

ABWP Phase I Decommissioning

Shipping and Navigation

Volume 2, Chapter 7



Project name ABWP Phase I Decommissioning

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Appendix 3.7	Outline Lighting and Marking Plan
Appendix 7.1	Navigational Risk Assessment

Statement of Authority

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Glossary

Term	Meaning
Arklow Bank Wind Park (ABWP) Phase I	Arklow Bank Wind Park (ABWP) Phase I comprises: - Offshore infrastructure seaward of High Water Mark (HWM), including: - Seven Wind Turbine Generators (WTG) with a combined capacity of 25.2 MW; - One meteorological (met) mast; and - One offshore export cable and inter-array cables connecting the WTGs and met mast. - Onshore infrastructure landward of HWM including: - One onshore cable; and - One onshore substation.
ABWP Phase II	ABWP Phase II comprises: - Offshore Infrastructure, including: 53 or 47 WTGs and two Offshore Substation Platforms (OSPs) located within the "Array Area"; - Two offshore export cables and inter-array cables connecting WTGs with the OSPs. - Onshore Grid Infrastructure; - Operations and Maintenance Facility (OMF); and - EirGrid Upgrade Works.
Additional mitigation	Actions that will be required to reduce the significance of environmental effects of the Proposed Works, which will be dependent on the significance of effects assessed in the EIAR. Also referred to as secondary mitigation in Institute of Environmental Management and Assessment (IEMA) (2024). IEMA is now the Institute of Sustainability and Environmental Professionals (ISEP).
Arklow Energy	Arklow Energy Limited, the entity seeking planning permission for the Proposed Works, i.e. the applicant.
Alternatives	A description of other options that have been considered during the conception of the Proposed Works (Environmental Protection Agency (EPA), 2022). Article 5(1) and Annex IV of the Environmental Impact Assessment (EIA) Directive) require "a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, including a comparison of the environmental effects" (EIA Directive 2011/92/EU (as amended)).
Automatic Identification System (AIS)	A system by which vessels automatically broadcast their identity and key statistics including location, destination, length, speed and current status. Most commercial vessels and European Union fishing vessels over 15 metres (m) in length are required to carry AIS.

Term	Meaning
Baseline	A description of the relevant aspects of the current state of the environment (baseline scenario) (EIA Directive 2014/52/EU).
Competent authority	Are those authorities that are entitled to give authorisation or consent to a plan or project. In the planning system, this means planning authorities and An Coimisiún Pleanála. There are, however, a wide range of other competent authorities in respect of other consent regimes e.g. EPA (environmental licensing), Minister for Agriculture, Food and the Marine (forestry, aquaculture and foreshore management), and various state bodies that have authority to undertake development under Part 9 of the Planning and Development Regulations (e.g. An Garda Síochána, defence forces, the courts service). The competent authority for this planning application is An Coimisiún Pleanála (ACP).
Consent	This shall include any licence, permission, permit, approval or other such authorisation granted by a public authority for any activity, or project where the authority is obliged to have regard to the requirements of the Environmental Impact Assessment (EIA) and/or Habitats Directive(s) (MacCabe Durney Barnes (MDB), 2017).
Cumulative effect	The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects (EPA, 2022). Cumulative effects within this EIAR comprise those arising from the Proposed Works with other developments, i.e. plans and projects that are 'reasonably foreseeable' (Planning Inspectorate (PINS), 2024).
Cumulative effects assessment	Assessment of potential environmental effects resulting from the Proposed Works cumulatively with other plans, projects or reasonably foreseeable activities.
Decommissioning	The final closing down and putting into a state of safety of a development, project or process when it has come to the end of its useful life (EPA, 2022).
Detailed Lighting and Marking Plan (LMP)	The contractor-developed version of the Outline LMP (see Volume 3, Appendix 3.7), to be prepared before Proposed Works Offshore commence and maintained as a live document until completion.
Detailed Offshore Decommissioning Management Plan (DEMP)	The contractor-developed version of the Outline Offshore DEMP (see Volume 3, Appendix 3.4), to be prepared before Proposed Works Offshore commence and maintained as a live document until completion.
Detailed Offshore Waste Management Plan (WMP)	The contractor-developed version of the Outline Offshore WMP (see Volume 3, Appendix 3.8), to be prepared before Proposed Works Offshore commence and maintained as a live document until completion.
Detailed Vessel Management Plan (VMP)	The contractor-developed version of this Outline VMP (see Volume 3, Appendix 3.5), to be prepared before Proposed Works Offshore commence and maintained as a live document until completion.
Draught	Vertical distance between the waterline and the lowest point of a vessel's hull (usually the keel). It essentially measures how deep a vessel sits in the water.
Dredged material	Seabed material arising from localised dredging potentially required to facilitate safe vessel access during Proposed Works Offshore, and / or extraction of seabed material located inside monopile (MP) foundations, as part of MP decommissioning.
Effect	The consequence of an impact on a receptor. For example, in the offshore environment, vessel activity (activity) results in increased levels of underwater noise (impact), with the potential to disturb marine mammals (effect).
EIA Scoping	The scoping stage provides an opportunity for both developers and the Competent Authority to determine those key environmental impacts and issues of concern that are likely to be of the utmost importance to the Project proposal's decision-making and eliminates those that are less of a concern (European Commission (EC,) 2017).
EIA Scoping Presentation	Presentation scoping the likely environmental impacts of the Proposed Works to be further considered in the Environmental Impact Assessment Report (EIAR). The EIA Scoping Presentation is included in Volume 3, Appendix 1.1 of the EIAR.
Embedded mitigation	Mitigation measures included as part of the Proposed Works. Include modifications arising through the iterative design process; and standard industry practice that would occur even without input from the EIA process, e.g. actions

Term	Meaning
	undertaken to meet other existing legislative requirements, or actions that are standard practices used to manage commonly occurring environmental effects. Correspond to primary and tertiary mitigation defined in IEMA (2024).
Environmental Impact Assessment (EIA)	Process of assessment of the effects of a project or development proposal on the environment. In the planning area, it is undertaken by a planning authority or An Coimisiún Pleanála during the consideration of applications for planning permission, taking account of an Environmental Impact Assessment Report (EIAR). The projects which require EIA are listed in Annex I and Annex II of the EIA Directive, as amended (Office of the Planning Regulator, n.d.).
Environmental Impact Assessment Report (EIAR)	A report or statement of the effects, if any, that Proposed Works, if carried out, would have on the environment. It is prepared by the developer to inform the EIA process (Office of the Planning Regulator, n.d.).
Environmental factor	Refers to environmental factors used to present the characteristics of the environment (EPA, 2022) that are used to organise the description of the environment in the EIAR.
Exclusive Economic Zone (EEZ)	Area beyond and adjacent to the territorial sea, subject to the specific legal regime established in this Part (UNCLOS, 1982). The EEZ in Ireland extends up to 200 nautical miles (nm) from the outer edge of the Territorial Sea.
Foreshore	The bed and shore, below the line of high water of ordinary or medium tides, of the sea and of every tidal river and tidal estuary and of every channel, creek, and bay of the sea or of any such river or estuary. Its outer limit is coterminous with the seaward limit of the territorial sea (Foreshore Act 1933 (as amended)), which is at a distance of 12 nm from the nearest point of the baseline or otherwise prescribed (Maritime Jurisdiction Act 2021 (as amended)).
High Water Mark (HWM)	Level reached by the sea level at high tide.
Impact	A change brought about by the Proposed Works.
Inter-array cables	Subsea power lines that link individual wind turbine generators (WTGs) together in an offshore wind farm, forming an electrical network. In ABWP Phase I, inter-array cables connect WTGs and the met mast to each other and have an overall length of 7.4 km.
Landfall	The point where the offshore export cable transitions from the offshore marine environment to the onshore terrestrial environment.
Magnitude	A combination of the spatial extent, duration, frequency and reversibility of an impact.
Maximum design scenario (MDS)	Represents 'realistic worst case' assessment parameters for each impact.
Meteorological (Met) mast	A mast with a number of meteorological sensors located at different heights to record meteorological and sea condition data
Mitigation measures	Measures to avoid, prevent or reduce impacts (EPA, 2022), which comprise both embedded and additional mitigation, see separate definitions for these.
Monitoring	The periodic or continuous observation of biodiversity indicators and of other parameters that may affect biodiversity for any changes that may occur over time, so as to confirm predictions made with respect to likely effects and identify adverse changes that may require remedial action (Office of the Planning Regulator, n.d.).
Monopile (MP)	Hollow steel cylinder driven into the seabed typically used to anchor an offshore wind turbine generator (WTG). In ABWP Phase I, MPs support the seven WTGs as well as the meteorological (met) mast.
Nautical mile (nm)	Measurement used for distances at sea. 1nm equates to 1.852km.
Offshore export cable	Subsea power cable that transports the total generated power from an offshore wind farm to the onshore power grid. In ABWP Phase I, the offshore export cable connects the wind turbine generator (WTG) T4 to landfall with an approximate overall length of 15.6 km. At landfall, the offshore export cable transitions to the onshore cable connecting to the onshore substation.
Offshore Site	Part of the site where Proposed Works Offshore are proposed to take place. In this application for planning permission, the Offshore Site comprises the Sub Lease Area, where the ABWP Phase I wind turbine generators (WTGs), met mast and inter-array cables are located, and the offshore export cable 10 m corridor

Term	Meaning
	connecting WTG T4 to the landfall at high water mark (HWM) near Arklow Harbour.
Pathway	The route by which an effect is conveyed between a source and a receptor (EPA, 2022).
Planning permission	Formal, legal approval required from a local planning authority or An Coimisiún Pleanála (ACP) to carry out development. The Proposed Works require planning permission submitted from ACP under Section 291 of the Planning and Development Act 2000, as amended.
Proposed Works	The Proposed Works include decommissioning of ABWP Phase I offshore infrastructure (Proposed Works Offshore) and decommissioning of ABWP Phase I onshore infrastructure (Proposed Works Onshore).
Receptor	Any element in the environment which is subject to impacts (EPA, 2022).
Recycling	Subjection of waste to any process or treatment to make it re-usable in whole or in part (Waste Management Act 1996 (as amended)).
Residual effect	The final predicted effect / impact remaining after mitigation (EPA, 2022).
Scour protection	Engineered barrier typically placed on the seabed around WTG foundations and subsea cables to prevent sediment erosion caused by accelerated water currents and waves, safeguarding the WTG's stability and protecting subsea cables. In ABWP Phase I, scour protection was originally introduced in the form of rock armour, however, this proved ineffective, and was removed in 2005. Since then, scour protection has been introduced through sandbags.
Sensitivity	The potential of a receptor to be significantly affected (EPA, 2022).
Shipping and Navigation Study Area	Area covered in the characterisation of the baseline environment and considered in the assessment of potential environmental effects relevant to Shipping and Navigation, defined as less than 20 km from the Offshore Site boundary, see Section 7.4.3 and Figure 7.1 in this document.
Significance	The importance of the outcome of the impact (or the consequence of change) for the receiving environment (EPA, 2022).
Source	The activity or place from which an effect originates (EPA, 2022)
Statutory consultee	An organisation or authority stipulated by legislation to be notified by a competent authority or developer if an application is made which might give that organisation a cause for concern. These are specified in the applicable legislation, e.g. Article 28 of the Planning and Development Regulations, 2001 (as amended) (EPA, 2022).
Sub Lease Area	Area where the ABWP Phase I WTGs, met mast and inter-array cables are located, as defined in the Sub Lease granted by Sure Partners Limited (SPL) to Arklow Energy Limited (Arklow Energy) to construct and operate ABWP Phase I.
Territorial Sea	Belt of sea adjacent to a coastal State's land territory and internal waters, over which the State has sovereignty. A coastal State may claim up to 12 nautical miles from its baseline (usually the low-water line along the coast) (UNCLOS, 1982).
Transboundary effects	Potential environmental effects that may occur across jurisdictional boundaries (MDB, 2017).
Transition Piece	The steel connection structure between the tower and the monopile (MP) foundation.
Waste	Any substance or object belonging to a category of waste specified in the First Schedule or for the time being included in the European Waste Catalogue which the holder discards or intends or is required to discard, and anything which is discarded or otherwise dealt with as if it were waste shall be presumed to be waste until the contrary is proved (Waste Management Act 1996 (as amended)).
Wind Turbine Generator (WTG)	Structure that converts the kinetic energy of ocean winds into electrical energy. ABWP Phase I includes seven GE Energy 3.6s WTGs with a rated capacity of 3.6 megawatts (MW) per WTG.
Zone Of Influence (ZoI)	The potential geographic area that could be affected by the implementation of the Proposed Works, having regard to the source-pathway-target risk assessment concept. The ZoI for Shipping and Navigation is defined as less than 20 km from the Offshore Site (when considering Proposed Works Offshore alone)

Term	Meaning
	and 25 nm (< 50 km) from the Offshore Site when considering potential cumulative effects with other developments, as this is considered to reflect the typical spatial extent over which local vessels operate and within which interactions with the Proposed Works Offshore and other developments are most likely to occur.

Acronyms

Acronym	Meaning
ABWP	Arklow Bank Wind Park
ACP	An Coimisiún Pleanála
AIS	Automatic Identification System
ALARP	As Low As Reasonably Practicable
AtoN	Aids to Navigation
CIA	Cumulative Impacts Assessment
CIL	Commissioners of Irish Lights
COLREGs	Convention on the International Regulations for Preventing Collisions at Sea
DCEE	Department of Climate, Energy and the Environment (previously DCCAE)
DECC-UK	UKs' Department for Energy & Climate Change
DEMP	Decommissioning Environmental Management Plan
DfT-UK	UKs' Department for Transport
DHPLG	Department of Housing, Planning and Local Government
DoT	Department of Transport
EC	European Commission
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EU	European Union
VMP	Vessel Management Plan
FSA	Formal Safety Assessment
HWM	High Water Mark
IEMA	Institute of Environmental Management and Assessment
ILB	Inshore lifeboat
IMO	International Maritime Organization
IRCG	Irish Coast Guard
LAT	Low Astronomical Tide
LLA	Local Lighthouse Authority
LMP	Lighting and Marking Plan
MCA	Maritime & Coastguard Agency
MCIB	Marine Casualty Investigation Board
MDS	Maximum Design Scenario
MGN	Marine Guidance Note

Acronym	Meaning
MP	Monopile
MSFD	Marine Strategy Framework Directive
MSO	Marine Survey Office
NIS	Natura Impact Statement
NMPF	National Marine Planning Framework
NRA	Navigation Risk Assessment
NtM	Notice to Mariners
OREI	Offshore Renewable Energy Installations
OSP	Offshore Substation Platform
OWEKH	Offshore Wind Evidence Knowledge Hub
PINS	Planning Inspectorate (UK)
RFI	Request for Further Information
RNLI	Royal National Lifeboat Institution
RYA's	Royal Yachting Association's
SAR	Search and Rescue
SOLAS	International Convention for the Safety of Life at Sea
SPL	Sure Partners Limited
TEN-T	Trans-European Transport Network
TP	Transition Piece
TSS	Traffic Separation Schemes
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
UN	United Nations
UNCLOS	United Nations Convention on the Law of the Sea
WTG	Wind Turbine Generators
ZoI	Zone of Influence

Units

Unit	Meaning
km	Kilometres
kn	knots
m	metre
mm	millimetre
nm	Nautical mile
%	percent

7 SHIPPING AND NAVIGATION

7.1 Introduction

- 7.1.1.1 Arklow Energy Limited (Arklow Energy) is seeking planning permission to decommission Arklow Bank Wind Park (ABWP) Phase I (referred to hereafter as 'the Proposed Works'). The Proposed Works include decommissioning of ABWP Phase I offshore infrastructure (Proposed Works Offshore) and decommissioning of ABWP Phase I onshore infrastructure (Proposed Works Onshore).
- 7.1.1.2 This chapter of the Environmental Impact Assessment Report (EIAR) presents the findings of the Environmental Impact Assessment (EIA) work undertaken to date for the Proposed Works Offshore as described in **Volume 2, Chapter 3: Proposed Works Description**.
- 7.1.1.3 The Proposed Works Offshore will be undertaken within the Offshore Site (see **Volume 2, Chapter 3**), which includes:
- The Sub Lease Area, located on the long narrow Arklow Bank sand bank, situated approximately 10 km off the coast of Arklow, south-east Ireland, where seven wind turbine generators (WTGs) and foundations, associated scour protection, 7.4 km of inter-array cables and one met mast are located; and
 - A 10 m wide cable corridor along the 15.6 km offshore export cable route connecting WTG T4 to the landfall point at High Water Mark (HWM).
- 7.1.1.4 This chapter considers the potential impacts and effects on shipping and navigation that could result from the Proposed Works Offshore, and is, in part, based on the EIAR prepared in support of the planning application for the proposed ABWP Phase II (SSE Renewables, 2026), which includes the development of 47 or 53 offshore wind turbines in an area surrounding the Offshore Site, where the Proposed Works Offshore are proposed to take place, see **Volume 2, Chapter 3**.
- 7.1.1.5 This chapter describes the methodology, datasets that have informed the EIA, baseline conditions, including future baseline, mitigation measures and the residual significant effects on shipping and navigation that could result from the Proposed Works Offshore.
- 7.1.1.6 The assessment is informed by the following chapters:
- **Volume 2, Chapter 1: Introduction**; and
 - **Volume 2, Chapter 3**.
- 7.1.1.7 The chapter also draws on information contained within the following appendices:
- **Volume 3, Appendix 3.5: Outline Vessel Management Plan**;
 - **Volume 3, Appendix 3.7: Outline Lighting and Marking Plan**; and
 - **Volume 3, Appendix 7.1: Navigational Risk Assessment**.

7.2 Legislative and Policy Context

7.2.1 Overview

- 7.2.1.1 The full relevant legislation and policy context for the Proposed Works has been detailed in **Volume 2, Chapter 1**. This section sets out the legislation and planning policy that is relevant to the shipping and navigation assessment, excluding that related to pollution from shipping and navigation, which is covered in **Volume 2, Chapter 4: Coastal Processes, Water and Sediment Quality**.

7.2.2 Legislation

International

United Nations Convention on the Law of the Sea (UNCLOS)

- 7.2.2.1 UNCLOS (UN, 1982) establishes the international legal framework governing the use of the world's oceans, including the rights and responsibilities of States in relation to navigation and the placement of offshore structures.
- 7.2.2.2 Article 60 specifies that "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". In addition to Article 60, UNCLOS includes provisions relevant to navigation safety, including the freedom of navigation (Articles 58 and 87), flag-state responsibilities for vessel safety (Article 94), and coastal-state rights to regulate passage within territorial waters (Article 21).
- 7.2.2.3 UNCLOS provisions have been considered throughout this EIAR chapter, particularly in relation to the potential interference of Proposed Works Offshore with international navigation.

Convention on the International Regulations for Preventing Collisions at Sea (COLREGs)

- 7.2.2.4 The COLREGs (International Maritime Organization (IMO), 1972/77) are the globally recognised rules that must be adhered to by all vessels navigating internationally, established by the IMO to prevent collisions. They set legally binding standards for steering, sailing, lighting, and sound signals for all vessels on the high seas and connected, navigable waters.
- 7.2.2.5 Key provisions include Rule 8, which requires that "any action taken to avoid collision (...) shall, if the circumstances of the case admit, be positive, made in ample time and with due regard to the observance of good seamanship", and Rule 19, which requires "vessels to proceed at a safe speed adapted to prevailing circumstances and conditions of restricted visibility, (...) with engines ready for immediate manoeuvre".
- 7.2.2.6 COLREGs have been considered throughout this EIAR chapter, particularly in relation to collision avoidance provisions.

International Convention for the Safety of Life at Sea (SOLAS)

- 7.2.2.7 The main objective of the SOLAS Convention (IMO, 1974) is to specify minimum standards for the construction, equipment and operation of ships, compatible with their safety. Flag States are responsible for ensuring that ships under their flag comply with its requirements, and a number of certificates are prescribed in the Convention as proof that this has been done. Control provisions also allow Contracting Governments to inspect ships of other Contracting States if there are clear grounds for believing that the ship and its equipment do not substantially comply with the requirements of the Convention - this procedure is known as port State control. The current SOLAS Convention includes Articles setting out general obligations, amendment procedure followed by an Annex divided into 14 Chapters.
- 7.2.2.8 Regulation 33 obliges the master of a vessel to provide assistance, at maximum possible speed, to any person in distress at sea when informed of such circumstances. Regulation 34 requires that any intended voyage is properly planned using up-to-date nautical charts and publications appropriate to the area concerned.
- 7.2.2.9 The SOLAS Convention has been considered throughout this EIAR chapter, particularly in relation to rendering assistance and passage planning when considering collision risk.

National

Maritime Safety Act 2005

- 7.2.2.10 The Maritime Safety Act 2005 aims, amongst other things, to enhance public safety and amenity by strengthening the law against improper use of certain personal watercraft and recreational craft and by promoting good practice in the operation of vessels generally.
- 7.2.2.11 The Act also provides a legislative framework for improving maritime safety through provisions relating to vessel operation, incident prevention, and the regulation of activities that may pose risks to navigation or the marine environment. It supports enforcement powers and establishes measures to reduce unsafe vessel behaviour within Irish waters.
- 7.2.2.12 This legislation is of relevance to this chapter as it underpins the regulatory framework governing vessel movements and navigational safety. In particular, it reinforces the importance of safe vessel operation, which is a key consideration in the assessment of collision and allision risks, as well as in the management of project related and third party vessel interactions during the Proposed Works Offshore.

S.I. No. 311/2024 - Merchant Shipping (Solus V-Navigational Equipment) Rules 2024

- 7.2.2.13 The S.I. No. 311 of 2024 set out requirements for marine equipment placed on board vessels, including navigational, safety, and communication systems, to ensure compliance with international standards under the SOLAS Convention.
- 7.2.2.14 This Regulation is relevant to this chapter as it supports the safe navigation and operation of vessels through the use of certified navigational equipment, thereby contributing to the overall framework for maritime safety within the Study Area.

7.2.3 Policy Context

National Policy Context

National Marine Planning Framework (NMPF)

- 7.2.3.1 The NMPF (The Department of Housing, Planning and Local Government (DHPLG, 2021) is Ireland's first comprehensive maritime spatial plan, setting out the government's long-term vision, objectives, and policies for managing the country's marine area. **Table 7.1** outlines NMPF provisions relevant to shipping and navigation and how and where they are covered in the EIAR, see also the **Planning Report** submitted in support of the application for planning permission for the Proposed Works.

Table 7.1: Summary of the NMPF relevant to shipping and navigation

Summary of relevant NMPF provisions	How and where considered in the EIAR
10 Defence and Security	
<u>Defence and Security Policy 1</u> Any proposal that has the potential to interfere with the performance by the Defence Forces of their security and non-security related tasks must be subject to consultation with the Defence Organisation. This includes potential interference with: • Safety of navigation and access to naval facilities; • Firing, test or exercise areas; • Communication, and surveillance systems; • Fishery protection functions.	The vessel traffic data assessed (see Section 7.5.1) includes military vessel traffic. Safety of navigation to vessels (including military) has been assessed in Section 7.6 .

Summary of relevant NMPF provisions	How and where considered in the EIAR
18 Ports, Harbours and Shipping	
<u>Ports, Harbours and Shipping Policy 1</u> To provide for shipping activity and freedom of navigation 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 harbours and navigational safety. This includes commercial anchorages and approaches to ports as well as key littoral and offshore routes; • A mandatory Navigation Risk Assessment; • Where interference is likely: whether reasonable alternatives can be identified; and • Where there are no reasonable alternatives: whether mitigation through measures adopted in accordance with the principles and procedures established by the International Maritime Organisation can be achieved at no significant cost to the shipping or ports sector	Potential impacts on port access and potential interference with existing or planned routes have been assessed in Section 7.6. A Navigation Risk Assessment has been prepared in support of this Chapter (see Volume 3, Appendix 7.1).
<u>Ports, Harbours and Shipping Policy 2</u> Proposals that may have a significant impact upon current activity and future opportunity for expansion of port and harbour activities should demonstrate that they will, in order of preference: a) avoid, b) minimise, or c) mitigate significant adverse impacts, and d) if it is not possible to mitigate significant adverse impacts on current activity and future opportunity for expansion of port and harbour activities, proposals should set out the reasons for proceeding	Potential impacts on port access have been scoped out, see Section 7.4.3.
<u>Ports, Harbours and Shipping Policy 3</u> Proposals that may have a significant impact upon current activity and future opportunity for expansion of port and harbour activities must demonstrate consideration of the National Ports Policy, the National Planning Framework, and relevant provisions related to the Trans-European Transport Network (TEN-T).	
<u>Ports, Harbours and Shipping Policy 4</u> Proposals within ports limits, beside or in the vicinity of ports, and / or that impact upon the main routes of significance to a port, must demonstrate within applications that they have: • been informed by consultation at pre-application stage or earlier with the relevant port authority; • have carried out a navigational risk assessment including an analysis of maritime traffic in the area; and • have consulted Department of Transport, MSO and Commissioners of Irish Lights. Applicants must continue to engage parties identified in pre-application processes as appropriate during the decision-making process.	The ABWP Phase I decommissioning EIA scoping presentation ((hereafter referred to as EIA Scoping Presentation) was issued to prescribed bodies in March 2026 (see Volume 3, Appendix 1.1), including the Department of Transport (DoT) and Marine Survey Office (MSO), Commissioners of Irish Lights (CIL) and Irish Coast Guard (IRCG) (among others). The key comments raised specific to this chapter and to the NRA are presented in Table 7.2. An NRA has been prepared in support of this Chapter (see Volume 3, Appendix 7.1).

Summary of relevant NMPF provisions	How and where considered in the EIAR
19 Safety at Sea	
<u>Safety at Sea Policy 1</u> Proposals for installation, operation, and decommissioning of Offshore Wind Farms must demonstrate how they will: - Minimise navigational risk between commercial vessels arising from an increase in the density of vessels in maritime space as a result of wind farm layout; and - Allow for recreational vessels within the Offshore Wind Farm (including consideration of turbine height) or redirect recreational vessels, minimising navigational risk arising between recreational and commercial vessels.	Potential impacts on commercial and recreational vessels are assessed in Section 7.6. An NRA has been prepared in support of this Chapter (see Volume 3, Appendix 7.1).
<u>Safety at Sea Policy 2</u> Proposals for infrastructure that have the potential to significantly reduce under-keel clearance must demonstrate how they will, in order of preference: - avoid, - minimise, - mitigate adverse impacts, or - if it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding	The Proposed Works Offshore will not reduce existing under-keel clearance, and therefore this policy provision is not considered relevant to the Proposed Works Offshore.
<u>Safety at Sea Policy 3</u> All proposals for temporary or permanent fixed infrastructure in the maritime area must ensure navigational marking in accordance with appropriate international standards and ensure inclusion in relevant charts where applicable.	As described in the Outline Lighting and Marking Plan (LMP) (see Volume 3, Appendix 3.7), lighting and marking, will be implemented in line with CIL requirements and applicable standards.
<u>Safety at Sea Policy 4</u> Establishing, changing or disestablishing Aids to Navigation (AtoN) must be sanctioned, in advance of works, by the Commissioners of Irish Lights.	As described in the Outline LMP (see Volume 3, Appendix 3.7), proposed AtoN will be implemented in line with CIL requirements and applicable standards.
<u>Safety at Sea Policy 5</u> Proposals must identify their potential impact, if any, on Maritime Emergency Response (Search and Rescue (SAR), Maritime Casualty and Pollution Response) operations. Where a proposal may have a significant impact on these operations it must demonstrate how it will, in order of preference: - avoid, - minimise, - mitigate adverse impacts, or - if it is not possible to mitigate significant adverse impacts, proposals should set out the reasons for proceeding, supported by parties responsible for maritime SAR	Potential impacts associated with SAR operations were scoped out (see Section 7.4.3).

Local Policy Context

- 7.2.3.2 The Proposed Works Offshore lie within the jurisdiction of Wicklow County Council. There is no local policy of specific relevance to shipping and navigation and accordingly, local policy is not considered further.

7.3 Consultation and Engagement

- 7.3.1.1 The EIA Scoping Presentation was issued to prescribed bodies in March 2026 (see **Volume 2, Appendix 1.1: EIA Scoping Presentation**).
- 7.3.1.2 **Table 7.2** sets out the key comments raised specific to this chapter and to the NRA for Proposed Works Offshore in response to the EIA Scoping Presentation and/or at meetings with relevant stakeholders held during the preparation of this EIAR, with details of how these

comments have been addressed, see **Stakeholder Consultation and Engagement Report** prepared in support of the application for planning permission.

Table 7.2: Summary of consultation and engagement feedback relevant to shipping and navigation

Comment	How and where considered in the EIAR
Commissioners of Irish Lights (CIL), online meeting held on 11th March 2026	
CIL is not the competent authority for approving / enforcing work areas, and recommends liaising with the IRCG for confirmation.	Noted, a separate meeting was held with IRCG on the 13 th March 2026.
Depending on the duration of Proposed Works Offshore, the Local Lighthouse Authority (LLA), in this case Arklow Energy as the nominated LLA under statute, would need to notify CIL in relation to lighting plans.	Noted, this will be captured in the Detailed Offshore Decommissioning Environmental Management Plan (DEMP), see outline version in Volume 3, Appendix 3.4: Outline Offshore DEMP .
MSO marine notices are generally required for projects in addition to very high frequency (VHF) notices related to radio use. This typically takes 28 days to process, as set out on DoT website.	Noted, this will be captured in the Detailed Offshore DEMP, see outline version in Volume 3, Appendix 3.4 .
The LMP should clarify that no marking post-decommissioning is being proposed.	This has been clarified in Volume 3, Appendix 3.7: Outline Lighting and Marking Plan .
The LMP should include reference to the two synthetic Automatic Identification System (AIS) on wind turbine generators (WTG) at T7 and T1, and consider whether these can be maintained until the end of Proposed Works Offshore, notifying CIL of their deactivation.	Reference to AIS at T1 and T7 has been made in Volume 3, Appendix 3.7: Outline Lighting and Marking Plan , which proposes to maintain existing AIS at T1 and T7 until the end of Proposed Works Offshore. Should this not be possible, agreement with aviation authorities and CIL will be sought on whether AIS needs to be transferred to other WTGs.
Deployment of buoys needs a Maritime Usage Licence (MUL) from the Maritime Area Regulatory Authority (MARA) or statutory consent from CIL. Regarding the latter, CIL would need a final version of the LMP, including final coordinates of proposed buoys and application through the CIL portal by Arklow Energy as LLA (as this responsibility cannot be transferred to the appointed contractor). Application should be sought at least six months before deployment of the buoys.	Noted, this will be captured in the Detailed Offshore DEMP, see outline version in Volume 3, Appendix 3.4 .
No comments on the EIA Scoping Presentation. Please refer to the DoT for discussion and agreement on the proposed scope of the Navigational Risk Assessment (NRA) and Shipping and Navigation EIAR Chapter.	Noted.
Irish Coast Guard (IRCG), online meeting held on 13th March 2026	
IRCG will mainly need to be engaged prior to the commencement of Proposed Works Offshore, with responsibility for reviewing specific plans related to emergency response, oil contingency, etc.	Noted, this will be captured in the Detailed Offshore DEMP, see outline version in Volume 3, Appendix 3.4 .
No comments on the EIA Scoping Presentation. Please refer to the DoT for discussion and agreement on the proposed scope of the Navigational Risk Assessment (NRA) and Shipping and Navigation EIAR Chapter.	Noted.
Marine Survey Office (MSO), Department of Transport (DoT), meeting held on 26th March 2026	
No objections on marking proposed but restriction of navigation for safety reasons cannot be enforced (as there are no legislative / policing means that can be implemented for the Proposed Works Offshore). The working area can be notified and advised to sea users and mariners.	Noted.
The MSO strongly recommends that close communication and reporting between contractors, IRCG and MSO should be maintained throughout the Proposed Works Offshore.	Noted, this will be captured in the Detailed Offshore DEMP, see outline version in Volume 3, Appendix 3.4 .

Comment	How and where considered in the EIAR
If proposed, stand by / support vessels could be used to inform/ request other vessels not to enter the work area to facilitate safe passage.	Noted, this will be captured in the Detailed Offshore DEMP, see outline version in Volume 3, Appendix 3.4.
Before vessels are chartered, it is recommended to engage with the MSO to confirm that the target vessels can operate in Ireland. Vessels may need specific licences, certifications, etc before they can operate in Ireland.	Noted, this will be captured in the Detailed Offshore DEMP, see outline version in Volume 3, Appendix 3.4.
MSO strongly recommends following recent guidance issued by the DoT when preparing the NRA.	Noted. This has been considered in the preparation of Volume 3, Appendix 7.1: Navigational Risk Assessment.
MSO confirmed that baseline data collected as part of ABWP Phase II, which dates 2022 / 2023, is considered appropriate to inform the NRA / EIAR for Proposed Works Offshore, this should be properly justified.	Noted. Section 1.3 of Volume 3, Appendix 7.1: Navigational Risk Assessment justifies the use of baseline information presented in ABWP Phase II NRA. This is summarised in Paragraph 7.4.3.1.
MSO confirmed that the NRA/ EIAR should focus on realistic worst-case scenarios as opposed to trying to model all potential scenarios.	Noted. Volume 2, Chapter 7: Shipping and Navigation of the EIAR and Volume 3, Appendix 7.1: Navigational Risk Assessment focus on realistic worst-case scenarios.
Should any infrastructure be left <i>in situ</i> , this will need to be charted. Bathymetry undertaken post-decommissioning will need to be shared with the MSO / United Kingdom Hydrographic Office (UKHO) (responsible for navigational charting in Ireland). Charts will not need to specify monopile (MP) cutting depths relative to Low Astronomical Tide (LAT).	Noted, this is covered in the Outline LMP (Volume 3, Appendix 3.7) and will be captured in the Detailed Offshore DEMP, see outline version in Volume 3, Appendix 3.4.
An Coimisiún Pleanála (ACP), Inspector's Report (ACP 321635-25) – Matters arising, 7th May 2026	
Health and safety/navigational considerations as a result of leaving the monopiles partially in situ and their potential risk of exposure.	Volume 2, Chapter 7 includes the assessment of potential allision (vessel-to-structure) risks, including in relation to residual MPs with potential to become exposed post-decommissioning, see Section 7.7.
Impact on commercial fisheries, shipping and navigation.	Volume 2, Chapter 6: Commercial Fisheries and Aquaculture includes the assessment of potential impacts on commercial fisheries and aquaculture. Volume 2, Chapter 7 includes the assessment of potential impacts on shipping and navigation.

7.4 Impact Assessment Methodology

7.4.1 Overview

- 7.4.1.1 **Volume 2, Chapter 1: Introduction** sets out the overarching approach that has been used in this EIAR. This section describes the assessment scope, baseline characterisation method and criteria used to determine the significance of any potential impacts as part of the shipping and navigation assessment.

7.4.2 Relevant Guidance

- 7.4.2.1 This chapter has been prepared in accordance with the following guidance documents:

- The Maritime Navigation Safety & Emergency Response Guidance Documents for Offshore Renewable Energy Installations (OREI) (DoT, 2025a);
- Offshore Renewable Energy Installations (OREI): Guidance and Operational Considerations for SAR and Emergency Response. Standard Operating Procedure 07-2025 (DoT, 2025b);
- Revised Guidelines for Formal Safety Assessment (FSA) for Use in the IMO Rule making Process (IMO, 2018);
- MGN 654 (Merchant and Fishing) Safety of Navigation: Offshore Renewable Energy Installations (OREIs) – Guidance on United Kingdom (UK) Navigational Practice, Safety and Emergency Response (Maritime & Coastguard Agency (MCA), 2021) including its annexes;

- Evidence Review Note: Shipping and Navigation, Offshore Wind Evidence Knowledge Hub ((OWEKH), 2026).

7.4.3 Assessment Scope

Technical Scope

- 7.4.3.1 The approach to assessment was presented in the EIA Scoping presentation (see **Volume 3, Appendix 1.1**) and has been refined during the preparation of this EIAR (see **Volume 2, Chapter 1**). Whilst the approach to the impact assessment for shipping and navigation considers relevant guidance outlined in **Section 7.4.2**, namely the DoT guidance, which refers to MGN 654 and the IMO FSA approach (IMO, 2018), the overall approach and technical scope of this chapter and that covered in the NRA (**Volume 3, Appendix 7.1**), has been adapted to reflect the nature and risk profile of the Proposed Works Offshore, i.e. decommissioning of an existing offshore wind farm and:
- Excludes the consideration of potential impact pathways that are not considered relevant, see **Table 7.4** below, mainly due to the fact that existing navigation patterns already avoid the Sub Lease Area, and the commitment to implement standard controls and procedures;
 - Builds on the NRA (Anatec, 2026) and Shipping and Navigation EIAR Chapter (SSE Renewables, 2026) prepared for the proposed ABWP Phase II in relation to ship traffic analysis, emergency response and search and rescue, and consideration of ship traffic routes and relevant baseline scenario frequencies estimated; and
 - Uses the NRA (Anatec, 2026) and Shipping and Navigation EIAR Chapter (SSE Renewables, 2026) prepared for the proposed ABWP Phase II (Anatec, 2026) as the primary baseline source, which is considered appropriate in both spatial (as it covers the Offshore Site and therefore shipping and navigation features of relevance to the Proposed Works Offshore, including wider regional context) and temporal terms (as it combines relatively recent AIS and non-AIS data from 2023 that is considered unlikely to have significantly changed over the last three years). The use of baseline data from the ABWP Phase II EIAR was also agreed with the MSO (see **Section 7.3**).
- 7.4.3.2 **Table 7.3** summarises the impacts considered as part of the assessment, while a summary of the effects scoped out of the assessment is presented in **Table 7.4**. Potential impacts to commercial fishing activities are separately covered in **Volume 2, Chapter 6: Commercial Fisheries and Aquaculture**.

Table 7.3: Impacts scoped into the shipping and navigation assessment

Impact	Potential effects scoped into the assessment
Increased collision (vessel-to-vessel) risk	The temporary increase in vessel activity during Proposed Works Offshore could result in an increased number of vessel-to-vessel encounters and associated collision risk. The following are distinguished: • Collisions in transit, between third party vessels and decommissioning vessels outside the work area(s); • Powered collisions with decommissioning vessels, caused by human or technical error in third-party vessels; and • Drifting collisions with decommissioning vessels, caused by third-party vessel blackout and drifting into the work area.
Increased allision (vessel-to-structure) risk	The phased programme of Proposed Works Offshore could result in the temporary presence of structures above sea level within the Sub Lease Area. In addition, the partial removal of monopiles (MPs) will maintain the presence of structures below the seabed post-decommissioning, which needs to consider risk of vessel-to-structure allision. The following are distinguished: • Powered allision, caused by human or technical error in third-party vessels; and • Drifting allision, caused by third-party vessel blackout and drifting into structures.

Table 7.4: Impacts scoped out of shipping and navigation assessment

Impact	Potential effects scoped out of the assessment
Cable interaction risk	As described on Volume 2, Chapter 3: Proposed Works Description , both offshore export / inter-array cables will be removed as part of the Proposed Works Offshore, and so, existing cable interaction risks would be eliminated. Accordingly, this potential impact has been scoped out.
Displacement of vessel traffic	All larger commercial vessels actively avoid the Sub Lease Area as a result of the shallow depths of Arklow Bank and associated grounding risks. Based on available vessel traffic data, instances of vessels passing over the Arklow Bank are very rare (mainly small recreational vessels on a very infrequent basis). On the basis of limited vessel movements over Arklow Bank and the use of localised and temporary work areas around the Sub Lease Area and along the offshore export cable (see additional information on proposed work areas in Volume 2, Chapter 3: Proposed Works Description and Appendix 3.7: Outline Lighting and Marking Plan), and the management of any potential interactions by adherence to COLREGS, there is limited potential for significant impacts in regard to the displacement of vessel traffic. In addition, details of the Proposed Works Offshore will be circulated in advance using Marine Notices which will be published and available on the Department of Transport's webpage. Therefore, the displacement of vessel traffic has been scoped out of assessment in the EIAR.
Port access restrictions	The Proposed Works Offshore will generate a number of vessel trips to and from various European and Irish ports which will be confirmed once the Decommissioning Contractor(s) has been appointed, however the number of trips associated with the Proposed Works Offshore is relatively limited. As described above, the majority of vessels actively avoid Arklow Bank due to limited water depth and associated grounding risk and as such any established routing into ports will not be affected by the Proposed Works Offshore. Additionally, the Detailed Offshore DEMP (Volume 3, Appendix 3.4) will include the advance issuing of Marine Notices, as published on the Department of Transport's website and circulated to relevant port and harbour authorities, will ensure that authorities and other vessels are aware of the activity of vessels associated with the Proposed Works Offshore. It is therefore considered that any potential impacts for restriction to port access are unlikely to become significant and therefore this heading is scoped out of the EIAR.
Diminished emergency response capability	The temporary increase in vessel activity during Proposed Works Offshore may temporarily increase the likelihood of an incident requiring an emergency response and consequently could diminish emergency response capability in the region. However, local emergency response stakeholders indicated that no impact on emergency response capability would be anticipated as part of ABWP Phase II development (SPL, 2024). Furthermore, the baseline incident rate is considered low with an average of 40 to 41 incidents per year reported in by the ABWP Phase II development, with only three within its Array Area. On this basis, it is considered unlikely that the Proposed Works Offshore would significantly impact the local emergency response capability and therefore this heading is scoped out of the EIAR.

Spatial Scope

- 7.4.3.3 The Shipping and Navigation Study Area has been defined to align with the ABWP Phase II Shipping and Navigation Study Area (SSE Renewables, 2026), extending less than 20 km from the Offshore Site boundary, considered to encompass shipping and navigation features of relevance to the Proposed Works Offshore, including wider regional context, and represent the Zone of Influence (ZoI) of Proposed Works Offshore alone.
- 7.4.3.4 The Shipping and Navigation Study Area, shown in the context of the proposed ABWP Phase II, is shown in **Figure 7.1**.

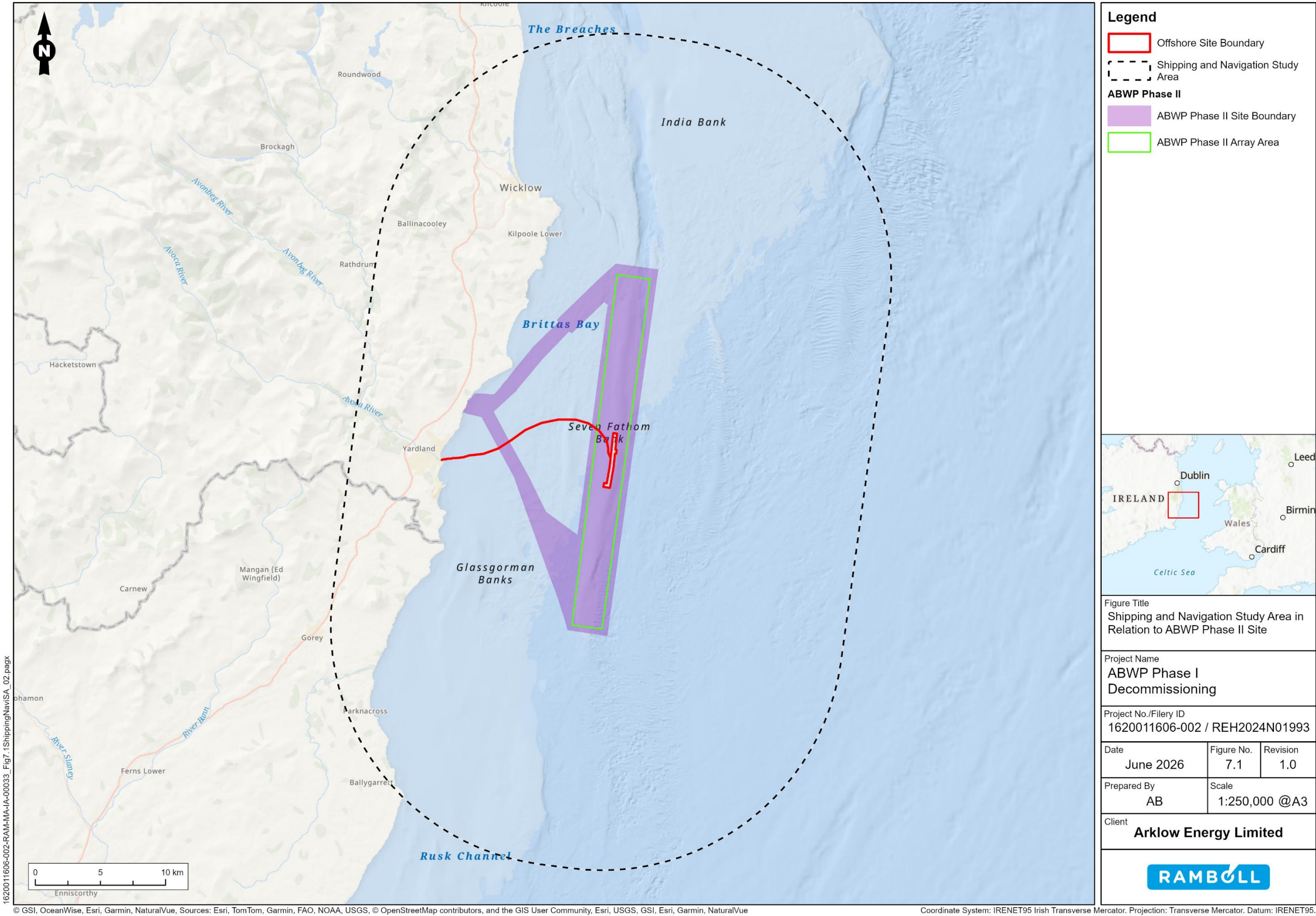


Figure 7.1: Shipping and Navigation Study Area in relation to proposed ABWP Phase II

Temporal Scope

- 7.4.3.5 The assessment has considered impacts arising during Proposed Works Offshore which would be temporary and short-term (up to weeks/months) in nature, as well as any long-term residual impacts that may continue / arise following the completion of Proposed Works Offshore.

7.4.4 Baseline Characterisation Method

Desk Study

- 7.4.4.1 Information on the baseline environment within the Shipping and Navigation Study Area was compiled through a detailed desktop review of existing datasets and technical studies included in ABWP Phase II EIAR (SSE Renewables, 2026) to inform both the NRA (**Volume 3, Appendix 7.1**) and this chapter, which include:

- Long-term Automatic Identification System (AIS) data, from Anatec in-house data, 2022 (ABWP Phase II EIAR assessment undertaken in 2023);
- Marine Casualty Investigation Board (MCIB) Incident Data MCIB 1992-2022 (ABWP Phase II EIAR assessment undertaken in 2023);
- Royal National Lifeboat Institution (RNLI) Incident Data RNLI 2013-2022 (ABWP Phase II EIAR assessment undertaken in 2023);
- UK Admiralty Charts 1410, 1411, and 1415 (United Kingdom Hydrographic Office (UKHO), 2023);
- Admiralty Sailing Directions Irish Coast Pilot NP40 (United Kingdom Hydrographic Office (UKHO), 2019);
- Dedicated survey vessel July 2023 – August 2023. A summer vessel traffic survey was undertaken between 7 July 2023 and 14 August 2023 using a dedicated survey vessel operating on-site to inform the ABWP Phase II EIAR. The survey comprised the collection of AIS data, radar data and visual observations, providing information on vessel movements and navigational activity within the Shipping and Navigation Study Area during the summer period;
- Dedicated survey vessel September 2022. A summer vessel traffic survey was undertaken between 8 September 2022 and 26 September 2022 using a dedicated survey vessel operating on-site to inform the ABWP Phase II EIAR. The survey comprised the collection of AIS data, radar data and visual observations, providing information on vessel movements and navigational activity within the Shipping and Navigation Study Area during the summer period; and
- On-site survey vessel July 2019: An earlier summer vessel traffic survey was undertaken between 15 July 2019 and 28 July 2019 using an on-site survey vessel to inform the ABWP Phase II EIAR. The survey collected AIS data, radar data and visual observations to characterise vessel movements and navigational patterns within the Shipping and Navigation Study Area during the summer period.

- 7.4.4.2 Although Irish guidance recommends the use of vessel traffic data not older than 24 months to assess potential shipping and navigation risks associated with new offshore wind developments, given the location of the Offshore Site, with most offshore infrastructure located within a shallow sand bank where vessel traffic is limited due to navigational constraints and charted features, baseline conditions captured in the ABWP Phase II EIAR (SSE Renewables, 2026) are considered to remain representative of current conditions, and no updated AIS data has been collated or analysed. As noted in **Section 7.3** and **paragraph 7.4.3.1**, the use of baseline data from the ABWP Phase II EIAR is considered appropriate for use in this assessment in both spatial and temporal terms, as agreed with the MSO.

Site-specific Surveys

- 7.4.4.3 As indicated above, a number of site-specific surveys were undertaken in 2023 to obtain non-AIS data and inform ABWP Phase II EIAR (SSE Renewables, 2026), covering the Shipping and Navigation Study Area, and therefore, as agreed with the MSO (see **Section 7.3**), ABWP

Phase II survey data has been used to inform this EIAR and no site-specific surveys have been undertaken specifically for the Proposed Works Offshore and this EIAR.

Baseline Data Limitations and Assumptions

7.4.4.4 Data limitations and assumptions are summarised below based on those identified in the ABWP Phase II EIAR (SSE Renewables, 2026):

- As noted above, it is assumed that desk-based and survey data collated and analysed as part of ABWP Phase II EIAR (SSE Renewables, 2026) are representative of baseline conditions within the Shipping and Navigation Study Area, and that these are accurate;
- It is assumed that vessels under an obligation to broadcast information via AIS have done so across each vessel traffic dataset, and details reviewed in ABWP Phase II EIAR (SSE Renewables, 2026) are accurate;
- It is noted that MCIB incident data is limited to incidents that have been subject to a complete investigation and that RNLI incident data is limited to incidents that required RNLI mobilisation. However, it is assumed that any notable incidents of relevance to the Offshore Site have been captured by MCIB and RNLI incident data reviewed in ABWP Phase II EIAR (SSE Renewables, 2026) and that given the overall low risk profile of the Offshore Site, this review is representative of incidents that may have occurred since 2022;
- It is noted that UKHO Admiralty Charts are updated periodically and therefore the information shown may not reflect the real time features within the Shipping and Navigation Study Area. However, it is assumed that UKHO Admiralty Charts reviewed in ABWP Phase II EIAR (SSE Renewables, 2026) are representative of baseline conditions within the Shipping and Navigation Study Area, and that these are accurate.

7.4.5 Assessment Criteria

7.4.5.1 In line with relevant guidance (see **Section 7.4.2**), the IMO FSA approach (IMO, 2018) has been utilised in the NRA (**Volume 3, Appendix 7.1**) and this chapter to assess hazards and potential effects relevant to shipping and navigation.

7.4.5.2 The FSA approach differs to the EIA methodology described in **Volume 2, Chapter 1**, as it focuses on risk control, and uses a risk matrix to assess each potential effect in relation to the frequency of occurrence of a given hazard, and the severity of impacts should the hazard occur, and to establish the overall significance of potential effects.

Frequency of Occurrence

7.4.5.3 The frequency of occurrence represents the likelihood of occurrence, and has been assessed using the frequency ranking scale presented in **Table 7.5**, where frequency is described using qualitative categories that range from negligible to frequent, and reflect the estimated rate at which an event may occur over time, defined using quantitative annual frequencies that use order-of-magnitude thresholds.

Table 7.5: Frequency of occurrence ranking definitions

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

Source: Anatec Limited, 2026

Severity of Consequence

7.4.5.4 The severity of consequence is based upon a number of factors, including consequences to people, property, environment and business, and depends on a number of factors, including the size, type, speed and course of the vessels involved. However, the NRA (see **Volume 3, Appendix 7.1**) assessed collision risk on an aggregated basis and did not differentiate collision frequency or consequence by vessel type.

7.4.5.5 The definitions of the severity of consequence rankings are presented in **Table 7.6**.

Table 7.6: Definition of terms relating to the severity of consequence

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

Source: Anatec Limited, 2026

Significance of Effect

7.4.5.6 The significance of the effect upon shipping and navigation is determined by correlating the frequency of occurrence and the severity of consequence. The method employed for this assessment is presented in **Table 7.7**.

Table 7.7: Matrix used for the assessment of the significance of the effect in relation to shipping and navigation

Frequency of Occurrence	Severity of consequence				
	Major	Serious	Moderate	Minor	Negligible
Frequent	Unacceptable	Unacceptable	Unacceptable	Tolerable	Tolerable
Reasonably probable	Unacceptable	Unacceptable	Tolerable	Tolerable	Broadly acceptable
Remote	Unacceptable	Tolerable	Tolerable	Broadly acceptable	Broadly acceptable
Extremely unlikely	Tolerable	Tolerable	Broadly acceptable	Broadly acceptable	Broadly acceptable
Negligible	Tolerable	Broadly acceptable	Broadly acceptable	Broadly acceptable	Broadly acceptable

Source: Adapted from Anatec Limited, 2026

7.4.5.7 Following the classification of an effect using this methodology, a clear statement will then be made as to whether that effect is significant or not significant. **Table 7.8**.

Table 7.8: Significance definitions relevant to shipping and navigation

Significance classification	Definition	Significant effect
Unacceptable	The risk level cannot be justified and must be removed or reduced via additional mitigation measures in order to be deemed acceptable.	Significant
Tolerable	Additional mitigation measures, that are cost beneficial, may be required to ensure the risk is As Low As Reasonably Practicable (ALARP). If ALARP, the risk level is considered to be tolerable with mitigation and therefore acceptable.	Not significant (if assessed to be ALARP)
Broadly acceptable	The risk level is considered reasonable with no additional mitigation required.	Not significant

Source: Adapted from SSE Renewables, 2026

7.4.5.8 The NRA (**Volume 3, Appendix 7.1**) uses FSA terminology as required under relevant guidance (i.e. DoT (2025a) which refers to MGN 654 (MCA, 2021)). Accordingly, relationship between EIAR and NRA terminology is outlined in **Table 7.9**. This chapter adopts EIAR terms within the framework of the FSA approach, as described above.

Table 7.9: Terms used in this chapter in relation to terms used in the NRA.

EIAR Term	NRA Term	Definition
Impact	Hazard	A potential to threaten human life, health, property or the environment.
Significance of effect	Significance of risk	The combination of the frequency of occurrence and the severity of consequence of an impact which results in a statement of significance.
Receptor	User	The component of the environment or user group affected by the impact.

Source: Adapted from OWEKH, 2026.

7.4.5.9 The assessment distinguishes between:

- Most likely scenario, based on the frequencies of occurrence obtained through modelling in **Volume 3, Appendix 7.1**, which are considered to represent the most often experienced minor glancing scenarios involving relevant vessels. Consequences are then assessed considering the severity of consequence ranking outlined in **Table 7.6** and applying professional judgement; and
- Worst-case scenario, which relates to scenarios with more severe consequences. In this scenario, the consequence rating obtained under the “most likely scenario” is revisited to capture the applicable worst-case consequence, and the frequency is adjusted using professional judgement to reflect the lower probability of such worst-case consequences to occur.

7.4.6 Key Parameters for Assessment

Maximum Design Scenario

7.4.6.1 The maximum design scenario (MDS) for each impact identified in **Section 7.4.3** has been selected as that having the potential to result in the greatest effect on an identified receptor or receptor group. The MDS presented in **Table 7.10** has been selected from the parameters provided in **Volume 2, Chapter 3** and methodology outlined in **Volume 2, Chapter 1**.

Table 7.10: MDS relevant for the assessment of potential impacts on shipping and navigation

Impact	MDS	Explanation
Increased collision (vessel-to-vessel encounters) risk	It is assumed that the main decommissioning vessels will be mobilised from a European port, assuming a transit duration of up to 15 days. ABWP Phase I decommissioned components will be taken to an available Irish port (Rosslare, Waterford, Dublin and Greenore are potential ports being considered at this stage). The following maximum vessel activity is defined on a per-activity basis: • Pre-decommissioning surveys: up to 20 vessel trips • Pre-dredging surveys: up to 48 vessel trips • Dredging (if required): up to 64 vessel trips • WTG and met mast removal: up to 12 vessel trips • TP/MP removal: up to 10 vessel trips • Scour protection removal: up to 80 vessel trips • Inter-array cable removal: up to 16 vessel trips • Offshore export cable removal: up to 19 vessel trips • Post-decommissioning surveys: up to 20 vessel trips Multiple vessel types may operate concurrently, including a Jack-Up Barge (JUB), tugboats, barges, multicat vessels and survey vessels. Proposed Works Offshore will be undertaken between May and October, 24 hours/day, 7 days/week. A buoyed work area will be established around the Sub Lease Area, with access discouraged for vessels not engaged in the Proposed Works Offshore. The work area has an extent of approximately 1,605 m (width) by 4,817 m (length). Where gaps between campaigns may exceed one year, the work area will be removed, allowing access to resume in the interim. A moving work area (500 m) will be established around the decommissioning vessel responsible for the offshore export cable removal. Removal of inter-array cable of approximately 7.4 km length. Removal of offshore export cable of approximately 15.6 km length. Removal of scour protection at up to eight foundation locations. Localised dredging (if required based on bathymetric conditions to allow decommissioning vessel access).	The assessment considers different "phases" (referred to as scenarios in Volume 3, Appendix 7.1: NRA) that represent the staging of Proposed Works Offshore activities across multiple years. This reflects a realistic worst-case for shipping and navigation receptors, where different levels of vessel activity leading to different levels of collision risk and associated potential impacts.

Impact	MDS	Explanation
Increased allision (vessel-to-structure allision) risk	The Proposed Works Offshore may be undertaken within a single continuous campaign or staged across multiple campaigns. For the purposes of this MDS, it is assumed that Proposed Works Offshore may be undertaken over a temporary period, with activities being intermittent and spatially progressive. Two main offshore decommissioning campaigns may be undertaken: • Removal of seven Wind Turbine Generators (WTGs) and one meteorological (met) mast, undertaken across a period of approximately 10 weeks; • Removal of seven Transition Pieces (TPs) / Monopile (MP) foundations, scour protection removal and inter-array and offshore export cable removal, and post-decommissioning surveys. Undertaken across a period of approximately 16 weeks. There is potential for programme gaps between the two main offshore decommissioning campaigns above, which would temporarily leave TPs and MPs without WTGs. MPs will be cut below seabed level to depths that minimise post-decommissioning exposure of residual monopiles, ranging between -6.59 m and -10.55 m Low Astronomical Tide (LAT).	The assessment considers different phases that represent the staging of Proposed Works Offshore activities across multiple years, and considers most likely and worst-case scenarios for shipping and navigation receptors, where different scenarios introduce different levels of vessel-to-structure allision risk and associated potential impacts, i.e.: • First campaign, which transitions from a full WTG to a TP and MP without WTG; • Transitional, without WTG; • Second campaign, which transitions from a TP / MP above seabed level to a MP below seabed level; and • Post-decommissioning, which represents the presence of MPs below seabed level.

Embedded Mitigation

- 7.4.6.2 As set out in **Volume 2, Chapter 1** several embedded mitigation measures have been adopted as part of the Proposed Works Offshore to reduce the potential for impacts on shipping and navigation.
- 7.4.6.3 Embedded mitigation includes the following measures as identified in the Institute of Environmental Management and Assessment (Institute of Sustainability and Environmental Professionals (ISEP) (formerly IEMA)) Impact Assessment Guidelines (IEMA, 2024):
- “measures included as part of the project design” (also referred to as primary mitigation in IEMA, 2015); and
 - “actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects” (also referred to as tertiary mitigation in IEMA, 2015).
- 7.4.6.4 Embedded mitigation measures have been taken into account as part of the initial assessment presented in **Section 7.4.7** (i.e., the initial determination of impact magnitude and significance of effects assumes implementation of these measures). This ensures that the measures that the Arklow Energy is committed to are considered in the assessment of effects. This approach is in line with EPA guidance, which states that ‘in an EIAR, it may be useful to describe avoidance measures that have been integrated into the project proposal’ (EPA, 2022).
- 7.4.6.5 Where an assessment identifies likely significant adverse effects, additional mitigation measures may be applied. These are “actions that will require further activity to achieve the anticipated outcome”, also referred to as secondary mitigation measures in IEMA (2024).
- 7.4.6.6 The embedded mitigation measures relevant to shipping and navigation are outlined in **Table 7.11** and will be implemented in accordance with the requirements of the planning permission issued under Section 291 of the Planning and Development Act 2000, as amended.

Table 7.11: Embedded mitigation relevant to shipping and navigation implemented as part of the Proposed Works.

Embedded mitigation reference	Description
Development and adherence to the Detailed Offshore Decommissioning Environmental Management Plan (DEMP)	Volume 3, Appendix 3.4: Outline Offshore DEMP presents standard industry practice and legal requirements for environmental management and mitigation that will be implemented as part of the Proposed Works Offshore. The outline Offshore DEMP also summarises any required additional mitigation identified in relevant EIAR chapters, serving as a framework for the future decommissioning contractor(s) to develop in detail before Proposed Works Offshore commence.
Development and adherence to the Detailed Vessel Management Plan (VMP)	Volume 3, Appendix 3.5: Outline VMP defines best-practice vessel management measures, including transit routes, speed restrictions, timing of activities, pollution prevention, and crew environmental awareness, to minimise disturbance, collision risk, and ecological harm.
Development and adherence to the Detailed Lighting and Marking Plan (LMP)	Volume 3, Appendix 3.7: Outline LMP identifies required lighting and marking throughout the Proposed Works Offshore and beyond in line with relevant standards and legal requirements.

7.4.7 Assumptions and Limitations of the Assessment

- 7.4.7.1 The assessment relies on the findings of the NRA (**Volume 3, Appendix 7.1**). Please refer to the NRA for associated assumptions and limitations.
- 7.4.7.2 No numerical modelling of vessel movements or future traffic patterns has been undertaken for this chapter. The assessment therefore assumes that navigation routes, port approaches and traffic densities analysed in ABWP Phase II EIAR (SSE Renewables, 2026) will remain broadly unchanged during Proposed Works Offshore, aside from temporary and localised effects

associated with project vessel activity, to be addressed through appropriate navigational controls and management measures set out in the Outline Offshore DEMP (**Volume 3, Appendix 3.4**).

7.5 Baseline Characterisation

7.5.1 Overview

- 7.5.1.1 This section describes the existing baseline characteristics as well as the future baseline relevant to shipping and navigation. A detailed characterisation of the baseline is presented in **Volume 3, Appendix 7.1: NRA**, with a summary of the key findings provided in this section.

7.5.2 Navigational Features

- 7.5.2.1 Navigational features within the Shipping and Navigation Study Area identified in the ABWP Phase II EIAR (SSE Renewables, 2026) include the following, illustrated in the NRA (see **Volume 3, Appendix 7.1**):
- There are no IMO adopted routeing measures within the Shipping and Navigation Study Area, with the closest Traffic Separation Schemes (TSS) being:
 - Off Tuskar Rock TSS, 26 nm to the south;
 - Off Smalls TSS, 49 nm to the south; and
 - Off Skerries TSS, 46 nm northeast;
 - Vessels align with the appropriate lanes of these TSS, and the resultant routes can be seen within the vessel traffic survey data (see **Volume 3, Appendix 7.1**);
 - There are shallow sand banks off the coast, including the Arklow Bank within which the Sub Lease Area is located. Given the grounding hazard associated with sand banks, the vast majority of vessels avoid these. It should be noted that the northern and southern extents of the Arklow Bank sand bank are marked with cardinal buoys as follows:
 - North cardinal buoy with AIS marking the northern bank extent; and
 - South cardinal buoy with AIS and Racon marking the southern bank extent;
 - Key ports located within the Shipping and Navigation Study Area include Arklow to the west, and Wicklow to the northwest. The Port of Dublin, although located outside the Shipping and Navigation Study Area, further north, represents the origin / destination of a notable proportion of vessels present (i.e. based on an assessment of the 2023 and 2022 vessel traffic survey data, approximately 25% of vessels indicated they were bound to Dublin via their AIS transmissions); and
 - There is a pilot boarding station off Arklow.

7.5.3 Analysis of Marine Traffic

- 7.5.3.1 This section characterises the marine traffic within the Shipping and Navigation Study Area as reviewed in **Volume 3, Appendix 7.1**:
- There are moderate activity levels around the Arklow Bank sand bank, with a clear spatial separation between offshore commercial traffic and inshore local traffic, with an average of approximately 36-37 vessels per day recorded within the Shipping and Navigation Study Area during summer periods;
 - The majority of commercial traffic is concentrated offshore of the Offshore site, while fishing and recreational vessels are predominantly located inshore;
 - The composition of traffic is diverse. During the 2023 survey period, cargo vessels constituted the largest share (approximately 40%), followed by recreational vessels (31%), fishing vessels (10%), tankers (7%), and passenger vessels (5%). Other vessel categories, including tugs, military vessels, and offshore support vessels, were present in relatively small numbers;
 - Vessel routeing is influenced by external factors such as IMO routeing measures and port connectivity, which reinforce established traffic corridors and further reduce randomness in vessel movements. A total of 12 main commercial routes have been identified within the Shipping and Navigation Study Area based on long-term AIS data, which reflect established

transit corridors linking Irish ports such as Dublin, Drogheda, and Belfast with wider European destinations and TSS systems. It should be noted that:

- The most significant route (Route 1) carries approximately 8-9 vessels per day and connects Dublin with the TSS Off Smalls, with traffic dominated by cargo vessels and RoPax ferries operating between Dublin and Cherbourg;
- Other routes show lower traffic densities but similar directional patterns, primarily oriented north-south or northwest-southeast;
- Across all routes, commercial vessels consistently remain offshore of the Arklow Bank sand bank, reflecting both safety considerations and established navigation practices;
- There is a clear spatial pattern in vessel draught / speed distribution across the Shipping and Navigation Study Area, which underlines a separation between larger, deeper-draught and faster (> 9 knots) traffic offshore and smaller, shallow-draught and slower (< 9 knots) traffic in nearshore waters;
- Overall, vessel tracks demonstrate a consistent avoidance of the Arklow Bank sand bank itself, with minimal intersections through the Offshore site. This behaviour is corroborated by long-term AIS data, which shows that traffic density is highest along routes offshore of the sand bank and in nearshore corridors, rather than across the sand bank;

7.5.4 Emergency Response and Search and Rescue

7.5.4.1 This section characterises the Emergency Response and Search and Rescue within the Shipping and Navigation Study Area as reviewed in **Volume 3, Appendix 7.1**:

- There is a well-established and multi-layered emergency response system in place in Irish waters, integrating aerial, maritime, and auxiliary resources to provide effective response to incidents in the vicinity of the Offshore Site;
- Aerial SAR operations are coordinated by the IRCG and delivered by Bristow Ireland Limited under contract. The IRCG operates four helicopter bases located at Waterford, Sligo, Shannon, and Dublin Airport, each equipped with Sikorsky S-92 helicopters (with one additional aircraft rotated between bases). These helicopters have an operational airspeed of approximately 145 knots and an endurance exceeding four hours, allowing efficient coverage of offshore areas. The Dublin base, located approximately 33 nm northwest of the Offshore Site, provides the closest aerial response capability;
- Marine SAR coordination is managed by the IRCG through Marine Rescue Coordination Centres located at Dublin, Malin Head, and Valentia Island. The Dublin centre, located approximately 28 nm from the Offshore Site, operates as the National Maritime Operations Centre and is responsible for coordinating SAR operations, maritime casualty response, and activities within the Irish Exclusive Economic Zone. This capability is supported by a network of 44 Coast Guard Units comprising approximately 940 volunteers, providing distributed coastal response;
- Additional maritime emergency response is provided by the Royal National Lifeboat Institution (RNLI), which operates an extensive network of lifeboat stations across Ireland and the UK. Stations in proximity to the Offshore Site include Wicklow, Arklow, and Courtown, providing rapid response capability, with further support from stations at Dun Laoghaire, Howth, Wexford, Rosslare Harbour, and Holyhead. These stations operate a mix of all-weather and inshore lifeboats (ILB), enabling response across a range of offshore and nearshore conditions;
- Third-party assistance forms an important supplementary component of the emergency response framework. Offshore operators typically have access to support vessels, helicopters, and operational equipment that can be mobilised in emergency situations. In addition, under the International Convention for the Safety of Life at Sea (SOLAS), vessels are required to render assistance to those in distress at sea, meaning nearby vessels may act as first responders where safe to do so; and
- Overall, the emergency response capacity within the Study Area comprises a coordinated, multi-agency system integrating aerial assets, maritime coordination centres, lifeboat services, and third-party response. This layered approach ensures that incidents at the Offshore Site can be addressed effectively through a structured and responsive emergency management framework.

7.5.5 Maritime Incidents

7.5.5.1 This section characterises the Maritime Incidents within the Shipping and Navigation Study Area as reviewed in **Volume 3, Appendix 7.1**:

- The historical record indicates a generally low level of offshore risk, with only a limited number of notable incidents identified. These include a collision in 2000 between a fishing vessel and a tanker under reduced visibility, and a fatal man overboard incident in 2016 involving a fishing vessel. These events indicate that fishing vessels are among the primary vessel types involved in serious local incidents, typically associated with operational conditions rather than fixed infrastructure;
- A broader dataset is provided by RNLI lifeboat response records between 2013 and 2022 (see **Volume 3, Appendix 7.1** for more detailed information), during which a total of 404 incidents were recorded, averaging approximately 40 incidents per year;
- Incident distribution shows a clear spatial pattern, with the majority of incidents concentrated in nearshore and coastal waters around Wicklow, Arklow, and Courtown. In contrast, very few incidents have occurred offshore within the Offshore Site, with only three minor incidents recorded over the period;
- The most common incident types include machinery failure and persons in danger, with the majority of incidents involving smaller vessels, particularly powered recreational vessels and fishing vessels;
- Operational experience from ABWP Phase I further supports the low offshore risk profile. No vessel-related incidents have been recorded in association with the existing wind turbine generators. The only reported event is a lightning strike on a turbine in 2022, which did not involve vessels or result in injury;
- Overall, both historical incident data and operational experience indicate that the Study Area is characterised by a low level of maritime incident risk, with incidents primarily occurring close to shore and involving smaller vessels. There is no evidence to suggest that offshore wind farm infrastructure has contributed to vessel-related incidents within the area.

7.5.6 Future Baseline Conditions

- 7.5.6.1 Annex IV of the EIA directive requires the inclusion of “a description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge”.
- 7.5.6.2 In the absence of Proposed Works Offshore, the shipping and navigation baseline can be expected to evolve both on a natural basis and in response to global trends such as climate change and other anthropogenic activities.
- 7.5.6.3 Climate change represents a significant and cross-cutting influence on maritime activity, with projections indicating notable effects on UK and Irish waters by 2040, including increased challenges to navigational safety and potential disruption to port operations (DECC-UK, 2016). Key climate change related considerations include, among others:
- The drive towards net-zero emissions, which is expected to require greater operational efficiency and new maritime operating models;
 - The continued expansion of offshore renewable energy, particularly offshore wind, alongside emerging technologies such as wave, tidal, and floating solar generation (DECC-UK, 2016); and
 - Sea-level rise, which is anticipated to alter coastlines, create new navigational hazards, and potentially open routes to deeper-draught vessels over the longer term (Christodoulou *et al.*, 2018).
- 7.5.6.4 It is anticipated that current shipping routes will continue to be in high demand, but as we progress to 2040, these routes will need to adapt to potential constriction, sharing the sea space, and changing vessel types (Irish Lights (IL), Northern Lighthouses Board (NLB), and Trinity House (TH), 2022). Future changes in supply chains, driven by environmental

considerations and advances in automation, robotics, and recycling, may increase reliance on short-sea shipping, while traffic will continue to include both large and small vessels with a widening range of operational capabilities (DfT-UK, 2019). Measures to reduce emissions, such as vessel speed restrictions, may result in longer transit times and increased congestion along established routes.

- 7.5.6.5 In addition, the potential development of ABWP Phase II represents a reasonably foreseeable change in the local marine environment. While this may influence the shipping and navigation activity in the future, such effects are considered separately within the Cumulative Impact Assessment (CIA) in **Section 7.7**.
- 7.5.6.6 The variability and long-term trends in shipping and navigation activity are an important consideration in defining the baseline environment and have informed the use of multiple data sources and assessment components, including vessel traffic analysis, navigational features, incident records, and search and rescue considerations. Based on the available information, and taking account of anticipated future trends in maritime activity in the absence of the Proposed Works Offshore, the current baseline is considered to be broadly representative of future conditions against which the potential impacts of Proposed Works Offshore have been assessed. However, for the purposes of NRA modelling, a 10% increase in marine traffic has been assumed for future baseline conditions, as this was considered a conservative estimate during stakeholder discussions held as part of ABWP Phase II NRA preparation (see **Volume 3, Appendix 7.1**).
- 7.5.6.7 The NRA (**Volume 3, Appendix 7.1**) indicates the following frequency of occurrence for collision (vessel-to-vessel encounters) risk and for allision (vessel-to-structure) risk in the absence of the Proposed Works Offshore, i.e. retention of offshore infrastructure (referred to as baseline scenario in the NRA, as it represents current frequency of occurrence):
- Collision (vessel-to-vessel) risk:
 - Without considering future vessel traffic increase: 6.40×10^{-3} (one incident in 160 years, i.e. extremely unlikely), assumed at present baseline conditions;
 - Considering a 10% future vessel traffic increase: 7.97×10^{-3} (one incident in 130 years, i.e. extremely unlikely), assumed in future baseline conditions;
 - Allision (vessel-to-structure) risk:
 - Powered allision (caused by human error): 8.01×10^{-07} (one incident in 1.2 million years, i.e. negligible), assumed at present / future baseline conditions (i.e. no change); and
 - Drifting allision (caused by external factors, such as propulsion failure): 9.68×10^{-05} (one incident in 10,000 years, i.e. extremely unlikely), assumed at present / future baseline conditions (i.e. no change).

7.6 Assessment of Impacts

7.6.1 Overview

- 7.6.1.1 This section includes the assessment of the impacts to shipping and navigation arising from the Proposed Works Offshore, using the findings of the NRA (**Volume 3, Appendix 7.1**) as a basis, which considers four phases introduced by the Proposed Works Offshore:
- **First campaign**, which includes the removal of the upper structural components of the WTGs and met mast, and include the following activities: pre-decommissioning surveys, dredging to ensure sufficient vessel access (if required) and removal of the WTG and met mast components, with an overall assumed duration of 10 weeks;
 - **Transitional phase** (without WTGs), which represents a temporary scenario between the first and second main campaigns. In this scenario, the WTG tower / met mast and upper components have been removed, while the TPs remain in place for a certain period, which

could range from weeks to a few years, and during which the work area established around the Sub Lease Area would be removed;

- **Second campaign**, which includes the removal of the remaining substructures and associated infrastructure, including the following activities: pre-decommissioning surveys, dredging for vessel access (if required), removal of TPs, removal of MPs (cut below seabed level between -6.59 m and -10.55 m LAT), removal of scour protection, removal of inter-array cables, removal of export cables, and post-decommissioning surveys; and
- **Post-decommissioning phase**, which represents the final state after completion of all Proposed Works Offshore, in which all above-seabed structures have been removed, MPs are cut below seabed level and only residual MPs remain, and no decommissioning activities are ongoing.

7.6.1.2 A summary of the effects is presented in **Table 7.14**.

7.6.2 Increased Collision (Vessel-to-Vessel) Risk

7.6.2.1 The Proposed Works Offshore will temporarily introduce a number of vessels, including heavy-lift vessels and support vessels in the work area established around the Sub Lease Area during the first and second campaigns (see above and **Volume 2, Chapter 3**) and moving work area along the offshore export cable route during the second campaign, **Volume 2, Chapter 3**.

7.6.2.2 The temporary introduction of vessels will increase local traffic density and increase the probability of encounters between third-party vessels and decommissioning vessels associated with the Proposed Works Offshore, temporarily increasing collision risk.

7.6.2.3 During the transitional phase, when no decommissioning vessel activity will take place, and once Proposed Works Offshore are completed (post-decommissioning scenario), traffic density will return to baseline conditions (or future baseline conditions if considering a long-term post-decommissioning phase).

7.6.2.4 To ensure that decommissioning vessel activities and transits are appropriately managed, embedded mitigation measures include the effective implementation of a detailed Offshore DEMP (see outline version in **Volume 3, Appendix 3.4**), detailed VMP (see outline version in **Volume 3, Appendix 3.5**) and detailed LMP (see outline version in **Volume 3, Appendix 3.7**), which specify marine coordination measures and other operational procedures, such as publishing of required Notice to Mariners (NtM), appropriate marking and lighting throughout Proposed Works Offshore, and requirements to comply with relevant industry standards and regulations such as COLREGs, which will be implemented to ensure that Proposed Works Offshore and decommissioning vessels are safely and effectively managed.

Most Likely Scenario

Frequency of Occurrence

7.6.2.5 Based on the modelling presented within the NRA (see **Volume 3, Appendix 7.1**), a collision resulting from the Proposed Works Offshore is not considered a likely event, with the following frequencies of occurrence estimated for each phase under a most likely scenario (as defined in **Paragraph 7.4.5.9**), distinguishing between collisions in transit, powered collisions with decommissioning vessels and drifting collisions with decommissioning vessels:

- First campaign and second campaign:
 - **Vessel-to-vessel collision in transit:** 7.97×10^{-3} (one incident in 130 years, i.e. **Extremely Unlikely**), a conservative estimate that assumes that vessel-to-vessel collision in transit caused by vessel traffic temporarily introduced during the first and second campaigns, and transiting to and from work areas during Proposed Works Offshore, has a frequency of occurrence equivalent to that introduced by 10% future vessel traffic increase assumed in future baseline conditions (see **Section 7.5.6**);

- **Powered collision with decommissioning vessels:** 8.01×10^{-07} (one incident in 1.2 million years, i.e. **Negligible**), where frequency of occurrence is lower than vessel-to-vessel collision in transit given that decommissioning vessels would be stationary within the work area around the Sub Lease Area (during both first and second campaigns) and move at slow speeds along the offshore export cable route (during the second campaign). The lower frequency also represents the short duration of associated Proposed Works Offshore activities, and the fact that a powered collision with a decommissioning vessel would require a vessel sailing outside its routes into the Sub Lease Area, which is considered of low probability given that existing traffic routes are relatively parallel to the Sub Lease Area;
- **Drifting collision with decommissioning vessels:** 1.63×10^{-05} (one incident in 61,000 years, i.e. **Negligible**), where frequency of occurrence is also lower than vessel-to-vessel collision in transit but higher than powered collision risk, given the different assumptions underlying human / technical error vs loss of propulsion followed by drift under environmental forcing.
- Transitional and post-decommissioning phases:
 - **Vessel-to-vessel collision in transit:** 6.40×10^{-3} (one incident in 160 years, i.e. **Extremely Unlikely**), where frequency of occurrence is considered to remain unchanged from current baseline conditions, given that Proposed Works Offshore would not introduce vessel traffic activity during this phase, and that although future third-vessel party activity could increase, it should not increase probability of collision in a substantial manner; and
 - Powered and drifting collision with decommissioning vessels (associated with Proposed Works Offshore) would not apply in these two phases.

Severity of Consequence

- 7.6.2.6 Under a most likely scenario, vessel-to-vessel collision in transit or powered /drifting collision of a third-party vessel with a decommissioning vessel would result in glancing or minor vessel-to-vessel impact, mainly due to the slow speeds at which decommissioning and third-party vessels are anticipated to transit / operate within the vicinity of the Offshore Site, with potential to cause multiple minor or single serious injury to personnel, but where damage to operations would not be considered critical, and therefore only limited external assistance would be required.
- 7.6.2.7 Under a most likely scenario, the severity of consequence of a vessel-to-vessel collision would, during all phases, be rated as **Moderate**.

Significance of Effect

- 7.6.2.8 Overall, under a most likely scenario, the frequency of occurrence is considered to be **Negligible - Extremely Unlikely**, depending on the phase considered, while the severity of consequence is considered to be **Moderate**. On this basis, the overall significance of potential effects associated with increased collision (vessel-to-vessel) risk under a most likely scenario, in all phases, is assessed as **Broadly Acceptable** and not significant in EIA terms.

Additional Mitigation and Residual Effect

- 7.6.2.9 Given that potential effects associated with increased collision (vessel-to-vessel) risk from Proposed Works Offshore, under a most likely scenario, are considered not significant in EIA terms, no additional mitigation measures are proposed. The residual effects associated with increased collision (vessel-to-vessel) risk are considered to be **Broadly Acceptable** and not significant in EIA terms.

Worst-Case Scenario

Frequency of Occurrence

- 7.6.2.10 Under a worst-case scenario, the frequency of occurrence of a more serious collision (vessel-to-vessel) encounter (see below) is considered to be lower than that of a most likely scenario (as defined in **Paragraph 7.4.5.9**), and therefore the frequency of occurrence ratings for the most likely scenario are reduced from Extremely Unlikely to **Negligible** or remain as **Negligible** for all phases.

Severity of Consequence

- 7.6.2.11 Under a worst-case scenario, vessel-to-vessel collision in transit or powered /drifting collision of a third-party vessel with a decommissioning vessel would assume a frontal impact involving larger vessels, and result in multiple serious injuries or even a fatality, property damage causing a critical impact on operations and/or environmental damage requiring, as a minimum, regional assistance.
- 7.6.2.12 Under a worst-case scenario, the severity of consequence of a vessel-to-vessel collision would, during all phases, be rated as **Serious**.

Significance of Effect

- 7.6.2.13 Overall, under a worst-case scenario, the frequency of occurrence is considered to be **Negligible** in all phases, while the severity of consequence is considered to be **Serious**. On this basis, the overall significance of potential effects associated with increased collision (vessel-to-vessel) risk under a worst-case scenario, in all phases, is assessed as **Broadly Acceptable** and not significant in EIA terms.

Additional Mitigation and Residual

- 7.6.2.14 Given that potential effects associated with increased collision (vessel-to-vessel) risk from Proposed Works Offshore, under a worst-case scenario, are considered not significant in EIA terms, no additional mitigation measures are proposed. The residual effects associated with increased collision (vessel-to-vessel) risk are considered to be **Broadly Acceptable** and not significant in EIA terms.

7.6.3 Increased Allision (Vessel-to-Structure) Risk

- 7.6.3.1 Increased allision (vessel-to-structure) risk associated with the Proposed Works Offshore relates to the potential for a third-party vessel to contact (or strike) a fixed or partially removed structure, either as a result of navigational error, loss of propulsion or steering, or adverse environmental conditions.
- 7.6.3.2 During Proposed Works Offshore, the vertical extent of WTGs will reduce progressively, and although the presence of decommissioning vessels and implementation of appropriate warning, marking and lighting will increase situational awareness, vessel-to-structure allision risk will remain.
- 7.6.3.3 It is anticipated that vessels deliberately entering the work area demarcated around the Sub Lease Area during Proposed Works Offshore, or the Sub Lease Area post-decommissioning, will be limited to small recreational and fishing vessels, as described in **Section 7.5.1**, which indicates that larger vessels generally avoid the Arklow Bank sand bank.
- 7.6.3.4 If a vessel begins drifting towards the Offshore Site, it is expected to first implement its own established response procedures, which may include deploying anchors or using thrusters, subject to vessel capability, availability, and power supply. In the case of emergency anchoring being required, relevant nautical charts would be anticipated to be reviewed to confirm that anchor deployment would not introduce additional risks, in accordance with emergency procedures. Considering the water depths within the Offshore Site, particularly within the Sub

Lease Area, the use of anchors to mitigate a drift scenario is considered practicable, although this will depend on the specific vessel involved.

- 7.6.3.5 During Proposed Works Offshore, decommissioning vessels may also be able to provide assistance during third-party vessel emergency situations (depending upon type and capability) in liaison with IRCG and as required under SOLAS obligations (IMO, 1974).
- 7.6.3.6 Once Proposed Works Offshore are completed, residual MPs will remain below the seabed level and accordingly, vessel-to-structure allision risk will remain.
- 7.6.3.7 To minimise increased allision (vessel-to-structure) risks) embedded mitigation measures include the effective implementation of a detailed Offshore DEMP (see outline version in **Volume 3, Appendix 3.4**), detailed VMP (see outline version in **Volume 3, Appendix 3.5**) and detailed LMP (see outline version in **Volume 3, Appendix 3.7**) which specify marine coordination measures and other operational procedures and requirements for marking and lighting throughout and following Proposed Works Offshore.
- 7.6.3.8 In addition, MPs will be cut below seabed level between -6.59 m and -10.55 m LAT to minimise residual MP exposure risk post-decommissioning, which will limit vessel-to-structure allision risks to only remain for vessels with a sufficiently large draught (above 6 – 8 m), which have not commonly been recorded within the vicinity of the Sub Lease Area.

Most Likely Scenario

Frequency of Occurrence

- 7.6.3.9 Based on the modelling presented within the NRA (see **Volume 3, Appendix 7.1**), an allision resulting from the Proposed Works Offshore is not considered a likely event, with the following frequency of occurrence estimated for each phase under a most likely scenario, distinguishing between powered and drifting allisions:
 - First campaign, transitional phase and second campaign:
 - **Powered vessel-to-structure allision:** 8.01×10^{-07} (one incident in 1.2 million years, i.e. **Negligible**), which assumes that powered vessel-to-structure allision represents no actual change from current baseline conditions.

Even though the presence of activity associated with Proposed Works Offshore and updated navigational warnings to mariners during the first and second campaigns is expected to increase situational awareness (and could further lower the frequency of occurrence), under a most likely scenario, the frequency of occurrence during these three phases is assumed to remain unchanged from baseline conditions.

In comparison to drifting vessel-to-structure allision, which considers that, theoretically, any vessel could drift and reach structures, a powered vessel would have to deviate from its route, which, given marine traffic alignment in relation to the Sub Lease Area, is considered more unlikely.

- **Drifting vessel-to-structure allision:** 9.68×10^{-05} (one incident in 10,000 years, i.e. **Extremely Unlikely**), a conservative estimate that assumes that drifting vessel-to-structure allision represents no actual change from current baseline conditions

It is considered that during the first and second campaigns, and during the transitional phase, current hazards would persist due to the possibility of propulsion failure of passing vessels. And although the structural height of the met mast / WTGs would gradually decrease as Proposed Works Offshore progress during the first and second campaigns, the TP would still represent a fixed obstacle that drifting vessels could collide with during all these three phases.

In comparison to drifting vessel-to-vessel collision (see **Section 7.6.2**), the difference in frequency is due to the higher probability for a drifting vessel to hit a fixed structure rather than a decommissioning vessel (even if this is temporarily stationary).

- Post-decommissioning phase:
 - **Powered vessel-to-structure allision:** 2.34×10^{-07} (one incident in 4.3 million years, i.e. **Negligible**), which assumes that powered vessel-to-structure allision represents a reduction in the frequency of occurrence estimated at present (8.01×10^{-07} (one incident in 1.2 million years, i.e. also rated negligible), see **Section 7.5.6**).

In comparison to baseline conditions, this reduction in frequency is due to the fact that during the post-decommissioning phase, the only offshore infrastructure retained within the Offshore Site would be residual MPs cut below seabed level between -6.59 m and -10.55 m LAT, and therefore allision would only be possible if a vessel has a draught large enough (> 6 m) to hit residual MPs, whether these are located below the seabed level or exposed (in case of temporary scour exposing residual MPs, see **Volume 3, Appendix 4.3**).

Considering current distribution of vessel draughts within the Shipping and Navigation Study Area (see **Section 7.5.3**), it is estimated that 71% of vessels would be unable to reach the residual MPs due to insufficient draught. In addition, any vessels travelling towards the Sub Lease Area, would be expected to ground on the Arklow Bank sand bank first (see **Volume 3, Appendix 7.1: Navigational Risk Assessment**);

- **Drifting vessel-to-structure allision:** 3.04×10^{-05} (one incident in 33,000 years, i.e. **Negligible**), also representing a lower frequency than that estimated at present (9.68×10^{-05} (one incident in 10,000 years, i.e. extremely unlikely), see **Section 7.5.6**), but relatively higher than powered vessel to structure allision due to the assumptions underlying human / technical error vs loss of propulsion followed by drift under environmental forcing.

For both powered and drifting vessel-to-structure allision in the post-decommissioning phase, a reasonable worst case assessment has been applied by assuming that vessels with sufficient draught could potentially interact with the residual MPs. This includes all vessels with a draught above 8 m and 50% of vessels with a draught between 6 m and 8 m, reflecting the depth of residual MPs to be between -6.59 m and -10.55 m LAT. On this basis, whether a residual MP remains buried or becomes exposed due to seabed dynamics does not alter the assessed risk, as the assessment already assumes that vessels with sufficient draught could reach and strike the residual MPs. Using a reasonable worst-case basis, the assessment does not take into account the more likely scenario that some of these vessels, if were to occur, would first ground on the sandbank before reaching the residual MPs.

Severity of Consequence

- 7.6.3.10 The consequences of a vessel allision, similar to those arising from a collision, would depend on several factors, including the size, type, speed, and course of the vessels involved, and offshore infrastructure involved. Based on the baseline conditions described in **Section 7.5.3**, vessels transiting within the Offshore Site are expected to predominantly comprise smaller vessels, noting that such transits occur infrequently.
- 7.6.3.11 Under a most likely scenario, during the first and second campaigns and during the transitional phase, any allision is anticipated to be generally low-speed and low-energy in nature, and likely limited to low-impact glancing allision, with potential to cause multiple minor or single serious injury to personnel, but where damage to operations would not be considered critical, and therefore only limited external assistance would be required, and overall rated as **Moderate**.
- 7.6.3.12 During the post-decommissioning phase, under a most likely scenario, most vessels transiting within the vicinity of the Sub Lease Area would be anticipated to have a draught impeding

impact, and in the event of an impact caused by either powered / drifting allision, this would be slowed by the presence of the Arklow Bank sand bank and result in a **Negligible** consequence.

Significance of Effect

- 7.6.3.13 Overall, under a most likely scenario, the frequency of occurrence is considered to be **Negligible - Extremely Unlikely**, depending on the phase and whether powered / drifting allision is considered, while the severity of consequence is considered to be **Negligible - Moderate**, also depending on the phase and whether powered / drifting allision is considered.
- 7.6.3.14 On this basis, the overall significance of potential effects associated with increased allision (vessel-to-structure) risk under a most likely scenario, in all phases, is assessed as **Broadly Acceptable** and not significant in EIA terms.

Additional Mitigation and Residual Effect

- 7.6.3.15 Given that potential effects associated with increased allision (vessel-to-structure) risk from Proposed Works Offshore are considered not significant in EIA terms, no additional mitigation measures are proposed. The residual effects associated with increased allision (vessel-to-structure) risk, under a most likely scenario, are considered to be **Broadly Acceptable** and not significant in EIA terms.

Worst-Case Scenario

Frequency of Occurrence

- 7.6.3.16 During the first and second campaigns and the transitional phase, under a worst-case scenario, the frequency of occurrence of an allision (vessel-to-structure) encounter (see below) is considered to be lower than that of an allision under a most likely scenario, (as defined in **Paragraph 7.4.5.9**), and therefore qualitatively rated as **Negligible** for these three phases.
- 7.6.3.17 During the post-decommissioning phase, under a worst-case scenario, the frequency of a moderate powered vessel-to-structure allision or a minor drifting vessel-to-structure allision (see below) is considered to be reduced but remains **Negligible** during this phase.

Severity of Consequence

- 7.6.3.18 During the first and second campaigns and the transitional phase, under a worst-case scenario, a vessel-to-structure allision would assume small vessel capsizing or larger vessel impact with associated pollution and damage to structures, and severity of consequence overall rated as **Serious**.
- 7.6.3.19 During the post-decommissioning phase, under a worst-case scenario, vessels with larger draught experiencing a powered allision with residual MPs would experience slightly larger damage than under a most likely scenario. However, severity of consequence is rated as **Moderate** given the reduced dimensions of residual MPs, and the effect of grounding on the Arklow Bank sandbank before reaching residual MPs.
- 7.6.3.20 In the case that, during the post-decommissioning phase, vessels with larger draught experienced a drifting allision with residual MPs, the severity of consequence would be rated as **Minor**, given the lower speeds at which the vessel would be moving towards the Arklow Bank sand bank and residual MPs before impacting.

Significance of Effect

- 7.6.3.21 Overall, under a worst-case scenario, the frequency of occurrence is considered to be **Negligible** for all phases, while the severity of consequence is considered to be **Serious** during the first and second campaign and the transitional phase, and **Minor - Moderate** during the post-decommissioning phase, depending on whether a powered or drifting allision is considered.

- 7.6.3.22 The overall significance of potential effects associated with increased allision (vessel-to-structure) risk under a worst-case scenario, in all phases, is assessed as **Broadly Acceptable** and not significant in EIA terms.

Additional Mitigation and Residual

- 7.6.3.23 Given that potential effects associated with increased allision (vessel-to-structure) risk from Proposed Works Offshore are considered not significant in EIA terms, no additional mitigation measures are proposed. The residual effects associated with increased allision (vessel-to-structure) risk under a worst-case scenario, are considered to be **Broadly Acceptable** and not significant in EIA terms.

7.7 Cumulative Effects

- 7.7.1.1 As indicated in **Volume 2, Chapter 1**, cumulative effects result from the addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects (EPA, 2022).
- 7.7.1.2 The assessment of cumulative effects on shipping and navigation presented in this section has followed the methodology set out in **Volume 2, Chapter 1**, which, in summary comprises:
- **Stage 1: Establish the long list of other developments to consider**, based on the location of other plans and projects (other developments) located within the cumulative Zone of Influence (ZoI). The cumulative ZoI for shipping and navigation has been defined as 25 nm (< 50 km) from the Offshore Site boundary, as this is considered to reflect the typical spatial extent over which local vessels operate and within which interactions with the Proposed Works Offshore and other developments are most likely to occur. Whilst it is recognised that vessel activity may occur over a wider regional scale, this cumulative ZoI is considered to provide a proportionate spatial basis for the assessment, and other developments located beyond this ZoI are not considered likely to contribute materially to cumulative effects on shipping and navigation identified within this assessment;
 - **Stage 2: Establish the short list of other developments to consider**, gathering key information on the other developments that is publicly available, considering the presence of potential pathways for cumulative effects and applying the Stage 2 screening criteria outlined in **Table 7.12**;

Table 7.12: Stage 2 screening criteria

Stage 2 Screening Criteria	
1	Development expected to be constructed / operational before commencement of Proposed Works is to be included as part of the baseline and hence screened out of the assessment.
2	Development not anticipated to temporally overlap or not anticipated to introduce potential for sequential cumulative effects and hence screened out of the assessment.
3	Development not anticipated to introduce physical effect-receptor pathway overlap and hence screened out of the assessment.
4	Development not anticipated to introduce non-physical effect-receptor pathway overlap and hence screened out of the assessment.
5	Low data confidence / low certainty that development will be realised and hence screened out of the assessment.
6	Potential pathway for cumulative effects exists and hence screened into the assessment.

- **Stage 3: Information gathering.** Gathering additional publicly available information on shortlisted developments to inform the assessment of the potential cumulative effects in more detail; and

- **Stage 4: Assessment.** Applying the same methodology used to assess the potential environmental effects of Proposed Works alone.

7.7.1.3 Stages 1 and 2 are presented in **Volume 3, Appendix 1.2: Cumulative Screening**, and the short list i.e. the other developments screened into the assessment of potential cumulative effects on shipping and navigation are outlined in **Table 7.13**, and shown in **Figure 7.2**. These comprise offshore wind farms and associated site investigations that:

- Fall within the defined cumulative ZoI;
- Have potential for temporal overlap with the Proposed Works Offshore; and
- Present a plausible pathway for cumulative interaction on shipping and navigation.

Table 7.13: Other developments screened into the assessment of potential cumulative effects on shipping and navigation

Other developments shortlisted (ID)	Type	Tier and status	Distance (km)	Pathway for Cumulative Effect
Arklow Bank Wind Park Phase II Site Investigations (SI04)	Site investigations	Tier 1 Approved (valid to July 2029)	0	Potential pathway for cumulative effects exists due to potential temporal / spatial overlap with the Proposed Works Offshore, as additional survey vessels may operate within the Offshore Site / its vicinity.
ABWP Phase II (ORE01)	Offshore wind farm	Tier 1 Application submitted	0	Potential pathway for cumulative effects exists due to temporal / spatial overlap with the Proposed Works Offshore, as additional vessels will be operating within the vicinity of the Offshore Site.
Wicklow Sea Wind Ltd - Cable Route Site Investigations. Site investigations for an export cable corridor from a Celtic Sea offshore windfarm (OWF) to the Wicklow coast (SI06)	Site investigations	Tier 1 Application submitted	0.11	Potential pathway for cumulative effects exists due to potential temporal / spatial overlap with the Proposed Works Offshore, as additional survey vessels may operate within the vicinity of the Offshore Site.
Wicklow Sea Wind Ltd., Site Investigations for the proposed Wicklow Project offshore wind farm, off County Wicklow (SI07)	Site investigations	Tier 1 Application submitted	5.53	Potential pathway for cumulative effects exists due to potential temporal / spatial overlap with the Proposed Works Offshore, as additional survey vessels may operate within the vicinity of the Offshore Site.
Codling Wind Park site investigations (SI11)	Site investigations	Tier 1 Approved, undergoing Judicial Review	19.89	Potential pathway for cumulative effects exists due to temporal / spatial overlap with the Proposed Works Offshore, as additional vessels will be operating within the vicinity of the Offshore Site.
Codling Wind Park (ORE02)	Offshore wind farm	Tier 1 Application submitted	21.54	Potential pathway for cumulative effects exists due to temporal / spatial overlap with the Proposed Works Offshore, as additional vessels will be operating within the vicinity of the Offshore Site.
Site Investigations for the proposed Dublin Array Offshore Wind Farm (SI08)	Site investigations	Tier 1 Approved (valid to January 2028)	22.93	Potential pathway for cumulative effects exists due to potential temporal / spatial overlap with the Proposed Works Offshore, as additional survey vessels may operate within the vicinity of the Offshore Site.

Other developments shortlisted (ID)	Type	Tier and status	Distance (km)	Pathway for Cumulative Effect
Dublin Array (ORE03)	Offshore wind farm	Tier 1 Application submitted	36.97	Potential pathway for cumulative effects exists due to temporal / spatial overlap with the Proposed Works Offshore, as additional vessels will be operating within the vicinity of the Offshore Site.

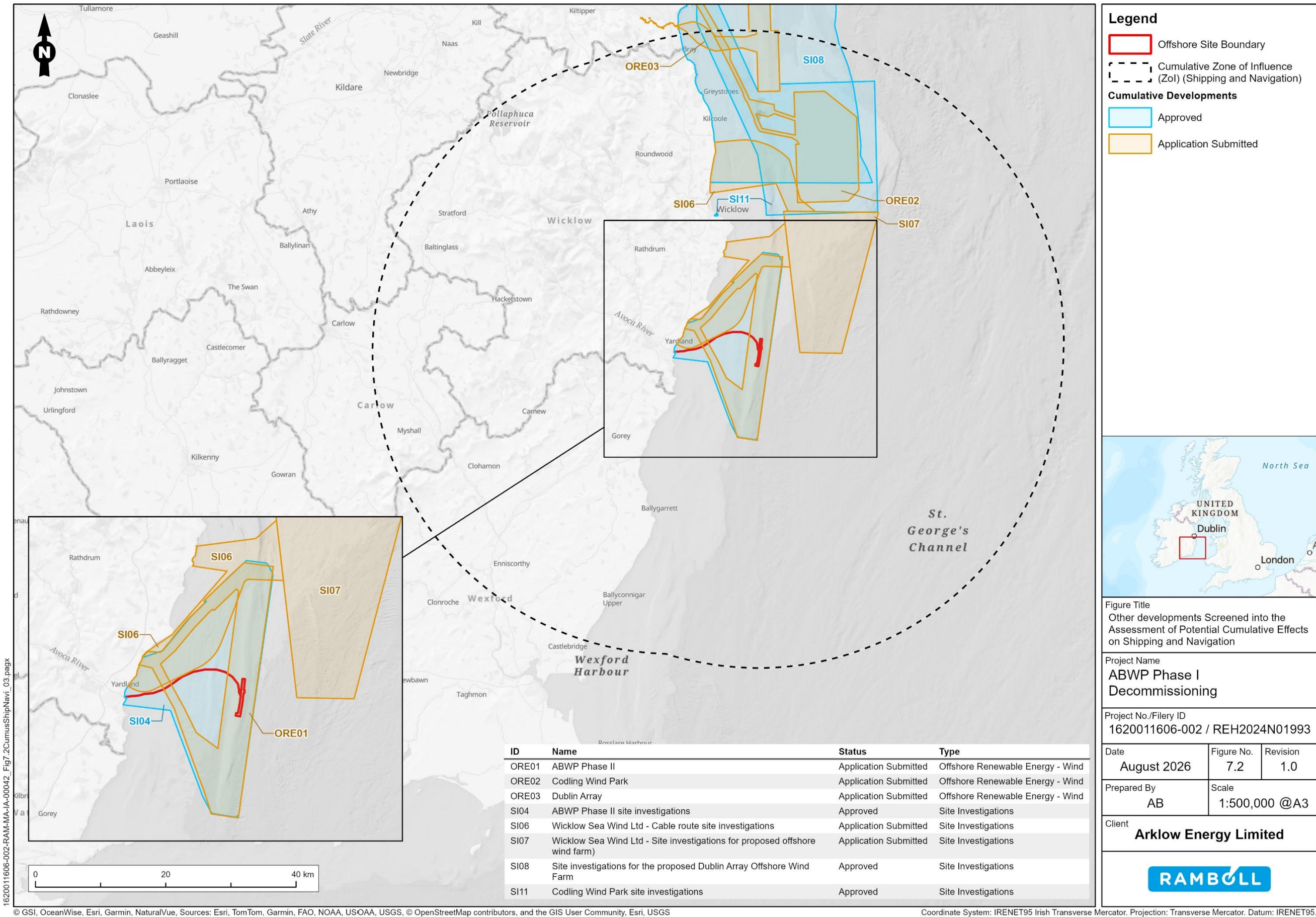


Figure 7.2: Other developments screened into the assessment of potential cumulative effects on shipping and navigation

7.7.1.4 Potential cumulative effects upon shipping and navigation arising from the other developments shortlisted above are assessed in relation to:

- Potential effects associated with increased collision (vessel-to-vessel) risk; and
- Potential effects associated with increased allision (vessel-to-structure) risk.

Increased Collision (Vessel-to-Vessel) Risk

7.7.1.5 Increased collision (vessel-to-vessel) risk has potential to be exacerbated by other developments screened in for cumulative effects, as these could temporarily and/or permanently increase third-party vessel traffic in the Shipping and Navigation Study Area, and therefore result in increased collision (vessel-to-vessel) risks.

7.7.1.6 During Proposed Works Offshore (i.e. first and second campaigns), embedded mitigation measures include the effective implementation of a detailed Offshore DEMP (see outline version in **Volume 3, Appendix 3.4**), detailed VMP (see outline version in **Volume 3, Appendix 3.5**) and detailed LMP (see outline version in **Volume 3, Appendix 3.7**), which specify marine coordination measures and other operational procedures, appropriate marking and lighting and requirements to comply with relevant industry standards and regulations such as COLREGs. Given that these measures can be considered industry standard, it is reasonable to assume that these would also be implemented by other developments screened in for potential cumulative effects, contributing to a safe and effective management of the temporary Proposed Works Offshore coexisting with other developments that generate vessel activity in the Shipping and Navigation Study Area.

7.7.1.1 In addition, should Proposed Works Offshore overlap with ABWP Phase II construction (ORE01), the outline LMP (**Volume 3, Appendix 3.7**) defines specific principles for how proposed work areas should be maintained or adjusted depending on the implementation of ABWP Phase II marking schemes. In particular, the arrangement of work areas is conditional on the marking strategy adopted for ABWP Phase II:

- If ABWP Phase II is marked using work areas that overlap or fully encompass the Proposed Works Offshore work areas, these would be removed;
- If alternative non-overlapping marking schemes are used, the proposed work area may remain in place, potentially with adjustments agreed in consultation with CIL / MSO; and
- If no work areas are implemented for ABWP Phase II, the proposed work area will remain unchanged.

7.7.1.2 During the transitional and post-decommissioning phases, given that Proposed Works Offshore will not introduce increased vessel activity and the fact that existing navigational patterns are mainly influenced by the presence of Arklow Bank sandbank and not by ABWP Phase I offshore infrastructure, Proposed Works Offshore, in combination with other developments, are not anticipated to contribute to increased collision (vessel-to-vessel) risks during these two phases.

Frequency of Occurrence

7.7.1.3 The contribution of other developments to a change in frequencies of occurrence estimated for each phase under most likely and worst-case scenarios is qualitatively assessed below, distinguishing between collisions in transit, powered collisions with decommissioning vessels and drifting collisions with decommissioning vessels:

- First campaign and second campaign:
 - **Vessel-to-vessel collision in transit.** Should there be a temporal overlap between the first / second campaigns, and other developments screened in, there will be a localised and temporary increase in vessel activity which could lead to increased vessel-to-vessel encounter risks within the cumulative ZoI for shipping and navigation. However, given the short-term nature of first (10 weeks) and second (16 weeks) campaigns, and that other developments screened in are also considered to be spatially discrete and temporary in nature, Proposed Works Offshore, in combination with other developments, would only be anticipated to lead to a minor increase in the frequency of

occurrence of vessel-to-vessel collision in transit, not considered sufficient to increase the qualitative classification of frequency of occurrence defined for Proposed Works Offshore alone.

Accordingly, the frequency of occurrence of vessel-to-vessel collision in transit associated with Proposed Works Offshore, in combination with other developments, is rated as **Extremely Unlikely** under a most likely scenario, and **Negligible** under a worst-case scenario (as this considers the frequency of occurrence of a more severe consequence).

- **Powered / drifting collision with decommissioning vessels.** Similarly, given the short-term nature of the first and second campaigns, location of the Offshore Site in relation to existing / future vessel traffic routes, and the fact that the temporary higher level of activity in work areas will contribute to increased situational awareness among third-party vessels, the minor increase in vessel traffic that Proposed Works Offshore could introduce, in combination with other developments, is not anticipated to be sufficient to increase the qualitative classification of frequency of occurrence of powered / drifting collision with decommissioning vessels defined for Proposed Works Offshore alone.

Accordingly, the frequency of occurrence of powered /drifting collision with decommissioning vessels is maintained as **Negligible** under most likely and worst-case scenarios.

- Transitional and post-decommissioning phases:
 - **Vessel-to-vessel collision in transit.** Proposed Works Offshore will not introduce vessel traffic activity during these two phases and will not introduce changes to existing vessel traffic patterns. Vessel traffic increase introduced by other developments can be considered encompassed within future baseline vessel traffic levels that assume an overall 10% increase in vessel activity, and for which frequency of occurrence of vessel-to-vessel collision in transit risks has been estimated as Extremely Unlikely, see **Section 7.5.6**. Under a worst-case scenario that considers the probability of more severe consequences, the frequency of occurrence can be considered as **Negligible**.
 - Powered and drifting collision with decommissioning vessels (associated with Proposed Works Offshore) would not apply in these two phases.

Severity of Consequence

- 7.7.1.4 Given the location of the Offshore Site in relation to the Arklow Bank sandbank and the slow speeds of decommissioning vessels anticipated during Proposed Works Offshore first and second campaigns, the severity of consequence of increased collision (vessel-to-vessel) risks is anticipated to remain unchanged when considering all phases of Proposed Works Offshore in combination with other developments (see **Section 7.6.2**), and accordingly, this is anticipated to remain **Moderate** under a most likely scenario and **Serious** under a worse-case scenario.

Significance of Cumulative Effect

- 7.7.1.5 Given that the qualitative assessment of frequency of occurrence and severity of consequence of potential cumulative effects associated with increased collision (vessel-to-vessel) risk remain unchanged when considering Proposed Works Offshore with other developments, the overall significance of cumulative effects is considered to remain **Broadly Acceptable** and not significant in EIA terms under most likely and worst-case scenarios, as assessed for Proposed Works Offshore alone, see **Section 7.6.2**.
- 7.7.1.6 It should be noted that collision risks associated with the ABWP Phase II NRA (Anatec Limited, 2026) were also assessed as Broadly Acceptable considering ABWP Phase II alone and in combination with other developments, and 10% future vessel traffic increase.

Additional Mitigation and Residual Cumulative Effect

- 7.7.1.7 Given that potential cumulative effects associated with increased collision (vessel-to-vessel) risk from other developments in combination with Proposed Works Offshore are considered not significant in EIA terms, no additional mitigation measures are proposed. The residual cumulative effects associated with increased collision (vessel-to-vessel) risk resulting from other developments in combination with Proposed Works Offshore are considered to be **Broadly Acceptable** and not significant in EIA terms.

Increased Allision (Vessel-to-Structure) Risk

- 7.7.1.8 Increased allision (vessel-to-structure) risk has potential to be exacerbated by other developments, as these could increase third-party vessel traffic in the Shipping and Navigation Study Area, and therefore result in increased allision risks with ABWP Phase I offshore infrastructure during and after Proposed Works Offshore.
- 7.7.1.9 Given the proximity of ABWP Phase II to the Offshore Site, the influence that this other development would have on allision (vessel-to-structure) risk, once operational and in a post-decommissioning scenario, has been assessed in detail in the NRA (see **Volume 3, Appendix 7.1**). Overall, an operational ABWP Phase II would further reinforce existing route separation around Arklow Bank, and reduce the probability of third-party vessels approaching the Sub Lease Area, where residual MPs will be located below seabed level.

Frequency of Occurrence

- 7.7.1.10 The contribution of other developments to a change in frequencies of occurrence estimated for each phase under most likely and worst-case scenarios is qualitative assessed below, distinguishing between powered and drifting vessel-to-structure allisions:
- First campaign, transitional phase and second campaign:
 - **Powered vessel-to-structure allision.** It is considered that the temporal overlap of first and second campaigns, and the transitional phase, with other developments could potentially increase vessel traffic activity around the Offshore Site. However, given the location of other developments in relation to the Offshore Site, and existing vessel traffic routes, the increased probability of powered vessels to deviate from their routes (outside and not aligned with the Offshore Site) towards the Offshore Site is unlikely to be substantial, and, overall, the frequency of occurrence of a powered vessel-to-structure allision estimated for Proposed Works alone is anticipated to remain unchanged when considering Proposed Works Offshore in combination with other developments, rated as **Negligible** under both most likely and worst-case scenarios.
 - **Drifting vessel-to-structure allision.** During the first and second campaigns, and during the transitional phase, current hazards would persist due to the possibility of propulsion failure of passing vessels, and although there will be a slight increase in vessel activity introduced by other developments, this is not considered sufficient to increase the frequency of occurrence of a drifting allision, which is considered to remain **Extremely Unlikely** under a most likely scenario, and **Negligible** during a worst-case scenario.
 - Post-decommissioning phase:
 - **Powered vessel-to-structure allision.** During the post-decommissioning phase, ABWP Phase I offshore infrastructure would no longer be located above the seabed level, and allision would only be possible if a vessel had a draught large enough (> 6 m) to plough through the seabed and hit residual MPs located below seabed level.
 - Given that other developments are not anticipated to use vessels of large draughts within the vicinity of the Sub Lease Area, the frequency of occurrence of a powered vessel-to-structure allision estimated for Proposed Works Offshore alone is anticipated

to remain unchanged when considering these in combination with other developments, or be further reduced when considering the influence of ABWP Phase II operation, overall rated as **Negligible** in both most likely and worst-case scenarios.

- **Drifting vessel-to-structure allision.** In line with the above, other developments are not anticipated to contribute to drifting vessel-to-structure allision risks with residual MPs, and frequency of occurrence is anticipated to remain unchanged and overall rated as **Negligible** in both most likely and worst-case scenarios

Severity of Consequence

- 7.7.1.11 Given the location of the Offshore Site in relation to the Arklow Bank sandbank, and the fact that offshore infrastructure will be located below seabed level during the post-decommissioning phase, the severity of consequence of increased allision (vessel-to-structure) risks is anticipated to remain unchanged when considering Proposed Works Offshore in combination with other developments, and accordingly, this is anticipated to remain **Moderate** (during the first and second campaigns, and transitional phase) and **Negligible** (during the post-decommissioning phase) under a most likely scenario; and **Serious** (during the first and second campaigns, and transitional phase) and **Minor** (during post-decommissioning when considering a drifting allision) – **Moderate** (during post-decommissioning when considering a powered allision) under a worse-case scenario.

Significance of Cumulative Effect

- 7.7.1.12 Given that the qualitative assessment of frequency of occurrence and severity of consequence of potential cumulative effects associated with increased allision (vessel-to-structure) risk remain unchanged when considering Proposed Works Offshore with other developments, the overall significance of cumulative effects is considered to remain **Broadly Acceptable** and not significant EIA terms under most likely and worst-case scenarios, as assessed for Proposed Works Offshore alone, see **Section 7.6.3**.
- 7.7.1.13 It should be noted that allision risks associated with the ABWP Phase II NRA (Anatec Limited, 2026) were also assessed as Broadly Acceptable considering both ABWP Phase II alone and in combination with other developments.

Additional Mitigation and Residual Cumulative Effect

- 7.7.1.14 Given that potential cumulative effects associated with increased allision (vessel-to-structure) risk from other developments, in combination with Proposed Works Offshore, are considered not significant in EIA terms, no additional mitigation measures are proposed.
- 7.7.1.15 The residual cumulative effects associated with increased allision (vessel-to-structure) risk resulting from other developments in combination with Proposed Works Offshore are considered to be **Broadly Acceptable** and not significant in EIA terms.

7.8 Transboundary Effects

- 7.8.1.1 **Volume 3, Appendix 1.3: Transboundary Screening** presents the screening of potential transboundary effects on shipping and navigation using PINS screening criteria (PINS, 2025) using information contained within this EIAR chapter.
- 7.8.1.2 As stated in **Volume 3, Appendix 1.3**, the approximate distance between the Offshore Site and the nearest maritime boundary is 33 km to the UK (Wales), which is beyond the Shipping and Navigation Study Area, which extends less than 20 km from the Offshore Site boundary.
- 7.8.1.3 Given the international nature of vessel activity, there is potential for shipping and navigation originating from other states to transit to or from international ports across the Shipping and Navigation Study Area. However, individual vessel transits, irrespective of flag state, have been accounted for through vessel traffic analysis, NRA (**Volume 3, Appendix 7.1**) and impact

assessment presented in this chapter, and potential impacts on non-Irish vessels are unlikely to become significant.

7.9 Summary

7.9.1 Summary of Effects

- 7.9.1.1 This chapter has assessed the potential impacts on shipping and navigation from Proposed Works Offshore alone and in combination with other relevant developments. The assessment has been informed by the NRA presented in **Volume 3, Appendix 7.1**
- 7.9.1.2 **Table 7.14** presents a summary of the potential impacts, embedded mitigation measures and residual effects. The impacts assessed include those related to:
- Increased collision (vessel-to-vessel) risk; and
 - Increased allision (vessel-to-structure) risk.
- 7.9.1.3 The assessment concludes that, with the implementation of embedded mitigation measures, all potential impacts on shipping and navigation from Proposed Works Offshore, and in combination with other developments, are **Broadly Acceptable** and not significant in EIA terms.
- 7.9.1.4 Overall, it is concluded that there will be no significant residual effects on shipping and navigation arising from the Proposed Works Offshore.

7.9.2 Summary of Additional Mitigation and Monitoring

- 7.9.2.1 No additional mitigation or monitoring is considered necessary, as all potential effects on shipping and navigation are assessed to be not significant in EIA terms.

Table 7.14: Summary of potential impacts and residual effects on shipping and navigation

Impact	Embedded mitigation	Frequency of occurrence	Severity of consequence	Significance of effect	Additional mitigation and monitoring	Residual effect
Most Likely Scenario						
Increased collision (vessel-to-vessel) risk – vessel-to-vessel collision in transit	Development and adherence to the Detailed Offshore DEMP (see outline version in Volume 3, Appendix 3.4). Development and adherence to the Detailed VMP (see outline version in Volume 3, Appendix 3.5). Development and adherence to the Detailed LMP (see outline version in Volume 3, Appendix 3.7), which requires charting of residual MPs left <i>in situ</i> under the seabed in conjunction with MSO / UKHO.	Extremely Unlikely (all phases)	Moderate	Broadly Acceptable (not significant)	No	Broadly Acceptable (not significant)
Increased collision (vessel-to-vessel) risk – powered / drifting collision with decommissioning vessels*		Negligible (all phases)	Moderate	Broadly Acceptable (not significant)	No	Broadly Acceptable (not significant)
Increased allision (vessel-to-structure) risk – powered vessel-to-structure allision		Negligible (all phases)	Moderate (all phases except post-decommissioning phase) Negligible (post-decommissioning phase)	Broadly Acceptable (not significant)	No	Broadly Acceptable (not significant)
Increased allision (vessel-to-structure) risk – drifting vessel-to-structure allision		Extremely Unlikely (all phases except post-decommissioning phase) Negligible (post-decommissioning phase)	Moderate (all phases except post-decommissioning phase) Negligible (post-decommissioning phase)	Broadly Acceptable (not significant)	No	Broadly Acceptable (not significant)
Worst-Case Scenario						
Increased collision (vessel-to-vessel) risk – Vessel-to-vessel collision in transit	Development and adherence to the Detailed Offshore DEMP (see outline	Negligible	Serious	Broadly Acceptable (not significant)	No	Broadly Acceptable (not significant)

Impact	Embedded mitigation	Frequency of occurrence	Severity of consequence	Significance of effect	Additional mitigation and monitoring	Residual effect
Increased collision (vessel-to-vessel) risk – powered / drifting collision with decommissioning vessels*	version in Volume 3, Appendix 3.4). Development and adherence to the Detailed VMP (see outline version in Volume 3, Appendix 3.5). Development and adherence to the Detailed LMP (see outline version in Volume 3, Appendix 3.7), which requires charting of residual MPs left <i>in situ</i> under the seabed in conjunction with MSO / UKHO.	Negligible	Serious	Broadly Acceptable (not significant)	No	Broadly Acceptable (not significant)
Increased allision (vessel-to-structure) risk – powered vessel-to-structure allision		Negligible	Serious (all phases except post-decommissioning phase) Moderate (post-decommissioning phase)	Broadly Acceptable (not significant)	No	Broadly Acceptable (not significant)
Increased allision (vessel-to-structure) risk – drifting vessel-to-structure allision		Negligible	Serious (all phases except post-decommissioning phase) Minor (post-decommissioning phase)	Broadly Acceptable (not significant)	No	Broadly Acceptable (not significant)

*Not applicable in transitioning and post-decommissioning phases

7.10 References

Anatec Limited, 2024. Arklow Bank Wind Park 2: Navigational Risk Assessment, Environmental Impact Assessment Report, Volume III, Appendix 15.1. Available at: www.pleanala.ie (Accessed: April 2026)

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