offshore export cable corridor.			**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
All vessels	OAA	Anchor interaction with mooring lines and subsea cables.	M-029, M-030, M-031, M-033, M-039, M-043, M-044, M-045, M-047, M-048, M-049, M-054, M-122.	**Negligible**	**Minor**	**Broadly Acceptable**
	Offshore export cable corridor.			**Extremely Unlikely**	**Minor**	**Broadly Acceptable**
All vessels and emergency responders	Offshore Project as a whole.	Reduction of emergency response capability including SAR access.	M-033, M-038, M-039, M-040, M-043, M-045, M-047, M-049, M-122.	**Remote**	**Serious**	**Tolerable with Mitigation**
Decommissioning						
All vessels	OAA	Increased vessel to vessel collision risk	M-029, M-030, M-031, M-033, M-038, M-039,	**Reasonably Probable**	**Moderate**	**Tolerable with Mitigation**

Receptor	Aspect of the Project	Activity and potential effect	Embedded environmental measures	Frequency of occurrence	Severity of consequence	Assessment of residual likely significant effects
	Offshore export cable corridor.	between third-party vessels.	M-043, M-045, M-047, M-048, M-049, M-054, M-106, M-118.	**Remote**	**Moderate**	**Tolerable with Mitigation**
	RCP search area.			**Remote**	**Moderate**	**Tolerable with Mitigation**
All vessels	OAA	Vessel to vessel collision risk between a third-party vessel and a Project vessel.	M-029, M-030, M-031, M-033, M-038, M-039, M-040, M-043, M-045, M-047, M-048, M-049, M-054, M-106, M-118.	**Remote**	**Moderate**	**Tolerable with Mitigation**
	Offshore export cable corridor.			**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
	RCP search area.			**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**
All vessels and port related services	OAA	Reduced access to local ports, harbours and marinas.	M-030, M-033, M-039, M-040, M-045, M-048, M-049, M-106.	**Extremely Unlikely**	**Minor**	**Broadly Acceptable**
	Offshore export cable corridor.			**Reasonably Probable**	**Minor**	**Tolerable with Mitigation**
	RCP search area.			**Negligible**	**Minor**	**Broadly Acceptable**
All vessels	OAA	Loss of station.	M-030, M-031, M-038, M-039, M-044, M-046, M-048, M-106.	**Extremely Unlikely**	**Moderate**	**Broadly Acceptable**

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15.18 Glossary of terms and abbreviations

15.18.1 Abbreviations

Acronym	Definition
AIS	Automatic Identification System
ALARP	As Low as Reasonably Practicable
AtoN	Aid to Navigation
CaP	Cable Plan
CBRA	Cable Burial Risk Assessment
CD	Chart Datum
COLREGs	International Regulations for the Prevention of Collisions at Sea
CMS	Construction Method Statement
CTV	Crew Transfer Vessel
DSLP	Design Specification and Layout Plan
EEA	European Economic Area
EIA	Environmental Impact Assessment
EMF	Electromagnetic Fields
EMP	Environmental Management Plan
ERCoP	Emergency Response Co-operation Plan
FLiDAR	Floating Light Detection and Ranging
FMMMS	Fisheries Monitoring, Management and Mitigation Strategy
FPSO	Floating Production, Storage and Offloading
FSA	Formal Safety Assessment
HM	His Majesty
HRA	Helicopter Refuge Area
HSE	Health and Safety Executive
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
IALA	International Organization for Marine Aids to Navigation and Lighthouse Authorities

ID	Identification
IHO	International Hydrographic Organisation
IMO	International Maritime Organisation
km	Kilometres
LMP	Lighting and Marking Plan
m	Metres
MAIB	Marine Accident Investigation Branch
MCA	Maritime and Coastguard Agency
MD-LOT	Marine Directorate – Licensing Operations Team
MGN	Marine Guidance Note
MHWS	Mean High Water Springs
MOD	Ministry of Defence
MPCP	Marine Pollution Contingency Plan
NLB	Northern Lighthouse Board
nm	Nautical Miles
O&M	Operation and Maintenance
OAA	Option Agreement Area
OREI	Offshore Renewable Energy Installations
PEMP	Project Environmental Monitoring Programme
PLL	Potential Loss of Life
Radar	Radio Detection and Ranging
RAM	Restricted in Ability to Manoeuvre
RCP	Reactive Compensation Platform
RNLI	Royal National Lifeboat Institution
RoPax	Roll-On/Roll-Off Passenger
RoRo	Roll-On/Roll-Off Cargo
RYA	Royal Yachting Association
SAR	Search and Rescue
SDC	Subsea Distribution Centre
SFF	Scottish Fishermen’s Federation

SLoO	Single Line of Orientation
TPV	Third-Party Verification
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
VMS	Vessel monitoring system
WETREP	Western European Tanker Reporting System
WTG	Wind Turbine Generator

15.18.2 Glossary of terms

Term	Definition
Allision	The act of striking or collision of a moving vessel against a stationary object.
Automatic Identification System	A system by which vessels automatically broadcast their identity, key statistics including location, destination, length, speed and current status. Most commercial vessels and European Union fishing vessels over 15m in length are required to carry AIS.
Collision	The act or process of colliding (crashing) between two moving objects.
Formal Safety Assessment	A structured and systematic process for assessing the risks and costs (if applicable) associated with shipping activity as defined by the IMO.
Main Commercial Route	Defined transit route (mean position) of commercial vessels identified within each study area.
Marine Guidance Note (MGN)	A system of guidance notes issued by the MCA which provide significant advice relating to the improvement of the safety of shipping at sea, and to prevent or minimise pollution from shipping.
Navigational Risk Assessment	A document which assesses the impacts to shipping and navigation of a proposed OREI based upon FSA.
Offshore export cable corridor study area	A buffer of 2nm applied around the offshore export cable corridor.
Offshore Renewable Energy Installation	As defined by MGN 654 (Merchant and Fishing) Safety of Navigation: OREIs – Guidance on UK Navigational Practice, Safety and Emergency Response (MCA, 2021). For the purposes of this report and in keeping with the consistency of the EIA, OREI can mean

Term	Definition
	offshore wind turbines and the associated electrical infrastructure such as offshore substations.
RCP search area study area	A buffer of 10nm around the RCP search area.
Regular Operator	Commercial operator whose vessel(s) are observed to transit through a particular region on a regular basis.
Safety zone	A statutory marine zone demarcated for the purposes of safety around a possibly hazardous installation or works / construction area.
Study area	A buffer of 10nm applied around the OAA.
Unique Vessel	An individual vessel identified on any particular calendar day, irrespective of how many tracks were recorded for that vessel on that day. This prevents vessels being over counted. Individual vessels are identified using their Maritime Mobile Service Identity (MMSI).

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