Balliemeanoch Pumped Storage Hydro

Environmental Impact Assessment Report

Volume 2: Main Report
Chapter 19: Shipping & Navigation

ILI (Borders PSH) Ltd

July 2024

Delivering a better world

Quality information

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Revision History

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1	July 2024	Submission	DL	David Lee	Technical Director

Distribution List

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19. Shipping and Navigation

19.1 Introduction

This chapter of the EIA Report (EIAR) has been prepared by Anatec Ltd and presents the assessment of likely significant effects of the Development on Shipping and Navigation. This chapter considers the potential impacts arising from the construction and operational phases of the offshore components of the Development.

The Shipping and Navigation assessment of effects has followed the International Maritime Organization (IMO) Formal Safety Assessment (FSA) methodology since this is the internationally recognised approach for assessing the impact to Shipping and Navigation users, and is the approach required for the Maritime and Coastguard Agency (MCA)'s methodology (Annex 1 of Marine Guidance Note (MGN) 654).

The shipping and navigation EIA chapter:

- Presents the existing Shipping and Navigation baseline established from desk studies and stakeholder consultation;
- Identifies any assumptions and limitations encountered in compiling the Shipping and Navigation information;
- Presents the likely significant environmental impacts on Shipping and Navigation arising from the Development and reaches a conclusion on the likely significant effects on Shipping and Navigation, based on the information gathered and the analysis and assessments undertaken; and,
- Highlights any necessary monitoring and/or mitigation measures which are recommended to prevent, minimise, reduce or offset the likely significant adverse effects of the Development on Shipping and Navigation.

19.2 Legislation and Policy

The following sections outline the legislation and policy of relevance to Shipping and Navigation which has been considered within the EIAR.

19.2.1 Legislation

A summary of the legislation relevant to Shipping and Navigation is presented in *Table 19.1 Summary of Legislation Relevant to Shipping and Navigation.*

Table 19.1 Summary of Legislation Relevant to Shipping and Navigation

Relevant Legislation	Summary of Legislation	How and Where Considered in the EIAR
United Nations Convention on the Law of the Sea (UNCLOS)	UNCLOS defines the rights and responsibilities of all nations with respect to their use of the sea, throughout the world. Article 60(7) states "*Artificial islands, installations and structures and the safety zones around them may not be established where interference may be caused to the use of recognised sea lanes essential to international navigation*".	UNCLOS is considered fully throughout this EIAR chapter. Particular regard is given to internationally recognised sea lanes (main commercial routes) which are considered a key element of the shipping and navigation baseline (see *section 19.6 Baseline Environment*) and have been considered where relevant as part of the impact assessment (see *section 19.7 Assessment of Effects*).
Convention on International Regulations for Preventing Collisions at Sea (COLREGs)	The COLREGs define the rules which must be adhered to by all vessels navigating internationally. Rule 8 Part (a) states "*Any action taken to avoid collision shall be taken in accordance with the Rules of this Part and shall, if the circumstances of the case admit, be positive, made in ample time and with due regard to the observance of good seamanship*". Rule 19 Part (b) states "*Every vessel shall proceed at a safe speed adapted to the prevailing circumstances and conditions of restricted*	The COLREGs in full are considered throughout this EIAR chapter with particular regard to collision avoidance (Rule 8) and conduct of vessels in restricted visibility (Rule 19) when considering collision risk in the impact assessment (see *section 19.7 Assessment of Effects*).

Relevant Legislation	Summary of Legislation	How and Where Considered in the EIAR
	visibility a power-driven vessel shall have her engines ready for immediate manoeuvre".	
Chapter V, Safety of Navigation, of the Annex to the International Convention for the Safety of Life at Sea (SOLAS)	SOLAS Chapter V is an international agreement that sets basic minimum criteria for all seafarers, dependent on the size and type of vessel. Regulation 33 states "*The master of a ship at sea which is in a position to be able to provide assistance on receiving a signal from any source that persons are in distress at sea, is bound to proceed with all speed to their assistance*".	SOLAS Chapter V in full is considered throughout this EIAR chapter with particular regard to rendering assistance to persons in distress (Regulation 33) and passage planning (Regulation 34) when considering emergency response capability (see *section 19.6.2 Emergency Response Resources and Historical Incident Data*).

19.2.2 National Planning Policy

A summary of the national planning policy relevant to Shipping and Navigation is presented in *Table 19.2 Summary of Policy Relevant to Shipping and Navigation*.

Table 19.2 Summary of Policy Relevant to Shipping and Navigation

Relevant Policy	Summary of Policy	How and Where Considered in the EIAR
UK Marine Policy Statement (DEFRA, 2011)	The UK Marine Policy Statement provides a framework for preparing Marine Plans and taking decisions affecting the marine environment. Paragraph 3.4.7 states "*Increased competition for marine resources may affect the sea space available for the safe navigation of ships. Marine plan authorities and decision makers should take into account and seek to minimise any negative impacts on shipping activity, freedom of navigation and navigational safety and ensure that their decisions are in compliance with international maritime law*".	Displacement of existing routes and activity, and the resultant increase in collision risk has been considered within the impact assessment (see*section 19.7.1*) .
Scotland's National Marine Plan (Scottish Government, 2015)	*Transport 1 "Navigational safety in relevant areas used by shipping now and in the future will be protected, adhering to the rights of innocent passage and freedom of navigation contained in United Nations Convention on the Law of the Sea (UNCLOS). The following factors will be taken into account when reaching decisions regarding development and use:* *The extent to which the locational decision interferes with existing or planned routes used by shipping, access to ports and harbour sand navigational safety. This includes commercial anchorages and defined approaches to ports.* *Where interference is likely, whether reasonable alternatives can be identified. Where there are no reasonable alternatives, whether mitigation through measures adopted in accordance with the principles and procedures established by the IMO can be achieved at no significant cost to the shipping or ports sector."* *Transport 2 "Marine development and use should not be permitted where it will restrict access to, or future expansion of, major commercial ports or existing or proposed port sand harbours."* *Transport 3 "Ferry routes and maritime transport to island and remote mainland areas provide essential connections and should be safeguarded from inappropriate marine development.* *Developments will not be consented where they will unacceptably interfere with lifeline ferry services."* *Transport 6 "Developers should ensure displacement of shipping is avoided where possible to mitigate against potential increased journey lengths (and associated fuel costs, emissions and impact on journey frequency)."*	All marine planning policies for shipping, ports, harbours and ferries have been considered fully throughout this EIAR chapter. Particular regard is given to the displacement of vessel traffic and reduced access to local ports. Mitigation measures have been identified to reduce the effect of such impacts (see *section 19.**9**Mitigation and Monitoring*).

19.3 Consultation

A consultation meeting was held via Microsoft Teams on 10th November, and was attended by the MCA, NLB, RYA Scotland and Clydeport. Consultation with the UK Chamber of Shipping was also carried out via email. Consultee feedback was also gathered in the Scoping Opinion. A summary of the key issues raised during consultation undertaken to date, specifically regarding Shipping and Navigation is presented in *Table 19.3 Summary of Consultation relating to Shipping and Navigation.*

Table 19.3 Summary of Consultation relating to Shipping and Navigation

Consultee	Key Issue	Summary of Response	Action Taken
MCA (Scoping Opinion)	The MCA noted the Marine Facility falls within the jurisdiction of Clydeport, who are the Statutory Harbour Authority and will be required to approve the Marine Facility. Local warnings may also be issued to alert vessels navigating in the vicinity of the works.	Clydeport have been consulted as part of the EIAR process.	Liaison with Clydeport will be a key mitigation measure.
RYA Scotland (Scoping Opinion)	Recreational vessel numbers visiting Inveraray are increasing, and there are several visitor moorings. Inveraray is not a good place for recreational vessels to anchor.	It is noted that vessel numbers visiting Inveraray in the future may continue to increase, particularly given the redevelopment of the pier.	Possible increases in visitors to Inveraray are captured in the Future Baseline Assessment, and have been considered within *section 19.7 Assessment of Effects.*
	Impacts on recreational boating should be scoped in.	Impacts on recreational vessels are considered within the **Assessment of Effects.**	Impacts on recreational vessels are considered within the *section 19.7 Assessment of Effects.*
	Inspire Inveraray wish to buy the old pier at Inveraray should be consulted by the Development.[1]	Inspire Inveraray have been included in public consultation events hosted by the Development.	Inspire Inveraray have been consulted by the Development.
Clydeport	Clydeport questioned whether the Marine Facility will remain in place following the construction of the Development.	Based on feedback received at the public consultation phase, it is preferred that the Marine Facility is removed following its use. However the Development remain open to future options for the use of the Marine Facility.	No action required.
	The MoD carry out sounding trials in the area, and submarines are recorded transiting within the Loch Fyne. Therefore, they should be consulted on the Development.	The MoD were consulted at the scoping stage and will be engaged throughout the Development programme.	Liaison with the MoD is included as a mitigation measure.
	Liaison with Clydeport will be useful in terms of coordination of vessel movements and promulgation of information. Details of the Development should be shared at the Clydeport user group meeting.	Liaison with Clydeport will be maintained throughout the Development programme as a key mitigation measure.	Liaison with Clydeport is included as a mitigation measure.
MCA	The MCA questioned whether abnormal loads would be required throughout the operational phase as part of regular maintenance.	Abnormal load deliveries during the operational phase of the Development are expected to be infrequent, and may be carried out by alternative means should the Marine Facility be removed. The Marine Facility may also be reinstalled if required during the lifetime of the Development.	Delivery of materials during the operational phase is considered within *section 19.7Assessment of Effects.*

[1] Inspire Inveraray purchased the pier at Inveraray in July 2023.

Consultee	Key Issue	Summary of Response	Action Taken
RYA Scotland	RYA Scotland noted that the Marine Facility is not considered a navigational risk to recreational vessels.	RYA Scotland's feedback on navigational risk has been considered in the **Assessment of Effects**.	No action required.
	It was queried whether the outlet on Loch Awe would create any risk to recreational users.	It was agreed that the outlet on Loch Awe would be designed such that there would be no impact on either vessels or the marine ecosystem on Loch Awe.	No action required.
	Local cruising clubs should be informed of activities. Clyde Cruising Club should be informed so that their published sailing directions can be updated.	Promulgation of information to local users is considered an embedded mitigation measure, and will include engagement with local user groups and the provision of as-built information.	Promulgation of information and provision of as-built information included as mitigation measures.
	It was queried whether recreational moorings in the area had been considered.	It was noted in the Scoping Report that leisure mooring agreements are in place throughout Loch Fyne. Clydeport indicated that they could provide information to the Development on registered moorings.	Disruption to recreational activities, including recreational moorings is considered within *section 19.7 Assessment of Effects.* Liaison with Clydeport has been considered as an embedded mitigation measure.
MoD (Gatecheck Response	It was queried whether it was possible to de-conflict piling with trials within Loch Fyne. MoD indicated that if this could be achieved then there were no issues. Trials take place on approximately 12 days per year.	Coordination with the MoD is considered an embedded mitigation measure, and will include a provision to cease piling works within Loch Fyne during trials.	Coordination with the MoD is included within the embedded mitigation measures.
UK Chamber of Shipping (Gatecheck Response)	The UK Chamber of Shipping raised no concerns in response to the Gatecheck Report.	No action required.	No action required.
Northern Lighthouse Board (NLB) (Gatecheck Response)	NLB indicated that they would continue to engage with the developer on navigational safety, including providing marking and lighting recommendations.	Consultation with the NLB on marking and lighting is included as an embedded mitigation measure.	Consultation with the NLB is included within the embedded mitigation measures.
RYA Scotland (Gatecheck Response)	RYA Scotland had no further comments regarding the Gatecheck report, noting that the appropriate engagement had been carried out and the report accurately reflects recreational boating.	No action required.	No action required.
MCA (Gatecheck Response)	The MCA noted that the possibility of abnormal loads being required during maintenance should be considered in the risk assessment.	The Marine Facility is currently anticipated to be removed following the construction of the Development, however some infrastructure may remain to facilitate the delivery of abnormal loads. The use of the Marine Facility during the operational phase has therefore been considered within *section 19.7 Assessment of Effects.*	The effects of delivering abnormal loads to the Marine Facility during the operational phase of the Development are considered within *section 19.7 Assessment of Effects.*
	The MCA would expect the impact on other marine users of Loch Awe to be considered.	Impacts on other marine users relating to the aspects of the Development within Loch Awe are considered separately within *Chapter 16 Socio-Economics, Recreation and Tourism.*	Impacts on other marine users within Loch Awe have been considered in *Chapter 16: Socio-Economics, Recreation and Tourism.*

19.4 Study Area

The Shipping and Navigation Study Area is defined as a 10 nm buffer on the deck footprint of the Marine Facility, constrained to the limits of Loch Fyne. This study area is considered sufficient to capture all Shipping and Navigation activity of relevance to the Development. It is noted that the Development also includes infrastructure within Loch Awe. As this is a freshwater loch, there are not expected to be impacts on Shipping and Navigation receptors. Impacts on marine users within Loch Awe will be considered within the *Chapter 16: Socio-Economics, Recreation and Tourism.*

The Shipping and Navigation Study Area is presented in *Figure 19.1: Shipping and Navigation Study Area.*

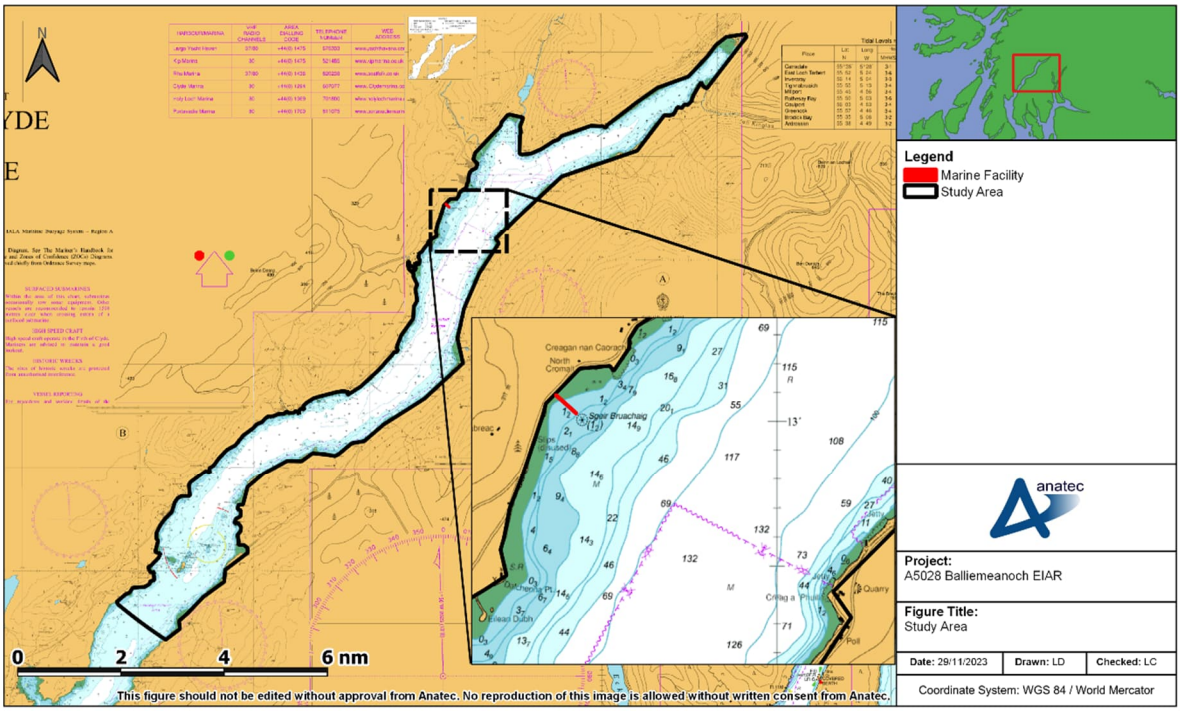


Figure 19.1: Shipping and Navigation Study Area

19.5 Methods

19.5.1 Data Sources

Information on the shipping and navigation baseline was collected through a detailed desktop review of currently accessible studies and datasets. The baseline has been established through the use of data on vessel traffic, navigational features and historical incident data in proximity to the Marine Facility. The key data sources used are presented in *Table 19.4 Data Sources Used to Inform the Shipping and Navigation Baseline*.

Table 19.4 Data Sources Used to Inform the Shipping and Navigation Baseline

Title	Source	Description
Six months of AIS Data	Anatec Ltd	AIS data covering three winter months (December 2022-February 2023) and three summer months (June – August 2023)
Admiralty Nautical Charts (2131, 2382-1 & 2382-2)	UKHO	Admiralty charts characterising navigational features in proximity to the Marine Facility
Marine Accident Investigation Branch (MAIB) Incident Data (2012 – 2021)	MAIB	Incident data covering maritime incidents in proximity to the Marine Facility between 2012 and 2021
Royal National Lifeboat Institution (RNLI) Incident Data (2013 – 2022)	RNLI	Incident data covering RNLI lifeboat responses to incidents in proximity to the Marine Facility between 2013 and 2022
Search and Rescue (SAR) Helicopter Taskings (2015 – 2023)	Department for Transport (DfT)	Incident data covering SAR helicopter taskings in proximity to the Marine Facility between 2015 and 2023

Title	Source	Description
Vessel Monitoring System (VMS) Satellite Fishing Data (2022)	Marine Scotland	12 months VMS data reporting positions of fishing vessels of greater than 12m in length in 2022.

19.5.2 Data Assumptions and Limitations

AIS Data

The carriage of AIS is required on board all vessels of greater than 300 Gross Tonnage (GT) engaged on international voyages, cargo vessels of more than 500 GT not engaged on international voyages, passenger vessels irrespective of size built on or after 1 July 2002, and fishing vessels over 15 m LOA.

When using the AIS dataset, it has been assumed that any vessels under an obligation to broadcast information via AIS have done so. It has also been assumed that those details broadcast via AIS (such as vessel type and dimensions) are accurate unless clear evidence to the contrary was identified. There may be occasional range limitations in tracking certain vessels, especially smaller (Class B AIS) vessels in winter. However the limitations of the AIS data are not considered to compromise confidence in the assessment.

Since the vessel traffic data includes only AIS data, there are limitations associated with vessels not broadcasting on AIS. This includes recreational vessels, military vessels, and fishing vessels of less than 15 m in length, which are not required to broadcast on AIS and may therefore be under-represented. However, all consultees were content with the methodology and data sources used, including the use of additional sources such as VMS data and consultation feedback, and therefore AIS data complemented by the additional data sources is considered to be suitably comprehensive and adequate for the assessment.

Historical Incident Data

All UK commercial vessels are required to report incidents to the MAIB, however there are no requirements for non-commercial recreational craft to report incidents to the MAIB. Nevertheless, the MAIB incident database is considered to be a suitable source for the characterisation of historical incidents and adequate for the assessment.

Admiralty Charts

The Admiralty Charts published by the UKHO are updated periodically, and therefore the information shown may not be reflective of real-time features within the shipping and navigation study area with complete accuracy. Taking into account that the consultees include local port authorities, the characterisation of navigational features is considered to be suitably comprehensive and adequate for the assessment. Only those aids to navigation which are charted and considered key to establishing the shipping and navigation baseline are shown.

19.5.3 Guidance and Standards

The primary guidance used to inform the shipping and navigation data gathering and assessment is as follows:

- IMO (2018). Revised Guidelines for FSA for Use in the IMO Rule-Making Process London: IMO. (IMO, 2018)
- MCA (2021). MGN 654 (Merchant and Fishing) Safety of Navigation: OREIs – Guidance on UK Navigational Practice, Safety and Emergency Response and its Annexes. Southampton: MCA.

19.5.4 Assessment Scope

The Shipping and Navigation assessment focuses on the Marine facility aspect of the Development. The assessment considers a maximum design scenario identified from the project description. *Table 19.5 Maximum Design Scenario relating to Shipping and Navigation* presents the maximum design scenario considered for each of the impacts assessed, and the phases each impact is relevant to.

Table 19.5 Maximum Design Scenario relating to Shipping and Navigation

Impact	Phase	Parameters Assessed
Deviations to vessel routeing resulting in increased vessel to vessel collision risk between third-party vessels	All Phases	Up to 10 vessel movements associated with the construction of the jetty, with a further 10 during the construction phase for the Development. Deck Cargo Barge – 50 m x 15 m, 2 m draught and deadweight tonnage of 1300 tonnes, used only at mean tide and above

Impact	Phase	Parameters Assessed
		Vessel-based Crane – Floating sheerleg, 45.1 m x 20.1 m, 1.6 m draught.
Increased vessel to vessel collision risk between a third-party vessel and a project vessel	All Phases	Up to 10 vessel movements associated with the construction of the jetty, with a further 10 during the construction phase for the Development. Deck Cargo Barge – 50 m x 15 m, 2 m draught and deadweight tonnage of 1300 tonnes, used only at mean tide and above Vessel-based Crane – Floating sheerleg, 45.1 m x 20.1 m, 1.6 m draught.
Increased risk of vessel grounding and restriction on vessel size navigating Loch Fyne to Inveraray	All Phases	Up to 10 vessel movements associated with the construction of the jetty, with a further 10 during the construction phase for the Development. Deck Cargo Barge – 50 m x 15 m, 2 m draught and deadweight tonnage of 1300 tonnes, used only at mean tide and above Vessel-based Crane – Floating sheerleg, 45.1 m x 20.1 m, 1.6 m draught.
Disruption to fishing activities	All Phases	Up to 10 vessel movements associated with the construction of the jetty, with a further 10 during the construction phase for the Development. Deck Cargo Barge – 50 m x 15 m, 2 m draught and deadweight tonnage of 1300 tonnes, used only at mean tide and above Vessel-based Crane – Floating sheerleg, 45.1 m x 20.1 m, 1.6 m draught.
Disruption to recreational activities	All Phases	Up to 10 vessel movements associated with the construction of the jetty, with a further 10 during the construction phase for the Development. Deck Cargo Barge – 50 m x 15 m, 2 m draught and deadweight tonnage of 1300 tonnes, used only at mean tide and above Vessel-based Crane – Floating sheerleg, 45.1 m x 20.1 m, 1.6 m draught.
Disruption to military exercises	All Phases	Up to 10 vessel movements associated with the construction of the jetty, with a further 10 during the construction phase for the Development. Deck Cargo Barge – 50 m x 15 m, 2 m draught and deadweight tonnage of 1300 tonnes, used only at mean tide and above Vessel-based Crane – Floating sheerleg, 45.1 m x 20.1 m, 1.6 m draught.
Allision risk between third-party vessels and new structure	All Phases	Marine facility extending up to 180 m into Loch Fyne with width of 10 m
Reduced access to local harbours	All Phases	Up to 10 vessel movements associated with the construction of the jetty, with a further 10 during the construction phase for the Development. Deck Cargo Barge – 50 m x 15 m, 2 m draught and deadweight tonnage of 1300 tonnes, used only at mean tide and above Vessel-based Crane – Floating sheerleg, 45.1 m x 20.1 m, 1.6 m draught.

19.5.5 Assessment Methodology

Overview

The shipping and navigation impact assessment follows the FSA methodology, which is the internationally recognised approach for assessing impacts to shipping and navigation users. The FSA methodology is centred on risk control and assesses each impact in terms of its frequency and consequence in order that its significance can be determined as ‘broadly acceptable’, ‘tolerable’ or ‘unacceptable’ in a risk matrix.

It is noted that the assessment therefore differs from the standard EIAR Methodology outlined in *Chapter 4 Approach to EIA*, but is a requirement of the MCA for any NRA.

Impact Assessment Criteria

Determining the significance of effects is a two-step process that involves defining the severity of consequence and the frequency of occurrence. This section describes the criteria applied in the assessment of effects to assign values to each of the two factors.

The criteria for defining the severity of consequence are presented in *Table 19.6 Severity of Consequence Ranking Definitions*, with the frequency presented in *Table 19.7: Frequency of Occurrence Ranking Definitions*.

Table 19.6 Severity of Consequence Ranking Definitions

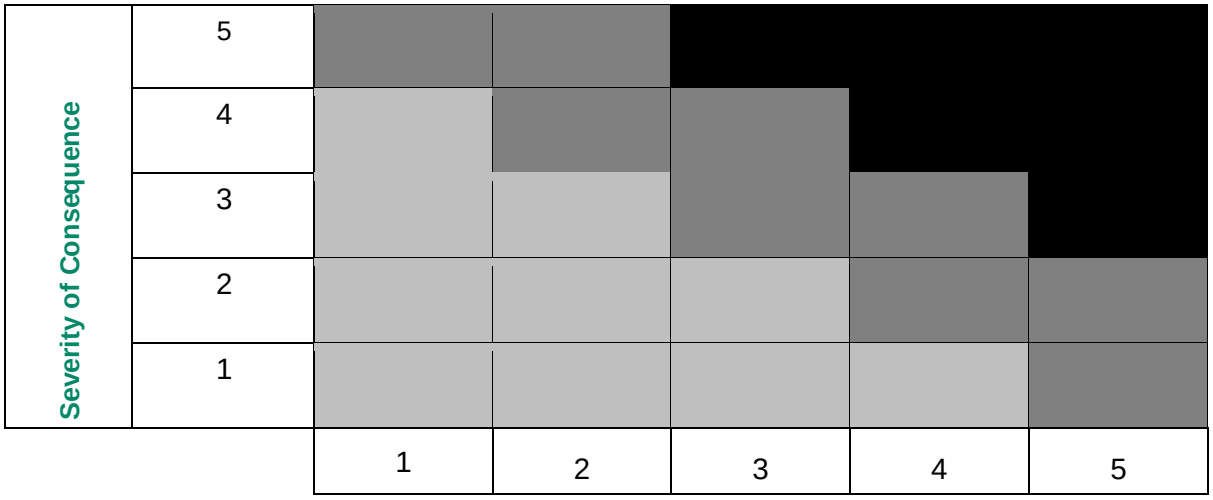
Rank	Description	Definition			
		People	Property	Environment	Business
1	Negligible	No perceptible risk	No perceptible risk	No perceptible risk	No perceptible risk
2	Minor	Slight injury(ies)	Minor damage to property, (i.e. superficial damage)	Tier 12 local assistance required	Minor reputational risks – limited to users
3	Moderate	Multiple minor or single serious injury	Damage not critical to operations	Tier 23 limited external assistance required	Local reputational risks
4	Serious	Multiple serious injuries or single fatality	Damage resulting in critical risk to operations	Tier 2 regional assistance required	National reputational risks
5	Major	More than one fatality	Total loss of property	Tier 34 national assistance required	International reputational risks

Table 19.7: Frequency of Occurrence Ranking Definitions

Rank	Description	Definition
1	Negligible	Less than 1 occurrence per 10,000 years
2	Extremely unlikely	1 per 100 to 10,000 years
3	Remote	1 per 10 to 100 years
4	Reasonably probable	1 per 1 to 10 years
5	Frequent	Yearly

The effects are then assessed using the tolerability matrix presented in *Table 19.8: Tolerability Matrix and Risk Rankings.*

Table 19.8: Tolerability Matrix and Risk Rankings



[2] Tier 1 – Local (within the capability of one local authority, offshore installation operator or harbour authority)
[3] Tier 2 – Regional (beyond the capability of one local authority or requires additional contracted response from offshore operator or from ports or harbours)
[4] Tier 3 – National (requires national resources coordinated by the MCA for a shipping incident and the operator for an offshore installation incident)

	Frequency of occurrence
	Unacceptable (high risk)
	Tolerable (intermediate risk)
	Broadly Acceptable (low risk)

Once identified, the significance of the impact will be assessed to ensure it is As Low As Reasonably Practicable (ALARP). Further risk control measures may be required to mitigate a hazard in line with the ALARP principles. Unacceptable risks are not considered to be ALARP.

For the purposes of this assessment:

- A level of effect of Unacceptable will be considered a 'significant' effect in terms of the EIA Regulations; and
- A level of effect of Broadly Acceptable or Tolerable (if ALARP) will be considered 'not significant' in terms of the EIA Regulations.

19.6 Baseline Environment

The following sections present an overview of the existing shipping and navigation baseline environment.

19.6.1 Navigational Features

This section presents an overview of the navigational features in proximity to the Marine Facility which forms part of the overall Development. The key navigational features are presented in *Figure 19.2: Navigational Features.*

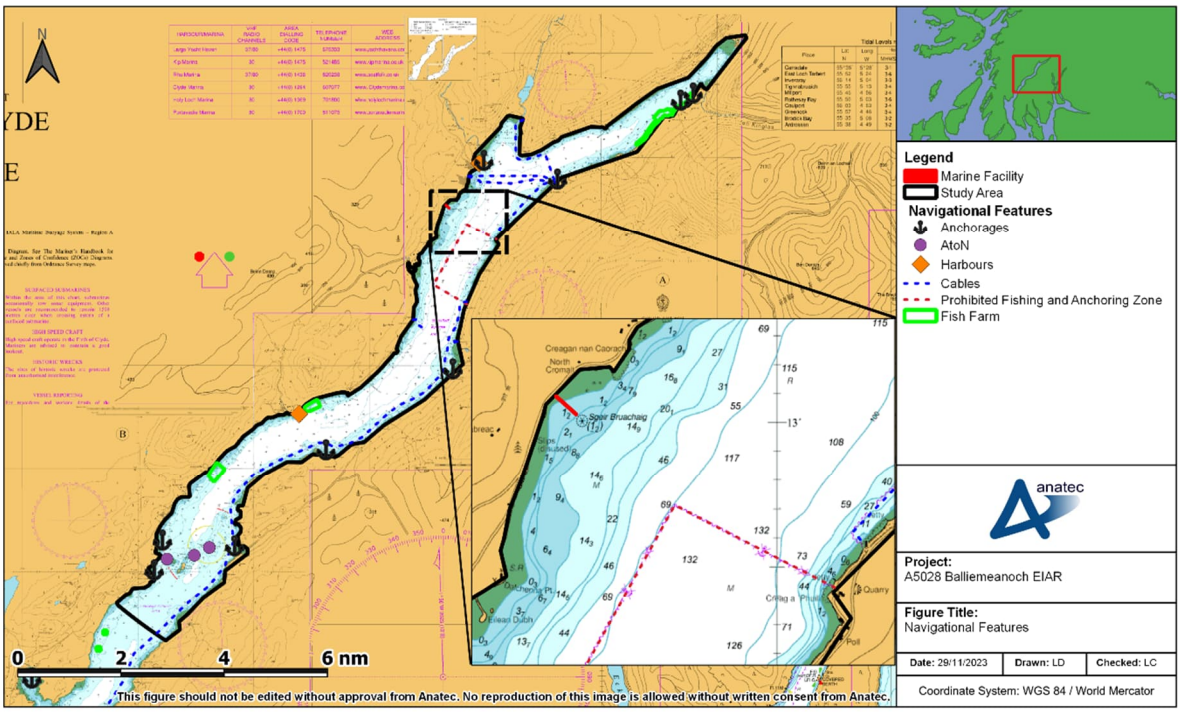


Figure 19.2: Navigational Features

The Marine Facility lies within Upper Loch Fyne, approximately 1 nm to the south of the fishing pier at Inveraray. The Marine Facility extends up to 180 m into the loch from the western shore, in water depths of 1-2 m. At the seaward end of the deck, there is a charted rock reducing the depth to 1.2 m.

There are two harbours within 10 nm of the Marine Facility within Loch Fyne. As noted, Inveraray is located approximately 1nm to the north (noting that the pier is not currently open to the public), while Furnace is located 5nm to the southwest. In addition, there is a pier used by fish farm vessels to the south of Furnace, close to a disused quarry. Anchorages are located throughout the Loch, with a chart note stating that these are recommended for the use of pleasure craft. The closest anchorage to the Marine Facility is adjacent to Inveraray harbour, approximately 1nm to the north, with other charted anchorages located throughout Loch Fyne. It was noted by RYA

Scotland in the Scoping Opinion that the anchorage at Inveraray is not a good anchorage for recreational vessels. An area containing chains and anchors is charted on the opposite bank to the Marine Facility, prohibiting anchoring or fishing activity. The Loch is located within the Clydeport statutory port limits.

It was noted in the Scoping Report that leisure mooring agreements are in place on both banks of Loch Fyne, with the largest being at Strachur. Clydeport indicated during consultation that they could provide the Development with locations of registered moorings.

There are fish farms located throughout Loch Fyne. There is one located within the Upper Loch, approximately 3.8 nm to the northeast of the Marine Facility. There are a further two within the study area, located 4.6 nm and 6.6 nm to the southwest, respectively.

Charted subsea cables are located throughout Loch Fyne. The closest cables to the Marine Facility have landfalls in Newtown Bay, less than 1 nm to the northeast of the Marine Facility. These cables cross Loch Fyne to Saint Catherines. Cables are also located throughout the east bank of Loch Fyne.

The entirety of Loch Fyne is also contained within a submarine exercise area, with it noted in consultation that submarines transit the Loch both submerged and on the surface. It was also noted during consultation that MOD sounding trials take place in the Loch.

19.6.2 Emergency Response Resources and Historical Incident Data

This section outlines the existing emergency response resources and historical incident data in the vicinity of the Marine Facility.

SAR helicopter provision is provided by Bristow Group on behalf of His Majesty's Coastguard (HMCG) from 10 base stations around the UK. The closest station to the Marine Facility is the Prestwick station, located approximately 45 nm to the south. There have been two SAR helicopter taskings within the study area since April 2015, with both of these being support operations located close to Inveraray.

The HMCG coordinates SAR operations through a network of 11 Maritime Rescue Coordination Centres (MRCC), including a Joint Rescue Coordination Centre (JRCC) based in Hampshire. All of the MCA's operations, including SAR, are divided into 18 geographical regions. The Marine Facility is within Area 17: "Kintyre to Mull, Isle of Arran and Inner Hebrides". The closest MRCCs to the Marine Facility are in Belfast, located approximately 95nm to the southwest, and Stornoway, 125nm to the north. It is noted that incident response is not necessarily coordinated by the nearest MRCC, as operators may be unavailable and calls re-routed to another MRCC.

The RNLI operate a fleet of more than 350 lifeboats out of more than 230 stations across the UK and Ireland, with the closest of these being at Tighnabruaich, approximately 20nm to the south of the Marine Facility, noting that any lifeboats would have to route around the southwestern point of the Cowal peninsula to reach the Marine Facility. There were 5 incidents responded to by the RNLI within the study area in the 10 years between 2013 and 2022, with all of these responded to by the station at Tighnabruaich. These incidents included two machinery failures, two "Person in danger" incidents and a vessel thought to be in trouble. All five incidents involved recreational craft or inflatables. As such, all five incidents occurred in the summer months between late May and early September.

All UK flagged vessels and non-UK flagged vessels in UK territorial waters (12 nm), a UK port or carrying passengers to a UK port are required to report incidents to the MAIB. Over a ten year period between 2012 and 2021, two incidents have been reported within the study area, with one accident to person and one machinery failure. Both incidents were located close to Inveraray.

Figure 19.3: Historical Incident Data presents an overview of the historical incident data within the study area from the MAIB and RNLI, as well as the locations of SAR helicopter taskings within the study area.

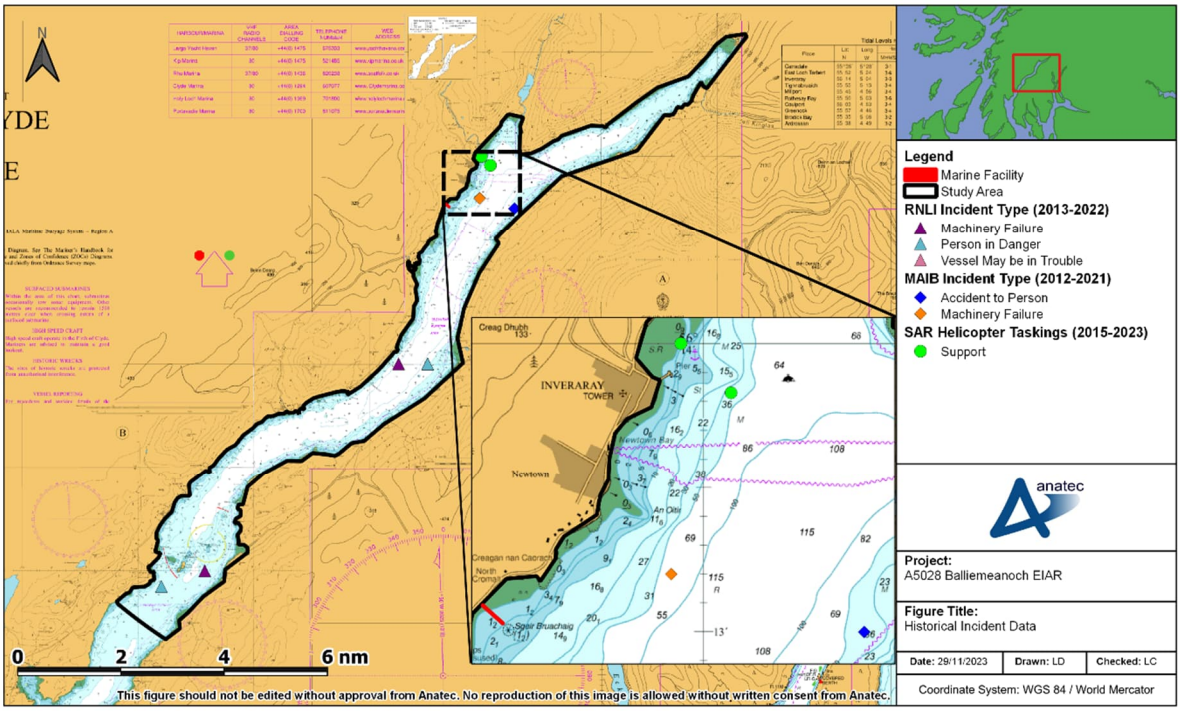


Figure 19.3: Historical Incident Data

19.6.3 Vessel Traffic Overview

The vessel traffic baseline within the shipping and navigation study area has been identified from 6 months of AIS data, covering 3 months between December 2022 – February 2023 (winter period) and a further 3 months recorded between June – August 2023 (summer period).

A plot of the vessel tracks recorded on AIS within the shipping and navigation study area, colour-coded by vessel type, is presented in *Figure 19.8 AIS Vessel Tracks by Vessel Type (6 Months)*. Following this, a vessel density heatmap is presented in *Figure 19.9 AIS Vessel Density (6 Months)*. The heatmap is based on the number of vessel tracks intersecting the 250 m x 250 m cells of a grid. *Figure 19.10: AIS Vessel Tracks by Vessel Type (3 Months Winter)* and *Figure 19.11: AIS Vessel Tracks by Vessel Type (3 Months Summer)* present the vessel tracks recorded in winter and summer, respectively, in order to show the seasonal variation in the traffic composition.

The most common vessel types in the study area were recreational vessels (54%) followed by fish farm support vessels (37%). Fish farm vessels were typically recorded in the south of the study area and did not generally pass close to the Marine Facility, and were recorded exclusively in the winter period. Recreational vessels were recorded throughout Loch Fyne, and were recorded exclusively during the summer period. Other vessels, such as workboats and fishery research/enforcement vessels, were recorded in low numbers throughout the six month data period. *Figure 19.4: Vessel Type Distribution* presents the distribution of vessel types within the study area during both the winter and summer periods.

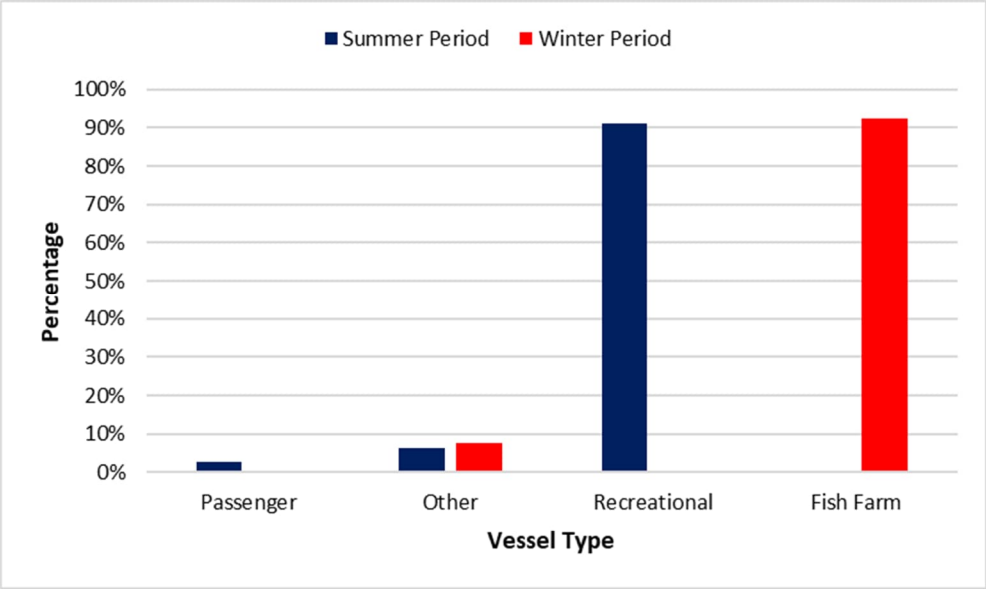


Figure 19.4: Vessel Type Distribution

It can be seen that the densest region of traffic is in the south of the study area, and is associated with the regions where fish farm support vessels coincide with the recreational traffic, noting that the two vessel types were not recorded in the area at the same time.

It was noted in the Scoping Report, based on publicly available sources at the time, that low levels of fishing activity take place within Loch Fyne, typically in the Lower Loch. This includes Nephrops trawling, crab and lobster potting, and scallop diving. Fishing vessel activity in the Upper Loch Fyne was limited to a small number of inshore fishing vessels. No fishing activity was recorded within Loch Fyne on AIS during the summer or winter survey periods, noting that small fishing vessels (less than 15 m in length) may be under-represented on AIS.

VMS data reviewed for 2022 within the study area did reveal low levels of fishing vessel activity in Loch Fyne, with this typically recorded in the lower Loch Fyne area. Vessel speeds were typically below 4 knots, indicating that vessels were potentially actively engaged in fishing. It is noted that fishing is prohibited in the area opposite the Marine Facility.

The average number of unique vessels recorded per day within the shipping and navigation study area per month is presented in *Figure 19.5: Average Daily Vessel Count per Month.*

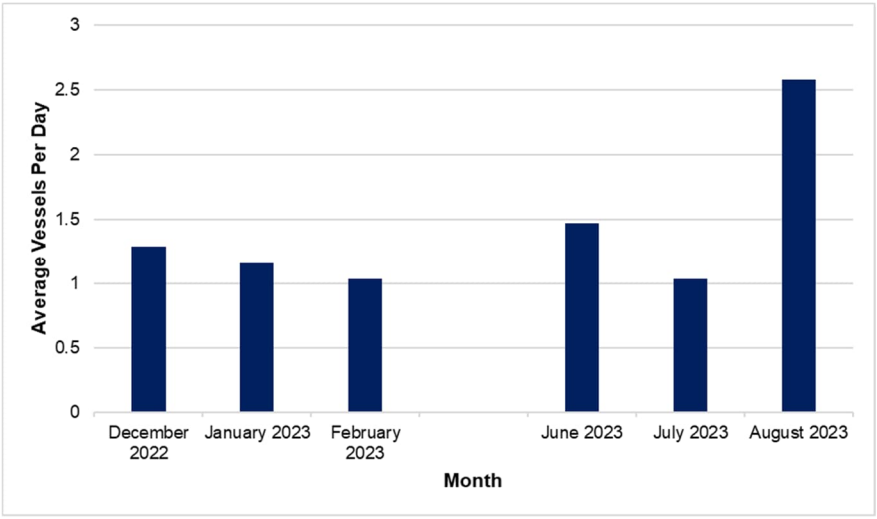


Figure 19.5: Average Daily Vessel Count per Month

There was an average of one to two vessels per day recorded within the study area over the six months of AIS data, with the summer period being slightly busier than winter, with approximately 12 vessels per week compared with eight in winter. The busiest month was August 2023, with two to three vessels per day recorded within the study area. This difference is largely due to the increase in recreational activity during August, with an increase of approximately one recreational vessel per day recorded compared with June and July. While vessel numbers were

similar between winter and summer, the composition of the traffic was significantly different, with recreational vessels not present in the study area during winter, and vessels associated with the fish farms in Loch Fyne recorded only during the winter months.

The average length of vessels within the study area was 23 m, with the longest being a fish farm support vessel at 87 m. The largest vessels were most commonly recorded in the south of the study area and were generally associated with the fish farms in the area. These vessels were typically present in the winter period, with very few vessels recorded in proximity to the Marine Facility during the winter period. Vessel lengths in the summer period were smaller, and more reflective of the recreational vessels present in the area. In line with this, more vessels were recorded sailing further up Loch Fyne in closer proximity to the Marine Facility. The average length in the winter period was 37 m, with this dropping to 13 m in the summer period. *Figure 19.6: Vessel Length Distribution* presents the distribution of vessel lengths in both the winter and summer period, highlighting the prevalence of smaller vessels in the summer compared with larger vessels in the winter.

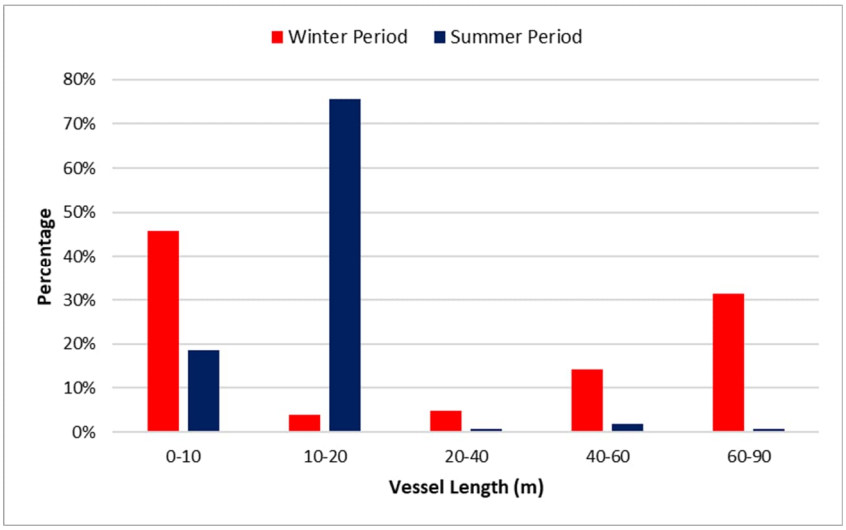


Figure 19.6: Vessel Length Distribution

Vessel speeds within the study area were typically below eight knots, with 34% of vessels being below 4 knots and a further 39% between four and eight knots. The fastest vessels tended to be those in the south of the study area associated with the fish farms, recorded during the winter period. Therefore, vessels in close proximity to the location of the Marine Facility tended to be slower moving vessels.

The maximum vessel draught recorded on AIS within the study area was 6.5 m, recorded by a fish carrier working in the south of the study area close to Furnace. The average draught of vessels within the study area was 4.8m, noting that draught information was unavailable for 73% of vessels. Draught information was generally unavailable for recreational vessels, which generally are expected to have shallow draughts. The distribution of vessel draughts is presented in *Figure 19.7: Vessel Draught Distribution.*

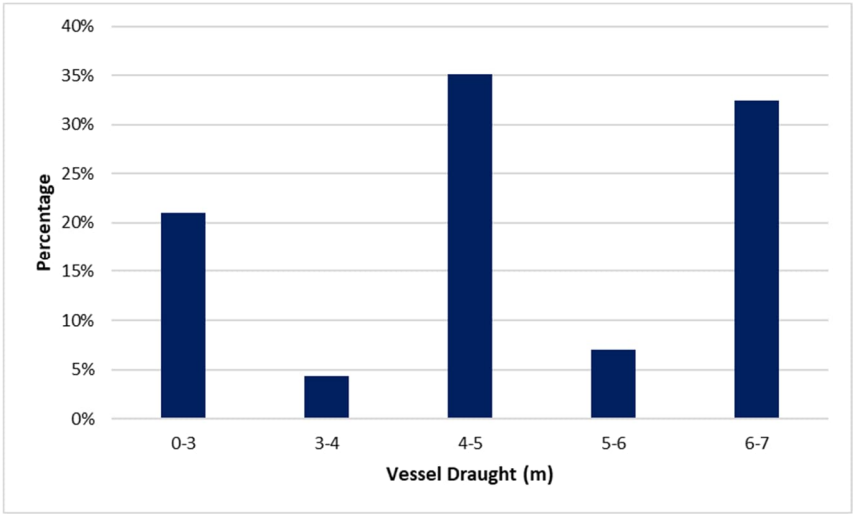


Figure 19.7: Vessel Draught Distribution

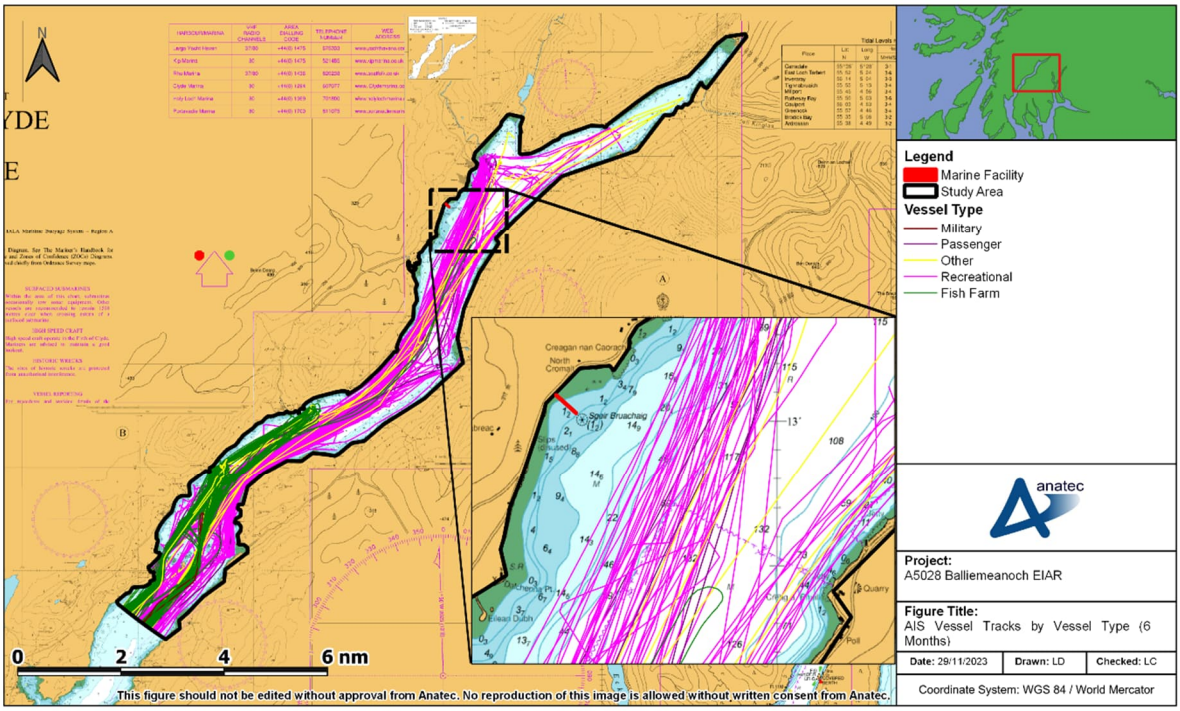


Figure 19.8 AIS Vessel Tracks by Vessel Type (6 Months)

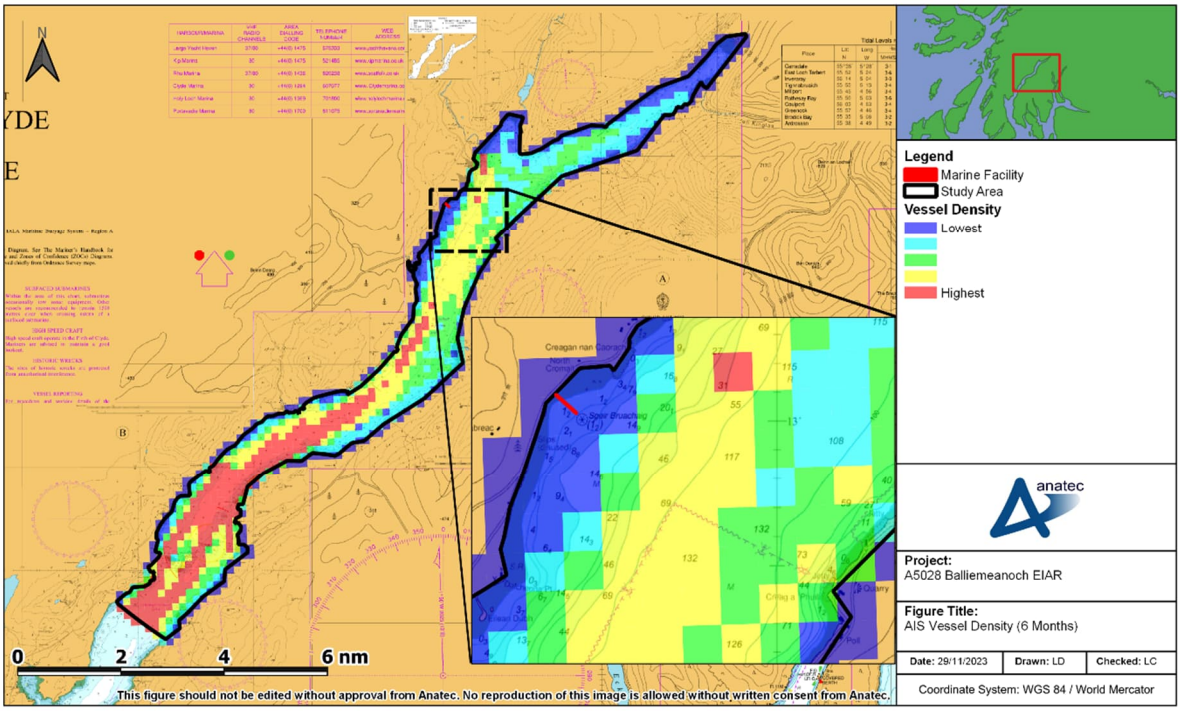


Figure 19.9 AIS Vessel Density (6 Months)

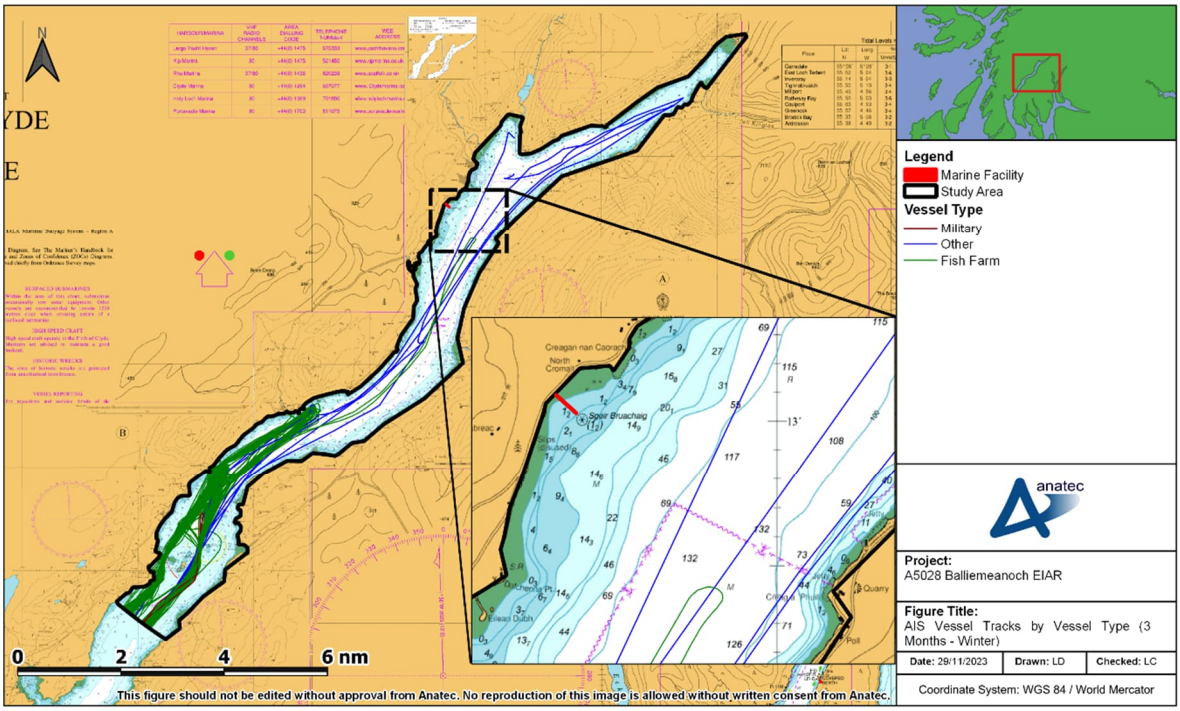


Figure 19.10: AIS Vessel Tracks by Vessel Type (3 Months Winter)

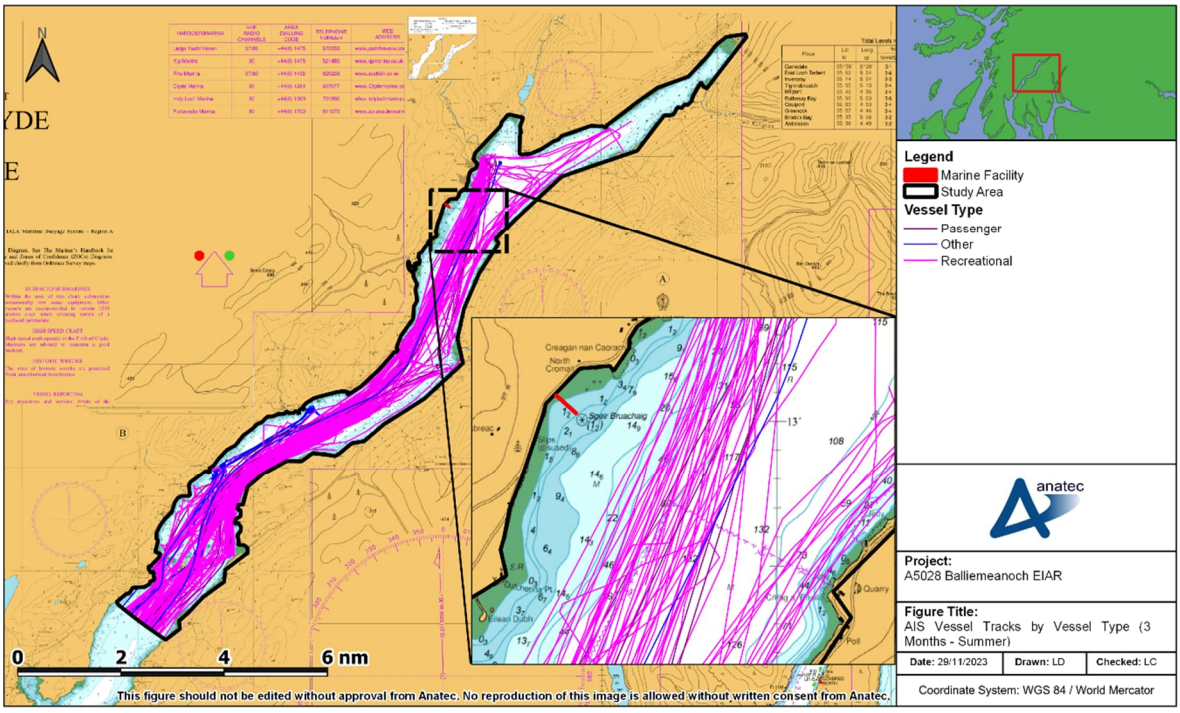


Figure 19.11: AIS Vessel Tracks by Vessel Type (3 Months Summer)

19.6.4 Future Baseline Scenario

This section provides an overview of the future baseline scenario and reviews factors that may lead to changes in vessel routeing and the existing baseline environment.

The pier at Inveraray was bought by the local community in July 2023, with works to renovate the pier beginning in November 2023. The pier is planned to reopen in April 2024, with the potential for this to increase traffic in the area, with recreational activity particularly likely to increase following the re-opening. Recreational activity can be otherwise difficult to predict but is assumed to remain similar or slightly increase in future years. Similarly, the make-up of recreational traffic may vary, with sail and electric-powered vessels expected to become more prominent in

place of diesel-fuelled craft. The locations of recreational activity may also vary, while volume of activity may be dependent on other factors such as the weather, climate change and the economy. It is possible that other vessel types, such as small passenger vessels and fishing vessels, may also visit the renovated pier.

Fishing trends are difficult to project into the future, noting that trends are dependent on numerous factors including fish stocks and quotas. Further changes to legislation following Brexit may also impact the size and make-up of the fishing fleet in UK waters.

19.7 Assessment of Effects

This section presents the assessment of the potential impacts to shipping and navigation arising from the construction and operational phases of the Development. The assessment of impacts follows the methodology presented in Assessment Methodology. Due to the long-term lifetime of the Development, the decommissioning phase has been scoped out of this assessment noting that the Marine Facility is expected to be removed following the construction phase and therefore there are not anticipated to be any hazards to shipping and navigation associated with the decommissioning phase.

19.7.1 Deviations to Vessel Routeing Resulting in Increased Vessel to Vessel Collision Risk

Construction Phase

The presence of the Marine Facility and vessel movements both during construction may lead to vessels being displaced from existing routes, leading to more close encounters and a potential increased risk of collision. The Marine Facility is expected to be used up to ten times during the construction phase of the Development, being used to deliver materials required for the construction of the onshore facility. Vessel movements relating to the Development are anticipated to utilise deck cargo barges to transport large, abnormal loads to the Marine Facility, along with a vessel-based crane to deliver them to shore. Operations are planned to take place at mean tide or above to ensure maximum under keel clearance is available to project vessels. It is noted that vessels involved in the activities may be RAM. Given the scale of the Marine Facility and the traffic in the area, no commercial routes are expected to be impacted by the structure, however the presence of large vessels may lead to disruption to vessels within Loch Fyne.

In addition to vessel movements relating to the construction of the onshore Development, there are expected to be up to ten movements associated with the construction of the Marine Facility.

Vessel movements will be coordinated to minimise disruption to other vessels. Promulgation of information via Notices to Mariners, Kingfisher bulletins, radio navigational warnings, NAVTEX and broadcast warnings will serve to inform vessels of activities in the area. The developer will also liaise with Clydeport, the MOD and other local users of the Loch to ensure awareness of the activities. All vessels will be expected to comply with international marine legislation, including both COLREGs and SOLAS.

Severity of Consequence

In the event of a collision incident between third-party vessels, the most likely consequences are minor contact between vessels resulting in minor damage to property and minor reputational effects on business, with no perceptible effect on people. The maximum adverse scenario could lead to foundering of one or more vessels foundering, resulting in Potential Loss of Life (PLL) and the environmental consequence of pollution. Such a scenario would be more likely if one of the vessels involved was a small craft, which may have weaker structural integrity than a commercial vessel.

The severity of consequence is therefore considered to be **moderate**.

Frequency of Occurrence

The impact will be present during the construction phase of the Development, which is scheduled to last up to seven years. However it is anticipated that the delivery of abnormal loads requiring the use of the Marine Facility will be concentrated within a shorter window within this period. Given the low number of vessel movements, and considering that marine coordination and planning will be used to minimise impacts on other vessels, in addition to the low traffic volume within Loch Fyne, it is not anticipated that there will be significant displacement leading to increased vessel encounters. In the event of an encounter, it is expected that vessels complying with the COLREGs would further reduce the likelihood of the situation escalating into a collision incident.

The frequency of occurrence is therefore considered to be **extremely unlikely**.

Significance of Impact
Overall, the severity of consequence is deemed to be moderate, and the frequency of occurrence is considered to be extremely unlikely. The effect will, therefore, be of **broadly acceptable adverse** significance, which is **not significant** in EIA terms.

Operational Phase

The Marine Facility is currently planned to be removed following the completion of the construction phase, however some infrastructure may be left in place should there be any requirement for the delivery of additional abnormal loads for major maintenance works. If needed, these are expected to be infrequent.

Severity of Consequence
In the event of a collision incident between third-party vessels, the most likely consequences are minor contact between vessels resulting in minor damage to property and minor reputational effects on business, with no perceptible effect on people. The maximum adverse scenario could lead to foundering of one or more vessels foundering, resulting in PLL and the environmental consequence of pollution. Such a scenario would be more likely if one of the vessels involved was a small craft, which may have weaker structural integrity than a commercial vessel.

The severity of consequence is therefore considered to be **moderate**.

Frequency of Occurrence
The operational phase is expected to last around100 years, however periods of maintenance requiring abnormal loads to be delivered are expected to be infrequent throughout this. Should the Marine Facility remain in place, and be required, the mitigations in place will ensure that displacement of vessels is low and therefore the increase in collision risk will be low.

The frequency of occurrence is therefore considered to be **negligible**.

Significance of Impact
Overall, the severity of consequence is deemed to be moderate, and the frequency of occurrence is considered to be negligible. The effect will, therefore, be of **broadly acceptable adverse** significance, which is **not significant** in EIA terms.

19.7.2 Increased Vessel to Vessel Collision Risk Between a Third-Party Vessel and a Project Vessel

Construction Phase

During the construction phase of the Development, there will also be increased collision risk between vessels due to the presence of additional vessels associated with the Development. It is noted that many of the vessels visiting the Marine Facility will be slower moving larger vessels transporting abnormal loads, and therefore may be RAM. These vessels may have limited capability to take avoidance action if on a collision course with another vessel, should such a situation arise.

The collision risk is likely to be greater in the higher density areas of the Loch, where encounters are more likely to take place. The vessel density is higher in the lower regions of the Loch, and is generally associated with seasonal vessel activity such as recreational vessels in the summer and fish farm vessels in the winter. Vessel numbers within the study area peaked at two to three vessels per day in August 2023, reflecting the overall low vessel density within Loch Fyne.

Promulgation of information using a variety of means will serve to ensure awareness of project activities, reducing the likelihood of unexpected encounters with other vessels, particularly those which may be RAM. This includes the use of Notices to Mariners, Radio Navigational Warnings, Navigational Telex (NAVTEX), and broadcast warnings, as well as liaison with local sailing clubs and Clydeport. Vessels involved in the Development will also be managed via marine coordination and carry out vessel traffic monitoring, in order to minimise disruption to vessels in the area. Vessels will also display any relevant marks and lights to ensure nearby vessels are aware of their presence.

Severity of Consequence

The most likely consequence in the event of a collision incident between a project vessel and third-party vessel is a minor contact between the vessel and resulting in minor damage to property and minor reputational effects on business. The maximum adverse scenario may involve one or more vessels foundering resulting in PLL and the

environmental consequence of pollution. Such a scenario might be more likely if the third-party vessel involved was a small craft (such as a recreational vessel), which may have weaker structural integrity than a commercial vessel.

The severity of consequence is therefore considered to be **moderate**.

Frequency of Occurrence

The impact will be present intermittently throughout the construction phase of the Development, with the Marine Facility anticipated to be used up to a total of ten times throughout the construction phase, with a further ten vessel visits required for the installation of the Marine Facility. Given the low traffic volumes present in the Loch, it is not considered likely that close encounters between project vessels and third-party vessels will occur. In the event that a close encounter does occur, collision avoidance action as per the COLREGs will be implemented, reducing the likelihood of the encounter escalating into a collision incident. This includes Rule 18, which governs responsibilities between vessels if one is RAM.

The frequency of occurrence is therefore considered to be **extremely unlikely**.

Significance of Impact
Overall, the severity of consequence is deemed to be moderate and the frequency of occurrence is considered to be extremely unlikely. The effect will, therefore, be of **broadly acceptable adverse** significance, which is **not significant** in EIA terms.

Operational Phase

As previously noted, the Marine Facility is currently planned to be removed following the construction phase. Should the Marine Facility remain in place, it is anticipated that project vessel use of the Marine Facility will limited, and only when maintenance requires the replacement of major components of the Development. Therefore it is unlikely that there will a significant number of project vessel movements within Loch Fyne during the operational phase of the Development.

Severity of Consequence
As per the construction phase, the most likely consequence of a collision incident between a project vessel and third-party vessel is a minor contact, while the maximum adverse scenario may involve vessel foundering resulting in PLL.

The severity of consequence is therefore considered to be **moderate**.

Frequency of Occurrence

The operational phase is expected to last around 100 years, however periods of maintenance requiring abnormal loads to be delivered are expected to be infrequent throughout this. Should the Marine Facility remain in place, and be required, the mitigations in place will ensure the increase in collision risk will be low.

The frequency of occurrence is therefore considered to be **negligible.**

Significance of Impact
Overall, the severity of consequence is deemed to be moderate and the frequency of occurrence is considered to be negligible. The effect will, therefore, be of **broadly acceptable adverse** significance, which is **not significant** in EIA terms.

19.7.3 Increased Risk of Vessel Grounding and Restriction on Vessel Size Navigating Loch Fyne to Inveraray

Construction Phase

The presence of project vessels navigating within Loch Fyne may reduce navigable room for other vessels transiting in the area. This may lead to vessels being displaced into shallower water, leading to a potential increase in grounding risk. Charted water depths within Loch Fyne are typically in excess of 70 m throughout the centre of the loch, with a central channel of approximately 0.6nm width with depths greater than 70 m, outside of which depths reduce rapidly towards the banks of the loch. While this does allow room for two vessels to pass one another, space is therefore limited within the loch to carry out manoeuvres including any potential collision avoidance actions.

Vessel operations within Loch Fyne are planned to take place at mean tide or above for the purposes of accessing the Marine Facility, meaning that under keel clearance for other vessels will also be increased during periods of activity.

Promulgation of information and liaison with other local users, such as Clydeport and the MoD will help to ensure that encounters between large vessels within the loch are limited and well-coordinated to avoid pushing vessels into dangerous water depths. Project vessels will be managed via marine coordination, marked and lit as required, and broadcast their positions on AIS so as to ensure the awareness of other users. In addition, vessels will comply with the requirements of the COLREGs and SOLAS.

In addition to the risk of grounding, it is also possible that the presence of project vessels may place limitations on access to the navigable space within Loch Fyne, as larger vessels may be unable to pass safely within sufficient water depths.

Severity of Consequence

The most likely consequence due to the reduction in navigable room within Loch Fyne is the temporary loss of some access to the Upper Loch during project activities involving larger vessels. In the event of a grounding occurring, most likely consequences are minor damage to property, as well as minor reputational effects on business, but no perceptible effect on people. The maximum adverse scenario is that of a vessel being pushed into areas with insufficient under keel clearance and suffering a grounding incident, which may lead to pollution, vessel foundering and PLL.

Overall the severity of consequence is considered to be **moderate**.

Frequency of Occurrence

Given the low number of vessel movements, any effect caused by the activities on the navigable room available are expected to be short term. Traffic volumes within the Loch are low, therefore the likelihood of vessels being displaced into dangerously shallow water is low. Vessels using the loch were typically either recreational vessels or fish farm vessels, depending on the season, which both generally have relatively shallow draughts.

Therefore the frequency of occurrence is considered to be **extremely unlikely.**

Significance of Impact
Overall, the severity of consequence is deemed to be moderate and the frequency of occurrence is considered to be extremely unlikely. The effect will, therefore, be of **broadly acceptable adverse** significance, which is **not significant** in EIA terms.

Operational Phase

Should the Marine Facility remain in place, vessel activities may have a similar impact on grounding risk within Loch Fyne as in the construction phase.

Severity of Consequence
The consequences of the impact are as described for the construction phase. The severity of consequence is considered to be **moderate**.

Frequency of Occurrence

Considering the anticipated removal of the Marine Facility, and the infrequent vessel visits should it remain in place, it is not expected that there will be a significant increase in grounding risk during the operational phase.

Therefore the frequency of occurrence is considered to be **negligible**.

Significance of Impact
Overall, the severity of consequence is deemed to be moderate and the frequency of occurrence is considered to be negligible. The effect will, therefore, be of **broadly acceptable adverse** significance, which is **not significant** in EIA terms.

19.7.4 Disruption to Fishing and Recreational Activities

Construction Phase

Disruption to fishing activities is considered within this Chapter from a navigational risk perspective, however commercial impacts such as loss of fishing grounds will be considered within Chapter 20: Commercial Fisheries of the EIAR.

Project vessel activities during the construction phase may cause disruption to fishing and recreational activities in the area. No fishing activity was recorded on AIS during either the summer or winter period, however the Scoping Report does indicate that a low level of fishing activity takes place throughout Loch Fyne. It is noted that AIS may under-represent fishing vessels, particularly those under 15 m in length. Fishing activity was recorded on VMS during 2022, with this typically occurring in the Lower Loch. Fishing is prohibited in the area opposite the Marine Facility, meaning that it is considered unlikely that vessel activities at the Marine Facility will impact fishing activities. Some disruption to fishing activities may still be caused during transit through the Loch.

Recreational activity was recorded throughout Loch Fyne during the summer survey period, with an average of one to two recreational vessels per day during the three months. Activity was highest in the Lower Loch, although vessels were also frequently recorded heading north to Inveraray. It is noted that there may be an increase in vessels visiting Inveraray following the re-opening of the pier in April 2024. The presence of leisure mooring agreements throughout Loch Fyne was noted in the Scoping Report.

Key mitigation measures in minimising disruption to fishing and recreational activities will include the promulgation of information using a variety of means, liaison with Clydeport and other local user groups, and the management of project vessels using marine coordination.

Severity of Consequence

Disruption to recreational and fishing activities are anticipated to primarily be related to vessel activities at the Marine Facility, and with vessels passing through Loch Fyne. With the mitigation measures in place and effective liaison with other users, it is anticipated that disruption to fishing and recreational activities are anticipated to be extremely short-term and minor in scale.

Therefore the severity of consequence is expected to be **minor**.

Frequency of Occurrence

Given the low traffic volumes in the area and the relatively small number of vessel movements anticipated, the likelihood of fishing and recreational activity being disrupted is expected to be low.

Therefore the frequency of occurrence is considered to be **extremely unlikely**.

Significance of Impact

Overall, the severity of consequence is deemed to be minor and the frequency of occurrence is considered to be extremely unlikely. The effect will, therefore, be of **broadly acceptable adverse** significance, which is **not significant** in EIA terms.

Operational Phase

The Marine Facility is currently planned to be removed following the construction phase. Therefore it is unlikely that there will a significant impact on fishing or recreational activities during the operational phase of the Development.

Severity of Consequence

As per the construction phase, the most likely consequence of a collision incident between a project vessel and third-party vessel is a minor contact, while the maximum adverse scenario may involve vessel foundering resulting in PLL.

The severity of consequence is therefore considered to be **minor**.

Frequency of Occurrence

Periods of major maintenance requiring abnormal loads to be delivered are expected to be infrequent during the operational phase, with the Marine Facility expected to be removed following the construction phase. Should the Marine Facility remain in place, and be required, the mitigations in place will ensure that displacement of vessels is low and therefore the likelihood of disruption to fishing and recreational activities is low.

The frequency of occurrence is therefore considered to be **negligible**

Significance of Impact
Overall, the severity of consequence is deemed to be minor and the frequency of occurrence is considered to be negligible. The effect will, therefore, be of **broadly acceptable adverse** significance, which is **not significant** in EIA terms.

19.7.5 Disruption to Military Exercises

Construction Phase

Loch Fyne is contained within a submarine exercise area, with it noted during consultation that submarines frequently enter the Loch, both submerged and on the surface during exercises. In addition to this, it was raised during consultation that sounding exercises also take place within the Loch.

The MoD were consulted at the scoping stage, and will continue to be consulted throughout the application process. Liaison with the MoD should also be carried out during the construction phase of the Development to ensure vessel activities within the Loch do not cause disruption to military exercises. It was agreed with the MoD that the piling activities would cease during sounding trials in Loch Fyne, which are expected to take place on approximately 12 days per year.

Severity of Consequence
With appropriate consultation undertaken during the application process and liaison carried out with the MoD throughout the construction phase, with notifications of vessel activities given, it is not expected that there will be significant disruption to any military exercises.

The severity of consequence is therefore considered to be **minor**.

Frequency of Occurrence

Given the low number of vessel movements expected during the construction phase, the likelihood of these activities disrupting military exercises is considered to be low.

Therefore the frequency of occurrence is considered to be **extremely unlikely**.

Significance of Impact
Overall, the severity of consequence is deemed to be minor and the frequency of occurrence is considered to be extremely unlikely. The effect will, therefore, be of **broadly acceptable adverse** significance, which is **not significant** in EIA terms.

Operational Phase

As previously noted, the Marine Facility is currently planned to be removed following the construction phase. Therefore it is unlikely that there will a significant impact on military activities during the operational phase of the Development.

Severity of Consequence
As per the construction phase, the severity of consequence is therefore considered to be **minor**.

Frequency of Occurrence

Periods of major maintenance requiring abnormal loads to be delivered are expected to be infrequent during the operational phase, with the Marine Facility expected to be removed following the construction phase. Should the Marine Facility remain in place, and be required, the mitigations in place will ensure that displacement of vessels is low and therefore the likelihood of disruption to military exercises is low.

The frequency of occurrence is therefore considered to be **negligible.**

Significance of Impact
Overall, the severity of consequence is deemed to be minor and the frequency of occurrence is considered to be negligible. The effect will, therefore, be of **broadly acceptable adverse** significance, which is **not significant** in EIA terms.

19.7.6 Allision Risk Between Third-Party Vessels and New Structure

Construction Phase

During the construction phase, the installation of the new Marine Facility will increase the risk of allision between third-party vessels and the new structure. Traffic levels in the vicinity of the Marine Facility are low, and the Upper Loch is mainly used by recreational vessels, and by those only in the summer months, noting that there may be vessel activity not covered by AIS. During the winter months, vessels within Loch Fyne were generally fish farm vessels working in the Lower Loch. It is noted that the re-opening of the Inveraray pier has the potential to increase vessel activity in the vicinity of the Marine Facility, including the potential for other vessel types to visit the new facility. An allision incident may occur either under power, due to watchkeeper failure, or due to a machinery or engine failure leading a vessel to drift towards the Marine Facility.

The Marine Facility will be marked and lit appropriately in agreement with the NLB, and information will be promulgated with local communities and via a range of methods, to ensure that vessels are aware of the Marine Facility.

Severity of Consequence

The most likely consequences of a vessel allision with the Marine Facility are minor contact resulting in minor property damage, and minor reputational effects on business, but no perceptible effect on people. The maximum adverse scenario may involve the foundering of an alliding vessel, leading to PLL and pollution. Such a scenario may be more likely if a recreational vessel or other small craft is involved in an allision, as these may have weaker structural integrity.

The overall severity of consequence is therefore considered to be **moderate**.

Frequency of Occurrence

Considering the Marine Facility extends only 180 m into the Loch in shallow waters, and the low levels of traffic typical in the Upper Loch Fyne, the likelihood of allision incidents occurring is considered very low.

Therefore the frequency of occurrence is considered to be **negligible**.

Significance of Impact

Overall, the severity of consequence is deemed to be moderate and the frequency of occurrence is considered to be negligible. The effect will, therefore, be of **broadly acceptable adverse** significance, which is **not significant** in EIA terms.

Operational Phase

If the Marine Facility remains in place during the operational phase, an increased allision risk will remain within Loch Fyne as discussed for the construction phase.

Severity of Consequence

The consequences of the impact are as described for the construction phase.

Therefore the severity of consequence is considered to be **moderate**.

Frequency of Occurrence

Considering the anticipated removal of the Marine Facility, it is not expected that there will be a significant increase in allision risk during the operational phase. Should the Marine Facility remain in place, the small extent of the jetty into the Loch and low traffic volume mean that the likelihood of an allision incident occurring remains low.

Therefore the frequency of occurrence is considered to be **negligible**.

Significance of Impact

Overall, the severity of consequence is deemed to be moderate and the frequency of occurrence is considered to be negligible. The effect will, therefore, be of **broadly acceptable adverse** significance, which is **not significant** in EIA terms.

19.7.7 Reduced Access to Local Harbours

Construction Phase

There is the potential for increased disruption to access to local harbours during the construction phase of the Development. The closest harbour to the Marine Facility location is the pier at Inveraray, located approximately 1nm to the north of the Marine Facility, noting that it is currently closed for redevelopment. The pier is expected to re-open in April 2024.

The main source of disruption is likely to be during project vessel activities and movements within Loch Fyne, particular during offloading at the Marine Facility. Project vessels will be managed by marine coordination, display appropriate marks and lights, broadcast on AIS and will be compliant with relevant Flag State regulations including the COLREGs, including Rule 18 which applies to vessels which are RAM. Liaison with Clydeport and local harbours will also help to manage disruption.

Severity of Consequence

Access to Inveraray may be impacted by the presence of vessels which may be RAM. Considering the mitigation measures in place to minimise disruption, most notably promulgation of information and liaison with local user groups, any loss of access is expected to be brief.

The severity of consequence is therefore considered to be **minor**.

Frequency of Occurrence

The impact will be present intermittently during the construction phase, with low numbers of vessel movements expected to take place. Given the low traffic volume and the navigable room available, the likelihood of vessels being unable to access harbours is considered to be low.

Therefore the frequency of occurrence is considered to be **extremely unlikely**.

Significance of Impact
Overall, the severity of consequence is deemed to be minor and the frequency of occurrence is considered to be extremely unlikely. The effect will, therefore, be of **broadly acceptable adverse** significance, which is **not significant** in EIA terms.

Operational Phase

As previously noted, the Marine Facility is currently planned to be removed following the construction phase. Therefore it is unlikely that there will a significant impact on harbour access during the operational phase of the Development.

Severity of Consequence
As per the construction phase, any loss of access to the harbour at Inveraray is expected to be temporary and unlikely to impact smaller vessels, which should have room to pass activities.

The severity of consequence is therefore considered to be **minor**.

Frequency of Occurrence

Periods of major maintenance requiring abnormal loads to be delivered are expected to be infrequent during the operational phase, with the Marine Facility expected to be removed following the construction phase. Should the Marine Facility remain in place, and be required, the likelihood of any impact to harbour access remains very low as per the construction phase.

The frequency of occurrence is therefore considered to be **negligible**

Significance of Impact
Overall, the severity of consequence is deemed to be minor and the frequency of occurrence is considered to be negligible. The effect will, therefore, be of **broadly acceptable adverse** significance, which is **not significant** in EIA terms.

19.8 Cumulative Effects

There are no cumulative schemes anticipated to cause any likely cumulative effects. The only development in the vicinity of the Marine Facility is the redevelopment of the pier at Inveraray, which is considered within the future baseline.

19.9 Mitigation and Monitoring

19.9.1 Embedded Mitigation

As part of the design process for the Development, a number of embedded mitigation measures have been considered to minimise the adverse impacts of the Development. These measures have and will continue to evolve over the course of the Development process as the EIA progresses and in response to consultation.

These measures typically include those that have been identified as good or standard practice and include actions that would be undertaken to meet existing legislation requirements. As there is a commitment to implementing these measures, and also to various standard sectoral practices and procedures, they are considered part of the design of the Development.

Embedded mitigation measures are presented in *Table 19.9 Embedded Mitigation Measures Relevant to Shipping and Navigation.*

Table 19.9 Embedded Mitigation Measures Relevant to Shipping and Navigation

Embedded Mitigation Measure	Description
Promulgation of information	Information will be distributed via means such as Notices to Mariners, Radio Navigational Warnings, NAVTEX and/or other navigation broadcast warnings as soon as reasonably practicable in advance of and during vessel activities.
Use of advisory safe clearance distances during vessel activities	Passing vessels will be requested to maintain a safe passing distance around any project vessels restricted in manoeuvrability.
Vessel traffic monitoring and marine coordination	Marine coordination (e.g., the preparation of a Vessel Management Plan) and communication will be used to manage project vessel movements and minimise impact on other vessels. This will include the timing of vessel movements to not interfere with scheduled ferries and other known vessel movements.
Compliance with COLREGs/SOLAS	Compliance of all project vessels with international marine regulations as adopted by the Flag State, notably the COLREGs (IMO, 1972/78) and SOLAS (IMO, 1974).
As-Built Information	The location, extent and nature of the Marine Facility will be communicated with the UKHO and any other relevant bodies to ensure awareness of the Development.
Marking and lighting of Marine Facility and construction vessels	Project vessels will display appropriate marks and lights, and will broadcast their status on AIS at all times, to indicate the nature of the work in progress, and highlight their restricted manoeuvrability, if applicable. The Marine Facility will also be marked and lit as per the requirements of IALA guidance and in agreement with the NLB.
Liaison with Clydeport and local harbours	Liaison with local ports and harbours, particularly Clydeport, during the construction phase.
Liaison with MoD	Liaison with the MoD will be undertaken to ensure project activities do not interfere with military exercises. Piling works associated with the construction phase will cease during trials within Loch Fyne (circa 12 days per year) to avoid generating noise in the water.
Review of feasibility of delivery of construction materials via Loch Fyne	Review of the route through Loch Fyne will be undertaken to ensure the navigation channel is feasible and suitable vessels are used.

Additional Mitigation, Compensation and Enhancement

No additional mitigation measures are considered necessary as all effects were assessed to be of broadly acceptable significance.

19.10 Residual Effects

Summaries of the assessment of effects for the construction and operation phases are presented in *Table 19.10 Summary of Effects: Construction* and *Table 19.11 Summary of Effects: Operation.*

Table 19.10 Summary of Effects: Construction

Receptor	Description of Effect	Severity of Consequence	Frequency of Occurrence	Significance of Effect	Additional Mitigation	Residual Significance
All Vessels	Deviations to Vessel Routeing Resulting in Increased Vessel to Vessel Collision Risk	Moderate	Extremely Unlikely	Broadly Acceptable	N/A	Broadly Acceptable
All Vessels	Increased vessel to vessel collision risk between a third-party vessel and a project vessel	Moderate	Extremely Unlikely	Broadly Acceptable	N/A	Broadly Acceptable
All Vessels	Increased risk of vessel grounding and restriction on vessel size navigating Loch Fyne to Inveraray	Moderate	Extremely Unlikely	Broadly Acceptable	N/A	Broadly Acceptable
Fishing Vessels, Recreational Vessels	Disruption to fishing and recreational activities	Minor	Extremely Unlikely	Broadly Acceptable	N/A	Broadly Acceptable
Military Vessels	Disruption to military exercises	Minor	Extremely Unlikely	Broadly Acceptable	N/A	Broadly Acceptable
All Vessels	Allision risk between third-party vessels and new structure	Moderate	Negligible	Broadly Acceptable	N/A	Broadly Acceptable
All Vessels	Reduced access to local harbours	Minor	Extremely Unlikely	Broadly Acceptable	N/A	Broadly Acceptable

Table 19.11 Summary of Effects: Operation

Receptor	Description of Effect	Frequency of Occurrence	Severity of Consequence	Significance of Effect	Additional Mitigation	Residual Significance
All Vessels	Deviations to Vessel Routeing Resulting in Increased Vessel to Vessel Collision Risk	Moderate	Negligible	Broadly Acceptable	N/A	Broadly Acceptable
All Vessels	Increased vessel to vessel collision risk between a third-party vessel and a project vessel	Moderate	Negligible	Broadly Acceptable	N/A	Broadly Acceptable
All Vessels	Increased risk of vessel grounding and restriction on vessel size navigating Loch Fyne to Inveraray	Moderate	Negligible	Broadly Acceptable	N/A	Broadly Acceptable

Receptor	Description of Effect	Frequency of Occurrence	Severity of Consequence	Significance of Effect	Additional Mitigation	Residual Significance
Fishing Vessels, Recreational Vessels	Disruption to fishing and recreational activities	Minor	Negligible	Broadly Acceptable	N/A	Broadly Acceptable
Military Vessels	Disruption to military exercises	Minor	Negligible	Broadly Acceptable	N/A	Broadly Acceptable
All Vessels	Allision risk between third-party vessels and new structure	Moderate	Negligible	Broadly Acceptable	N/A	Broadly Acceptable
All Vessels	Reduced access to local harbours	Minor	Negligible	Broadly Acceptable	N/A	Broadly Acceptable

19.11 References

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