Eastern Green Link 3

Marine Environmental Appraisal

Chapter 11 - Shipping and Navigation

Prepared for:
Scottish Hydro Electric Transmission plc (SHE-T)

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TRANSMISSION

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Table of Contents

Abbreviations/Glossary

AIS	Automatic Identification System
ALARP	As Low As Reasonably Practicable
ARPA	Automatic RADAR Plotting Aid
CBRA	Cable Burial Risk Assessment
CLV	Cable Lay Vessel
COLREGS	Regulations for Preventing Collisions at Sea, 1972
CoS	Chamber of Shipping
EMODnet	European Marine Observation Data Network
FLO	Fisheries Liaison Officer
GPS	Global Positioning System
IMO	International Maritime Organisation
INS	International Navigation System
KIS-ORCA	Kingfisher Information Service - Offshore Renewable & Cable Awareness
MAIB	Marine Accident Investigation Branch
MCA	Maritime and Coastguard Agency
MEAp	Marine Environmental Appraisal
NAVAREA	Navigational Areas
NAVTEX	Navigational Telex
NRA	Navigational Risk Assessment
NTM	Notice to Mariners
OfTDA	Offshore Transmission Development Area
RYA	Royal Yachting Association
SIMOPs	Simultaneous operations
SOPEP	Shipboard Oil Pollution Emergency Plan
TH	Trinity House
The Project	Eastern Green Link 3
TSS	Traffic Separation Scheme
UKC	Under Keel Clearance
UKHO	United Kingdom Hydrographic Office
VTS	Vessel Traffic Survey

11. Shipping and Navigation

11.1. Introduction

This chapter of the Marine Environmental Appraisal (MEAp) describes the potential impacts arising from the construction, operation and maintenance and decommissioning of the Proposed Development on shipping and navigation. For the purposes of seeking the necessary consents, the Eastern Green Link (EGL) 3 Project has been split into different 'Schemes' i.e. English Onshore Scheme, English Offshore Scheme, Scottish Onshore Scheme and the Scottish Offshore Scheme (with the latter hereinafter referred to as 'the Proposed Development'). Collectively all components of EGL 3 are referred to as "the Project".

A description of the works expected to be undertaken during construction, operation and maintenance and decommissioning of the Proposed Development is provided in **Chapter 3: Project Description**. The Proposed Development, defined spatially by the Red Line Boundary (RLB), includes approximately 145 kilometres (km) of subsea High Voltage Direct Current (HVDC) cables from mean high water springs (MHWS) at the landfall at Sandford Bay, Scotland, to the boundary with adjacent English waters and is nominally 700 metres (m) wide. This width is considered adequate to micro-site around sensitive seabed features or habitats, or to allow for the footprint of installation vessels and is the maximum extent of seabed in which construction and operation of the Proposed Development may take place. The RLB is shown in **Figure 11-1 (Drawing reference P2675-AIS-EGL3-001-A)**.

As set out in **Chapter 1: Introduction**, cable installation and some associated activities beyond 12 nautical miles (NM) are exempt from the requirement to obtain a Marine Licence under the Marine and Coastal Access Act 2010 as well as repair of the installed cable in inshore and offshore waters. This chapter presents an assessment of the effects of the Proposed Development from MHWS at the Sandford Bay landfall to the border with English adjacent waters. This is to provide a holistic view of the Proposed Development and any associated impacts. However, consent is not being sought for the exempt cable (either installation or repair) and only cable protection would be included in the Marine Licence beyond 12 NM.

Kilometre Points (KPs) are used throughout this chapter to provide context as to where within the Study Area is being described (see **Section 11.1.1** for definition of Study Area). KP 436 is defined at the border with adjacent English waters, while KP 580 is defined at the Scottish landfall in Sandford Bay, Peterhead.

Shipping and Navigation receptors include commercial and recreational vessels, as well as navigational features. Please note that commercial fisheries are covered in **Chapter 12: Commercial Fisheries** and recreational activities (excluding boating) and other sea users are covered in **Chapter 13: Other Marine Users**.

The potential for interaction between the Proposed Development and other plans and/or projects, which may result in significant cumulative effects on shipping and navigation is assessed in **Section 11.11**.

This chapter should be read in conjunction with:

- **Chapter 3: Project Description**.
- **Chapter 12: Commercial Fisheries** which identifies the spatial and temporal impacts on commercial fishing activity; and
- **Chapter 13: Other Marine Users** which identifies the spatial and temporal impacts on recreational users and other assets.

This chapter is supported by the following appendices:

- **Appendix 11A: Navigation Risk Assessment**
- **Appendix 3A: Electric and Magnetic Field (EMF) Assessment**

11.1.1. Study Area

The Proposed Development would route from MHWS at Sandford Bay, Peterhead, to the border between Scottish and English adjacent waters. The Study Area for shipping and navigation relevant to this Marine Environmental Assessment (MEA) and the Navigation Risk Assessment (NRA) includes the RLB to MHWS, plus an additional 5 NM buffer either side. This is considered an industry standard buffer distance that fully characterises the baseline and encapsulates the distance that any potential impacts could occur within.

For the Proposed Development, AIS data has been used to determine the size and quantity of vessels which operate in the vicinity of the RLB. Automatic Identification System (AIS) data provides information on the type of vessel and vessel density. The coverage of AIS data used extends past the Study Area to cover previously identified potential Proposed Development routes and provide a characterisation of general vessel behaviour in the area.

11.2. Data Sources

A summary of the organisations that have supplied data, together with the nature of that data is outlined in **Table 11-2**.

11.2.1. Site Specific Survey Data

Whilst no site specific surveys were assessed as required for shipping and navigation, data has been purchased specific to the Study Area to characterise the baseline for the assessment and is detailed in **Table 11-1**.

Table 11-1: Site specific data sources used to inform the assessment

Data Source	Description	Reference
MariTrace	5-minute time series Automatic Identification System (AIS) data of shipping activities from 01/12/2023 to 30/11/2024 (12 months of data).	MariTrace, 2025
Marine Themes Vector Data	Marine Themes Vector data tiles including anchorage areas, marine use areas, aquaculture, navigational lines, navigational routes, beacons and buoys.	FIND Mapping, 2024
Admiralty	Admiralty charts covering the Study Area, including 5617-5, 0213, 0278 and 0273.	Admiralty, 2025.

11.2.2. Publicly Available Data

A desk-based review of publicly available data has also been undertaken to supplement the purchased area specific data and inform assessment of other receptors within the Study Area. **Table 11-2** lists the key data sources which have been used to characterise the shipping and navigation baseline.

Table 11-2: Key data sources used to inform the assessment.

Data Source	Description	Reference
Royal Yachting Association (RYA)	UK Coastal Atlas of Recreational Boating 2.1. AIS dataset of recreational vessel activity.	RYA, 2019
European Marine Observation and Data Network (EMODnet)	Coarse-grained vessel density maps.	EMODnet, 2024
Vessel Monitoring System (VMS) data	VMS data for the period 2019 - 2023	Defra, 2024
Royal National Lifeboat Institution (RNLI)	RNLI 2019-2023 datasets including Returns of Service, lifeboat stations and support centres.	RNLI, 2024
Marine Accident Investigation Branch (MAIB)	MAIB incident reports and occurrences.	MAIB, 2025

11.3. Consultation

11.3.1. Non-Statutory Scoping

In January 2024, a MEA Non-Statutory Scoping Report was submitted to the Scottish Government Marine Directorate - Licensing Operations Team (MD-LOT) as part of a pre-application consultation exercise for the Proposed Development. Responses from consultees were received on 15 July 2024.

Table 11-3 summarises the responses received relevant to the shipping and navigation assessment and regard has been given to them in preparing this chapter and **Appendix 11A: Navigation Risk Assessment**.

Table 11-3: Summary of Scoping Opinion responses for shipping and navigation

Consultee	Comments	Response
Maritime and Coastguard Agency (MCA)	Consideration to changes in vessel routeing needs to be given, particularly in heavy weather, due to the large number of other marine users in the region.	This has been assessed within **Appendix 11A: Navigation Risk Assessment.**
	The MCA welcome the completion of a Navigational Risk Assessment (NRA) and suggested a marine hazard identification workshop be held.	Marine hazard identification workshop was held. Please see **Appendix 11A: Navigation Risk Assessment**.
	A Burial Protection Index study should be completed, and subject to traffic volumes, an anchor penetration study may be necessary. The MCA acknowledge the intention to complete a CBRA, which will inform further assessments.	A Cable Burial Risk Assessment (CBRA) has been completed and will be used to inform discussions with the installation contractor on required burial depths.
	The MCA would expect the assessment to detail potential impact of navigational issues for commercial, fishing 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	Please see **Section 11.8**.
	There is a potential for reduction to under keel clearance (UKC) which should be scoped into the assessment.	Please see **Section 11.8.511.7**.
	If cable protection measures are required, a 5% reduction in surrounding depths referenced to Chart Datum will be considered, noting this is subject to further consultation at Marine License Application stage. Where this is not achievable, further discussions must be held.	Please see **Section 11.7**.
	An electromagnetic deviation study should be completed. On receipt of the report, the MCA has the right to request a deviation study of the cable route post installation.	Please see **Appendix 3A: Electric and Magnetic Field Assessment**
Northern Lighthouse Board	Noted the intention to undertake an NRA.	Please see **Appendix 11A: Navigation Risk Assessment**.
	Noted that consultation will include the Peterhead Port Authority.	Please see below in **Table 11-4** for the response from Peterhead Port Authority.
Royal Yachting Association (RYA) Scotland	The Project Team already has sufficient information about the movements and courses of recreational craft. Note that only about a quarter of recreational craft in these waters transmit an AIS signal. However, the tracks of those that do should be representative of all cruising recreational craft except perhaps near the landfall sites. We can supply additional information in relation to the baseline assessment.	Please see **Section 11.7**.
	It will be important to consider how best to promulgate Notices to Mariners (NtMs).	Please see **Section 11.7**.
	RYA Scotland noted that an NRA will be carried out.	Please see **Appendix 11A: Navigation Risk Assessment**.

11.3.2. **Other Consultations**

In addition to the non-statutory scoping consultation process, the Applicant has undertaken supplementary consultation with individual stakeholders to keep them informed of ongoing updates. **Table 11-4** summarises the comments received and the regard given to them in preparing this chapter.

Table 11-4: Summary of other consultation responses for shipping and navigation

Consultee	Comments	Response
Maritime and Coastguard Agency (MCA), Trinity House (TH), Northern Lighthouse Board (NLB) and Chamber of Shipping (CoS)	Meeting held with all parties on 30 July 2024, it was asked by TH if the Project vessels blocking navigations features includes interaction with buoys. TH also confirmed previous positive experiences had come from open communication between projects, regulators and port authorities. NLB asked about consultation that the project had undertaken and if this included offshore wind farms. Discussion around shipping levels between the Morven and Ossian projects was held and it was agreed that vessels will be unlikely to use the gap in between both projects to transit and instead will travel around the developments. The MCA confirmed the cable crossing locations would be of interest regarding a 5% reduction in navigable depth.	Interaction with buoys is considered as part of the assessment for blocking navigational features in **Section 11.8.7**. Early and frequent communication has been considered as part of the embedded mitigation and applied when necessary in **Section 11.7**Error! Reference source not found.. Consultation with other developers is captured within this table. Assessment of cumulative effects with other projects is considered in **Section 11.11**. Reduction in under-keel clearance is considered as part of the assessment in **Section 11.8.5**
Scottish Fisherman's Federation	Meeting held 30 October 2024, it was requested the environmental measures relating to notification to fisheries explicitly referred to the Kingfisher Information Service - Offshore Renewable & Cable Awareness (KIS-ORCA) service.	The KIS-ORCA service has been included in the relevant embedded mitigation measure (**Section 11.7**).
Peterhead Port Authority	Consultation undertaken 16 July 2024. No project specific mitigation measures arose.	The Proposed Development team continue to engage with Peterhead Port Authority as works progress.
Ossian Offshore Wind Farm (OWF)	Meeting held 7 August 2024, discussion around similar routes between the projects was held and need emphasised for assessment of cumulative effects.	Cumulative effects have been considered in **Section 11.11**.
Morven OWF	Consultation held 21 June 2024 via email. Email response from Morven received 28 June 2024. Request for Cable Burial Risk Assessment to take into account future case traffic movements. Morven requested future engagement as the project progresses.	A Cable Burial Risk Assessment (CBRA) has been completed and will be used to inform discussions with the installation contractor on required burial depths. Engagement will be ongoing throughout the installation phase as both projects progress.
Bellrock OWF	Email response received 31 July 2024. Request to be consulted in advance of construction to ensure safe vessel navigation. Request for internal coordination to ensure there is no obstruction between Eastern Green Link (EGL 3) and the SSEN-T offshore substation. Potential requirement for a crossing agreement between EGL 3 and the Bellrock Offshore Transmission Development Area (OfTDA).	Proximity and crossing agreements will be put in place prior to constrictions and means of coordination with Bellrock OWF and other developers established.
MCA, CoS, Forth Ports, Bellrock and Ossian	A HAZID workshop for Scottish waters was held on 13 November 2024. All comments made in the workshop related to the Navigational Risk Assessment (NRA), which forms the basis of this assessment.	A summary of changes as a result of the Hazard Identification (HAZID) workshop have been provided in **Appendix 11A: Navigation Risk Assessment**.

11.4. Baseline Characterisation

11.4.1. Overview

Within the Study Area, AIS data indicates that there are three main shipping lanes or areas (it should be noted that only vessels over 12 m in length are required by law to have AIS capability, and therefore vessels may be operational in the Study Area but not captured in the AIS data).

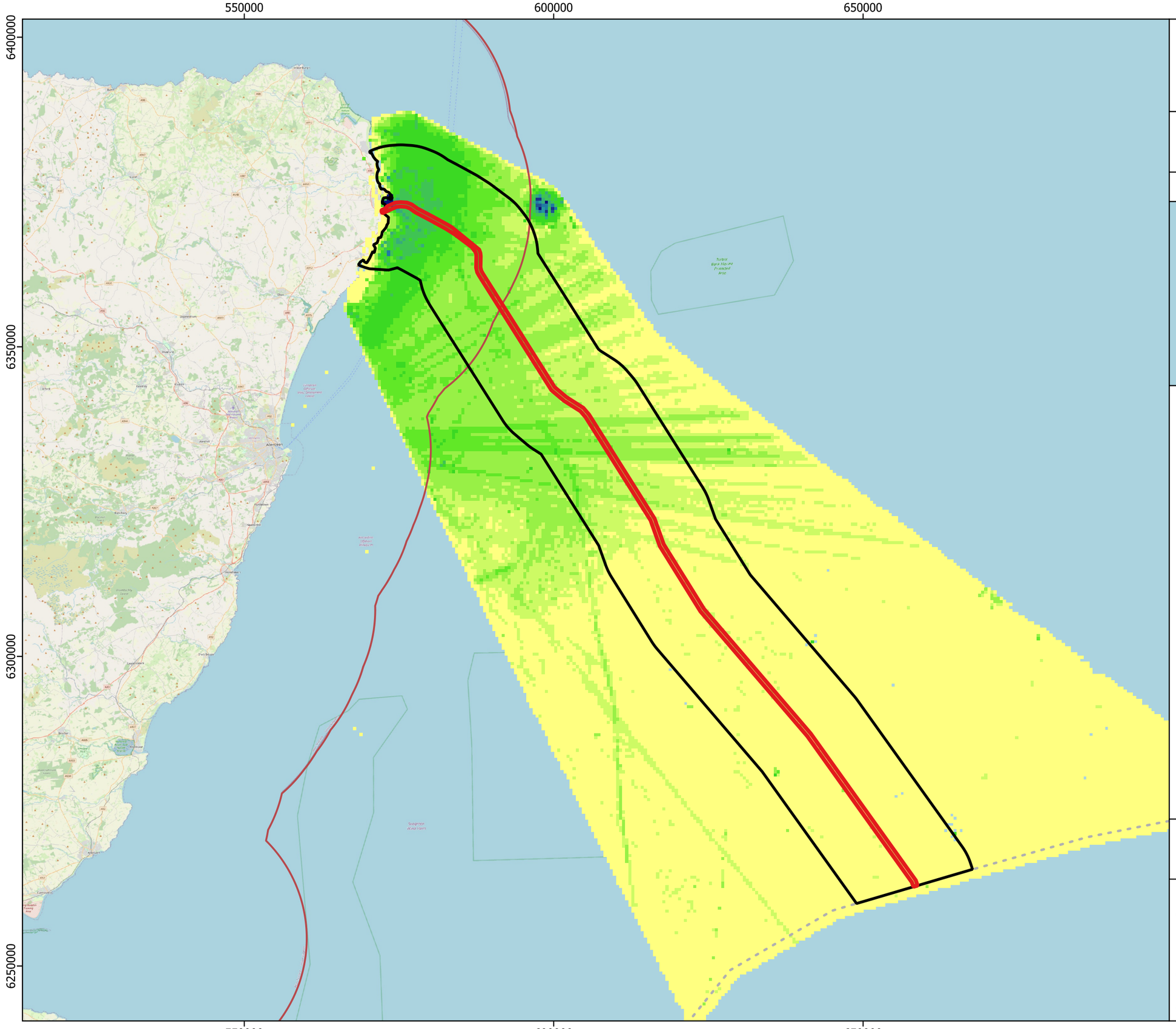
From KP 512 to the Scottish Landfall, there is an increase in marine traffic nearshore due to higher vessel activity related to the Aberdeen and Peterhead ports. The largest category are cargo vessels heading in three directions from the Port of Aberdeen, with the majority heading in a north-east direction and crossing the cable route. Hotspots of this vessel activity can be identified on **Figure 11-1 (Drawing reference P2675-AIS-EGL3-001-A)**.

As displayed in **Figure 11-1 (Drawing reference P2675-AIS-EGL3-001-A)**, the Proposed Development runs parallel between areas that are proposed for two new wind farms (Morven and Ossian OWFs) between KP 436 to KP 496 The current levels of marine traffic in this area are low; these windfarms are not yet constructed but are currently in development, with Morven OWF currently planned to start construction in 2027 and Ossian planned to commence construction in 2031. The majority of the route in this area has low vessel density at less than 1 hour per year.

There is a band of higher passenger vessel density which follows the coast approximately 6 km offshore due to regular roll on-roll off ferries (NorthLink) between Aberdeen and either the Shetland or Orkney Islands. However, these ferry routes result in relatively low vessel densities (maximum of 3.5 vessel hours per year).

There is a hotspot of vessel activity at the Hywind Scotland Floating OWF (Buchan Deep Demo), which is 24 km east of Sandford Bay and 0.5 km east of the shipping and navigation Study Area. Within the Study Area, traffic including cargo vessels, high-speed craft and tug vessels are expected to transit across the RLB area to reach the site.

Shipping activity is concentrated just south of Peterhead in Sandford Bay, both in terms of vessel traffic density and also size of associated vessels. Cargo vessels and vessels categorised as Other (any vessel type that did not fit into the categories used for the classification, as defined by EMODnet guidance (2019)) are active at Peterhead Port at approximately 80-280 and 180-1470 average vessel hours per year respectively. The traffic in the nearshore areas of Sandford Bay is comprised mainly of smaller vessels below 30,000 tonne typically used for fishing, as Peterhead is one of Europe's largest fishing ports. The port contains 11 quay areas and a deep water berth (<14 m), allowing large vessels to use the port for fishing, oil and gas and renewables projects. Within the RLB to the north of Sandford Bay, densities of 239 and 154 vessel hours per year are found within Peterhead Port Authority limits.



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Average Vessel Hours (2023-2024) All Vessels

P2675-AIS-EGL3-001-A

Legend

- Red Line Boundary
- Shipping and Navigation Study Area
- 12NM Limit
- Scottish Adjacent Waters

Vessel Density 2023 - 2024 (Hours per Year)

- <1
- 1 -2
- 2 - 5
- 5 - 10
- 10 - 25
- 25 - 50
- 50 - 75
- 75 - 100
- 100 - 150
- 150 - 200
- 200 - 500
- > 500

0 10 20 30 KM

0 5 10 15 NM

N

Date	22/05/2025
Coordinate System	WGS 84 / UTM zone 30N
Projection	Universal Transverse Mercator (UTM)
Unit	meters
Scale at A3	1:600,000
Created	EL
Reviewed	VF
Authorised	JH

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572000 573000 574000 575000 576000

6374000
6373000
6372000
6371000

Average Vessel Hours (2023-2024) All Vessels

P2675-AIS-EGL3-027-A

Legend

- Navigation Line
- Red Line Boundary
- Peterhead Port Authority Boundary

Vessel Density 2023 - 2024 (Hours per Year)

- <1
- 1 -2
- 2 - 5
- 5 - 10
- 10 - 25
- 25 - 50
- 50 - 75
- 75 - 100
- 100 - 150
- 150 - 200
- 200 - 500
- > 500

0 0.3 0.6 0.9 KM
0 0.15 0.3 0.45 NM
N

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Unit	meters
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Created	AJ
Reviewed	VF
Authorised	JH

572000 573000 574000 575000 576000

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11.4.2. **Vessel Type Distribution**

Vessel type distribution in the Study Area is shown in

Figure 11-3. The majority of vessels observed in the Study Area were cargo vessels, consisting of more than 34% of the total vessels accounted for. The majority of these vessels were located transiting to or from the Port of Aberdeen and travelling across the Study Area rather than parallel to it. These vessels represent some of the largest in the Study Area and those that are likely to have the biggest anchors and least manoeuvrability.

The next largest vessel category was fishing vessels, which made up 13.6% of all vessels in the Study Area. The majority of vessel traffic was located within the 6 NM limit (the area within which the UK has exclusive fishing rights) and was centred on Peterhead Port, with vessels travelling in multiple directions to and from the port. Vessel densities were up to 75 vessel hours per year per km^2 close to the port, with these higher levels located to the north of the RLB. It is noted however that that not all fishing vessels broadcast AIS at all times (particularly when engaged in fishing activities (UC Santa Cruz, 2022)), and smaller fishing vessels are likely to be underrepresented in the data, where AIS equipment carriage is not mandatory. These vessels commonly stay around inshore waters, so vessel traffic could be higher than what it is represented in the data. Similarly, a recent study found that 47% of all vessel traffic in Scotland, on average, broadcasts AIS, leaving a substantial number of vessels unaccounted for in data. These vessels were found to operate in the Scottish coastal area two-thirds of the time (Hague et al., 2025).

Within the Study Area, 12% of all vessels were classified as Other, meaning they didn't fit into any of the other categories presented. These vessels can serve a range of purposes and be many different sizes. The majority of the traffic follows similar patterns to the cargo vessels which indicates these vessels are transiting to and from the Port of Aberdeen in the three key directions discussed previously.

The remaining vessel types all represented under 10% of all vessel traffic in the Study Area. The majority of vessel tracks showed traffic taking similar routes, with hotspots shown across the Study Area in a north-south direction around the headland. The exception is high-speed craft (1.6%), which cut across the Study Area to the east to the Buchan Deep Demo wind site located just outside the Study Area boundary.

Maritime incident data was also used to inform of any navigational risks in the Study Area. Data from the RNLI details that the most frequent reason for utilisation of their services in the Study Area was 'Machinery failure' (16.2%), with ''in water' and 'other' both ranking second (14.9%). One incident related to a collision within the Study Area has been noted which required an RNLI call out, which occurred in July 2023 *ca*. 1 km southeast of the RLB near Boddam. Data from the MAIB shows 10 incidents took place within the Study Area between 2022 and 2024. 30% of incidents had a weather component as part of the cause, and 40% of the total incidents occurred within Peterhead Port. Collisions made up 20% of the incidents reported and one collision took place in the port itself. Further details on the incidents are provided in **Appendix 11A: Navigation Risk Assessment**. In total, three separate collisions (two recorded by the MAIB and one requiring a call out from the RNLI) took place within the Study Area. Each of these collisions took place in the nearshore area and involved commercial fishing vessels.

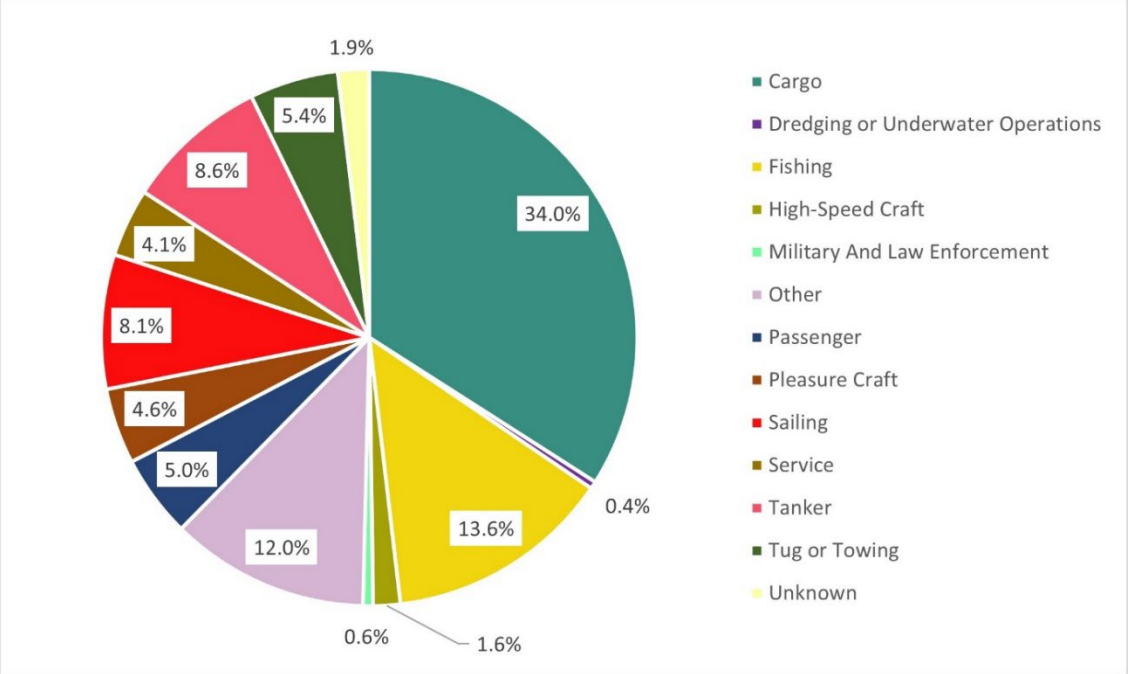

Figure 11-3: Vessel type distribution in the EGL3 Study Area

11.4.3. **Navigational Features**

Navigational features are areas that are marked on nautical charts for mariners' information, either as aids to navigation or areas to be aware of or avoided. These include ports and port areas, anchorage areas, extraction areas, military practice or firing areas, no anchorage areas, wind farms, spoil grounds, cables, pipelines, Traffic Separation Systems, anchorages, aids to navigation, pilot boarding stations, oil and gas infrastructure and charted wrecks or obstructions. Navigational features within the Study Area are shown in **Figure 11-4 (Drawing reference P2675-NAV-EGL3-001-B)**.

At the England/Scotland boundary, the Study Area encompasses the gap between the Morven and Ossian OWFs and is located within Military Practice Areas (Areas of Intense Aerial Activity) for the entirety of the EEZ. The Study Area also includes the eastern edge of the proposed Bowdun OWF. Within 12 NM of landfall, the Proposed Development travels parallel to a cable agreement area (EGL 2) and crosses an additional agreement area heading from the north (NorthConnect) on the approaches to the Sandford Bay landfall.

A pilotage station is located approximately 2.5 km to the east of Boddam. Multiple dumping grounds are located north of the RLB, including one active site. The RLB then enters the Peterhead Port Harbour Area for approximately 3.7 km. Within this area the Proposed Development crosses a navigation line heading south-east and two more disposal sites (South Buchan Ness and South Buchan Ness B) before making landfall in Sandford Bay. Two buoys are located within Peterhead Bay, but these will not interact with the Proposed Development. No anchorages are located within the Study Area. There are also four lighthouses in proximity to the Sandford Bay Landfall, namely Peterhead South Breakwater, Peterhead Harbour North, Peterhead Harbour South, and Bucan Ness (near Boddam). A lifeboat station is also located at Peterhead.

Additional harbour areas in the Study Area include Boddam Harbour (currently used by a small number of fishing vessels) and Port Erroll, located in Crudden Bay, which is used by both commercial fishing vessels and recreational vessels.

550000 600000 650000

6400000 6350000 6300000 6250000

Moray East OFTO

IN Salamander

Buchan Deep Demo

IN Nora

Muir Mhor

Campion

NORTH SEA
OFFSHORE CHARTS
SHEET 5
DEPTHS IN METRES

Aberdeen Offshore W/F

Kincardine

Bowdun Offshore Wind Farm

Bellrock

Ossian Offshore Wind Farm

Morven

Seagreen Phase 1 Windfarm

Seagreen Phase 1 OFTO

Berwick Bank Wind Farm

Berwick Bank OFTO

0 10 20 30 KM

intertek metoc

Navigational Features

P2675-NAV-EGL3-001-B

Legend

- Red Line Boundary
- Shipping and Navigation Study Area
- Anchorage Area
- Buoy
- Navigation Line
- Anchorage Area
- Caution Area
- Dumping Ground
- Harbour Area
- Military Practice Area
- Restricted Area
- Wind Cable Agreements
- Wind Site (All Status)
- 12NM Limit
- Scottish Adjacent Waters

0 10 20 30 KM
0 5 10 15 NM
N

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Reviewed	VF
Authorised	JH

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11.4.4. **Recreational Vessel Activity**

Royal Yachting Association (RYA) AIS intensity data is displayed in **Figure 11-5 (Drawing reference P2675-RYA-EGL3-002-A)**. Offshore the intensity of recreational vessels is low, and this increases within the 12 NM of landfall. Vessels depart from the Peterhead area and head in several directions, however the intensity increases to moderate in the nearshore area and along the entire coastline within the Study Area. As discussed previously, only 43% of nearshore vessels on the Scottish coast broadcast are using AIS (Hauge *et al.,* 2025). It was noted in the scoping response received from the RYA (Table 11-3) that only a quarter of all recreational vessels in the area use AIS, but that the patterns observed by those vessels do reflect the general usage and so provide a useful map of common routes for all recreational vessels. As a result, the usage of the nearshore area by recreational vessels is likely to be greater than that presented in **Figure 11-5 (Drawing reference P2675-RYA-EGL3-002-A)**.

There are four RYA affiliated clubs and training centres located at Peterhead, including Relyon Nutec, Peterhead Sailing Club, North East Scotland College (Scottish Maritime Academy), and Peterhead Sea Cadets Club. These clubs are based around the Peterhead Marina. Further discussion of recreational usage of the area is provided in **Chapter 13: Other Marine Users**.

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600000
650000
6400000
6350000
6300000
6250000

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Royal Yatching Association UK - Coastal Atlas of Recreational Boating

P2675-RYA-EGL3-002-A

Legend

- Red Line Boundary
- Shipping and Navigation Study Area
- 12NM Limit
- Scottish Adjacent Waters

AIS Intensity (Recreational Yachting)

- High
- Low

0 10 20 30 KM

0 5 10 15 NM

N

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Reviewed	VF
Authorised	JH

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11.5. Identification of Impacts and Zone of Influence

11.5.1. Spatial Scope

The Study Area for the assessment of shipping and navigation includes the RLB together with an additional 5 NM either side, representative of the industry standard (as described in **Section 11.1.1**). The Study Area for shipping and navigation is shown on all figures.

11.5.2. Temporal Scope

The temporal scope of the assessment of shipping and navigation is consistent with the period over which the Proposed Development would be carried out. It assumes construction of the Proposed Development would commence at the earliest in 2028 with the latest possible completion by 2033. Within this window, construction (including pre-lay activity) is expected to take 55 months. Operation would commence in 2033 with periodical maintenance required during the operational phase. It is assumed that maintenance and repair activities could take place at any time during the life span of the Proposed Development.

The Proposed Development is expected to have a life span of more than 40 years. If decommissioning requires cessation of operation and removal of infrastructure at this point in time, then activities and effects associated with the decommissioning phase are expected to be of a similar level to those during the construction phase works albeit with a lesser duration of two years. Acknowledging the complexities of completing a detailed assessment for decommissioning works up to 40 years in the future, based on the information available, the Applicant has concluded that impacts from decommissioning would be no greater than those during the construction phase. Furthermore, should decommissioning take place it is expected that an assessment in accordance with the legislation and guidance at the time of decommissioning would be undertaken and a separate Marine Licence would be sought for decommissioning activities.

11.5.3. Identification of Pressure-Receptors Pathways

The principal shipping and navigation receptors that have been identified as being potentially subject to significant effects are summarised in **Table 11-5**. The scoping in of these impacts are based on the potential impacts identified within the shipping and navigation MEA Non-Statutory Scoping Report. This took a precautionary approach whereby some impacts were scoped 'in' to the assessment if a strong evidence base to scope the impact 'out' was lacking.

Table 11-5: Shipping and navigation receptors scoped in for assessment

Potential impact	Activity	Project stage	Receptor	Zone of Influence	Reason for Consideration
Increased risk of vessel collisions	Boulder clearance, PLGR, pre-sweeping of sand waves. Cable burial and trenching. Placement of external cable protection. HDD drilling. Repair and maintenance.	All phases	All vessels	10 NM	The increase in vessel numbers due to the presence of vessels associated with the Proposed Development may increase the risk of vessel collisions.
Disturbance to existing shipping and fishing patterns	Boulder clearance, PLGR, pre-sweeping of sand waves. Cable burial and trenching. Placement of external cable protection. HDD drilling. Repair and maintenance.	All phases	All vessels	10 NM	The increase in vessel numbers due to the presence of vessels associated with the Proposed Development may increase the risk of disturbance to existing shipping and fishing patterns.

Accidental anchor strike or drag onto exposed submarine cable	Cable burial and trenching. Presence of cable.	All phases	All vessels	10 NM	Exposed cable (either pre-burial or in areas of low burial during operation) is at risk of an anchor strike or drag from another vessel.
Accidental snagging of fishing gear	Cable burial and trenching. Presence of cable.	All phases	All vessels	10 NM	Use of fishing gear in the area may result in accidental snagging on the cable.
Reduction in under-keel clearance	Placement of external cable protection. Presence of cable.	All phases	All vessels	10 NM	Placement of external cable protection may reduce under-keel clearance for vessels navigating in the area.
Interference with marine navigational equipment during the operational phase	Presence of cable.	Operation (including repair and maintenance)	All vessels	10 NM	The operational cable will emit EMF, which may interfere with marine navigational equipment. This will only occur once the cable is operational, and is therefore scoped out for the construction and decommissioning phases.
Proposed Development vessels blocking navigational features	Boulder clearance, PLGR, pre-sweeping of sand waves. Cable burial and trenching. Placement of external cable protection. HDD drilling. Repair and maintenance.	All phases	Navigational features	10 NM	There is a risk that vessels associated with the Proposed Development may block navigational features for other marine users. These include ports and port areas, anchorage areas, extraction areas, military practice or firing areas, no anchorage areas, wind farms, spoil grounds, cables, pipelines, TSS, anchorages, aids to navigation, pilot boarding stations, oil and gas infrastructure and charted wrecks or obstructions.
Impact on human safety due to reduced visibility	Boulder clearance, PLGR, pre-sweeping of sand waves. Cable burial and trenching. Placement of external cable protection. HDD drilling. Repair and maintenance.	All phases	All vessels	10 NM	There is a risk that encountering adverse weather conditions may comprise safe working on vessels associated with the Proposed Development.

11.5.4. **Guidance**

The shipping and navigation assessment has been undertaken in accordance with relevant guidance and has been compiled in accordance with professional standards. The guidance and standards which relate to this assessment are:

- International Maritime Organisation (IMO) Guidelines for Formal Safety Assessment (FSA) – MSC-MEPC.2/Circ.12/Rev.2 (IMO, 2018).
- Consideration to linear structures such as marine cables in relation to offshore renewable structures has been considered using:
    - Maritime and Coastguard Agency (MCA) Marine Guidance Note (MGN) 654 (Merchant and Fishing) Safety of Navigation: Offshore Renewable Energy Installations (OREIs) - Guidance on United Kingdom (UK) Navigational Practice, Safety and Emergency Response. (MCA, 2021).

- MCA MGN 372 Amendment 1 "Offshore Renewable Energy Installations (OREIs) - Guidance to Mariners operating in the vicinity of UK OREIs" (MCA, 2022).
- MCA Methodology for Assessing the Marine Navigational Safety Risks & Emergency Response of OREIs Version 3.1 (MCA, 2023).

11.6. Key Parameters for Assessment

11.6.1. Realistic Worst-Case Design Scenario

The assessment has followed the Rochdale Envelope approach as outlined **Chapter 3: Project Description**. The assessment of effects has been based on the description of the Proposed Development and parameters outlined in **Chapter 3: Project Description**. However, where there is uncertainty regarding a particular design parameter, the realistic worst-case design parameters are provided below with regards to shipping and navigation along with the reasons why these parameters are considered worst-case. The assessment for shipping and navigation has been undertaken on this basis. Effects of greater adverse significance are not likely to arise should any other development scenario (e.g., different infrastructure layout within the RLB), to that assessed here, be taken forward in the final design plan, provided the development scenario is within the Rochdale Envelope parameters set out.

With regards to both construction and operation activities it is assumed that the rates of progress (the speed at which a particular activity moves at or takes to complete) as described in **Table 11-6** would be used. This has been considered as an expected worst-case scenario based on previous experience with other similar developments. Further detail is provided in **Appendix 11A: Navigation Risk Assessment**.

Table 11-6: Rates of progress for the Proposed Development (worst case indicative estimates)

Marine Campaign	Rate of Progress (m/hr unless otherwise stated)
Pre and post lay survey	3000
Pre-Lay Grapnel Run (PLGR)	1500
Boulder clearance	200
Sandwave pre-sweeping	200
Out of service cable removal	1 day per asset
Cable lay	200
Cable burial	150
Cable jointing	10
HDD punch out and cable pull in	6 days per pull in
External protection for in service cable and pipeline crossings	1 crossing per day
Remedial rock placement	200
Operation and maintenance surveys	1000

11.7. Embedded Mitigation Measures

As set out in **Chapter 4: Marine Environmental Appraisal Scope and Methodology**, embedded mitigation measures form part of the design for which consent is sought and can be characterised as 'design measures' or 'control and management measures.' This embedded mitigation would be implemented as part of the Proposed Development and secured by way of a condition in the Marine Licence as relevant

Several management plans would be provided to discharge Marine Licence conditions prior to the start of construction. These would include a Construction Environmental Management Plan (CEMP), a Marine Pollution Contingency Plan (MPCP), Marine Mammal Mitigation Plan (MMMP) and a Fisheries Management and Mitigation Plan (FMMP). These documents will outline measures to be implemented to comply with legislation, such as Prevention of Pollution at Sea (MARPOL) and Safety of Life at Sea (SOLAS), and the mitigation commitments proposed within this MEAp (Embedded Mitigation OMT08). An Outline CEMP is provided as **Appendix 3B: Outline Construction Environmental Management Plan**. In addition, design measures identified through the MEAp process have been applied to avoid or reduce potential significant effects.

Table 11-7 outlines the embedded mitigation measures that would be implemented for the Proposed Development that have been considered by the shipping and navigation assessment.

Table 11-7: Embedded mitigation measures used for the shipping and navigation assessment

Receptor	Project activities	Embedded measures
All vessel types	Construction	OSU01 - For safety purposes, all vessels will be requested to maintain a minimum distance from construction vessels to prevent interactions.
	Construction	OSU02 - Timely and efficient communication will be given to sea users in the area via NtM, Kingfisher Bulletins, Radio Navigation Warnings Navigational Telex (NAVTEX) and Navigational Areas (NAVAREA) warnings and /or broadcast warnings.
	Construction	OSU03 - Procedures will be in place to minimise disruption near high density shipping areas. e.g. avoidance of anchoring near busy areas, passage planning of installation vessels, emergency response plan etc.
	Construction	OSU04 - Channels of communication will be established and maintained between the Applicant, commercial fishing interests and relevant Port authorities.
	Construction	CF01 - A Fisheries Liaison Officer (FLO) and fisheries working group(s) will be maintained throughout construction to ensure project information is effectively disseminated, dialogue is maintained with the commercial fishing industry and access to home ports is maintained during the main fishing season. Details of the FLO will be included in the Fisheries Management and Mitigation Plan (FMMP).
	Construction	OSU05 - Communication with vessel traffic services (VTS) in port areas to keep vessels updated and update other marine users on vessel movements.
	Construction	OSU06 - Coordination of Simultaneous Operations (SIMOPs) with other developers and marine activities to be undertaken prior to commencement of operations.
	Construction	OSU07 - Project vessels will comply with the International Regulations for Preventing Collisions at Sea, 1972 (COLREGs) as amended, particularly with respect to the display of lights, shapes and signals. The masters of other vessels are expected to be familiar with and comply with the COLREGS.
	Construction	OSU08 - Pilotage within port authority limits as required by the port authority.
	Construction	OSU09 - Pollution events as the result of a collision will be managed through the Project Emergency Response Plan, Marine Pollution Contingency Plan and specifically the Shipboard Oil Pollution Emergency Plan (SOPEP).
	Construction	OSU10 - Guard vessel(s), using RADAR with Automatic RADAR Plotting Aid (ARPA) to monitor vessel activity and predict possible interactions, will be employed to work alongside the installation vessel(s) during cable installation works and to protect any temporary cable exposures during installation.
	Construction	OSU11 - Cable jointing operations to be planned away from high shipping activity where possible.
	Construction	OMT04 - Cable protection features would only be installed where considered necessary for the safe operation of the Proposed Development. This includes the repair of cables due to accidental damage, where depth of lowering is not achieved and at infrastructure crossings.
	Construction	OSU12 - Cable Burial Risk Assessment (CBRA) to be undertaken to identify appropriate target depth of burial based on geology, water depths and AIS data. This will reduce the chance of interaction with other marine users, and as per the CBRA recommendations deeper burial or cover will be implemented in areas of high shipping activity to further reduce this risk.
	Construction	OSU13 - Designated adverse weather shelter areas (would recommend to be further than 500 m from construction) - to be determined with the contractor.
	Construction	OSU14 - All vessels associated with the Proposed Development would display appropriate marks and lights and would always broadcast their status on AIS if appropriate.
All vessel types	Operation	OMT06 - HVDC poles will be bundled to minimise the effects of EMF for electrosensitive receptors.

Receptor	Project activities	Embedded measures
	Operation	OMT03 - The intention is to bury the cables in the seabed, except in areas where trenching is not possible e.g. where ground conditions do not allow burial or at infrastructure crossings.
	Operation	OMT07 - As-built locations of cable and external protection will be supplied to UKHO (Admiralty), Crown Estate Scotland and Kingfisher (KIS-ORCA).
	Operation	OSU15 - Cables will be marked on Admiralty Charts and fisherman's awareness charts (paper and electronic format).

11.8. Significance Assessment

The approach to the assessment methodology is set out in **Chapter 4: Marine Environmental Appraisal Scope and Methodology** of the MEAp. However, whilst this has informed the approach that has been used in this shipping and navigation assessment, it is necessary to set out how this methodology has been applied, and adapted as appropriate, to address the specific needs of this shipping and navigation assessment. The methodology for the shipping and navigation assessment is based on the NRA methodology (**Appendix 11A: Navigation Risk Assessment**) but has been adapted to align with the MEAp approach for an evaluation of significance of effect. In turn the NRA methodology is informed by International Maritime Organisation (IMO) and MCA guidance for completing risk assessments for developments in the marine environment. This is considered the industry standard approach, and the NRA methodology was presented to stakeholders during the HAZID workshop.

The NRA assesses risk using a combination of frequency of occurrence and severity of consequence, which in turn is then defined as levels of 'tolerability' (which in turn are reduced to As Low As Reasonably Practicable (ALARP), once the environmental measures have been applied). This has been adapted to 'significance' to align with the wider MEAp.

The severity of consequence is defined in relation to impacts on human safety, ships, displacement of vessels, business/reputational impacts and environmental impacts. These have all been considered together to create the severity of consequence definition (**Table 11-8Error! Reference source not found.**). The frequency definitions used in this assessment are presented in **Table 11-9Error! Reference source not found.**.

Table 11-8: Severity of consequence

Severity of Consequence	Definition
Minor	Single or minor injuries Single local equipment damage Temporal displacement of vessel (hours) No negative publicity No perceptible impact to reputation. Minor environmental emissions, no spill response needed
Significant	Multiple minor injuries Multiple local equipment damage Temporal displacement of vessel (days) Minor reputational risks Local negative publicity Tier 1 response - local assistance needed
Severe	Multiple or severe injuries Non-severe ship and equipment damage Temporal displacement of vessel (weeks) Moderate reputational risks Regional negative publicity Tier 2 response - may not require external assistance
Serious	Single fatality or multiple severe injuries Severe damage to ship and equipment Temporal displacement of vessel (months) National reputational risks and negative publicity

Severity of Consequence	Definition
	Tier 2 response - will require external assistance
Catastrophic	Multiple fatalities Total loss of ship and equipment Permanent displacement of vessels International reputational risks and negative publicity Tier 3 response - national assistance needed

Table 11-9: Frequency of occurrence

Severity of Consequence	Definition
Extremely Remote	Likely to occur once in the lifetime of the Proposed Development (assumed as 50 years) or less
Remote	Likely to occur once a decade
Probable	Likely to occur once per year
Very Probable	Likely to occur once per month
Frequent	Likely to occur once per week or more

Table 11-10 Error! Reference source not found. below details the risk matrix, which is used to determine the significance of the impact in the assessment of the Proposed Development across the construction and operational stages. The significance criteria is then defined as major, moderate, minor or negligible. It is noted that in **Appendix 11A: Navigation Risk Assessment**, only Major (significant) risks are considered intolerable, and that the aim of the NRA is to reduce the risk to ALARP, meaning that Moderate (potentially significant) risks are considered tolerable if ALARP.

Table 11-10: Risk matrix – significance evaluation

		Severity of consequence				
		Minor	**Significant**	**Severe**	**Serious**	**Catastrophic**
Frequency of occurrence	**Extremely Remote**	Negligible (not significant)	Negligible (not significant)	Minor (not significant)	Minor (not significant)	Minor (not significant)
	Remote	Negligible (not significant)	Minor (not significant)	Minor (not significant)	Moderate (potentially significant)	Moderate (potentially significant)
	Probable	Minor (not significant)	Minor (not significant)	Moderate (potentially significant)	Moderate (potentially significant)	Major (significant)
	Very Probable	Minor (not significant)	Moderate (potentially significant)	Moderate (potentially significant)	Major (significant)	Major (significant)
	Frequent	Moderate (potentially significant)	Moderate (potentially significant)	Major (significant)	Major (significant)	Major (significant)

11.8.1. Increased Risk of Vessel Collisions

During both the construction and operational phases (maintenance specifically in the operational phase, as once operational there will be no additional vessel presence), the presence of vessels working on the Proposed Development will increase the risk of a potential collision with another vessel transiting the area which cause injury to personnel onboard, up to potential loss of life. This includes all activities in both phases, including, but not limited to, seabed preparation, cable installation, cable jointing, remedial cable protection and installing crossing infrastructure. During both phases, the vessels will be slow moving (approximately 200 m/hr for cable installation) or stationary at some points depending on the activity – rates of progress are discussed **Table 11-6**Error! Reference source not found., with the slowest activity noted as cable jointing, where the vessel is almost stationary (this results in the highest risk level

for this activity as shown in the Risk Matrix in the NRA (**Appendix 11A: Navigation Risk Assessment**). Transiting vessels may have to alter planned routes to avoid construction vessels, which could create pinch points in areas of increased vessel density such as in close proximity to shipping lanes. Larger construction vessels, such as the cable lay vessel (CLV) will also have limited manoeuvrability during these operations, making any evasive manoeuvres to avoid potential collisions more challenging. The potential effect of a vessel collision could range from damage to the vessel to loss of life. Damage to the vessel could lead to accidental hydrocarbon releases to the marine environment that have the potential to lead to pollution events. This is considered further in **Chapter 7: Intertidal and Subtidal Benthic Ecology**.

At the proposed landfall, the potential for additional vessels in the area to support the construction works further increases the risk of collision. Additionally, the requirement for an anchored or jack-up barge at the HDD exit point is located within the Peterhead Port Authority area. Cargo vessels, fishing vessels, sailing vessels and high-speed craft are the most frequently found vessel types in this area, and it is noted there is a potential risk that recreational vessels could drift into vessels working on the Proposed Development in adverse weather or tidal conditions, or be pushed into routes usually reserved for larger vessels (such as the navigation line heading south east from the port). However, the majority of recreational and smaller vessel activity is located within the Peterhead Bay where there will be no interaction with vessels associated with the Proposed Development. The entry and exit to Peterhead Port is managed by the Port Authority who will be kept up to date of the project activities, reducing further risk of vessels being in close enough proximity to cause a collision. The barge will be located at this point in the nearshore for approximately one month during the installation phase. The location of the barge will not block access to the port or any berths and does not interact with any navigational channels due to its location close to the shore, but the expected safety advisory zone is likely to interact with the entry and exit to Peterhead Port where vessel hours are noted at 153 hours per year in the AIS data.

Decommissioning effects are not considered to be any greater than those assessed for the construction phase, as any cable removal activities usually have greater rates of progress and require fewer vessels than construction activities. However, this will be dependent on the shipping and navigation conditions at the time of decommissioning and the approach to decommissioning selected. As this is anticipated to occur in upwards of 40 years, the effect of decommissioning on shipping and navigation receptors will be assessed closer to the time.

As stated in the embedded mitigation (**Section 11.7**), all vessels will communicate with all relevant stakeholders prior to the commencement of any construction or maintenance activities via a NtM, which will include the requested safety advisory zone around the vessels to ensure safe working and reduce the risk of nearby vessels that could cause a potential collision. Additional procedures will be put in place by the installation contractor in areas of high vessel traffic to reduce the risk of collision, such as avoidance of anchoring in areas of increased traffic such as transit routes out of the Port of Aberdeen. Communication with Peterhead Port Authority will be implemented to ensure they have visibility of the vessel's movements and can therefore plan accordingly regarding port activity and advising other port users if required. SIMOPS will be developed with any other project undergoing works at the same time as the Proposed Development, which will allow for discussion and coordination of operations to minimise disruption to all projects and to other vessels. All vessels during both phases will comply with COLREGs to reduce risk of collision. Once installation is complete, vessel collision risk will reduce to previously observed levels as all vessels associated with the Proposed Development will leave the area. No vessels are associated with the operational phase apart from during routine inspection or potential repair activities, during which the same mitigation will apply if relevant to the activities being completed.

Based upon the above assessment, the **frequency** of this impact has been assessed as **extremely remote** and the severity **catastrophic**, resulting in an overall effect of **Minor** and **Not Significant** during all phases of the Proposed Development.

11.8.2. **Disturbance to Existing Shipping and Fishing Patterns**

There is potential that the Proposed Development will cause disturbance to existing shipping and fishing patterns. Areas of greater vessel density for all vessel types were located perpendicularly across the Proposed Development coming from the Port of Aberdeen in three main shipping lanes, and the highest vessel density within the Study Area was located within Peterhead Port where vessel densities reached over 16,000 vessel hours per year. Vessel traffic is still high just outside of the harbour breakwater (153 vessel hours per year within the RLB, largely following the navigational line heading south east from the port) but continues to reduce with distance from the port.

During the HDD punch out and cable pull-in operations, a jack-up barge, spud barge or multi-cat will be present for up to 4 months. Considering that there is a high density of shipping activity at Peterhead Port, this may result in other vessels in the area having to re-route or reduce speed to avoid construction activities. Additional fuel may also be required to make the longer journey, at a cost to the affected vessel. The disturbance will however be temporary and limited to the safety advisory zone set around the vessel during its operations. The vessel will be located in Sandford Bay, located south of Peterhead Bay, and the position at the HDD exit point has a vessel density of 75 vessel hours per year indicating moderate disruption will be encountered by other vessels (however, alternative routes to access the port are available and it is therefore not anticipated that smaller craft will be squeezed into areas utilised by larger vessels). Further details on disturbance levels assessed per project activity during the construction and operation phase are presented in the Risk Matrix in Appendix A of the NRA (**Appendix 11A: Navigation Risk Assessment**).

Ongoing disturbance from the HDD punch out and cable pull-in operations may result in potential reputational damage due to the inconvenience caused to other marine users during the construction phase. Once construction is complete, there will be no further disturbance to shipping and fishing during the operational phase, apart from during operation and maintenance surveys or when a cable repair is required. During these activities, the risks are the same as for the corresponding activity during construction.

Decommissioning effects are not considered to be any greater than those assessed for the construction phase, as any cable removal activities usually have greater rates of progress and require fewer vessels than construction activities. However, this will be dependent on the shipping and navigation conditions at the time of decommissioning and the approach to decommissioning selected. As this is anticipated to occur in upwards of 40 years, the effect of decommissioning on shipping and navigation receptors will be assessed closer to the time.

As stated in the embedded mitigation (**Table 11-7**), early consultation with key stakeholders (such as local fisheries) will be undertaken to inform them of planned works and allow them to plan for the disruption to minimise the impact to their operations. This will also be communicated via NtM, regular VTS communications and KIS-ORCA updates. SIMOPs will be developed with other developers where required to reduce the disturbance to each project and collectively to other marine users. Fishers co-operation agreements will be arranged where required as fishing grounds may be temporarily unavailable for the duration of the period of each project phase. Where possible, cable jointing activities will also be planned away from areas of high shipping activity to minimise disruption, as this activity will require the vessel to be stationary or very slow moving for an extended period of time (rate of progress is estimated to be 10m/hr as shown in **Table 11-6**Error! Reference source not found.). The use of a safety advisory zone set around all vessels during operations will mean that avoidance areas will be as small as safely possibly to reduce the amount of disturbance to existing shipping patterns, and therefore reduce additional journey time required due to work associated with the Proposed Development.

Based upon the above assessment, the **frequency** of this impact has been assessed as **probable** and the severity **severe** as a worst case scenario (due to the potential reputational risks), resulting in an overall effect of **Moderate** and **Potentially Significant** during all phases of the Proposed Development.

11.8.3. Accidental Anchor Strike or Drag

Risk of accidental anchor strike or drag is highest during the Proposed Development's operational phase, however there is a low risk that during the cable lay and burial activities of the construction phase that emergency anchoring by either project or external vessels could strike the cable before burial can take place.

Cable exposures may occur due to mobile sediment or scour, which can increase the risk of an accidental anchor strike or drag due to the lack of protection. Vessel anchors also have the potential to strike the cable during anchor deployment in areas of surface lay. It is considered unlikely that an anchor will be deployed in deeper waters and away from designated anchorage areas, and none are located in close proximity to the Proposed Development.

There is the potential that third-party asset repair or inspection campaigns could accidentally strike or drag the cable when anchoring, however as crossing agreements will be in place to set out an agreed working arrangement this is considered unlikely. Anchor strikes or drags can lead to damage to the cable, which can lead to outages of power supply and subsequent reputational impacts due to an issue with providing required electricity. This is considered one of the highest risks to the Proposed Development during the operational phase (as shown in the Risk Matrix in **Appendix 11A: Navigation Risk Assessment**). However, the low level of vessel density over the majority of the Proposed Development lessens this risk.

Decommissioning effects are not considered to be any greater than those assessed for the construction phase, as any cable removal activities usually have greater rates of progress and require fewer vessels than construction activities. However, this will be dependent on the shipping and navigation conditions at the time of decommissioning and the approach to decommissioning selected. As this is anticipated to occur in upwards of 40 years, the effect of decommissioning on shipping and navigation receptors will be assessed closer to the time.

To mitigate the risk of an accidental anchor strike or drag, a CBRA has been completed which details the burial requirements for the cable to maintain an acceptable level of risk. This takes into account seabed conditions and existing shipping movements, which indicate where areas of deeper burial are needed to mitigate any accidental anchor deployment in the vicinity of the Proposed Development. Additionally, through the use of best practice when designing the rock protection scouring will be minimised. This has been assessed as Not Significant in **Chapter 6: Marine Physical Processes**, meaning the likelihood of cable exposure through scour is low.

During construction, there may be a delay between cable lay and cable burial which will leave the cable at risk of an anchor strike. The cable will be identified to other marine users by either guard vessels or temporary marker buoys, and notices regarding the area of exposed cable will be communicated via NtM, KIS-ORCA notifications NAVTEX and NAVAREA warnings. Both measures will highlight the area of unburied cable and reduce the risk of an anchor strike or drag incident.

Once the construction phase has finished, the as-laid coordinates of the cable will be communicated to the UKHO and KIS-ORCA for inclusion in relevant charts and plotters. This will inform other users of the Proposed Development for the duration of its operating life.

During this phase, any cable exposures will be notified to other marine users as soon as possible to prevent an anchor strike using the same formats as during the construction phase.

Based upon the above assessment, the **frequency** of this impact has been assessed as **extremely remote** and the severity **catastrophic** (from a business and reputational effects perspective), resulting in an overall effect of **Minor** and **Not significant** during all phases of the Proposed Development.

11.8.4. **Accidental Snagging of Fishing Gear**

Peterhead Port is considered one of Europe's largest fishing ports, and is Europe's largest for whitefish and pelagic species. As a result, a high level of fishing traffic transits in and out of the port on a regular basis. Fishing vessel traffic across the Study Area is centred within the 6 NM zone and is considered moderate, with hotspots of activity averaging between 50 and 75 vessel hours per year. The type of fishing commonly used includes trawling, dredging and seine netting. VMS data shows that scallop dredging is the most frequent form of fishing within the nearshore area, with landings in excess of £20,000 recorded (Brown and May, 2021). Whilst gear will be requested to be removed from the RLB during construction, fishing may occur over the cable once it is operational. Towed gear has the potential to damage the in-service cable by snagging on cable protection or potential exposures that may occur over the lifetime of the Proposed Development. This could result in an ongoing loss of service whilst the cable awaits repair, resulting in national news coverage if the outage is severe enough which could have negative reputational impacts and substantial costs.

Decommissioning effects are not considered to be any greater than those assessed for the construction phase, as any cable removal activities usually have greater rates of progress and require fewer vessels than construction activities. However, this will be dependent on the shipping and navigation conditions at the time of decommissioning and the approach to decommissioning selected. As this is anticipated to occur in upwards of 40 years, the effect of decommissioning on shipping and navigation receptors will be assessed closer to the time.

During construction, regular communication with the fisheries will be undertaken by the Proposed Development FLO. NtMs will also be issued alongside notifications on KIS-ORCA, informing vessels of areas the project is working and the expected duration. A CBRA has been completed to advise of safe burial depths for the cable, which has taken fishing effort into account during its recommendations to prevent potential exposures. Once installed, the as-laid coordinates of the cable will be communicated to the UKHO and KIS-ORCA for inclusion in relevant charts and plotters. This will inform other users of the Proposed Development for the duration of its operating life. During this phase, any cable exposures will be notified to other marine users as soon as possible to prevent any snagging occurring.

Based upon this assessment, the **frequency** of this impact has been assessed as **extremely remote**, and the severity assessed as **catastrophic** (from a business and reputational effects perspective), with a resultant overall effect of **Minor** and **Not significant** for all phases of the Proposed Development.

11.8.5. **Reduction in Under Keel Clearance**

Reduction in under-keel clearance would be caused by the deployment of cable protection measures along the route where required. This could include infrastructure crossing locations, or in areas where burial is not able to be achieved due to seabed conditions. This is considered a risk during the construction phase once the protection measures have been deployed and continues throughout the operational phase and through to decommissioning if the cable protection is not removed. There is an MCA requirement that seeks to keep a reduction in water depth (chart datum) to less than 5% to ensure existing and future safe navigation is maintained (MCA, 2021).

The preferred method of cable protection for the Proposed Development is burial, which has been informed by the CBRA to assign appropriate burial depths along the route depending on risk from anchor penetration related to vessel traffic and associated anchor size. Areas of buried cable will not result in any reduction in under keel clearance. The majority of the Proposed Development is contained within deeper waters (> 50 m), so any reduction in water depth and subsequently under-keel clearance are unlikely to cause any effects to any vessel types transiting the area. The proposed crossings rock berm height will be a maximum of 2.2 m above the seabed, and there are only four known crossings required, with a further three assumed with OWF export cables in the pre-consent stage, each of which are located in deep water offshore and will not result in a greater than 5% reduction in navigable depth.

At the HDD punch out point in Sandford Bay there is the potential that an additional rock berm will be utilised for additional cable protection. This rock berm may potentially be present throughout the nearshore area, including the navigational line for entry and exit to Peterhead Port. The rock berm in this location will be lower in height than those proposed for the crossing, with a maximum height of 1.5 m above the seabed. Based on charted depths, the potential of area for rock placement ranges in water depth from 15.5 m to 24.5 m. This will result in a reduction in water depth from 6.1% in the deepest areas to 9.7% in the shallowest areas. This therefore exceeds the MCA requirement of less than a 5% depth reduction.

Shipping in the immediate nearshore area is low, averaging between 8 to 13 vessel hours per year (as shown in **Figure 11-2**). This area contains the shallowest water depths (15.5 m) so will therefore have the greatest depth reduction of 9.7%. The majority of vessel

traffic in this nearshore area consists of Other or Tug and Tow vessels with no traffic from larger vessels such as cargo and tanker ships. As a result, it is not expected that the reduction in water depth in this location will cause any significant risks to navigation despite exceeding the 5% depth reduction,

The planned rock berm may also continue further along the cable route, ending approximately 150 m from the navigational line that denotes the entry and exit approach to Peterhead Port (as shown in Figure 11-2). The water depth in this location is deeper than the nearshore, ranging from 20.4 m to 24.5 m which will result in a depth reduction between 7.4% and 6.1%. Vessel traffic in this area is high due to its location within the vicinity of the navigation line, ranging from 94 to 154 vessel hours per year (when accounting for all vessels). This traffic mostly consists of Other, Cargo, Service and Tug and Tow categories of vessels, and several of these vessel types may have larger drafts that could be impacted by a reduction in water depth in this area. Peterhead Port's deepest berths have depths of up to 14 m, (Peterhead Port, 2025), which is anticipated to increase to up to 16 m in the future to accommodate new infrastructure (Scottish Offshore Wind Ports Alliance, 2025). Between 10 – 11 m is the current maximum draft that is permitted within Peterhead Port, and therefore the assessment has been undertaken on this basis.

Based on the shallowest depths in the vicinity of the navigation line, the shallowest depths after the installation of the rock berm will be 18.6 m. Based on the current maximum vessel draft, this will still allow for up to 7.6 m of under keel clearance for navigation in the area. Large vessels will be subject to pilotage requirements and therefore would be controlled by someone with a high level of local knowledge and ability to avoid constraints. This would minimise the risk of potential unsafe navigation in the area of the rock placement as the risk is greatest to large vessels. The distance between the proposed rock berm and the navigation line should be sufficient to provide navigation room into the port, and the rock placement will be located in areas of lower traffic. Smaller vessels will not be affected by the change in navigable depth at this location due to their smaller drafts.

The embedded mitigation includes provisions for cable protection only where it is necessary, therefore reducing the potential for water depth to be reduced. Once construction is complete, the as-laid coordinates will be provided to the United Kingdom Hydrographic Office (UKHO) for charting, after which all vessels traversing the area will be aware of any potential depth changes as a result of the Proposed Development. It is noted that due to the planned reduction in water depth, ongoing consultation with the MCA and Peterhead Port will be required and this may result in a need for further assessment if required.

Based upon the above assessment, the **frequency** of this impact has been assessed as **remote** and the severity **significant**, resulting in an overall effect of **Minor** and **Not significant** for all phases of the Proposed Development.

11.8.6. Interference with Marine Navigational Equipment

Emissions of EMF during the operational phase have the potential to interfere with marine navigational equipment due to deviations in magnetic compasses and interference with inertial navigation. Inertial navigation systems (INS) used alongside global positioning systems (GPS) to navigate are not expected to be impacted by the Proposed Development as these systems have negligible sensitive EMF. This is owing to marine gyrocompasses (used in INS) remaining unaffected by external magnetic fields as modern INS equipment generally uses laser technology and resonating quartz devices which are self-contained.

The operational cable will emit an EMF, which may have a small, localised effect in magnetic compasses. The degree to which it may affect magnetic compasses is dependent on several factors including cable separation distance, armoured cable design and water depth. The Proposed Development will be buried where appropriate (expected to be up to 135 km of route length achievable), therefore reducing the potential for compass deviation. EMF calculations have been provided in **Appendix 3A: Electric and Magnetic Field Assessment** and have assumed burial at 1 m depth. These calculations indicate that over 99.5% of the RLB resulted in compass deviations of less than 3 degrees; small sections exceeding this are located in shallow waters, where water depth is below 3 m. MCA guidance for compass deviation is that there must be no more than a 3 degree electromagnetic variation for 95% of the cable route and for the remaining 5% of the cable route there must be no more than a 5 degree electromagnetic variation in water depths of 5m and deeper. The calculations provided indicate that this guidance is met. The assessment does not suggest any additional mitigation is required to reduce the impact to any marine navigational equipment. **Appendix 11A: Navigation Risk Assessment** has therefore assessed that 0.5% of the Proposed Development, located only in shallow water in the vicinity of the Sandford Bay landfall, will be the proposed frequency of interference with marine navigational equipment. Due to the nearshore location of the potential interference, any vessels affected will be able to navigate using coastal landmarks and therefore have a reduced reliance on navigational equipment should anything be affected by EMF. Therefore, as a result of the low level of proposed interference (which has been mitigated through early stage project design such as cable bundling and burial), no additional environmental measures have been proposed.

Based upon the above assessment, the **frequency** of this impact has been assessed as **remote** and the severity **minor**, resulting in an overall effect of **Negligible** and **Not Significant** for the operation phase of the Proposed Development.

11.8.7. Proposed Development Vessels blocking Navigational Features

Vessels associated with the Proposed Development have the ability to block navigational features throughout all activities in the construction and operational phases (where a vessel is involved, such as maintenance). Navigational features include anchorages, approaches to ports and buoys. The Proposed Development enters Peterhead Port Authority area for approximately 3.7 km. The

RLB crosses a dumping ground and a navigation line but is not located close to any anchorages or buoys. The HDD exit point is located just inside of the harbour limits for Peterhead Port and therefore may block access to the port to vessels travelling from the south. The rock placement at the HDD exit may also block access to the port during this activity. No additional navigational features will be blocked by the Proposed Development.

Due to the safety advisory zones required by the CLV during construction (expected to be 500 m but this could vary depending on area and activity), access to Peterhead Port may be blocked. This would require vessels traveling in this direction to travel around the project vessels (considered to be an anchored barge or jack up barge and the CLV during pull-in operations) in order to enter the port, leading to a disruption frequency of approximately once a month based on vessel traffic in the area.

Decommissioning effects are not considered to be any greater than those assessed for the construction phase, as any cable removal activities usually have greater rates of progress and require fewer vessels than construction activities. However, this will be dependent on the shipping and navigation conditions at the time of decommissioning and the approach to decommissioning selected. As this is anticipated to occur in upwards of 40 years, the effect of decommissioning on shipping and navigation receptors will be assessed closer to the time.

As discussed in the embedded mitigation, early consultation with stakeholders, alongside regular communication with vessels and other marine users (including through NtM) will ensure that everyone in the area is aware of the construction phase of works (and any maintenance works planned) and can plan accordingly to adjust routes to avoid the safety advisory zone. SIMOPs with other projects in the area will also aim to minimise blocking any navigational features by planning each project's operations so that access is not completely revoked for the period of the activity. Installation contractor procedures will also aim to reduce the time spent near navigational features where possible by avoidance of anchoring where vessel density is high and creating passage plans for installation vessels.

Based upon the above assessment, the **frequency** of this impact has been assessed as **probable** and the severity **severe** (due to potential impact to business and reputation and displacement of vessels), resulting in an overall effect of **Moderate** and **Potentially Significant** after all embedded mitigation is considered for all phases of the Proposed Development.

11.8.8. Impact on Human Safety due to Reduced Visibility

During both the construction and operation phases of the Proposed Development, any activity that requires a vessel may encounter adverse weather. This in turn can lead to reduced visibility, which can lead to challenges for the crew to continue working and compromise safe working conditions. As the Proposed Development is located within the North Sea and will require vessels year-round, it is likely that adverse weather conditions leading to reduced visibility will be encountered. Potential human safety issues could include increased risk of injury due to poor visibility or exacerbated human error due to challenging weather conditions.

The embedded mitigation details that if the conditions reduce visibility to an unsafe level, activities will be paused and the vessel will transit to take shelter in a safe location until the weather has passed. This may require the cable to be cut and laid on the seabed until the vessel can return if the weather is deemed to be suitably challenging. These will be agreed with the contractor during installation planning, which will include defining unsafe working limits. The vessel will also be in contact with other vessels and ports (where appropriate) and can communicate regarding weather and visibility complications. The contractor will have their own safe systems of work which will be reviewed and agreed prior to commencement of the construction phase.

Based upon the above assessment, the **frequency** of this impact has been assessed as **probable** and the severity **significant**, resulting in an overall effect of **Minor** and **Not Significant** after all embedded mitigation is considered for all phases of the Proposed Development.

11.9. Project Specific Mitigation Measures

The significance of effect of disturbance to existing shipping and fishing patterns (see **Section 11.8.2**) and project vessels blocking navigational features (see **Section 11.8.7**) was assessed to be moderate and potentially significant, primarily based on potential reputational impacts that the Proposed Development may incur (as discussed further in **Appendix 11A: Navigational Risk Assessment**). It is noted in the NRA that all risks are reduced to ALARP through the use of embedded mitigation, which involves industry standard safety precautions for cable installation and maintenance, and is therefore defined as "tolerable". Whilst the significance of the effect is classed as "potential", the risk is considered ALARP and therefore cannot be further mitigated. As a result, no further project specific mitigation is required.

11.10. Residual Effect

The appraisal of the impacts of the Proposed Development on shipping and navigation receptors identified two residual effects as moderate and potentially significant, Disturbance to Existing Shipping and Fishing Patterns and Project Vessels Blocking Navigational Features. As discussed in **Section 11.10**, no further project specific mitigation is proposed as the risks are considered to be ALARP (by following industry guidance and best practice) and therefore cannot be mitigated further.

11.11. Cumulative Effects

If the construction or decommissioning of other plans and projects have a temporal overlap with the construction of the Proposed Development, there is potential for cumulative adverse effects on commercial fisheries greater than that caused solely by the Proposed Development. As outlined by **Chapter 4: Marine Environmental Appraisal Scope and Methodology**, a four-stage approach has been undertaken to assess the cumulative adverse effects from other plans and projects in-combination with the construction of the Proposed Development.

11.11.1. Stage 1: Identification of ZoI

Section 11.1.1 justified a ZoI of 10 NM as an industry standard Study Area for a shipping and navigation assessment. Whilst there are several developments that are within this ZoI, potential projects within 30 km have also been included as vessel traffic may need to transit the RLB to reach the construction area which could interact with vessels or activities associated with the Proposed Development.

11.11.2. Stage 2: Shortlist of Plans and Projects relevant to Shipping and Navigation

Chapter 4: Marine Environmental Appraisal Scope and Methodology outlines a longlist of plans and projects within 30 km of the Proposed Development. From this longlist, six plans/projects within 30 km of the Proposed Development have been shortlisted to inform the cumulative effects assessment for shipping and navigation (**Table 11-11**). Infrastructure within this ZoI that is already operational has been scoped out, since the effects of the maintenance of operational projects has influenced the baseline assessment.

Table 11-11: Shortlist of plans and projects relevant to shipping and navigation

Application Reference	Plan or Project	Type of Project	Distance from Proposed Development	Status
SCOP-0056	Bowdun OWF	OWF	5.78 km	Pre Application-Scoping Report
00010686	Flora (INTOG) BP Northeast Offshore Wind	INTOG	19.65 km	Application- EPS Licence
00010344	Morven OWF	OWF	1.98 km	Pre Application- Scoping Report
00010861	Ossian OWF	OWF	2.66 km	Pre Planning
06771 & 06870	NorthConnect	Cable	0 km / crosses	Licence, expired
00009943	Eastern Green Link 2 (EGL 2)	Cable	0 km / crosses	Licence granted
00011091	Cenos Floating OWF – transmission infrastructure	Export cable	0 km/crosses	Application – EIA submitted
SCOP-0066	Aspen Floating OWF – transmission infrastructure	Export cable	0 km/crosses	Pre Application – Scoping Report
SCOP- 0020	MarramWind OWF	Export cable	0 km/crosses	Pre Application – Scoping Report
00011026	Muir Mhor OWF	OWF	~3 km	Application – EIA submitted

11.11.3. Stage 3: Information Gathering and Identification of Pressure-receptor Pathways

Construction of the Proposed Development is scheduled to commence in 2028 with the latest possible completion by 2033. Within this window, construction (including pre-lay activity) is expected to take 55 months.

Flora (INTOG) OWF is situated approximately 19.65 km from the Proposed Development; details on its proposed construction and operation dates are currently unknown.

Bowdun OWF is situated approximately 5.57 km from the Proposed Development and is due to commence construction in 2029, with commercial operation scheduled to begin in 2032-2033. There may therefore be a small window of overlap in the construction of the Proposed Development and Bowdun OWF.

Ossian OWF is situated approximately 2.66 km from the Proposed Development and is anticipated to commence construction from 2031 to 2038, with a total Lease Area of 858 km^2. There may therefore be a window of overlap in the construction of the Proposed Development and Ossian.

Due to the location of the Morven OWF in relation to the Proposed Development, simultaneous construction or sequential construction in quick succession of the two projects has the potential for cumulative adverse effects from increased risk of vessel collisions and disturbance to existing shipping and fishing patterns. Construction is currently planned for 2027.

NorthConnect is planned to cross the Proposed Development at approximately KP 576. However, construction of NorthConnect has been placed on hold by the Norwegian Government, and the current Marine Licence for this project has expired (expiration date 2024) (NorthConnect, 2025). As no new MLA has been submitted or Marine Licence granted for the project, it is assumed that this project will not have a temporal overlap in construction with the Proposed Development. Therefore, NorthConnect will not be assessed in-combination with the Proposed Development and will not be taken forward to stage 4 of the cumulative effects assessment.

The construction of EGL 2 is currently underway, with cable operation scheduled for 2029 (Eastern Green Link 2, 2025). Additionally, EGL 2 and the Proposed Development share the same landfall at Sandford Bay, Peterhead. Therefore, it is expected that there will be a temporal overlap in construction with the Proposed Development for one year. The MLA for EGL 2 has been submitted and can be viewed using the marine case management system (MCMS) (case reference: MLA/2022/00273/1).

Cenos Floating OWF export cable crosses over the Proposed Development, has submitted an EIA and construction is due to commence in 2030 with operation in 2031. Due to the spatial and potential temporal overlap, there is the potential for adverse cumulative effects from increased risk of vessel collisions and disturbance to existing shipping and fishing patterns.

Aspen Floating OWF export cable crosses over the Proposed Development, is in the pre-application phase and construction may begin in 2028 with operation in 2029 or 2030. Due to the spatial and potential temporal overlap, there is the potential for adverse cumulative effects from increased risk of vessel collisions and disturbance to existing shipping and fishing patterns.

MarramWind OWF export cable crosses over the Proposed Development, is in the pre-application phase and construction is scheduled to begin in the late 2020s. Due to the spatial and potential temporal overlap, there is the potential for adverse cumulative effects from increased risk of vessel collisions and disturbance to existing shipping and fishing patterns.

The Muir Mhor OWF export cable corridor is located approximately 3 km from the RLB of the Proposed Development. Muir Mhor OWF has submitted EIA and is scheduled to begin construction in 2030 with activities lasting up to four years. Due to the spatial and potential temporal overlap, there is the potential for adverse cumulative effects from increased risk of vessel collisions and disturbance to existing shipping and fishing patterns.

11.11.4. **Stage 4: Assessment**

Three of the impacts screened in for assessment have been carried forward for assessment of cumulative effects (below) as multiple projects under construction at the same time could increase the risk of these impacts on receptors in the area, largely due to an increase in the number of vessels above baseline conditions. It is assumed all crossing locations of proposed projects will not reduce navigable depth by more than 5% as all location where anticipated crossing would take place exceed 50 m water depth. The risk of the other impacts included in **Section 11.8** will not be increased when other projects within the vicinity are under construction as the issues are specific to each project, and as such have not been carried forward for assessment of cumulative impacts.

The assessment concludes in **Section 11.10** that there will be two potentially significant adverse effects as a result of the Proposed Development, for disturbance to existing shipping and fishing patterns and blocking of navigational features.

11.11.4.1. Increased risk of vessel collisions

The assessment concludes in **Section 11.8.1** that there are no significant adverse effects of increased risk of vessel collisions.

Overlapping construction activity would result in an increased number of vessels both within and close to the RLB, particularly close to the England/Scotland border where the Morven and Ossian OWFs are located or at the Sandford Bay landfall where EGL 2 is also located, and in turn increase the risk of vessel collisions. The Proposed Development also overlaps with the export cables of the Cenos Floating OWF, Aspen Floating OWF and Marram OWF and is within 3km of the Muir Mhor OWF. There is a potential that vessels associated with the Flora and Bowdun OWFs will also transit to their respective sites across the RLB and potentially close to construction activity for the Proposed Development.

SIMOPs will be agreed with the other developers during construction to reduce the risk of different project vessels being in close proximity to each other where possible. Vessels will also request a safety distance from each other which will be incorporated into the SIMOPs planning. For the Cenos Floating OWF, the impact for vessel collisions between the project and a third-party (such as the Proposed Development) was considered tolerable and ALARP. For the Muir Mhor OWF, the impact for vessel collisions between the project and a third party along the export cable corridor was considered tolerable with mitigation. Neither project noted any specific concerns with collision risk in the area and each project has requested a safety zone of 500 m from other vessels during construction activities to reduce collision risk.

The EGL 2 development includes a minimum safe distance of 500 m for other vessels from the project vessels, resulting in a recommended clearance zone of 1.5 km when anchoring systems are also taken into account. Peterhead Port will be involved in all discussions to ensure that landfall operations between the projects are known in advance. Based on the space constraints at the Sandford Bay landfall, it is expected only one project will be able to be present at a time in the area during the installation phase, and coordination will happen to ensure this is implemented. The same process will be followed if any maintenance activities overlap spatially and temporally. Any transiting vessels associated with other developments will be informed of the Proposed Development's activities through NtMs like other vessels transiting in the area.

An environmental impact assessment (EIA) has only been published for two of the OWF projects, and therefore only a project alone significance assessment has been conducted for Cenos Floating OWF and Muir Mhor OWF. For the remaining wind farms to be consented, the projects will need to mitigate any significant adverse impacts that may arise from its development and, due to the scale of footprint of these wind farms compared to the Proposed Development, the impact will be significantly larger than that of the Proposed Development.

During the stakeholder consultation it was raised by the MCA that they had concerns surrounding the potential funnelling of vessels in between the Morven and Ossian wind farms and that this in turn could increase the risk of collisions and pose further risk to all assets in this area. It was confirmed to the Project team that the Morven and Ossian wind farms will be lit to appear as one wind farm, which will therefore discourage any vessels from travelling through the gap. Whilst this will increase vessel journey times, it will reduce collision risk and when considered alongside the fact only one project can be present at the Sandford Bay landfall at once, the frequency of this impact has been assessed as **extremely remote** and the severity **catastrophic**, resulting in an overall effect of **Minor** and **Not Significant** when considered alongside other projects (which is considered ALARP).

11.11.4.2. Disturbance to existing shipping and fishing patterns

Vessel density within the Study Area is highest in Peterhead Port and the immediate surrounding area, as well as across three navigational channels from the Port of Aberdeen. EGL 2 is also making landfall in Sandford Bay however it is likely only one project will be able to install in the area at one time due to space constraints. This will be managed through SIMOPs, which will likely extend the duration of time that the area is restricted to other vessels. However, the vessel density in Sandford Bay is low with the majority of high-density activity located inside Peterhead Bay which will be unaffected. Whilst vessels outside will be disturbed from travelling south into the port to enter, this will be a temporary disturbance which will cease once all project activity is complete. Within their assessment, EGL 2 note that deviation from established vessel routes and areas is considered Tolerable (which is ALARP). Coordination with Peterhead Port is also noted to occur across the installation of EGL 2, which is also planned for the Proposed Development.

The Cenos Floating OWF has assessed vessel displacement during construction as tolerable and ALARP. The Muir Mhor OWF has assessed vessel displacement during construction as broadly acceptable. As the overlap of both projects is not located within a high density vessel traffic area, it is not considered that the potential overlap in construction will cause any combined greater disturbance to shipping and fishing patterns in each area. As the Flora OWF, Bowdun OWF, Aspen Floating OWF and MarramWind OWFs are currently in the planning phase, there are no existing shipping patterns in place for transit by project vessels to and from the site and so this cannot be assessed in detail. It is expected that if there is any spatial or temporal overlaps, NtMs will inform the vessels prior to transit and routes can be planned accordingly.

As discussed above, the Proposed Development routes between the Morvan and Ossian OWFs. The vessel density in this area is very low and therefore any increase in vessels (and the area unable to be accessed due to their relevant safety advisory areas) will temporarily affect only a small number of vessels who transit in this area. SIMOPs will be arranged between all projects to ensure the relevant project vessels will not be affecting the other projects. Once all three projects are operational, the area will be unavailable to traffic but there is additional sea room around the wind farms to allow for transit in any direction with only a small additional journey time increase. As discussed previously, the number of vessels this is likely to affect is considered small, and as a result the assessment is unchanged when considering other projects as well. Therefore, the frequency of this impact has been assessed as **very probable** and the severity **severe** as a worst case scenario (due to the potential reputational risks), resulting in an overall effect of **Moderate** and **Potentially Significant** when considered alongside other projects (which is considered ALARP).

11.11.4.3. Proposed Development vessels blocking navigational features

The Sandford Bay landfall is also the proposed landfall location for the EGL 2 project, meaning that additional vessels could be present in Sandford Bay that restrict access to Peterhead Port. Due to the restrictions on space in Sandford Bay, only one project will be able to present in the location at one time. SIMOPs will be developed with other developers to mitigate the impact on other marine users in the area, particularly recreational and fishing vessels that are entering and exiting Peterhead Port. Whilst the disturbance may be ongoing for several years due to all projects, access to the port is still available from other approaches and will require vessels to make a small route deviation to avoid the additional project vessels. As the effects will be temporary, but may be prolonged due to the Proposed Development utilising the same landfall as EGL 2, the frequency of this impact has been assessed as **probable** and the severity **severe**, resulting in an overall effect of **Moderate** and **Potentially Significant** when considered alongside other projects (which is considered ALARP).

11.11.4.4. Stage 4 assessment conclusions

Cumulative effects have been assessed for increased risk of vessel collisions, disturbance to existing shipping and fishing patterns and Proposed Development vessels blocking navigational features for projects Bowdun OWF, Flora (INTOG) OWF, Morven OWF, Ossian OWF, Cenos Floating OWF, Muir Mhor OWF, Aspen Floating OWF, MarramWind OWF, NorthConnect and EGL 2. In all cases no cumulative effects were predicted.

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