Liverpool Bay CCS Ltd
HYNET CARBON DIOXIDE TRANSPORTATION AND STORAGE PROJECT - OFFSHORE

Environmental Statement
Volume 2, chapter 9: Shipping and Navigation

EHE7228B
Liverpool Bay CCS Limited
Final
September 2023
Offshore ES
Shipping and Navigation

rpsgroup.com

Document status					
Version	**Purpose of document**	**Authored by**	**Reviewed by**	**Approved by**	**Date**
Final	Final	RPS/ Anatec	Eni UK Ltd	Eni UK Ltd	September 2023

Prepared by:	**Prepared for:**
RPS	**Liverpool Bay CCS Limited**

Glossary

Term	Meaning
Cumulative effect assessment	Assessment of the likely effects arising from the offshore components of the HyNet CO_2 Transportation and Storage System ('Proposed Development') alongside the likely effects of other development activities in the vicinity of the Proposed Development.
Effect	The consequence of an impact
Environmental Impact Assessment	A statutory process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information, which fulfils the assessment requirements of the EIA Directive and EIA Regulations, including the publication of an Environmental Impact Assessment (EIA) Report.
Impact	A change that is caused by an action
Magnitude	Size, extent, and duration of an impact.
Maximum Design Scenario	The maximum design parameters of each Proposed Development asset (both on and offshore) considered to be a worst case for any given assessment but within the range of the Project Design Envelope.
Mitigation Measure	Measure which would avoid, reduce, or remediate an impact
Non-statutory stakeholder	Organisations with whom the regulatory authorities may choose to engage who are not designated in law but are likely to have an interest in a proposed development.
Project	The HyNet Carbon Dioxide Transportation and Storage Project.
Project Design Envelope (PDE)	Also known as the Rochdale Envelope, the PDE concept is routinely utilised in both onshore and offshore planning applications to allow for some flexibility in design options, particularly offshore, and more particularly for foundations and turbine type, where the full details of the project are not known at application submission but where sufficient detail is available to enable all environmental impacts to be appropriately considered during the EIA.
Project lifetime effects	Effects that occur throughout more than one phase of the project (construction, operations and maintenance, and decommissioning) interacting to potentially create a more significant effect upon a receptor than if just assessed in isolation in a single phase.
Proposed Development	The offshore components of the Project which are subject of this Environmental Statement, as described in Chapter 3: Proposed Development Description.
Receptor-led effects	Effects that interact spatially and/or temporally resulting in inter-related effects upon a single receptor.
Residual Impact	Residual impacts are the final impacts that occur after the proposed mitigation measures have been put into place, as planned.
Scoping Opinion	Sets out the Secretary of State's response to the Applicants Scoping Report and contains the range of issues that the Secretary of State, in consultation with statutory stakeholders, has identified should be considered within the EIA.
The Applicant	This is Liverpool Bay CCS Ltd.
Transboundary effects	Impacts from a project within one state affect the environment of another state(s).

Acronyms and Initialisations

Acronym/Initialisation	Description
AIS	Automatic Identification System
ALARP	As Low As Reasonably Practicable'
ATBA	Area To Be Avoided
AtoN	Aid to Navigation
CAA	Civil Aviation Authority
CBRA	Cable Burial Risk Assessment

Acronym/Initialisation	Description
CCS	Carbon Capture and Storage
CEA	Cumulative Effects Assessment
CHA	Competent Harbour Authority
CoCP	Code of Construction Practice
COLREG	International Regulations for Preventing Collisions at Sea
CO_2	Carbon Dioxide
CSIP	Cable Specification and Installation Plan
CtL	Consent to Locate
CTV	Crew Transfer Vessel
EcIA	Ecological Impact Assessment
EEA	European Economic Area
EIA	Environmental Impact Assessment
EMF	Electromagnetic Field
EMP	Environmental Management Plan
Eni	Eni UK Limited
EPA	Environmental Protection Agency
ES	Environmental Statement
ESCA	European Subsea Cables UK Association
FLCP	Fisheries Liaison and Coexistence Plan
FLO	Fisheries Laison Officer
FO	Fibre Optic
KIS-ORCA	Kingfisher Information Service – Offshore Renewables and Cable Awareness
LOA	Length Overall
MCA	Marine and Coastguard Agency
MDS	Maximum Design Scenario
MHWS	Mean High Water Springs
MLWS	Mean Low Water Spring
MMO	Marine Management Organisation
NRA	Navigational Risk Assessment
NRW	Natural Resources Wales
NSTA	North Sea Transition Authority, preceded by the Oil and Gas Authority
NtM	Notice to Mariners
OP	Offshore Platform
OPRED	Offshore Petroleum Regulator for Environment and Decommissioning
PDE	Project Design Envelope
RAM	Restricted in their Ability to Manoeuvre
RYA	Royal Yachting Association
SHA	Statutory Harbour Authority
SOLAS	The International Convention for the Safety of Life at Sea (SOLAS)
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
VMP	Vessel Management Plan

Units

Units	Description
%	Percent
GT	Gross Tonnes
km	Kilometres
m	Metres (distance)
nm	Nautical Mile (distance; equal to 1.852 km)

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9 SHIPPING AND NAVIGATION

9.1 Introduction

This chapter of the Offshore ES presents the assessment of the likely significant effects (as per the "EIA Regulations") on the environment of the Proposed Development on shipping and navigation. Specifically, this chapter considers the potential impacts from the construction, operation and maintenance, and decommissioning of the offshore components (seaward of the MHWS mark) of the Proposed Development, which includes the cables leading to MHWS).

The Proposed Development assessed in this chapter and in the Navigational Risk Assessment Technical Report (NRA) (Anatec Limited and RPS Group, 2023) includes the subsea power cables and the proposed Douglas CCS platform, as well as movements to and from the sites for activities associated with repurpose of existing pipelines, modification to wells and modifications to existing platforms. The assessment does not cover work carried out within the existing safety zones.

The shipping and navigation assessment of effects has followed the International Maritime Organization (IMO) Formal Safety Assessment (FSA) methodology since this is the internationally recognised approach for assessing the impact to shipping and navigation users, and is the approach required for the Maritime and Coastguard Agency (MCA)'s methodology (Annex 1 of Marine Guidance Note (MGN) 654) (MCA, 2021a), noting that MGN 654 is intended for Offshore Renewable Energy Installations (OREIs) as opposed to Carbon Capture and Storage (CCS) developments.

This chapter summarises information contained within the NRA (Anatec Limited and RPS Group, 2023).

9.2 Purpose of this chapter

The primary purpose of the Offshore ES is outlined in volume 1, chapter 1 of the of the Offshore ES. It is intended that the Offshore ES will provide the statutory and non-statutory stakeholders with sufficient information to determine the likely significant effects of the Proposed Development on the receiving environment.

In particular, this Shipping and Navigation ES Chapter:

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

9.3 Study area

The Proposed Development Shipping and Navigation study area is defined as a bounding box encompassing a 10 nm buffer on the proposed new Douglas CCS platform location, plus a 5 nm buffer on the proposed cable routes. The study area is considered sufficient to appropriately characterise the shipping activity and navigational features of relevance to the Proposed Development and to encompass any vessel traffic which may be impacted by the Proposed Development. The study area has been presented to and approved by stakeholders during consultation on the NRA approach (see Section 9.5). It is noted that a Physical Work Area

is also defined surrounding the proposed cable routes and the Douglas, Hamilton, Hamilton North and Lennox platforms. This area defines the area in which any of the work associated with the Proposed Development is expected to be take place.

The Shipping and Navigation study area is presented in Figure 9.1.

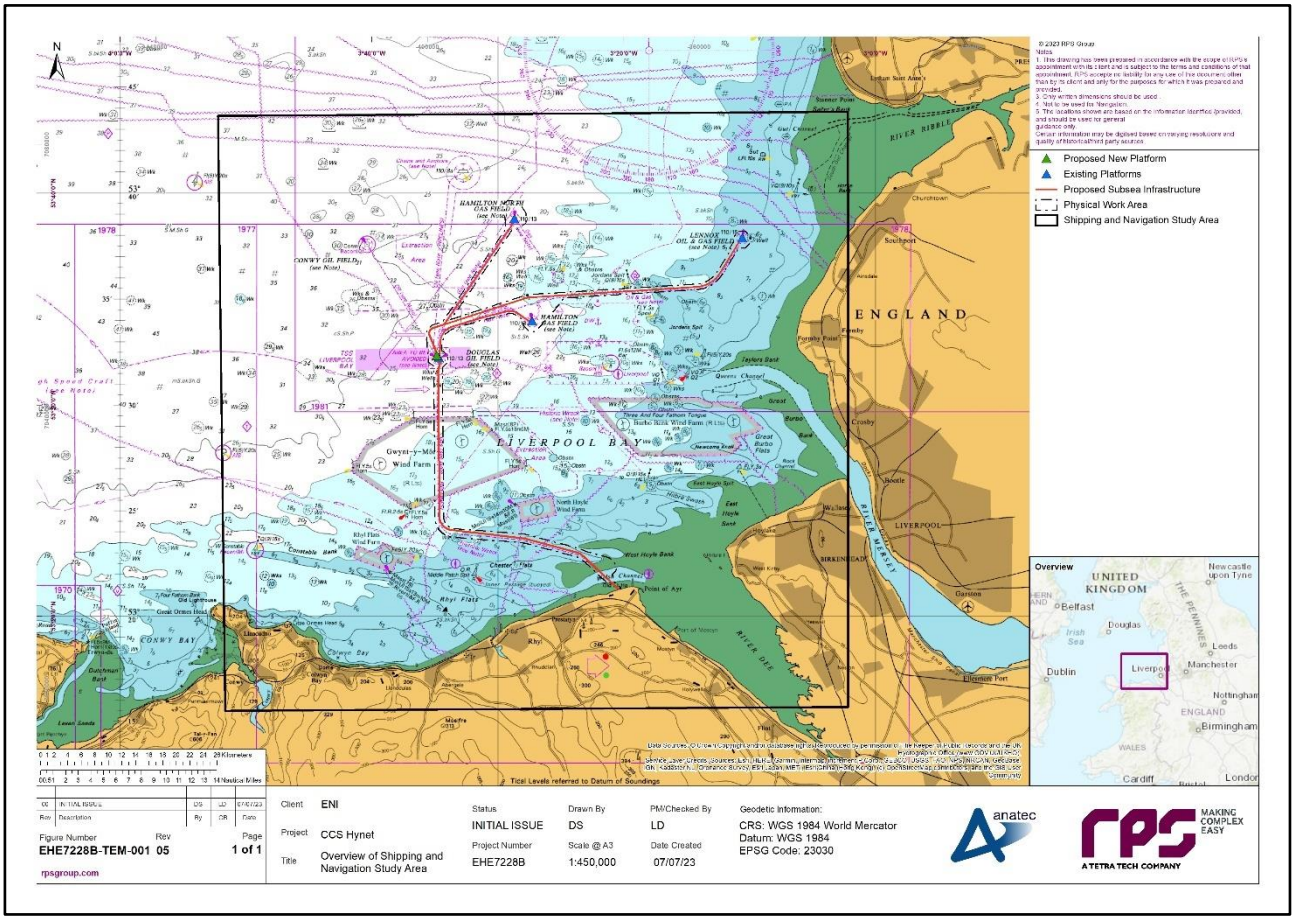


Figure 9.1: Shipping and Navigation Study Area

9.4 Policy and Legislative Context

The policy context for the HyNet Carbon Dioxide Transportation and Storage Project- Offshore is set out in Chapter 2: Policy and Legislative Context of the Offshore ES.

A summary of policy provisions relevant to Shipping and Navigation is set out in Table 9.1, with relevant legislation set out in Table 9.2.

Table 9.1: Summary of Marine Policies Relevant to Shipping and Navigation

Relevant Policy	Summary of Provision	How and Where Considered in the Offshore ES
UK Marine Policy Statement (DEFRA, 2011)	The UK Marine Policy Statement provides a framework for preparing Marine Plans and taking decisions affecting the marine environment. Paragraph 3.4.7 states "*Increased competition for marine resources may affect the sea space available for the safe navigation of ships. Marine plan*	Displacement of existing routes and activity, and the resultant increase in collision risk has been considered within the impact assessment (see Section 9.11).

Relevant Policy	Summary of Provision	How and Where Considered in the Offshore ES
	authorities and decision makers should take into account and seek to minimise any negative impacts on shipping activity, freedom of navigation and navigational safety and ensure that their decisions are in compliance with international maritime law".	
North-West Marine Plan (MMO, 2021)	*NW-PS-1: Ports and harbours are essential to realising economic and social benefits for the north-west marine plan areas and the UK. NW-PS-1 makes sure that proposals do not restrict current port and harbour activity or future growth, enabling long-term strategic decisions, and supporting competitive and efficient port and shipping operations.* *NW-PS-2: Within the north-west marine plan areas, there are International Maritime Organization routeing systems that are essential for shipping activity, freedom of navigation and navigational safety. NW-PS-2 confirms that proposals that compromise these important navigation routes should not be authorised. NW-PS-2 enables and supports safe, profitable and efficient marine businesses.* *NW-PS-3: The north-west marine plan areas are very busy with respect to high-density navigation routes, strategically important navigation routes and passenger services. NW-PS-3 confirms that proposals that pose a risk to safe navigation or the viability of these routes and services should not be authorised. NW-PS-3 aims to protect these routes and services by enabling and promoting safe, profitable and efficient marine businesses.* *NW-CAB-1: Subsea cabling is important to the growth and sustainability of telecommunications, offshore wind farms and electricity transmission. NW-CAB-1 supports and encourages cable burial where possible, to meet the needs of the sector while enabling co-existence with other users of the north west marine plan areas.*	All marine planning policies for ports, harbours and shipping have been considered fully in the ES chapter. Particular regard has been given to the possibility of the displacement of vessel traffic and the reduction in access to local ports. Mitigation measures have been identified in Section 9.10 to reduce the effect of these impacts. The primary means of cable protections is planned to be cable burial, with external protection only anticipated to be used at cable crossings.
Welsh National Marine Plan (Welsh Government, 2019)	*P&S_ 02: Ports and Shipping (supporting)* *These safeguarding policies seek to minimise negative impacts on shipping activity, ensure freedom of navigation and navigational safety which are provided under international law, and protect the efficiency and resilience of continuing port operations, including their economic interests. They do this by ensuring that developments or other activities which may restrict ports and shipping in terms of continuing current operations and responding to future development*	All marine planning policies for ports, harbours and shipping have been considered fully in the ES chapter. Particular regard has been given to the possibility of the displacement of vessel traffic and the reduction in access to local ports. Mitigation measures have been identified in Section 9.10 to reduce the effect of these impacts. The primary means of cable protections is planned to be cable burial, with external protection only anticipated to be used at cable crossings.

Relevant Policy	Summary of Provision	How and Where Considered in the Offshore ES
	opportunities are considered and addressed in decision making. They also recognise the significant potential for coexistence of compatible activities with ports and shipping. Displacement of shipping should be avoided where possible. *CAB_01: Subsea cabling (supporting):* *451. The Subsea Cable sector can reduce the potential for conflict, and increase co-location and coexistence opportunities, by undertaking burial of the cable, however the nature of activity over buried cables needs to be considered in light of prudent maritime practice and national and international law. Preference should be given to this method of cable installation where there is possibility of significant impact by other activities and where seabed conditions are suitable. Where burial is not achievable or desirable, alternative protection measures may be appropriate (in line with regulatory requirements and industry good practice).*	

Table 9.2: Summary of Legislation Relevant to Shipping and Navigation

Relevant Legislation	Summary of Provision	How and Where Considered in the Offshore ES
United Nations Convention on the Law of the Sea (UNCLOS) (UNCLOS, 1982)	UNCLOS defines the rights and responsibilities of all nations with respect to their use of the sea throughout the world. Article 60(7) states "*Artificial islands, installations and structures and the safety zones around them may not be established where interference may be caused to the use of recognised sea lanes essential to international navigation*".	UNCLOS is considered fully throughout this ES chapter. Particular regard is given to internationally recognised sea lanes (main commercial routes) which are considered a key element of the shipping and navigation baseline presented in Section 9.7 and have been considered when assessing the significance of impacts in Section 9.11.
Submarine Telegraph Act (UK Government, 1885)	An Act to carry into effect an International Convention for the Protection of Submarine Telegraph Cables. Article II states *"It is a punishable offence to break or injure a submarine cable, wilfully or by culpable negligence, in such manner as might interrupt or obstruct telegraphic communication, either wholly or partially, such punishment being without prejudice to any civil action for damages."* *This provision does not apply to cases where those who break or injure a cable do so with the lawful object of saving their ship, after they have taken every necessary precaution to avoid so breaking or injuring the cable.*	This has been taken into consideration in the assessment of impact from anchors or fishing gear in Section 9.11.

Relevant Legislation	Summary of Provision	How and Where Considered in the Offshore ES
Convention on International Regulations for Preventing Collisions at Sea (COLREGs) (IMO, 1972/78)	The COLREGs define the rules which must be adhered to *by all vessels navigating internationally.* Rule 8 Part (a) states *"Any action taken to avoid collision shall be taken in accordance with the Rules of this Part and shall, if the circumstances of the case admit, be positive, made in ample time and with due regard to the observance of good seamanship."* Rule 19 Part (b) states *"Every vessel shall proceed at a safe speed adapted to the prevailing circumstances and conditions of restricted visibility A power-driven vessel shall have her engines ready for immediate manoeuvre."*	The COLREGs in full are considered throughout this ES chapter with particular regard to collision avoidance (Rule 8) and conduct of vessels in restricted visibility (Rule 19) when considering collision risk in the impact assessment contained within Section 9.11.
Chapter V, Safety of Navigation, of the Annex to the International Convention for the Safety of Life at Sea (SOLAS) (IMO, 1974)	SOLAS Chapter V is an international agreement that sets basic minimum criteria for all seafarers, dependent on the *size and type of vessel.* Regulation 33 states *"The master of a ship at sea which is in a position to be able to provide assistance on receiving a signal from any source that persons are in distress at sea, is bound to proceed with all speed to their assistance"*	SOLAS Chapter V in full is considered throughout this ES chapter with particular regard to rendering assistance to persons in distress (Regulation 33) and passage planning (Regulation 34) when considering anchor interaction with subsea cables and emergency response capability in the impact assessment contained within Section 9.11.

9.5 Consultation

A summary of the key issues raised during consultation undertaken to date specific to Shipping and Navigation is presented in Table 9.3 below, together with how these issues have been considered in the production of this Offshore ES chapter. Further detail is presented within the NRA (Anatec Limited and RPS Group, 2023).

Table 9.3: Summary of Key Consultation of Relevance to Shipping and Navigation

Date	Consultee and type of response	Issue raised	Response to issue raised and/or where considered in this chapter
09/06/2022	Port of Mostyn – Consultation Meeting	It was noted that the Port is actively tendering for work with the local planned wind farms to serve as a logistics base and to receive wind farm components.	Planned offshore wind farms are presented in Section 9.7.5, with it noted that Mostyn may serve as a port serving these projects
		Vessel traffic at the port includes 10 crew transfer vessels (CTVs) movements per day, approximately 12 cargo vessels per year, and occasional jack-up vessels, all of which are associated with local wind farms.	Vessel numbers provided by the Port of Mostyn are noted in Section 9.7.4 and throughout the impact assessment in Section 9.11, noting that more recent numbers were provided in 2024..
		The Port noted the tidal lagoon project adjacent to the Port of Mostyn. The lagoon will be a	Planned tidal lagoon projects are presented in Section 9.7.5 and considered within the

Date	Consultee and type of response	Issue raised	Response to issue raised and/or where considered in this chapter
		6.7 km breakwater, scheduled for first power in 2027.	cumulative impacts assessment in Section 9.12.
27/01/2023	OPRED – Scoping Opinion	Section 3.5: Offshore Construction Phase - Offshore Power and Fibre Optic (FO) Cables. Clarification regarding the target cable burial depth is requested. It is advised that, if a minimum cable burial depth cannot be met due to ground condition, the cable should (generally) be protected by rock armouring in order to reduce the risk of navigational hazards.	Cables are anticipated to be buried to a target depth of 3 m in nearshore areas, and 2 m further offshore, as per Section 9.8.1. Where burial is not possible, such as at cable crossings, external protection is to be deployed in line with the findings of a Cable Burial Risk Assessment (CBRA) (see Section 9.10).
		The Proposed Development area for the Project carries a significant amount of through traffic to major ports, with a number of important international shipping routes in close proximity. The Developer is required to take into consideration any changes in vessel routing, particularly in heavy weather, to ensure shipping can continue to make safe passage without large-scale deviations. Any reduction in navigable depth should be referenced to chart data.	The vessel traffic baseline has been characterised in Section 9.7. Vessel displacement has been considered in Section 9.11.1, with local port access assessed in Section 9.11.4. Due to the proposed development largely coinciding with existing infrastructure, it is not anticipated that significant deviation will be required, with deviations mostly being temporary, localised deviations during the construction phase.
		The Navigational Risk Assessment should establish how the phases of the Project are managed to a point where risks are reduced and considered to be 'as low as reasonably practicable' (ALARP).	The FSA methodology is described in Section 9.9, with embedded mitigation measures used to reduce the risks to ALARP outlined in Section 9.10.
		It noted that the ES will consider the potential impacts of the construction, operation and maintenance and decommissioning phases of the Project and will follow the IMO Formal Safety Assessment methodology. The ES should provide details on the possible impacts of navigational issues for both commercial and recreational craft specifically: i. Collision Risk; ii. Navigational Safety; iii. Risk Management and Emergency response including potential impacts to search and rescue (SAR) and emergency response in the area to ensure there are no impacts on SAR operations; iv. Marking and lighting of site and information to mariners; v. Effect on small craft navigational and communication equipment;	The listed impacts have been assessed within Section 9.11, with impacts assessed for all three phases of the Proposed Development. Impacts have been assessed following the IMO FSA as outlined in Section 9.9.

Date	Consultee and type of response	Issue raised	Response to issue raised and/or where considered in this chapter
		vi. The risk to drifting recreational craft in adverse weather or tidal conditions; and vii. The likely squeeze of small craft into the routes of larger commercial vessels."	
		A safe realistic under keel clearance (UKC) assessment should be undertaken for the maximum drafts of vessels, both observed and anticipated. A link to The Maritime and Coastguard Agency (MCA) Under Keel Clearance Policy is provided in Annex 2.	Under keel clearance has been assessed within the impact assessment presented in Section 9.9. If areas are identified where water depth reduction may exceed 5%, a detailed draught assessment will be carried out post-consent to determine any safety risk to navigation.
		The Developer should ensure that any cables which need to be buried meet the appropriate burial depth and that evidence of this is provided by completing a Burial Protection Index study.	Cables are expected to be buried to a target depth of 3 m in nearshore areas, and 2 m further offshore. Cable burial and protection will be informed by CBRA (see Section 9.10).
		Subject to the traffic volumes, the Developer should note that an anchor penetration study may also be necessary. If cable protection measures are required (rock bags or mattresses), the MCA is willing to accept a 5% reduction in surrounding reference depths referenced to Chart Datum. This will be particularly relevant where depths are decreasing towards shore and potential impacts on navigable water increase. Where this is not achievable, the Developer must discuss this further with the MCA and Trinity House.	Suitable cable burial and/or external protection will be informed by a CBRA as noted in Section 9.10. Following surveys, if it is identified that additional protection is required and the MCA condition of no more than 5% reduction in water depth is exceeded, a review of impacts on shipping local to the affected area will be carried out. Consultation with the MCA and Trinity House will also be carried out as per MGN 654.
		It is advised that no effects are scoped out of the ES assessment with regards to shipping and navigation pending the outcome of the Navigational Risk Assessment (NRA) and further stakeholder consultation.	No effects were scoped out of the assessment with regards to shipping and navigation, which is presented in Section 9.11.
26/06/2023	RYA – Consultation meeting	RYA are content with the NRA methodology, impacts, consultees, and mitigation measures presented.	Noted that RYA are content with the approach.
		It was noted that the local recreational users are unlikely to have any issues with the Proposed Development.	Noted that the Proposed Development is unlikely to cause issues for recreational users in the area.
27/06/2023	Port of Liverpool – Consultation meeting	It was noted that the baseline presented aligned with the experience of the Port of Liverpool in the area, noting that wind farm vessels cross the Rock Channel	Wind farms vessels are represented appropriately within the baseline assessment in Section 9.7. Noted that the data recorded is

Date	Consultee and type of response	Issue raised	Response to issue raised and/or where considered in this chapter
		out of the Mersey broadcasting as passenger vessels.	in agreement with local experience.
		It was noted that ferry operators may be a useful consultee. The Port of Liverpool offered to disseminate information to ferry operators.	Noted. Ferry operators will be informed of the works via the Port of Liverpool and local Notices to Mariners (Section 9.10).
		It was noted that dredging takes place constantly within the Queen's Channel, however the TSS lies outside the port limits and is not dredged.	Dredging activity has been noted in the traffic baseline presented in Section 9.7.
		It was recommended that use of Liverpool pilots could be considered for the project vessels as they form a liaison with vessel traffic. Local notices to mariners can also be issued by the port.	Liaison with local ports and harbours and promulgation of information via local notices to mariners are noted as embedded mitigation as listed in Section 9.10.
		Part of the Proposed Development lies within the Port of Liverpool limits and will require liaison with the port.	Liaison with local ports and harbours is noted as an embedded mitigation as listed in Section 9.10.
		No concerns were raised with the Proposed Development or the proposed methodology for the assessment, noting that much of the infrastructure coincides or replaces existing infrastructure.	Noted that no concerns were raised with the methodology presented.
29/06/2023	MCA – Consultation meeting	The RYA Coastal Atlas was recommended as a data source to inform on recreational traffic.	Consultation was undertaken with the RYA to inform the NRA, with no concerns raised regarding recreational vessels in the area. Therefore AIS was considered sufficient to inform on recreational activity in the area.
		The MCA queried whether decommissioning works at the existing Douglas complex were included within the scope of the assessment.	Douglas decommissioning works are subject to a separate permit process and are not included within the scope of the NRA. Consideration has been given to the overlapping timescales, with the existing Douglas complex and the proposed Douglas CCS platform expected to be on site at the same time for a period of time.
		The MCA raised no concerns with the NRA methodology, impacts or mitigation measures presented.	Noted that the MCA accept the methodology, impacts and mitigation measures presented.
29/06/2023	Trinity House – Consultation meeting	Trinity House noted that the platform lighting and marking falls under the remit of the Standard Marking Schedule as opposed to IALA guidance.	Suitable lighting and marking will be in place on the Douglas CCS platform in accordance with the Standard Marking Schedule and in agreement

Date	Consultee and type of response	Issue raised	Response to issue raised and/or where considered in this chapter
			with Trinity House, as noted in Section 9.10.
		Trinity House raised no concerns with the NRA methodology, impacts or mitigation measures presented.	Noted that Trinity House accept the methodology, impacts and mitigation measures presented.
29/06/2023	Port of Mostyn – Consultation meeting	Port of Mostyn raised no concerns with the NRA methodology, impacts or mitigation measures presented.	Noted that the Port of Mostyn accept the methodology, impacts and mitigation measures presented.
		It was noted that there are several wind farm projects being developed in the area and the Port of Mostyn may see an increase in the vessels associated with these, including potentially construction vessels.	Future wind farm developments and potential resultant changes to the vessel traffic baseline are noted in Section 9.7.5 and considered in the cumulative assessment (Section 9.12).
29/06/2023	UK Chamber of Shipping – Consultation meeting	It was noted that the project boundaries for offshore wind farms in the planning phase may differ from the as-built footprint of arrays.	Possible changes to planned wind farm boundaries are noted in the discussion of the future traffic baseline detailed in Section 9.7.5.
		It was noted that the construction of wind farms in the area may lead to significant traffic deviations and alter the existing traffic baseline.	Noted in the future traffic baseline presented in Section 9.7.5 that traffic patterns may change in response to the construction of offshore wind farms. Traffic deviations considered in the cumulative assessment (Section 9.12)
		The Chamber queried whether the proposed Douglas CCS platform would qualify for an automatic 500 m safety zone, but noted that they would support.	It is assumed that a new 500m safety zones will be established around the new Douglas platform as part of the embedded mitigation measures listed in Section 9.10.
		Disruption to the Liverpool Bay TSS during the construction phase was noted to be the primary concern for the Chamber, given that the as-built project would have minimal differences to existing infrastructure.	Vessel deviations and reduced access to local ports and harbours has been assessed within the impact assessment presented in Section 9.11. Disruption to the Liverpool Bay TSS is expected to be very short-term and localised due to the speed of the cable-lay activities.
		The Chamber raised no concerns with the NRA methodology, impacts or mitigation measures presented.	Noted that the Chamber accept the methodology, impacts and mitigation measures presented.
26/06/2024	Port of Mostyn – Consultation Meeting	The Port indicated that they would not allow any obstruction of traffic during the cable lay operation within the Welsh Channel.	Reduction in access to the Port of Mostyn is considered within the impact assessment in Section 9.11 and the cumulative assessment in Section 9.12. It is noted that the construction plan and

Date	Consultee and type of response	Issue raised	Response to issue raised and/or where considered in this chapter
			methodology will be agreed in consultation with and approved by the Port of Mostyn prior to commencing activities.
		The Port requested that the NRA reflects that the Port of Mostyn is the harbour authority, and has a statutory duty to keep the port open at all times.	Reduction in access to the Port of Mostyn is considered within the impact assessment in Section 9.11 and the cumulative assessment in Section 9.12. It is noted that the construction plan and methodology will be agreed in consultation with and approved by the Port of Mostyn prior to commencing activities, to ensure that the port can remain open at all times throughout the construction period.
		The Port recommended that a marine planning liaison officer be appointed.to liaise between vessels during construction.	Noted in the impact assessment in Section 9.11 and in the additional mitigation measures in Section 9.13.
		The Port indicated that the cable should be -9m below Chart Datum within the Welsh Channel, as this is a statutory requirement. As built surveys will also be required to confirm the actual burial depth.	Noted in Section 9.11 that the cable will be buried to 3m below the seabed, deeper than the existing gas pipeline.
		The Port advised that re-dredging of the Welsh Channel is anticipated in 2026 to ensure the largest construction vessels for offshore wind farms can be accommodated. Following this, vessels with draughts of up to 11m may enter the channel.	Port developments are considered in Section 9.7.5, and within the cumulative impact assessment in Section 9.12.

9.6 Methodology to Inform the Baseline

9.6.1 Data Sources

Information on the shipping and navigation baseline was collected though a detailed desktop review of currently accessible studies and datasets. The baseline has been established though the use of data on vessel traffic, navigational features and historical incident data in proximity to the Proposed Development. Key data sources are listed in Table 9.4.

Table 9.4: Summary of Key Data Sources

Title	Source	Description
12 Months AIS Data (January – December 2022)	12 Months AIS Data (January – December 2022)	Characterising vessel traffic movements within the study area
Navigational Features	Admiralty nautical charts 1978 & 1826 (UKHO, 2023)	Characterising other navigational features in the proximity to the proposed development
	Admiralty Sailing Directions NP37 "*West Coasts of England and Wales Pilot"* (UKHO, 2022)	
Wind Farm Boundaries and Agreements	GIS for wind farms within England and Wales, The Crown Estate (TCE) 2023 (TCE, 2023)	Characterising wind farm boundaries and agreements in proximity to the proposed development
Maritime Incident Data	Marine Accident and Investigation Branch (MAIB) incident data, 2012-2021	Review of maritime incidents in proximity to the proposed development
	Royal National Lifeboat Institution (RNLI) incident data, 2013-2022	
	Department for Transport (DfT) UK civilian SAR helicopter taskings (April 2015 – 2022)	
Additional Fishing Data	Vessel Monitoring System (VMS) satellite fishing data 2020, MMO	Provide further information on fishing activities in proximity to the proposed development

9.6.2 Data Assumptions and Limitations

9.6.2.1 AIS Data

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

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

Since the vessel traffic data includes only AIS data, there are limitations associated with vessels not broadcasting on AIS. However, the MCA and Trinity House were content with the methodology and data sources, including the use of additional data sources such as VMS data and consultation feedback. The AIS data, complemented by the additional data sources, is considered to be suitably comprehensive and adequate for the assessment.

Military vessels are not required to broadcast on AIS and may therefore be under-represented.

9.6.2.2 Historical Incident Data

Although all UK commercial vessels are required to report incidents to the MAIB, this is not mandatory for non-UK vessels unless they are in a UK port, within territorial waters or carrying passengers to a UK port. There are also no requirements for non-commercial recreational craft to report incidents to the MAIB. Nevertheless, the MAIB incident database is considered to be a suitable source for the characterisation of historical incidents and adequate for the assessment.

9.6.2.3 Admiralty Charts

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

9.7 Existing baseline description

9.7.1 Overview of Baseline Environment

A summary of the shipping and navigation baseline is provided in the following sections. Further detailed analysis of the baseline is provided within the NRA (Anatec Limited and RPS Group, 2023).

9.7.2 Navigational Features

This section presents an overview of the navigational features in proximity to the Proposed Development. The key navigational features are presented in Figure 9.2. Navigational features are presented in separately in more detail within the NRA (Anatec Limited and RPS Group, 2023).

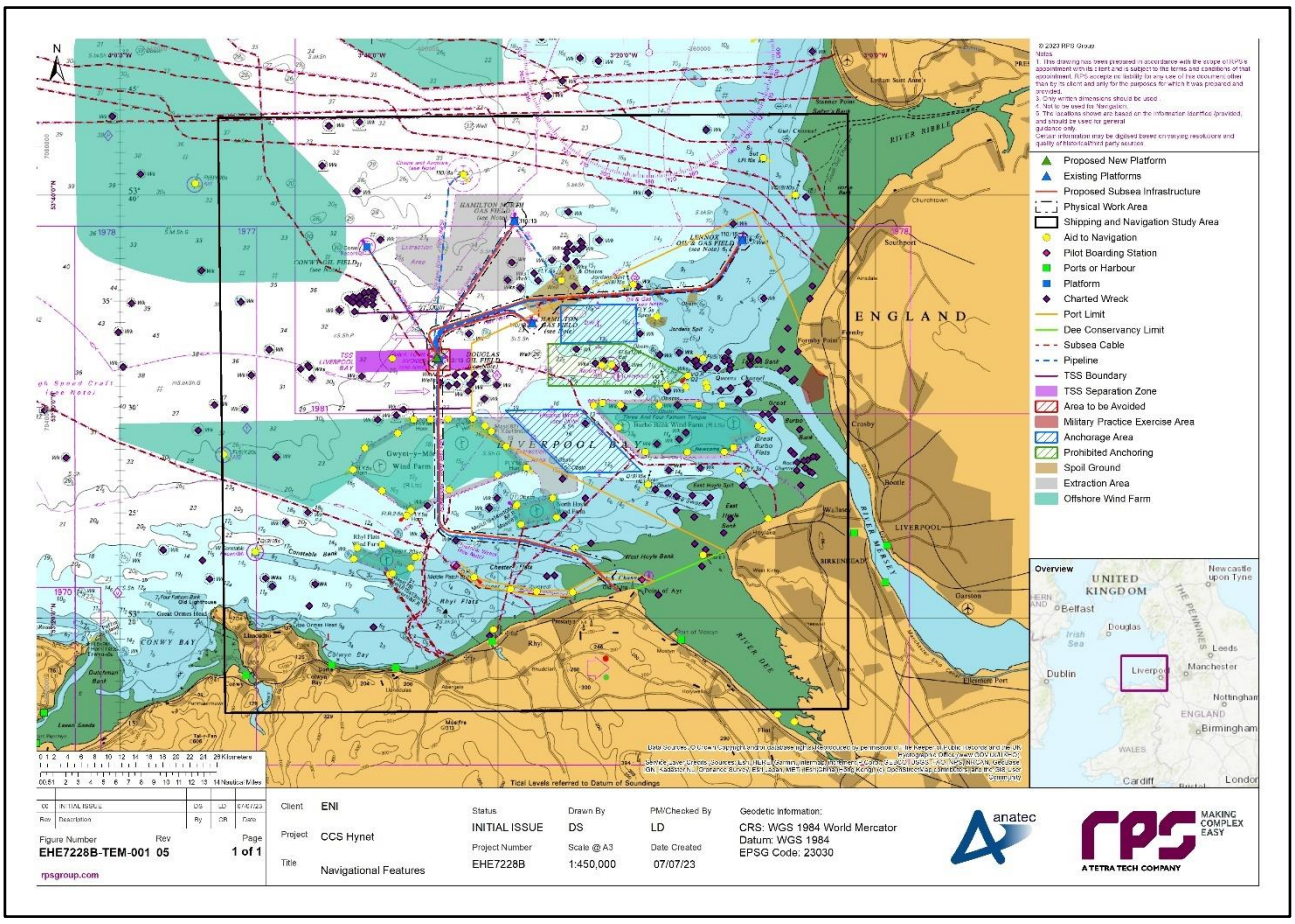


Figure 9.2: Navigational Features

The proposed Douglas CCS platform associated with the Proposed Development lies within the existing safety zone at the existing Douglas complex, located 200 m north of the accommodation platform. This safety zone also lies within an Area to be Avoided and is inside the separation zone of the Liverpool Bay TSS. The

westbound lane of the TSS lies to the north of the Douglas location, with the westbound lane to the south. The Liverpool Bay TSS is a key thoroughfare used by vessels visiting ports within the River Mersey, accessed via the Queen's Channel.

Ports within the Mersey include the Port of Liverpool, which is made up of several facilities including container docks, tanker facilities and passenger ferry terminals. The port limits of the Port of Liverpool extend into Liverpool Bay, with the western limit defined by the eastern edge of the Liverpool Bay TSS. The limits therefore encompass the existing platforms at Lennox and Hamilton, and part of the cable routes which form part of the Proposed Development. The Mersey also serves as the access to the Manchester Ship Canal, which houses terminals accommodating cargoes ranging from aggregates, animal feed, biomass and wind turbine components.

The other significant port limit in the shipping and navigation study area is the Port of Mostyn limit, which is located within the Dee Estuary. Mostyn is accessed via the Welsh Channel, a buoyed 85m channel, which extends to the west and is crossed by the Proposed Development close to the landfall at Point of Ayr. Access is also possible via the Mid Hoyle Channel which extends northwards from the River Dee, though water depths are limited. The Port of Mostyn is the Statutory Harbour Authority (SHA) for the immediate vicinity of the Port, and the Competent Harbour Authority (CHA) for pilotage, with its jurisdiction extending through the Welsh Channel to the Middle Patch Buoy, located approximately 2nm to the south of the Proposed Development. The CHA limits for pilotage are therefore crossed by the Proposed Development within the Welsh Channel.

The Port of Mostyn operates pilotage for the vessels visiting Mostyn, or entering the Dee Estuary. Pilot boarding is in the entrance to the Dee Estuary, approximately 1.7nm east of where the Proposed Development crosses the Welsh Channel, and at the entrance to the Welsh Channel, 7nm to the west of the Proposed Development's crossing of the Welsh Channel. It was stated in feedback from the Port of Mostyn that the Welsh Channel sees significant tidal variations, and that deep-draught vessels such as jack-ups associated with wind farm construction need to pass at high tide. Furthermore, these also operate in such a way that one jack-up enters and another leaves during the same tidal window.

Charted anchorages are located within the Port of Liverpool limits, with three deep water anchorage berths located 0.5 nm south of the cable route to Lennox, with a prohibited anchoring zone neighbouring this to the south. A further nine anchor berths are located south of this, between the Burbo Bank and Gwynt y Môr wind farms. These anchorages are typically used by commercial vessels such as cargo vessels and tankers, many of which are awaiting pilotage through the Queen's Channel to the Port of Liverpool.

There are six offshore wind farm projects in proximity to the Proposed Development, with four of these already constructed: Burbo Bank, North Hoyle, Rhyl Flats and Gwynt y Môr. The proposed cable route between Douglas and the landfall passes through the Gwynt y Môr wind farm, crossing the inter-array cables. The Gwynt y Môr wind farm is expected to be extended to the west by the Awel y Môr wind farm, for which the consent application has been submitted. The Mona wind farm boundary is located 5 nm to the north-west of the Proposed Development, and is in the pre-planning phase. Similarly, the Morecambe wind farm is located 6 nm to the north of the Hamilton North platform.

There are numerous subsea cables in the area. The included export cables associated with the offshore wind farms, including the Burbo Bank, North Hoyle and Gwynt y Môr cables which are crossed by the Proposed Development. The Proposed Development also cross the Western Link power cable which runs from Hoylake to Ireland. There are a number of cables running from the English coast to Ireland and the Isle of Man located to the north of the Proposed Development. Existing pipelines in the area run in similar routes to the cables associated with the Proposed Development, and are planned to be repurposed.

There are a number of aids to navigation (AtoN) and charted wrecks in proximity to the Proposed Development. AtoN include the Hamilton OSU in the north of the shipping and navigation study area, which is marked as an AtoN, buoys marking pilot boarding stations for Mostyn and Liverpool, and peripheral structures associated with the various wind farms in the area. There is one charted wreck within the Physical Work Area, 1.2 nm to the south of the proposed Douglas platform.

9.7.3 Emergency Response Resources and Historical Incident Review

This section summarises the existing emergency response resources and historical incident data in proximity to the Proposed Development.

SAR helicopter provision is provided by Bristow Group on behalf of HMCG from 10 base stations around the UK. The closest station to the Proposed Development is at Caernarfon, 32 nm to the southwest, which responded to the majority of taskings within the shipping and navigation study area. Other responding stations included Humberside (100 nm to the east), St Athan (120 nm to the south) and Lee on Solent (174 nm) to the southeast. Between 2015 and 2022, 153 helicopter taskings were recorded within the shipping and navigation study area. These were primarily in coastal areas, primarily along the Welsh coast south of the Proposed Development.

The HMCG coordinates SAR operations through a network of 11 Maritime Rescue Coordination Centres (MRCC), including a Joint Rescue Coordination Centre (JRCC) based in Hampshire.

All of the MCA's operations, including SAR, are divided into 18 geographical regions. The proposed development is within Area 15: "Great Orme to West Scottish Border including the Lakes". The closest MRCC to the proposed development is at Holyhead, located approximately 40 nm to the west. It is noted that incident response is not necessarily coordinated by the nearest MRCC, as operators may be unavailable and calls re-routed to another MRCC.

The location of the RNLI stations in proximity to the Proposed Development, along with the incidents recorded between 2013 and 2022 are presented in Figure 9.3. The RNLI operate a fleet of more than 350 lifeboats out of more than 230 stations across the UK and Ireland, with several of these located close to the Proposed Development. The Rhyl station responded to 34% of callouts within the shipping and navigation study area, with New Brighton (14%), Llandudno (13%), Conwy (13%) and Hoylake (11%) also responding to a significant proportion. Over the ten-year period, there were an average of 158 callouts per year within the shipping and navigation study area, with these largely concentrated along the coastline. The most common incident type responded to by the RNLI was "Person in Danger", which accounted for 37%, followed by machinery failures (16%). Common casualty types, alongside "Person in Danger" incidents, were recreational vessels (25%) and personal craft (10%). Six incidents were recorded within the Physical Work Area, with three "person in danger" incidents and three machinery failures.

All UK flagged vessels and non-UK flagged vessels in UK territorial waters (12 nm), a UK port or carrying passengers to a UK port are required to report incidents to the MAIB. Over the ten year period, there was an average of 12 to 13 incidents per year recorded within the study area. The most common incident types were machinery failures (22%), "Accident to Person" (19%) and grounding/stranding incidents (18%). The most common type of vessel involved in incidents was "other commercial", which includes vessels such as workboats, dredgers, SAR craft and tugs, and accounted for 35% of incidents recorded by the MAIB. Cargo vessels (22%), service ships (15%) and recreational craft (11%) also accounted for a significant number of incidents within the study area.

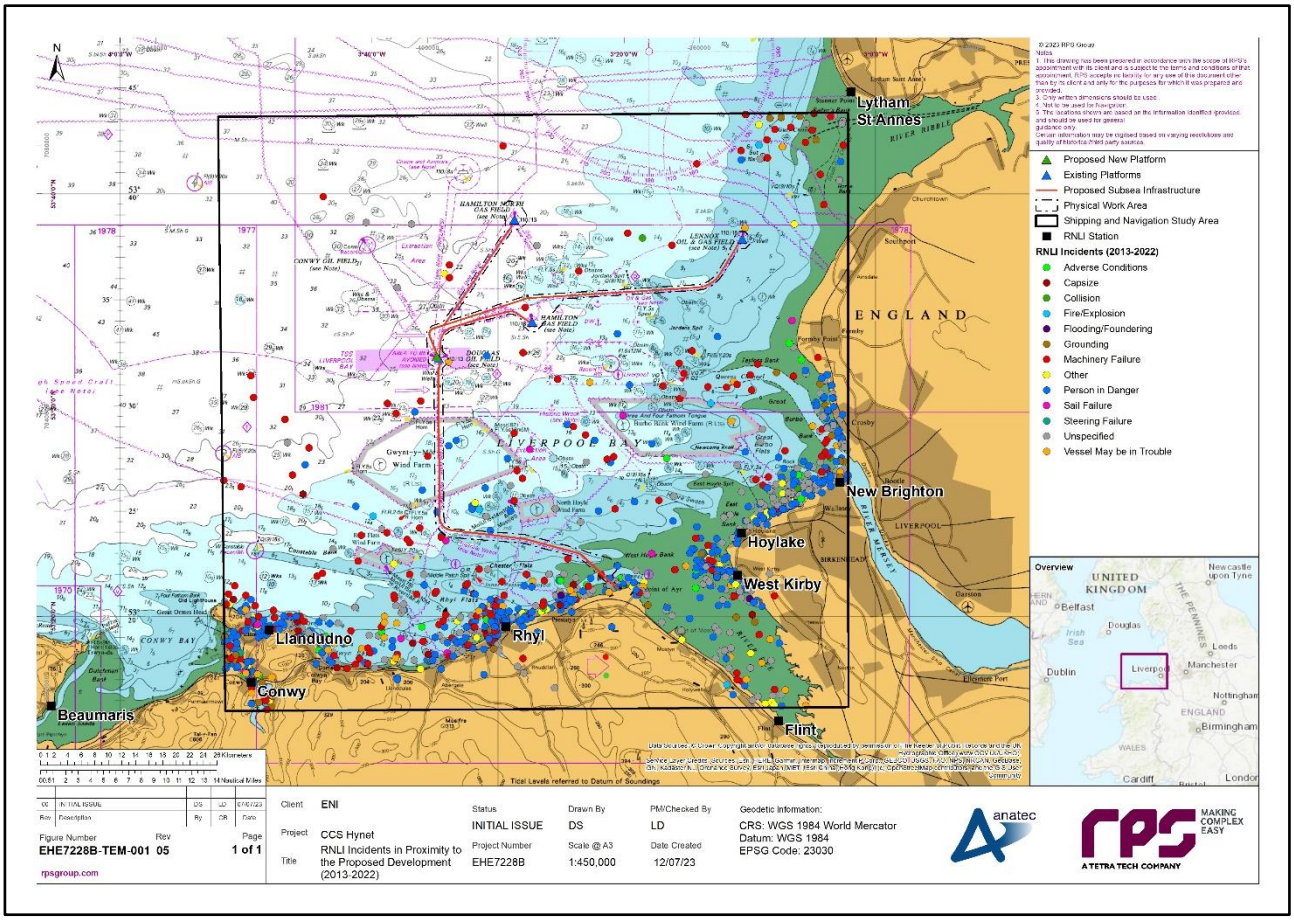


Figure 9.3: RNLI Stations and Incidents in Proximity to the Proposed Development

9.7.4 Vessel Traffic Overview

The vessel traffic baseline within the shipping and navigation study area has been identified from 12 months of AIS data, covering the entirety of 2022.

A plot of the vessel tracks recorded on AIS within the shipping and navigation study area is presented in Figure 9.4. It is noted that a number of tracks have been classified as temporary or non-routine and have been removed. These included vessels undertaking surveys, including unmanned survey vessels and vessels undertaking guard duty. Vessels which remained stationary in port, or alongside oil & gas installations and wind turbines have also been removed from the analysis to ensure that a fair representation is given to typical vessel traffic movements in the area.

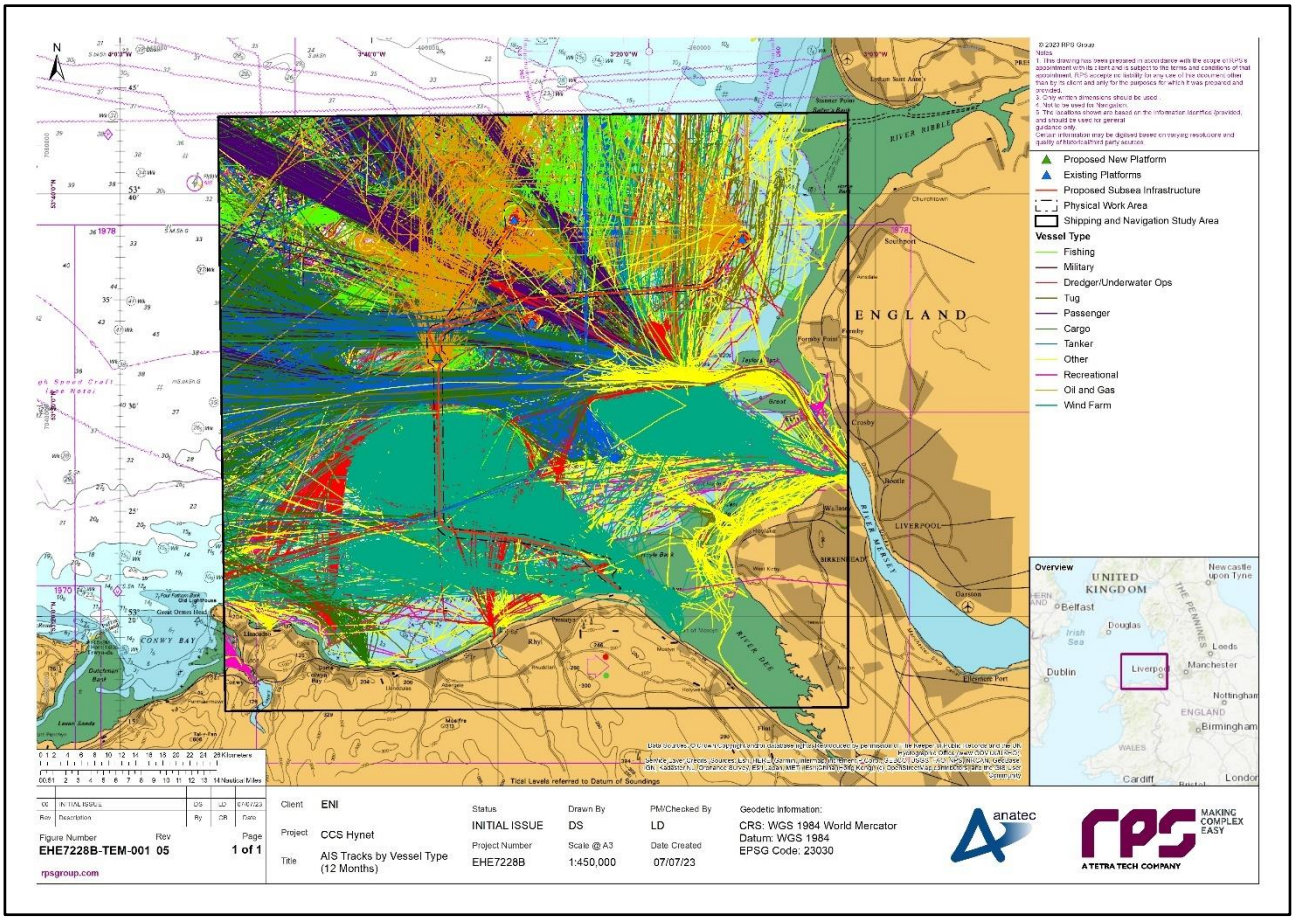


Figure 9.4: AIS Tracks by Vessel Type – (12 Months)

The most common vessel type recorded in the shipping and navigation study area was cargo vessels, accounting for 29% of unique vessels per day recorded in the area, followed by wind farm vessels (18%) and tankers (17%). Cargo vessels and tankers tended to be recorded on the main commercial routes as highlighted by the density heatmap, while wind farm vessels were typically recorded close to the coastline, and were recorded on transit to or within the various wind farms in the study area, including Gwynt-y-Môr, Burbo Bank and Rhyl Flats.

Figure 9.5 presents the density of vessels recorded within the shipping and navigation study area, based on a grid of 500 m x 500 m cells. Cells are colour-coded such that approximately 20% of cells fall into each category.

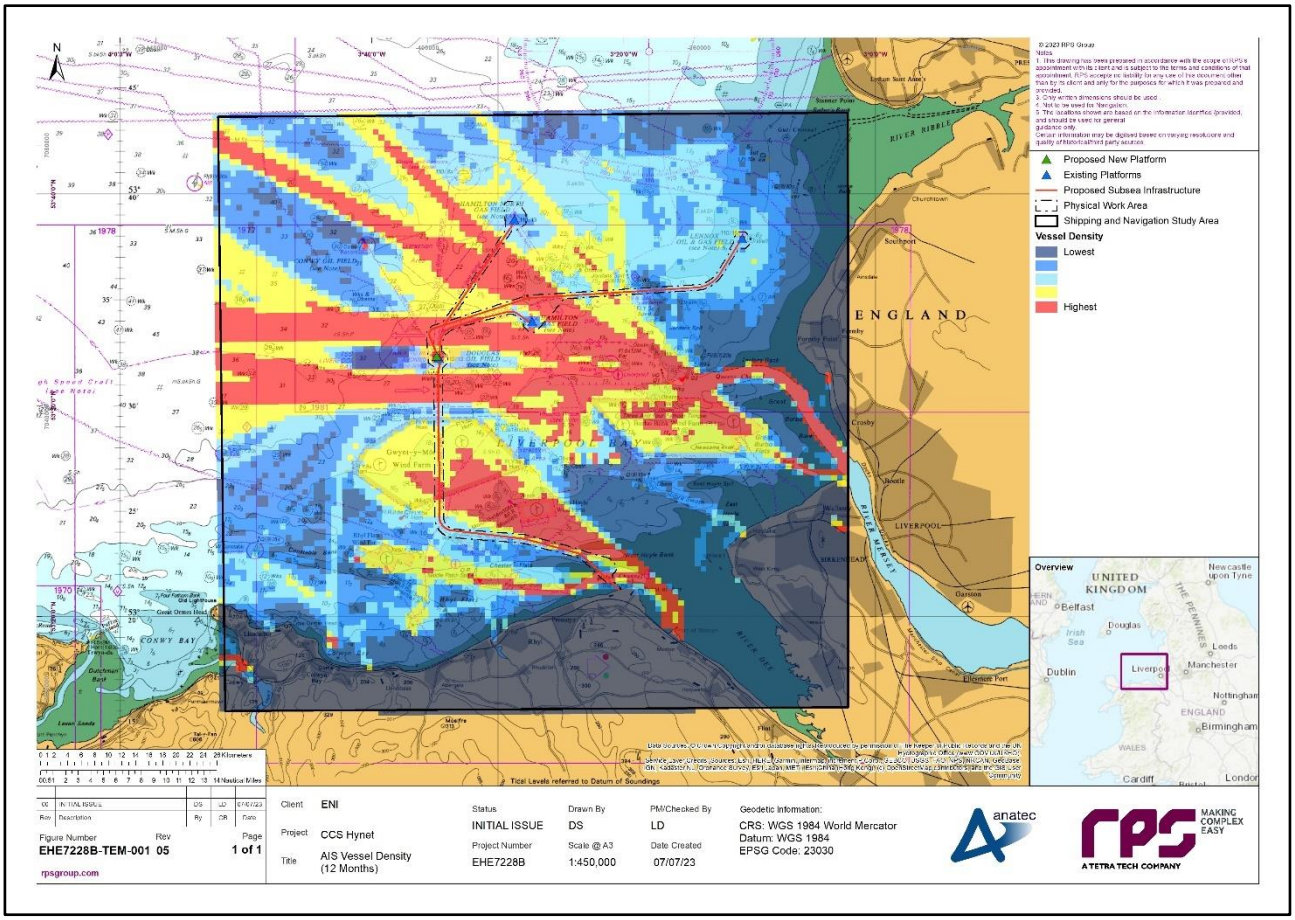


Figure 9.5: AIS Vessel Density – (12 Months)

The vessel density heatmap highlights the high density areas of traffic within the study area. High density regions included the Queen's Channel, which serves as the main access route to the ports within the River Mersey including Liverpool and the Manchester Ship Canal, the Liverpool Bay TSS which channels the traffic to the north and south of the proposed location of the Douglas CCS platform, as well as the various wind farms in the area and their associated vessel routes. This includes the routes between Mostyn in the south of the shipping and navigation study area and the North Hoyle, Rhyl Flats and Gwynt-y-Mor wind farms. Main vessel routes used by cargo vessels, tankers and passenger vessels heading to Ireland also form high density routes towards the northwest of the study area. It was noted during consultation that the Port of Liverpool carries out frequent maintenance dredging of the Queen's Channel, further contributing to this high density area.

Figure 9.6 presents the average daily vessel count within the study area and within the Physical Work Area, presented using unique vessels per day[1].

[1] Vessels are only counted once per day in order to avoid over-counting of vessels due to exiting and re-entering the study area or broken AIS tracks

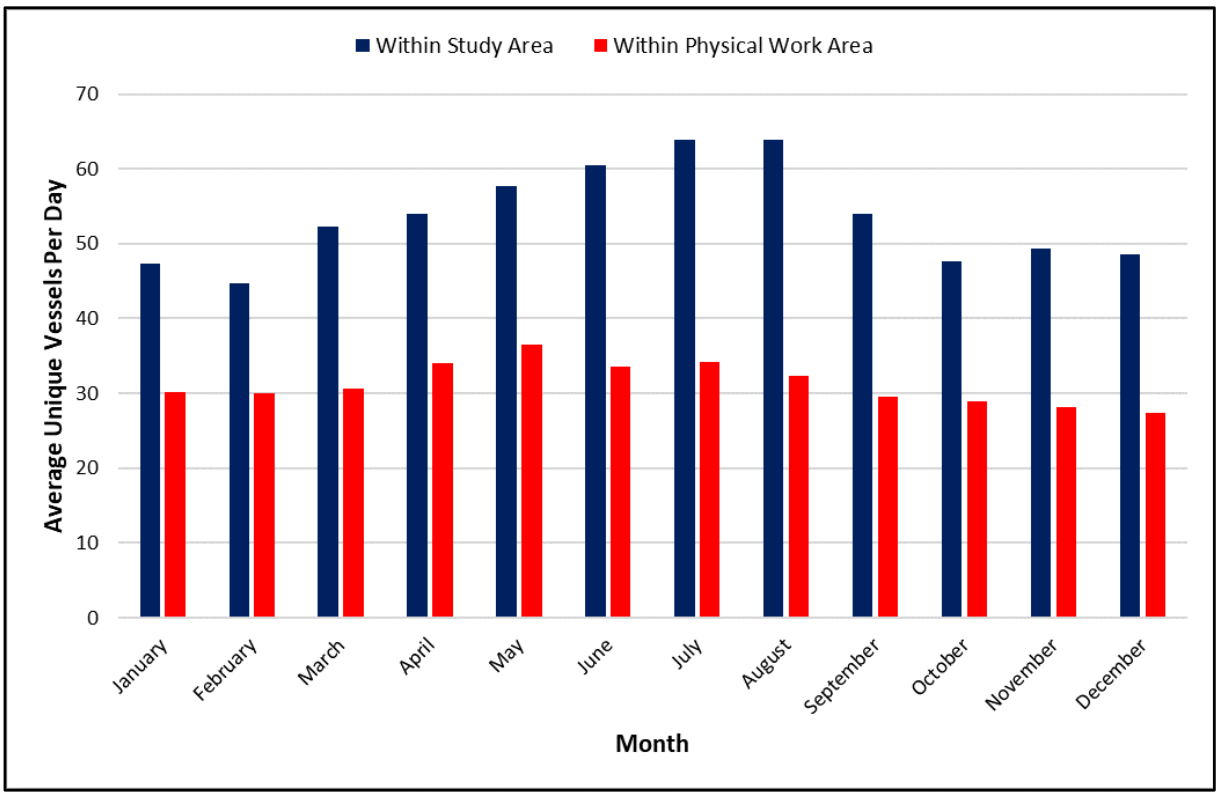


Figure 9.6: Average Daily Vessel Count per Month (2022)

There was an average of 54 vessels per day within the study area, with July being the busiest month, when an average of 64 vessels per day were recorded. The quietest month was February, when an average of 45 vessels per day were recorded. The difference in vessels counts can be attributed largely to recreational activity in the summer months, while passenger and wind farm vessels were also more frequent over the summer. Within the Physical Work Area, there were an average of 31 unique vessels per day, with the most vessels recorded in May with 36 vessels per day, compared with a low of 27 unique vessels per day in December.

On average, there were 16 cargo vessels and 9 tankers recorded within the shipping and navigation study area per day. Common destinations for these vessels included Liverpool and other ports within the Mersey, Belfast, Dublin, Antwerp and Rotterdam. The majority of these vessels were recorded utilising the Liverpool Bay TSS, while the anchorages close to the entry to the Queen's Channel were also regularly used by commercial vessels.

The average length of vessels recorded within the shipping and navigation study area throughout 2022 was 91m, with the largest vessel being a 349 m container ship, recorded transiting the Liverpool Bay TSS on passage between Liverpool and Antwerp. In general, larger vessels within the shipping and navigation study area were recorded utilising the Liverpool Bay TSS and on well-defined routes to the northwest, including ferry routes to Ireland. Smaller vessels tended to include crew transfer vessels associated with the wind farms, as well as pilot vessels, and therefore are largely seen inshore of the Douglas platform location. Wind farm vessels based in the Port of Mostyn, transiting to the Rhyl Flats and Gwynt-y-Môr wind farms.

The average vessel draught recorded in the shipping and navigation study area was 4.5m, with the deepest being 14m, recorded by a crude oil tanker visiting Liverpool via the Liverpool Bay TSS and the Queen's Channel on passage from Algeria. Traffic patterns by draught were largely similar to those by length, with the deepest draught vessels typically using the main routes through the area, such as the TSS and the Queen's Channel, while shallower draught vessels were recorded throughout the study area, particularly around the wind farms and near shore areas.

DWT traffic patterns were similar, with the largest vessels typically transiting via the well-defined routes through the shipping and navigation study area, and smaller vessels recorded more widely throughout the area. The average DWT recorded was 8,644, with the largest being a crude oil tanker recorded visiting Tranmere, with a DWT of 164,608.

The fastest vessels recorded in the study area tended to be the vessels on regular passenger routes, as well as wind farm vessels while on passage between the wind farms and Port of Mostyn. Slower vessels tended to include fishing vessels, wind farm vessels located within the wind farms and oil and gas vessels in proximity to installations in the north of the study area. The average speed of vessels recorded in the study area was 8.0 knots, with the highest being 35.8 knots by a lifeboat working close to shore.

There were seven to eight unique vessels per day recorded at anchor within the shipping and navigation study area. A significant proportion of the anchored vessels were concentrated within the charted anchorage areas located between the Gwynt y Môr and Burbo Bank wind farms. A large number of wind farm vessels were also recorded at anchor around the boundaries of the two wind farms, particularly at Gwynt y Môr. The most common type of anchored vessels were tankers (45%), followed by cargo vessels (29%) and wind farm vessels (22%).

On average, one fishing vessel was recorded per day within the study area. April was the busiest month in terms of fishing activity, with three unique vessels per day recorded on average. Common gear types recorded within the study area included dredgers (40%), potter/whelkers (39%) and beam trawlers (13%). Fishing activity was most common in the north of the study area, with some potting activity recorded within the Gwynt y Môr wind farm.

In addition to AIS, VMS satellite data for 2020 was reviewed to inform on fishing vessel movements. Fishing density as reported by the MMO showed a good correlation between with the baseline as established using AIS data.

Throughout 2022 two unique recreational vessels per day were recorded within the study area. Recreational activity was highest during the summer, peaking at seven unique vessels per day in August, with very little recreational activity recorded in the winter, noting that recreational vessels tend to be under-represented on AIS due to carriage requirements. Recreational activity was primarily associated with either the Mersey ports, or with Conwy Bay in the southwest of the study area. Recreational vessels on passage were also recorded, particularly in the western extent of the study area. The majority (96%) of recreational vessels recorded within the study area were UK-registered.

During 2022, there were 4,089 vessel tracks recorded on AIS entering or exiting the Port of Mostyn, noting that this excludes temporary vessel activities such as survey and buoy work in the approaches to the Port of Mostyn and in Liverpool Bay. Wind farm support vessels made up the vast majority (99%) of vessels visiting Mostyn, with the remainder made up of tugs, workboats, cargo vessels and RNLI lifeboats.

It was noted in feedback from the Port of Mostyn that wind farm support vessels make multiple transits per day between the Port and wind farms, which are under-represented in the average daily counts. Mostyn advised that there are an average of 8,400 transits made by wind farm support vessels annually, with a further 200 made by jack-up and general cargo vessels. This corresponds to an average of 23 to 24 transits per day associated with the Port of Mostyn. During consultation with the Port of Mostyn in 2022, it was noted that there were approximately 10 CTV movements per day, with one cargo vessel per month and occasional jack-up vessels associated with the local wind farms visiting the Port of Mostyn.

Vessels recorded on AIS used two main routes to access Mostyn, with vessels either following the Welsh Channel extending to the west out of the River Dee, or the Mid Hoyle Channel, which passes north, through the West Hoyle Bank. The Welsh Channel is crossed by the Proposed Development, alongside the location where the existing pipeline crosses the Welsh Channel. The Mid Hoyle Channel is not crossed by the Proposed Development, though there is a slight overlap with the Physical Work Area. Both channels are buoyed, with the pilot boarding location lying where both channels converge before entry to the Dee estuary. Of the vessels recorded on AIS, 78% were recorded transiting the Mid Hoyle Channel, with 22% recorded on AIS using the Welsh Channel.

Average vessel sizes were similar in both channels, with this largely dictated by the high volume of crew transfer vessels associated with the wind farms. The largest vessels visiting Mostyn were six 90m cargo vessels, all of which were recorded entering and leaving via the Welsh Channel. These vessels had a draught of approximately 3.5m. The deepest draught vessel was a jack-up vessel supporting the wind farms, with a draught of 4.8m. This vessel was recorded in the Mid Hoyle Channel on seven occasions, and just once in the Welsh Channel. The Port of Mostyn indicated that there were significant tidal variations of up to 9m in the approaches to the port.

9.7.5 Future Baseline Scenario

An assessment of the factors which may impact the future shipping has been carried out and is described within this section.

The key impact on vessel routeing in the area is expected to be the construction of a number of wind farms in the area. In particular, Mona, Morgan and Morecambe wind farms, if consented, have the potential to significantly alter routes visiting the Mersey ports, particularly routes (including ferry routes) to Ireland. It is noted that all of these wind farms are in the pre-planning phase and will be subject to their own consenting process and boundaries therefore have the potential to differ significantly from any finally constructed projects. The Awel y Môr wind farm, located to the west of the Gwynt y Môr, may also displace existing traffic into the Liverpool Bay TSS. It was noted during consultation that these may also lead to an increase in wind farm vessels utilising the Port of Mostyn, including construction vessels. In line with industry experience, commercial vessels are expected to maintain a minimum mean distance of 1 nm from wind farm structures. There is potential for smaller vessels, such as fishing vessels and recreational vessels to pass within wind farms. In addition to offshore wind farms, there are plans to build tidal lagoons in the area, with the Port of Mostyn planning to build the first of these extending from the breakwater of the Port to Point of Ayr. Other tidal lagoon projects are in an early planning phase, located on the north coast of Wales and within the Mersey.

Within the study area, the most common destinations included Liverpool, Mostyn, Manchester, Belfast and Garston, as well as nearby oil and gas fields and wind farms. Port arrival statistics from the Department for Transport (DfT, 2023) covering the period from 2017 to 2022 have been reviewed for key ports broadcast as destinations on AIS within the study area, as well as other local ports to determine trends in shipping in the recent years. Vessel arrivals for the Manchester, Liverpool and Belfast are shown in Figure 9.7, with statistics for local ports in Garston and Mostyn shown in Figure 9.8.

The DfT statistics have certain reporting limitations, and therefore are not directly comparable with the AIS data, but are useful for indicating the overall trend. According to the DfT, vessel arrivals include all commercial vessels except fishing, towing/pushing tugs, work boats, non-seagoing vessels, non-merchant ships, and vessels of unknown or unrecorded type.

It should be noted that the Port of Mostyn is regularly visited by wind farm support vessels, which lie in the category of work boats based on the vessel type they broadcast on AIS. This means that the vessel movements associated with the offshore renewable industry visiting the Port of Mostyn are not included in the DfT port arrival statistics.

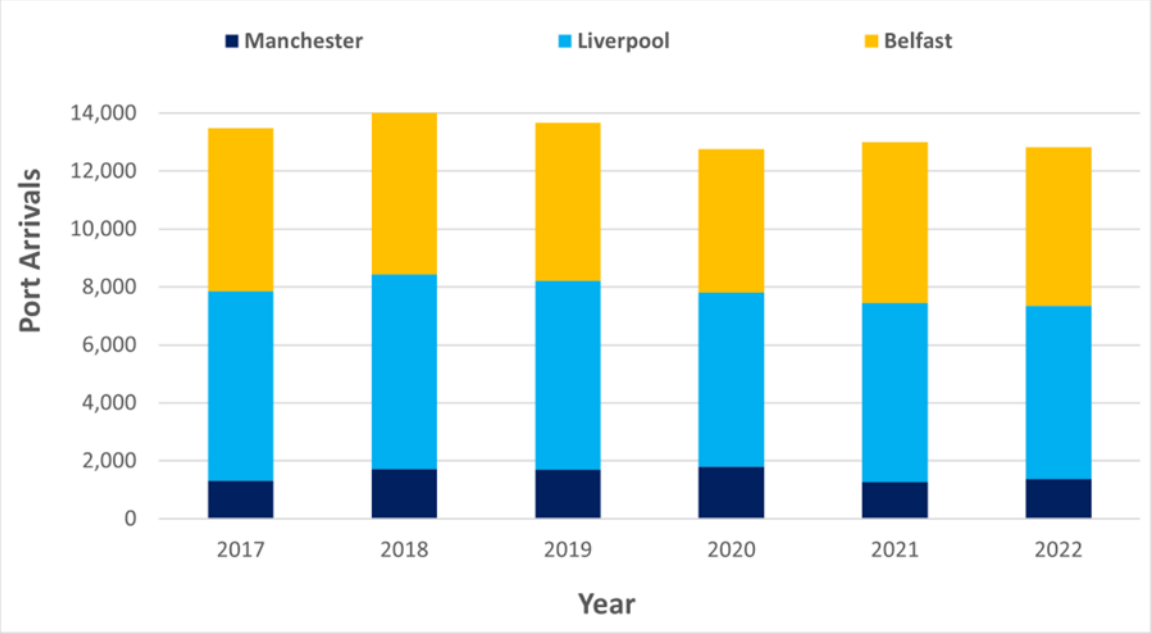


Figure 9.7: Vessel Arrivals for Major Ports 2017 – 2022

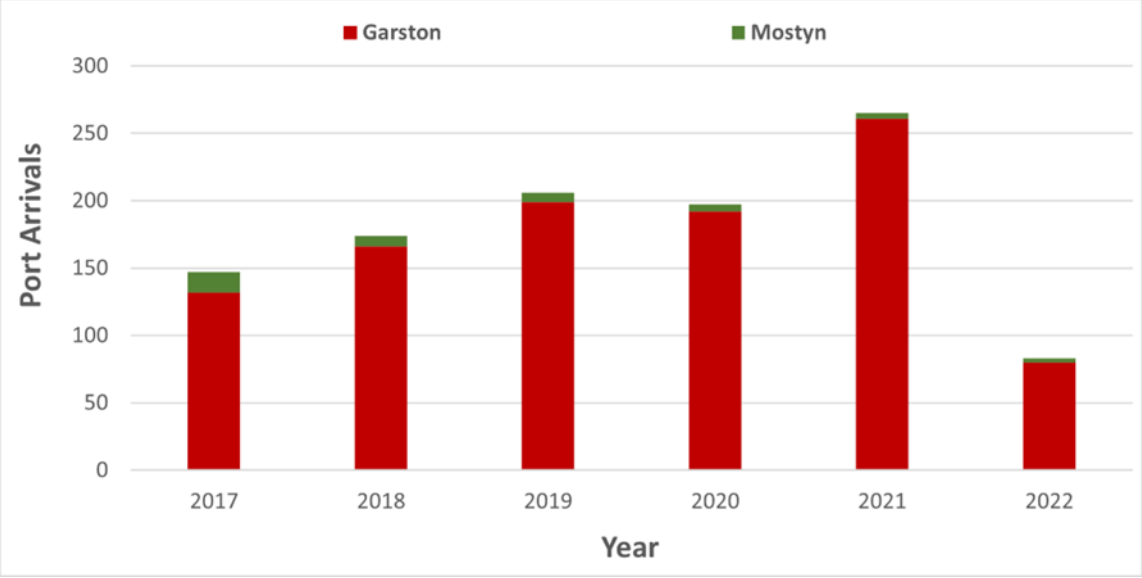


Figure 9.8: Vessel Arrivals for Other Local Ports 2017 – 2022

Port arrivals across all five ports have declined by 5% since 2017, noting that there is potential for this to have been impacted by Brexit and the COVID-19 pandemic. Overall, this decline equates to approximately 700 fewer arrivals in 2022 compared with 2017. Vessel arrivals for major ports peaked in 2018, with approximately 14,000 arrivals between the three ports. The Ports of Garston and Mostyn peaked in 2021 with 265 vessel arrivals, reducing to 83 in the following year.

The Port of Liverpool and the Manchester Ship Canal are operated by Peel Ports, who have plans to invest £200m in sustainable port infrastructure projects by Summer 2024. There are currently no detailed plans on expansion at either of the Liverpool or Manchester. In 2016, Liverpool saw the completion of the Liverpool2 container terminal, which increased the port's ability to handle the largest container ships. Garston is operated by Associated British Ports, and recently underwent enhancement to the dry bulk storage offering at the port.

The Port of Mostyn submitted a marine works application in February 2023 to extend an existing berth by constructing a 350m quay that would accommodate the construction of fixed foundation and floating wind farm

projects in the Irish and Celtic Seas. The quay is planned to have an alongside water depth of 12m (Chart Datum (CD)). The planned construction of this quay is expected to take around 21 months and will lead to an increase in vessel movements associated with the offshore renewable industry, including deeper draught vessels and towage of floating turbine platforms subject to being Restricted in their Ability to Manoeuvre (RAM). In addition to this, further dredging works would also be required to create new berths for ships, deepening of existing berths and maintenance dredging of the approach channel. This would increase vessel movements in terms of dredgers and barges frequently working in the area for the duration of these works. The developments at the port would also include the disposal of materials within the disposal site between Point of Ayr and Mostyn Deep. It is noted that subject to favourable determination, this expansion plan is expected to take place during 2025 and 2026, potentially coinciding with the construction dates for the Proposed Development.

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

Recreational activity can be similarly difficult to predict, but is assumed to remain similar or slightly increase in future years. Similarly the make-up of recreational traffic may vary, with sail and electric-powered vessels expected to become more prominent in place of diesel-fuelled craft. The locations of recreational activity may also vary, while volume of activity may be dependent on other factors such as the weather, climate change and the economy.

9.8 Key Parameters for Assessment

9.8.1 Maximum Design Scenario

A range of potential project impacts on shipping and navigation have been identified which could potentially occur during the construction, operation and maintenance, and decommissioning phases of the Proposed Development.

Impacts that have been scoped into the assessment are outlined in Table 9.5 along with the identified maximum design scenarios. The maximum design scenarios have been selected as those having the potential to result in the greatest effect on an identified user or user group. These scenarios have been selected from the details provided in volume 1, chapter 3 of the of the Offshore ES. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the Project Design Envelope (PDE) (e.g. different infrastructure layout), to that assessed here, be taken forward in the final design scheme.

Table 9.5: Maximum Design Scenario Considered for Each Impact as Part of the Assessment of Likely Significant Effects on Shipping and Navigation

Potential Impact	Phase			Maximum Design Scenario	Justification
	C	O&M	D		
Vessel displacement leading to increased vessel to vessel collision risk between third-party vessels	✓	✓	✓	**Construction Phase** • Cable installation expected to take up to two months • Douglas CCS Platform installation is expected to take up to five months • Maximum of 2 HLV on site making up to 4 return trips • Maximum of 2 jack-up vessels on site making up to 4 return trips • Maximum of 17 tug/anchor handlers making up to 22 return trips • Maximum of 12 cargo barges making up to 17 return trips • Maximum of 3 dive support/light construction vessels making up to 3 return trips • Maximum of 2 survey vessels making up to 3 return trips • Maximum of 6 crew transfer vessels making up to 216 return trips • Maximum of one cable installation vessel making one return trip • Maximum of 5 support vessels making up to 83 return trips • Maximum of 3 multicats making up to 3 return trips • Maximum of 3 working boats making up to 3 return trips • Maximum of one trench support vessel making one return trip • Maximum of one seabed preparation vessel making one return trip • Maximum of one cable protection installation vessel making one return trip • Maximum of one cable burial installation vessel making one return trip • 500 m advisory safe passing distances around cable installation vessels • 500 m safety zone around the Douglas CCS platform **Operation and Maintenance Phase** • Anticipated operation and maintenance phase lasting 25 years. • Maximum of one jack-up vessel on site at one time, making up to 15 return trips • Maximum of 3 other vessels (multi-purpose support/Inspection, maintenance and repair vessels (IMR)) on site at one time making up to 15 return trips • 500 m safety zone around the Douglas CCS platform	Greatest number of vessels associated with the Proposed Development and greatest duration, resulting in the maximum temporal effect and maximum displacement of third-party vessels, leading to the maximum effect on vessel to vessel collision risk

Potential Impact	Phase			Maximum Design Scenario	Justification
	C	O&M	D		
				• 500 m advisory safe passing distance around cable maintenance vessels during periods of major maintenance **Decommissioning Phase** • It is anticipated that decommissioning works will be similar in terms of the maximum design scenario to the construction phase.	
Increased vessel to vessel collision risk between third-party vessels and project vessels	✓	✓	✓	**Construction Phase** • Cable installation expected to take up to two months • Douglas CCS Platform installation is expected to take up to five months • Overall programme for works at existing platforms expected to take up to four years • Maximum of 2 HLV on site making up to 4 return trips • Maximum of 2 jack-up vessels on site making up to 4 return trips • Maximum of 17 tug/anchor handlers making up to 22 return trips • Maximum of 12 cargo barges making up to 17 return trips • Maximum of 3 dive support/light construction vessels making up to 3 return trips • Maximum of 2 survey vessels making up to 3 return trips • Maximum of 6 crew transfer vessels making up to 216 return trips • Maximum of one cable installation vessel making one return trip • Maximum of 5 support vessels making up to 83 return trips • Maximum of 3 multicats making up to 3 return trips • Maximum of 3 working boats making up to 3 return trips • Maximum of one trench support vessel making one return trip • Maximum of one seabed preparation vessel making one return trip • Maximum of one cable protection installation vessel making one return trip • Maximum of one cable burial installation vessel making one return trip • 500 m advisory safe passing distances around cable installation vessels • 500 m safety zone around the Douglas CCS platform **Operation and Maintenance Phase** • Anticipated operation and maintenance phase lasting 25 years. • Maximum of one jack-up vessel on site at one time making up to 15 return trips	Greatest number of vessels associated with the Proposed Development and greatest duration, resulting in the maximum temporal effect, on vessel to vessel collision risk involving a project vessel and third-party vessel.

Potential Impact	Phase			Maximum Design Scenario	Justification
	C	O&M	D		
				• Maximum of 3 other vessels (multi-purpose support/IMR vessels) on site at one time making up to 15 return trips • One mobile offshore drilling unit (MODU) anticipated on site for well operations every 10 years **Decommissioning Phase** • It is anticipated that decommissioning works will be similar in terms of the maximum design scenario to the construction phase.	
Vessel to platform allision risk	✗	✓	✗	**Operation and Maintenance Phase** • Anticipated operation and maintenance phase lasting 25 years. • Platform topside dimensions of 76.7 m x 45.6 m	Maximum dimensions and operational lifetime of the Proposed Development resulting in the maximum temporal effect on vessel to platform allision risk.
Reduced access to local ports	✓	✓	✓	**Construction Phase** • Cable installation expected to take up to two months • Douglas CCS Platform installation is expected to take up to five months • Overall programme for works at existing platforms expected to take up to four years • Maximum of 2 HLV on site making up to 4 return trips • Maximum of 2 jack-up vessels on site making up to 4 return trips • Maximum of 17 tug/anchor handlers making up to 22 return trips • Maximum of 12 cargo barges making up to 17 return trips • Maximum of 3 dive support/light construction vessels making up to 3 return trips • Maximum of 2 survey vessels making up to 3 return trips • Maximum of 6 crew transfer vessels making up to 216 return trips • Maximum of one cable installation vessel making one return trip • Maximum of 5 support vessels making up to 83 return trips • Maximum of 3 multicats making up to 3 return trips • Maximum of 3 working boats making up to 3 return trips • Maximum of one trench support vessel making one return trip • Maximum of one seabed preparation vessel making one return trip	Maximum duration of the installation works and operational lifetime of the Proposed Development, utilising the maximum number of project vessels, resulting in the maximum effect on access to local ports.

Potential Impact	Phase			Maximum Design Scenario	Justification
	C	O&M	D		
				• Maximum of one cable protection installation vessel making one return trip • Maximum of one cable burial installation vessel making one return trip • 500 m advisory safe passing distances around cable installation vessels • 500 m safety zone around the Douglas CCS platform **Operation and Maintenance Phase** • Anticipated operation and maintenance phase lasting 25 years. • 500 m safety zone around the Douglas CCS platform. • 500 m advisory safe passing distance around cable maintenance vessels during periods of major maintenance. • One mobile offshore drilling unit (MODU) anticipated on site for well operations every 10 years. **Decommissioning Phase** • It is anticipated that decommissioning works will be similar in terms of the maximum design scenario to the construction phase.	
Anchor interaction with subsea cable	✗	✓	✗	**Operation and Maintenance Phase** • Anticipated operation and maintenance phase lasting 25 years. • Up to 4 subsea cables with a total length of 92.1 km • Target burial depth of 3m in nearshore areas, and 2m in areas offshore of the West Hoyle Spit. • Up to 32 potential cable crossings with a total cable length of 8.4 km • External rock protection at cable crossings with a maximum height of 0.8 m.	Greatest length of subsea cables and maximum number of cable crossings with external protection giving the maximum potential for anchor interaction.
Fishing gear interaction with subsea cable	✗	✓	✗	**Operation and Maintenance Phase** • Anticipated operation and maintenance phase lasting 25 years. • Up to 4 subsea cables with a total length of 92.1 km • Target burial depth of 3m in nearshore areas, and 2m in areas offshore of the West Hoyle Spit.	Greatest length of subsea cables and maximum number of cable crossings with external protection giving the maximum potential for fishing interaction.

Potential Impact	Phase			Maximum Design Scenario	Justification
	C	O&M	D		
				• Up to 32 potential cable crossings with a total cable length of 8.4 km • External rock protection at cable crossings with a maximum height of 0.8 m.	
Vessel grounding due to reduced under keel clearance	✗	✓	✗	**Operation and Maintenance Phase** • Anticipated operation and maintenance phase lasting 25 years. • Up to 4 subsea cables with a total length of 92.1 km • Target burial depth of 3m in nearshore areas, and 2m in areas offshore of the West Hoyle Spit. • Up to 32 potential cable crossings with a total cable length of 8.4 km • External rock protection at cable crossings with a maximum height of 0.8 m.	Greatest length of subsea cables and maximum number of cable crossings with external protection giving the maximum potential for reduced under keel clearance.
Interference with magnetic interference	✗	✓	✗	**Operation and Maintenance Phase** • Anticipated operation and maintenance phase lasting 25 years. • Up to 4 subsea cables with a total length of 92.1 km • Target burial depth of 3m in nearshore areas, and 2m in areas offshore of the West Hoyle Spit.	Greatest length of subsea cables and maximum temporal impact on magnetic compasses
Reduction of emergency response capability due to increased incident rates for SAR responders and increased demand on the available resources	✓	✓	✓	**Construction Phase** • Cable installation expected to take up to two months • Douglas CCS Platform installation is expected to take up to five months • Overall programme for works at existing platforms expected to take up to four years • Maximum of 2 HLV on site making up to 4 return trips • Maximum of 2 jack-up vessels on site making up to 4 return trips • Maximum of 17 tug/anchor handlers making up to 22 return trips • Maximum of 12 cargo barges making up to 17 return trips • Maximum of 3 dive support/light construction vessels making up to 3 return trips • Maximum of 2 survey vessels making up to 3 return trips • Maximum of 6 crew transfer vessels making up to 216 return trips	Greatest length of subsea cables and maximum project vessels on site giving the maximum potential for reduction SAR capability

Potential Impact	Phase			Maximum Design Scenario	Justification
	C	O&M	D		
				• Maximum of one cable installation vessel making one return trip • Maximum of 5 support vessels making up to 83 return trips • Maximum of 3 multicats making up to 3 return trips • Maximum of 3 working boats making up to 3 return trips • Maximum of one trench support vessel making one return trip • Maximum of one seabed preparation vessel making one return trip • Maximum of one cable protection installation vessel making one return trip • Maximum of one cable burial installation vessel making one return trip • 500 m advisory safe passing distances around cable installation vessels • 500 m safety zone around the Douglas CCS platform **Operation and Maintenance Phase** • Anticipated operation and maintenance phase lasting 25 years. • 500 m safety zone around the Douglas CCS platform • 500 m advisory safe passing distance around cable maintenance vessels during periods of major maintenance • One mobile offshore drilling unit (MODU) anticipated on site for well operations every 10 years **Decommissioning Phase** • It is anticipated that decommissioning works will be similar in terms of the maximum design scenario to the construction phase.	

9.8.2 Impacts scoped out of the Assessment

No impacts to shipping and navigation have been scoped out of the assessment.

9.9 Methodology for Assessment of Effects

9.9.1 Overview

The shipping and navigation assessment of effects has followed the FSA methodology since this is the internationally recognised approach for assessing the impact to shipping and navigation users, and is the approach required for the MCA's methodology (Annex 1 of MGN 654). The following guidance documents have been considered:

- MGN 654 (Merchant and Fishing) Safety of Navigation: Offshore Renewable Energy Installations (OREIs) – Guidance on UK Navigational Practice, Safety and Emergency Response and its annexes (MCA, 2021a); and
- Revised Guidelines for FSA for Use in the IMO (International Maritime Organization) Rule-Making Process (IMO, 2018)
- MGN 661 (Merchant and Fishing) Navigation – Safe and Responsible Anchoring and Fishing Practices (MCA, 2008)

It is noted that the assessment therefore differs from the standard EIA Methodology outlined in chapter 5.

9.9.2 Impact Assessment Criteria

The FSA approach is used to assess the risk associated with the hazards identified due to the proposed development, based on baseline data, expert opinion, stakeholder concerns and lessons learnt from existing offshore developments. Embedded mitigation measures which have been identified as relevant to reducing risk are also considered. The risk ranking was undertaken by Anatec during an internal hazard review and ranking, based on extensive consultation with stakeholders, including presentation of identified hazards and proposed mitigation measures, and discussions on any stakeholder concerns. The findings are presented in the Risk Control Log in the NRA (Anatec Limited and RPS Group, 2023).

Determining the significance of effects is a two-step process that involves defining the severity of consequence and the frequency of occurrence. This section describes the criteria applied in the assessment of significance in Section 9.11 to assign values to each of the two factors.

The criteria for defining the severity of consequence are presented in Table 9.6. For the level of assistance required to manage environmental damage, the tiers indicated relate to the incident response matrix provided in the National Contingency Plan (MCA, 2014).

Table 9.6: Severity of Consequence Ranking Definitions

Rank	Description	Definition			
		People	Property	Environment	Business
1	Negligible	No perceptible risk	No perceptible risk	No perceptible risk	No perceptible risk
2	Minor	Slight injury(ies)	Minor damage to property, (i.e. superficial damage)	Tier 12 local assistance required	Minor reputational risks – limited to users

[2] Tier 1 – Local (within the capability of one local authority, offshore installation operator or harbour authority

Rank	Description	Definition			
		People	Property	Environment	Business
3	Moderate	Multiple minor or single serious injury	Damage not critical to operations	Tier 23 limited external assistance required	Local reputational risks
4	Serious	Multiple serious injuries or single fatality	Damage resulting in critical risk to operations	Tier 2 regional assistance required	National reputational risks
5	Major	More than one fatality	Total loss of property	Tier 34 national assistance required	International reputational risks

The criteria for defining the frequency of occurrence of each effect is presented in Table 9.7.

Table 9.7: Frequency of Occurrence Ranking Definitions

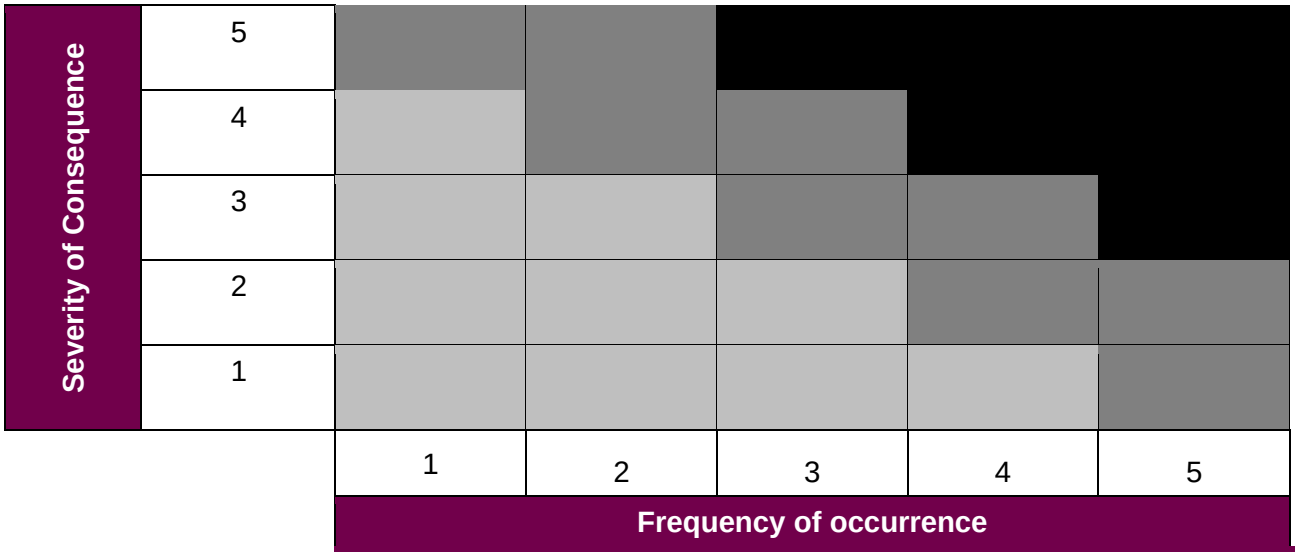
Rank	Description	Definition
1	Negligible	Less than 1 occurrence per 10,000 years
2	Extremely unlikely	1 per 100 to 10,000 years
3	Remote	1 per 10 to 100 years
4	Reasonably probable	1 per 1 to 10 years
5	Frequent	Yearly

The significance of an effect upon shipping and navigation is determined by correlating the severity of consequence and frequency of occurrence using the risk ranking matrix presented in Table 9.8.

[3] Tier 2 – Regional (beyond the capability of one local authority or requires additional contracted response from offshore operator or from ports or harbours

[4] Tier 3 – National (requires national resources coordinated by the MCA for a shipping incident and the operator for an offshore installation incident)

Table 9.8: Tolerability Matrix and Risk Rankings



	Unacceptable (high risk)
	Tolerable (intermediate risk)
	Broadly Acceptable (low risk)

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

For the purposes of this assessment:

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

9.10 Embedded Mitigation

As part of the Proposed Development design process, a number of embedded mitigation measures have been adopted to reduce the potential for risk to shipping and navigation. These measures have and will continue to evolve over the development process as the EIA progresses and in response to consultation.

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

The embedded mitigation measures within the design relevant to shipping and navigation are outlined in Table 9.9.

Table 9.9: Embedded Mitigation Measures Relevant To Shipping And Navigation

Embedded Mitigation Measures	Details
Promulgation of information advising on the nature, timing and location of activities, Safety Zones and advisory safe passing distances, including through Notices to Mariners.	Timely circulation of information via Notices to Mariners (NtM), Kingfisher/KIS-ORCA notifications, Radio Navigational Warnings, Navigational Telex (NAVTEX), and/or other navigational broadcast warnings as soon as reasonably practicable in advance of and during the works.
Lighting and marking of project vessels	Cable Lay Vessels (CLVs) and other vessels involved in cable installation will display appropriate marks and lights, and broadcast their status on AIS at all times, to indicate the nature of the work in progress, and highlight their restricted manoeuvrability.
Guard vessel and/or temporary Aid to Navigation (AtoN)	Where required based on risk assessment, guard vessels and/or temporary AtoNs may be deployed to guide vessels around any areas of construction activity.
Use of guard vessels at cable exposures	Where cable exposures exist that would result in significant risk (e.g. if cable burial is carried out post cable lay), guard vessels will be used where appropriate until the risk has been mitigated by burial and/or other protection methods.
Advisory safe passing distances and safety zones	Passing vessels will be requested to maintain an advisory safe passing distance around project vessels (e.g. cable installation vessels) restricted in manoeuvrability. It is assumed that a 500 m Safety Zone for the new Douglas CCS platform will be in place.
Marine coordination	Marine coordination and communication to manage project vessel movements.
Vessel Management Plan	A Vessel Management Plan (VMP) will be developed which will determine vessel routeing to and from construction areas and ports to avoid areas of high risk to marine mammals. The VMP will be required to be approved by the Port of Mostyn and Natural Resources Wales (NRW) prior to the commencement of construction activities.
Development of and adherence to an Environmental Management Plan (EMP) that will be prepared and implemented during the construction, operational and maintenance and decommissioning phases of the Proposed Development. The EMP will include appendices detailing actions to minimise Invasive Non-Native Species (INNS) (the INNSMP), and a Marine Pollution Contingency Plan (MPCP) will be developed which will include planning for accidental spills, address all potential contaminant releases and include key emergency contact details	Measures will be adopted to ensure that the potential for release of pollutants from construction, operational and maintenance and decommissioning plant is minimised. These will likely include: designated areas for refuelling where spillages can be easily contained, storage of chemicals in secure designated areas in line with appropriate regulations and guidelines, double skinning of pipes and takes containing hazardous substances, and storage of these substances in impenetrable bunds. All vessels will be required to comply with the standards set out in the International Convention for the Prevention of Pollution from Ships (MARPOL).
Compliance with COLREGs and SOLAS	Compliance of all project vessels with international marine regulations as adopted by the Flag State, notably the COLREGs (IMO, 1972/78) and SOLAS (IMO, 1974).
Liaison with ports and harbours	Liaison with local ports and harbours, particularly the Port of Mostyn, during the construction phase.
Construction plan	A construction plan will be prepared in consultation with the Port of Mostyn to ensure that impacts on the Port during construction within the Welsh Channel are minimised. Prior to

Embedded Mitigation Measures	Details
	the commencement of works, the construction plan will require to be approved by the Port.
Fishing liaison	Ongoing liaison with fishing fleets will be maintained via an appointed Fisheries Liaison Officer (FLO) and Fishing Industry Representative. Prior to construction, a Fisheries Liaison and Coexistence Plan (FLCP) will be developed, setting out in detail the planned approach to fisheries liaison and means of delivering any other relevant mitigation measures.
The Applicant is committed to marking and lighting the project in accordance with relevant industry guidance and as advised by relevant stakeholders including the MCA, Civil Aviation Authority (CAA) and Trinity House. This will include appropriate lighting and marking of Offshore Platforms (OPs). The Applicant will also ensure the project is adequately marked on nautical charts. A lighting and marking plan will be secured.	The new CCS platform will exhibit lights, marks, sounds, signals and other aids to navigation as required by the Standard Marking Schedule, and in consultation with Trinity House. The platform and cables will be suitably marked on Admiralty Charts, with associated note.
Scour Protection	Scour protection (e.g. rock berms) will only be used at third-party cable crossings and monitored as per below.
Suitable implementation and monitoring of Cable Protection	Suitable implementation and monitoring of cable protection informed by a CBRA. Cables will be buried to a target depth of 3m in the nearshore areas, and 2m for the remaining length of the route and only be protected using external protection (e.g. rock berms) at third-party crossings. It is noted that where cable crossings exceed a 5% water depth reduction, a detailed draught assessment will be undertaken post-consent and consultation with the MCA and Trinity House will be required.
Development and adherence to a Cable Specification and Installation Plan (CSIP) post consent which will include cable burial where possible (in accordance with the specific policies set out in the North West Inshore and North West Offshore Coast Marine Plans (MMO, 2021)) and cable protection, as necessary.	The CSIP will set out appropriate cable burial depth in accordance with industry good practice, minimising the risk of cable exposure. The CSIP will also ensure that cable crossings are appropriately designed to mitigate environmental effects, these crossings will be agreed with relevant parties in advance of CSIP submission. The CSIP will include a detailed CBRA to enable informed judgements regarding burial depth to maximise the chance of cables remaining buried whilst limiting the amount of sediment disturbance to that which is necessary. Measures will seek to reduce the amount of Electromagnetic Field (EMF) which benthic and fish and shellfish receptors are exposed to during the operations and maintenance phase by increasing the distance between the seabed surface and the surface of the cables.
Where practicable any requirements for cable protection will be compliant with MGN 654	Following further survey and detailed engineering, if areas are identified where external protection is required and the MCA condition of no more than 5% reduction in water depth is not achievable, a location specific review of impacts to shipping and consultation with the MCA will be carried out and additional mitigations agreed as required.

9.11 Assessment of Significance

9.11.1 Vessel displacement leading to increased vessel to vessel collision risk between third-party vessels

9.11.1.1 Construction phase

Installation of the offshore Douglas CCS platform and cables may cause displacement of vessels around the areas of installation, which could lead to an increased risk of a collision between two third-party vessels during the construction phase. In particular vessels may be required to deviate around cable installation vessels, which are large, slow moving vessels which will be RAM. In addition, jack up vessels used for landfall works may also lead to vessel displacement close to the shore. As the offshore platform is located within the existing Safety Zone for the Douglas Complex and an Area To Be Avoided (ATBA), and Liverpool Bay TSS lanes pass at least 0.4 nm from the proposed location, there is not expected to be any additional displacement associated with the construction of the new Douglas CCS platform within the existing Safety Zone. Works within the existing Hamilton, Hamilton North and Lennox Safety Zones are not covered in this NRA.

Vessel displacement will be more likely in busier areas of shipping. From the baseline assessment, passing vessel activity was significant across the Proposed Development, with higher density associated with the Liverpool Bay TSS lanes, vessels working at the Gwynt y Môr OWF and NW-SE routes used by the regular ferries running from Liverpool to Ireland. The Welsh Channel, which provides access to the Port of Mostyn is also identified as a busy area, primarily with CTVs associated with the wind farms. The Port of Mostyn also identified that vessel transits may be under-estimated on AIS, and that there were a total of approximately 8,600 vessel transits per year associated with the port. The Port indicated that expansion works are due to take place in 2025 and 2026, potentially leading to an increase in vessel traffic visiting the port and therefore passing through the Welsh Channel.

Regular fishing and recreational activity was observed within the vicinity of the Proposed Development. Construction vessels may therefore cause a disruption to both local fishers and recreational boaters. Fishing activity was mostly recorded further offshore and was frequently recorded in the vicinity of the Physical Work Area to the north west of the proposed Douglas CCS platform. Recreational activity was recorded throughout the shipping and navigation study area, mainly passing out of the Queen's Channel, and are recorded crossing the Physical Work Area at various locations, including in near shore areas. It is noted that recreational craft and small fishing vessels close to shore will be under-represented by the AIS data.

The installation of the proposed Douglas CCS platform and new cables are expected to be carried out in Q1-Q2 2026. Preparations for the shore approach of the power cables from Douglas to Point of Ayr are proposed to commence in Q2 2025. Installation works for the new platform are expected to take up to five months, while cable laying works are expected to take up to two months. The spatial extent of construction areas where vessels may be required to deviate around vessels which are RAM is expected to be small at any given time.

Details of construction activities, including any advisory safe passing zones, will be suitably promulgated via NtMs, Kingfisher, Radio Navigational Warnings, NAVTEX and/or broadcast warnings to maximise awareness of ongoing construction activities. Guard vessels will be used where required to raise awareness of construction works to passing vessels and communication with the Ports of Liverpool and Mostyn will help to minimise collision risk associated with vessels using the port.

The appointment of an FLO will aid in ensuring local fishers are made aware of construction works. Local Notices to Mariners will help to inform recreational users. All vessels will be expected to comply with international marine legislation, including the COLREGs and SOLAS.

Severity of Consequence

In the event of a collision incident between third-party vessels, the most likely consequences are minor contact between the vessels resulting in minor damage to property and minor reputational effects on business but no

perceptible effect on people. The maximum adverse scenario could involve one of the vessels foundering resulting in potential loss of life (PLL) and the environmental consequence of pollution. Such a scenario would be more likely if one of the vessels involved was a small craft which may have weaker structural integrity than a commercial vessel.

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

Frequency of Occurrence

The impact will be present throughout the construction phase which will last for up to six months. Given that third-party vessels are expected to be compliant with relevant Flag State regulations including the COLREGs, collision avoidance action ensure that the likelihood of an encounter developing into a collision incident is low. This is furthered by the promulgation of information which will maximise awareness of ongoing construction activities, thus allowing third-party vessels to passage plan in advance, if considered appropriate.

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

Significance of Risk

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

9.11.1.2 Operation and maintenance phase

Once the Proposed Development is operational, vessel displacement associated with the new cables is limited to any repair or maintenance work required, which is expected to be minimal and localised in nature. As the new Douglas CCS platform will be located within an existing Safety Zone and ATBA, there is not expected to be any additional displacement associated with the platform during the operational phase.

9.11.1.3 Decommissioning phase

There may also be a risk of vessel displacement leading to increased vessel to vessel collision risk between third-party vessels created during the decommissioning phase.

Severity of Consequence

Since the numbers and types of vessels used to remove the cables and platform are expected to be similar to those used for installation, this impact is expected to be similar in nature to the equivalent construction phase impact.

Therefore, the most likely consequences associated with the maximum adverse scenario are as per the equivalent construction phase impact.

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

Frequency of Occurrence

The impact will be present throughout the decommissioning phase which is assumed to last for a similar timeframe as the construction period. Given that third-party vessels are expected to be compliant with Flag State regulations including the COLREGs, the likes of collision avoidance action ensure that the likelihood of an encounter developing into a collision incident is low. This is furthered by the promulgation of information which will maximise awareness of ongoing decommissioning activities, thus allowing third-party vessels to passage plan in advance.

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

Significance of Risk

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

9.11.2 Increased vessel to vessel collision risk between a third-party vessel and a project vessel

9.11.2.1 Construction Phase

There is an increased collision risk created during the construction phase for all passing traffic due to the presence of vessels associated with the construction of the offshore platform and cables, and decommissioning and repurposing of the existing Hamilton Main, Hamilton North and Lennox satellite platforms. This includes vessels involved in surveys, seabed preparation, cable installation, platform installation, topside removal and installation, cable burial and/or protection installation, drilling of wells, commissioning of CO_2 pipelines and Landfall works. The nature of certain construction works, such as cable installation and other activities, requires large, slow moving vessels which will be RAM. Therefore, these vessels may have limited capability in taking avoidance action from a passing vessel on a collision course, should such a situation arise. In addition, there may be an increased collision risk between third-party vessels and jack ups used during Landfall works, and between third-party vessels and HLVs used for the platform installation. Due to their reduced size and increased mobility in comparison, smaller vessels associated with the construction phase (e.g. tugs, guard vessels, support vessels, CTVs), are considered to pose a lesser risk of collision than that of the larger cable installation vessels, jack ups or HLVs.

The collision risk is likely to be greater in higher density shipping areas. Passing vessel activity was significant across the Proposed Development, with higher density associated with the Liverpool Bay TSS lanes, vessels working at the Gwynt y Môr OWF and NW-SE routes used by the regular ferries running from Liverpool to Ireland. The Port of Mostyn also identified that vessel transits may be under-estimated on AIS, and that there were a total of approximately 8,600 vessel transits per year associated with the port. The Port indicated that expansion works are due to take place in 2025 and 2026, potentially leading to an increase in vessel traffic visiting the port and therefore passing through the Welsh Channel.

Up to four cable installation vessels which are RAM will be on site at any one time and a jack up vessel is expected to be used for Landfall works. Additional support vessels include one seabed preparation vessel, one trench support vessel, one cable protection installation vessel and one cable burial installation vessel, as well as survey vessels, crew/work boats and multicats. For the new Douglas CCS platform, there will be one HLV vessel and additional support vessels including tugs, cargo barges, survey vessels and crew boats. The installation of the proposed Douglas CCS platform and new cables are expected to be carried out in Q1-Q2 2026. Preparations for the shore approach of the power cables from Douglas to Point of Ayr are proposed to commence in Q2 2025. Installation works for the new platform are expected to take up to five months, while cable laying works are expected to take up to two months with operations in the Welsh Channel anticipated to last 12-24 hours, with the cable lay vessel also being beached close to the landfall for approximately 4 days prior to this. During works within the Welsh Channel, only one cable-lay vessel will be present, with three multicats working alongside for the repositioning of vessel anchors. The spatial extent of construction areas where vessels which are RAM are working is expected to be small at any given time. There will also be additional vessel movements associated with works to repurpose existing assets at the Hamilton Main, Hamilton North and Lennox platforms between Q4 2024 and Q3 2028, although these vessels are not expected to be RAM. Up to 128 return trips are anticipated during this time, the majority of which are associated with CTVs.

Project vessels will be managed by marine coordination, will display suitable marks and lights, will broadcast on AIS (where appropriate) and will be compliant with relevant Flag State regulations including the COLREGs and SOLAS.

Details of construction activities, including any advisory safe passing distances will be suitably promulgated via NtM, Kingfisher, Radio Navigational Warnings, NAVTEX and/or broadcast warnings to maximise awareness of ongoing construction activities. Communication with the Ports of Liverpool and Mostyn about the construction work activities and appointment of a FLO will also help to raise awareness of the works and minimise collision risk. Where required, guard vessels and/or temporary AtoNs will be used to raise awareness of construction work to passing vessels and to guide vessels around any areas of construction activities, and platform installation works will be located within the existing Safety Zone and ATBA at the Douglas Complex.

Severity of Consequence

The most likely consequences in the event of a collision incident between a project vessel and third-party vessel are minor contact between the vessels resulting in minor damage to property and minor reputational effects on business but no perceptible effect on people. The maximum adverse scenario could involve one of the vessels foundering resulting in PLL and the environmental consequence of pollution. Such a scenario would be more likely if the third-party vessel involved was a small craft which may have weaker structural integrity than a commercial vessel. It was noted in the feedback from the Port of Mostyn that a collision within the Welsh Channel may lead to a period of reduced port access, leading to CTVs associated with the port being unable to return from nearby wind farms. It is noted that alternative access is possible via the Mid Hoyle Channel.

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

Frequency of Occurrence

The impact will be present throughout the construction phase which will last for up to four years, with cable laying works anticipated to take up to two months. The number of vessel movements to and from the Douglas Complex and satellite platforms are relatively low, the majority of which associated with CTVs. With the mitigation measures noted above implemented, it is considered unlikely that a close encounter between a third-party vessel and a project vessel will occur. In the event that such an encounter does occur, collision avoidance action would be implemented by the vessels as per the COLREGs, including Rule 18 which governs responsibilities between vessels if one is RAM, thus ensuring that the likelihood of the encounter developing into a collision incident is very low.

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

Significance of Risk

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

9.11.2.2 Operation and Maintenance phase

During the operation and maintenance phase, there will be up to 15 return trips by jack-up vessels and 15 return trips by other vessels visiting the new Douglas CCS platform, which is significantly fewer visits than currently received by the Douglas Complex. There is therefore not expected to be any additional vessel to vessel collision risk associated with vessels visiting the new Douglas CCS platform.

There will be a requirement to undertake inspection surveys as well as the potential for unplanned repair works on the proposed cables, which could result in an increased collision risk between a third-party vessel and a survey/maintenance vessel.

This risk is described under the construction phase, however maintenance/monitoring work is expected to be less disruptive and span a shorter period than cable construction works.

Routine inspections of the subsea structures are planned to two yearly and five years, with annual surveys on a seven year rolling programme also planned. There may also be requirements for cable repair and/or burial

as required. Cable repairs/reburials may include vessels which are RAM. As per the construction phase, project vessels will be managed by marine coordination, will display suitable marks and lights, will broadcast on AIS and be compliant with relevant Flag State and international regulations including the COLREGs and SOLAS.

Similarly to the construction phase, details of major maintenance activities including any advisory clearance zones, as defined by risk assessment, will be suitably promulgated via NtM, Kingfisher, Radio Navigational Warnings, NAVTEX and/or broadcast warnings to maximise awareness of ongoing major maintenance activities.

Severity of Consequence

The most likely consequences in the event of a collision incident between a project vessel and third-party vessel are as per the equivalent construction phase impact, namely minor contact and damage to property and minor reputational effects on business, but no perceptible effect on people. The maximum adverse scenario could involve one of the vessels foundering resulting in PLL and the environmental consequence of pollution. Such a scenario would be more likely if the third-party vessel involved was a small craft which may have weaker structural integrity than a commercial vessel.

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

Frequency of Occurrence

The impact will be present throughout the operation and maintenance phase which will last for up to 25 years. With implementation of the embedded mitigation measures outlined in Section 9.10 it is considered unlikely that an encounter between a third-party vessel and a project vessel will occur. In the event that such an encounter does occur, collision avoidance action would be implemented by the vessels as per COLREGs, thus ensuring that the likelihood of the encounter developing into a collision incident is very low.

The likelihood of an encounter is decreased compared to the construction phase given the smaller scale of maintenance activities, although this is somewhat balanced by the much longer duration of the operation and maintenance phase.

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

Significance of Risk

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

9.11.2.3 Decommissioning Phase

There may also be an increased collision risk created during the decommissioning phase for all passing traffic due to the presence of vessels associated with decommissioning works.

Severity of Consequence

Since the numbers and types of vessel used to remove the cables and CCS platform are expected to be similar to those used for installation, this impact is expected to be similar in nature to the equivalent construction phase impact.

Therefore, the most likely consequences associated with the maximum adverse scenario are as per the equivalent construction phase impact.

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

Frequency of Occurrence

The impact will be present throughout the decommissioning phase which is assumed to last for a similar timeframe as the construction period. With the embedded mitigation measures previously noted implemented, it is considered unlikely that an encounter between a third-party vessel and a project vessel will occur. As per the equivalent construction phase impact, in the event that such an encounter does occur, collision avoidance action would be implemented by the vessels as per the COLREGs, thus ensuring that the likelihood of the encounter developing into a collision incident is very low.

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

Significance of Risk

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

9.11.3 Vessel to platform allision risk

9.11.3.1 Operation and maintenance phase

Once the new Douglas CCS platform has been installed, there may be a risk of vessel to structure allision. This could be a powered allision (i.e. vessels under power alluding with the platform due to watchkeeper failure) or a drifting allision (i.e. due to machinery or engine failure, causing the vessel to drift into the platform).

Should an allision occur, the consequences will depend on multiple factors including the energy of the impact, structural integrity of the vessel and sea state at the time of the impact. In general powered allisions are expected to generate higher impact energies than drifting allisions. The most likely consequences will be minor damage with the vessel able to resume passage and undertake a full inspection at the next port. As an unlikely worst case, the vessel could founder resulting in a PLL and pollution.

Additionally, commercial vessels are expected to comply with international and flag state regulations (including the COLREGs and SOLAS) and will be able to passage plan in advance given the promulgation of information relating to the Proposed Development.

This risk is mitigated by the location of the proposed new Douglas CCS platform within an existing Area to be Avoided, which restricts vessels from transiting close to the platform. It is also assumed that a 500 m Safety Zone will be in place and that the platform has suitable operational lighting and marking in accordance with the Standard Marking Schedule for offshore installations.

Severity of Consequence

The most likely consequences in the event of an allision incident between a third-party vessel and the new Douglas CCS platform are minor contact and damage to property and minor reputational effects on business, but no perceptible effect on people. The maximum adverse scenario could involve the vessel foundering resulting in PLL and the environmental consequence of pollution. Such a scenario would be more likely if the vessel involved was a small craft which may have weaker structural integrity than a commercial vessel.

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

Frequency of Occurrence

The impact will be present throughout the operation and maintenance phase which will last for up to 25 years. With implementation of the embedded mitigation measures outlined in Section 9.10, including the 500 m Safety Zone and ATBA, and the familiarity of vessels with the existing structures in the Douglas Complex, an allision incident is considered to be unlikely.

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

Significance of Risk

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

9.11.4 Reduced access to local ports

9.11.4.1 Construction Phase

There is the potential for reduced access to local ports due to construction works associated with the cable construction works, in particular close to the Landfall. Vessels visiting the Port of Mostyn access this port via the Welsh Channel, which is intersected by the proposed cable routes from Douglas to Point of Ayr. The Mid Hoyle Channel was used by vessels recorded on AIS associated with Mostyn, with approximately 78% of vessels opting to enter this way. Vessels recorded on AIS broadcast draughts of up to 4.8m in both the Welsh Channel and the Mid Hoyle Channel, noting that this is static draught and does not account for the significant tidal variations in the area. The longest vessels accessing the Port of Mostyn were 90m cargo vessels, which were recorded on six occasions in 2022, always transiting via the Welsh Channel.

The majority of vessels using the Welsh Channel to enter the Port of Mostyn are wind farm support vessels transiting to the Gwynt-y-Môr, North Hoyle and Rhyl Flats OWFs.

The installation of the proposed new cable is expected to be carried out in Q1-Q2 2026. Preparations for the shore approach of the power cable from Douglas to Point of Ayr are proposed to commence in Q2 2025. Cable laying works are expected to take up to two months, with cable lay works across the Welsh Channel anticipated to last 12-24 hours, with the cable lay vessel also being beached close to the landfall for approximately four days prior to this. It is noted that even a small spatial deviation may reduce access significantly in constrained areas such as the Welsh Channel, where the navigation channel is approximately 85m wide. It was stated in feedback from the Port of Mostyn that the Welsh Channel sees significant tidal variations, and that deep-draught vessels such as jack-ups associated with wind farm construction need to pass at high tide. Therefore cable lay within tidal windows should be coordinated with other vessels to ensure that access is available to the port of Mostyn for these deep draught vessels.

Project vessels will be managed by marine coordination, will display appropriate marks and lights, broadcast on AIS and will be compliant with relevant Flag State regulations including the COLREGs, including rule 18 which applies to vessels which are RAM. Liaison with the Port of Mostyn will help to manage disruption. This impact was discussed during consultation with the Harbour Master of the Port of Mostyn, with further liaison planned in advance of construction works to ensure impact on the access to the Port of Mostyn is minimised. It was noted by the Port of Mostyn that the port is a Statutory Harbour Authority and therefore has a statutory duty to remain open at all times. The Port of Mostyn also recommended the appointment of a Marine Planning Liaison Officer to coordinate vessels during the construction period.

Severity of Consequence

Cable installation and landfall construction works will result in temporary disruption to vessels using the Port of Mostyn, due to the presence of vessels which may be RAM, such as the cable laying vessel. The Port of Mostyn noted in their feedback that disruption of traffic utilising the Welsh Channel would also lead to commercial impact on the Port and tenants, however the focus of the NRA is on safety impacts. The Port of Mostyn also added that a loss of access may lead to crew members being temporarily required to remain on CTVs, which are day boats with limited provisions and facilities on board. It is noted that access to the Port of Mostyn is possible via both the Welsh Channel and the Mid Hoyle Channel, with the Mid Hoyle Channel more typically used by CTVs.

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

Frequency of Occurrence

The impact will be present during installation of the cables within the Welsh Channel. Cable installation in the Welsh Channel is anticipated to last 12-24 hours, with the cable lay vessel also being beached close to the landfall for approximately 4 days prior to this. During works within the Welsh Channel, only one cable-lay vessel will be present, with three multicats working alongside for the repositioning of vessel anchors. During construction works, an advisory safe passing distance would be proposed around the cable-lay vessel, noting that this will be outlined in the construction plan and vessel management plan, which will both require approval from the Port of Mostyn prior to the commencement of works.

An average of 11 vessels per day accessed the Port of Mostyn based on the AIS data, the majority of which were wind farm support vessels. It is noted that there may be additional small craft not broadcasting on AIS also requiring access to the Port of Mostyn. Based on feedback from the Port of Mostyn, there are approximately 8,600 transits per year associated with the Port, corresponding to 23 to 24 transits per day.

However, due to the short-term nature of cable installation works in the Welsh Channel, the disruption to port access is reduced. This impact will be mitigated by good communication with the Port of Mostyn during the construction phase, including liaison with the Port to approve the construction methodology, and approval of a vessel management plan from both NRW and the Port of Mostyn. Once a cable lay contractor is appointed, a detailed construction plan, including vessel movements and operations, will be provided to and agreed with the Port of Mostyn and NRW.

The frequency of occurrence is therefore considered to be **reasonably probable**.

Significance of Risk

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

9.11.4.2 Operation and maintenance phase

There is the potential for reduced access to local ports due to cable maintenance and repair works.

Severity of Consequence

The overall timescale for any maintenance/repair works is expected to be less than for construction works. Similarly to the construction phase, details of major maintenance activities including any advisory clearance zones, as defined by risk assessment, will be suitably promulgated to maximise awareness of ongoing major maintenance activities.

Such works may result in limited disruption to vessels accessing the Port of Mostyn via the Welsh Channel. However, any required maintenance in this area is expected to be temporary in nature.

In addition, maintenance vessels will be managed by marine coordination, will display appropriate marks and lights, broadcast on AIS and will be compliant with relevant Flag State regulations including the COLREGs, including rule 18 which applies to vessels which are RAM. Liaison with the Port of Mostyn will help to manage disruption.

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

Frequency of Occurrence

The reduction in access is decreased compared to the construction phase given the smaller scale of maintenance activities, although this is somewhat balanced by the much longer duration of the operation and maintenance phase.

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

Significance of Risk

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

9.11.4.3 Decommissioning phase

There may be potential for reduced access to local ports due to decommissioning works.

Severity of Consequence

Since the numbers and types of vessels used to remove the cables are expected to be similar to those used for installation, this impact is expected to be similar in nature to the equivalent construction phase impact.

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

Frequency of Occurrence

The impact will be present throughout the decommissioning phase which is assumed to last for a similar timeframe as the construction period. Since the anticipated reduction in access to local ports and the volumes of vessel traffic accessing the ports are assumed to be the same as for the equivalent construction phase impact, and the appropriate embedded mitigation measures are in place, it is anticipated that the frequency of occurrence is similar to the construction phase.

The frequency of occurrence is therefore considered to be **reasonably probable**.

Significance of Risk

The severity of consequence is deemed to be minor and the frequency of occurrence is considered to be reasonably probable. The effect will, therefore, be of **tolerable** adverse significance, which is **not significant** in EIA terms.

9.11.5 Anchor interaction with subsea cable

9.11.5.1 Construction phase

The preferred approach for cable burial is that the cable is laid on the seabed and then buried using a plough. Therefore, there may be a period of time after laying when the cables are exposed and not protected through burial or other means such as rock placement. This period represents a potentially higher risk of interaction from vessel anchors with the surface-laid cables.

There is a risk that a nearby anchored vessel will lose its holding ground and subsequently drag anchor over the cables. Vessels at anchor were mainly located within the charted anchorage areas located between the Gwynt y Môr and Burbo Bank wind farms, and around the boundaries of the two wind farms.

If a passing vessel suffers engine failure, there is a possibility that it may drop anchor to avoid drifting into an emergency situation such as a collision, allision or grounding. This is more likely to occur in areas closer to the coast or to other hazards (e.g. offshore developments). In open waters where depths are deeper and anchoring may not be feasible, the vessel is more likely to attempt to either fix the problem or await assistance.

Severity of Consequence

While exposed any vessel anchor could interact with the cables. If an anchor becomes snagged on the cable, there could be a risk of injury in trying to free it. If the anchor cannot be freed the safest action is to slip it, and not attempt to raise or cut the cable.

The most likely consequences are limited damage to property (anchoring vessel or subsea cable). The maximum adverse scenario may include damage to property including to the vessel's anchor or subsea cable.

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

Frequency of Occurrence

From the vessel traffic survey data, the majority of anchoring activity took place within the charted anchorage areas located between the Gwynt y Môr and Burbo Bank wind farms, and around the boundaries of the two wind farms. The deep water anchorage east of the Hamilton Gas Field is located 0.4 nm to the south of the Douglas to Lennox cable and may pose a higher risk from a vessel dragging anchor.

Areas where emergency anchoring risk is expected to be higher are where vessel density was highest (e.g. within the TSS lanes), within the Gwynt y Môr OWF and where there were high densities of traffic associated with ferry route. The maritime incident data showed that the most frequent incident type to be recorded was machinery failure, which could lead to emergency anchoring.

Mitigation includes circulation of information to make mariners aware of the exposed cable and use of guard vessels where cable exposures are considered to present significant risk to navigation.

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

Significance of Risk

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

9.11.5.2 Operation and maintenance phase

There is a risk that a vessel anchor interacts with the cables due to an anchor dragging or emergency anchoring incident during the operation and maintenance phase.

High risk areas for an anchor dragging incident are where vessels routinely anchor close to the cable (e.g. within the charted anchorage areas located between the Gwynt y Môr and Burbo Bank wind farms, and around the boundaries of the two wind farms). The deep water anchorage east of the Hamilton Gas Field is located 0.4 nm to the south of the Douglas to Lennox cable and may pose a higher risk from a vessel dragging anchor.

For emergency anchoring, higher risk areas include areas where the density of vessels crossing the cables is higher and areas closer to the coast or to other hazards (e.g. offshore developments), which increases the likelihood of dropping anchor in an emergency. From the baseline assessment, passing vessel activity was significant across the Proposed Development, with higher density associated with the Liverpool Bay TSS lanes, vessels working at the Gwynt y Môr OWF and NW-SE routes used by the regular ferries running from Liverpool to Ireland.

During the operation and maintenance phase the cables will be marked on UKHO Admiralty Charts with associated note/warning about anchoring, trawling or seabed operations.

A CBRA will be undertaken to identify high risk areas along the cable routes and to determine suitable burial depths for the cables during the operation and maintenance phase. Burial is the preferred method for protecting the cables from vessel anchors. The cables are anticipated to be buried to a target depth of 3m in the nearshore areas, and 2m for the remaining length of the route, with external protection, (i.e. freshly quarried rock and concrete mattresses), used at the ten crossings. Target burial depths will be confirmed by the CBRA. Cable protection will be regularly monitored to confirm its integrity.

Severity of Consequence

Once the cables are protected, either through burial and/or other protection measures, larger vessels (e.g. cargo vessels and tankers) are more likely to threaten the cables as their anchors are able to penetrate deeper

into the seabed and can cause greater damage than smaller anchors (fishing and recreational vessels) if contact is made. The anchors of smaller vessels (e.g. fishing and recreational craft) are unlikely to penetrate as deeply. Suitable target burial depths, defined in a CBRA, will mitigate the risk from vessel anchors. Periodic monitoring will be undertaken to confirm cable protection remains suitable.

The most likely consequences are limited damage to property (anchoring vessel or subsea cable). The maximum adverse scenario may include damage to property including to the vessel's anchor or subsea cable.

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

Frequency of Occurrence

Protection of the cables via burial and/or external protection will reduce the frequency of occurrence of anchor interaction.

Although there may be limited decision-making time if a vessel is drifting towards a hazard, it is anticipated that the charting of infrastructure including all subsea cables will inform any decision to anchor, as per Regulation 34 of SOLAS.

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

Significance of Risk

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

9.11.6 Fishing gear interaction with subsea cable

9.11.6.1 Construction phase

Similar to the impact associated with vessel anchors, there is the potential for risk of interaction from fishing gear with surface-laid cables prior to burial by plough, as this may result in a period of time during which the cables are exposed (prior to burial or placement of external protection).

Severity of Consequence

Although fishers are advised to follow the current maritime industry guidance (MGN 661, the Mariner's and all Admiralty charts) and avoid demersal trawling (and anchoring) in the immediate vicinity of the cables, it is acknowledged that fishing may still occur over the cables either inadvertently, or at the discretion of fishing vessel operators.

There is higher risk of snagging from demersal gear if the cable is exposed. The response from the crew includes reducing/reversing the propulsive force, attempting to unfasten the equipment, or releasing the gear and therefore in the majority of snagging incidents, it should be possible to recover the situation without any serious consequences (e.g. injury or fatality to crew members). However, accident data from the MAIB indicates that safe recovery from a snagging incident is not always the outcome. Consequences of snagging therefore range from damage to gear and the cable, loss of stability due to lines being put under strain and in the worst case, capsize of the vessel, men overboard and risk of injury or fatality. For example, a risk of capsize could occur if the vessel attempted to free its gear by raising the cable rather than releasing the gear.

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

Frequency of Occurrence

Fishing vessels carrying demersal gear that interacts with the seabed when deployed present the greatest risk of snagging on subsea cables. Static gear types (e.g. potters/whelkers and gill netters) are not considered to present a safety risk from snagging as they are able to carefully select the position of their gear, avoiding any

subsea cables. Demersal gear types identified in the baseline assessment relative to the Proposed Development were mainly dredgers, which contributed 40% of gear types recorded on AIS in the area. The highest risk area of snagging is where vessels engaged in fishing with demersal gears are most active, mainly to the east and north of the Douglas Field. It is also noted that there is likely to be significant activity from small fishing vessels in coastal waters, which may be under-represented in the AIS data, although these are most likely to be using static gear which has lower snagging risk.

It is expected that mitigation including having a FLO in place and circulation of information (e.g. via Kingfisher and local communications) will help ensure fishers are aware of the exposed cable and avoid fishing directly over it. In addition, guard vessels will be used in any areas where cable exposures are considered to present significant risk to fishing gear snagging.

The frequency of occurrence during the period that the cables are surface-laid is considered to be **remote**.

Significance of Risk

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

Additional mitigation to reduce this impact to ALARP is to minimise the amount of time between cable lying and installation of cable protection, (e.g. burial).

9.11.6.2 Operation and maintenance phase

There is a risk of fishing gear interaction with the cables due to fishing activity, which has been described previously under the description of this impact during the construction phase. High intensity areas for demersal fishing activity occurred mainly to the east and north of the Douglas Field.

During the operation and maintenance phase the cables will be marked on UKHO Admiralty Charts and KIS-ORCA with associated note/warning about anchoring, trawling or seabed operations.

A CBRA will be undertaken to provide a detailed assessment of fishing activity along the proposed cables and fishing gear penetration depths for the various soil conditions in order to determine suitable burial depths for the cables during the operation and maintenance phase. Burial is the preferred method for protecting the cables from fishing gear. The cables are anticipated to be buried to a target depth of 3m in the nearshore areas, and 2m for the remaining length of the route, with external protection, (i.e. freshly quarried rock and concrete mattresses), used at the ten crossings. Target burial depths will be confirmed by the CBRA. Cable protection will be regularly monitored to confirm its integrity.

Severity of Consequence

The planned cable protection is assumed to provide effective mitigation from fishing gear snagging, reducing the risk of serious consequences such as snagging, capsize of the vessel and PLL.

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

Frequency of Occurrence

Once the cables are installed, the depiction of the cables on nautical and Kingfisher charts may discourage fishing in the vicinity of the cables; however evidence shows this is not always the case with installed cables as often it is assumed they are adequately protected against fishing gear interaction. The planned cable protection (through burial) is assumed to provide effective mitigation against the risk of demersal gear making contact with the installed cables. As discussed, it is the responsibility of the fishers to dynamically risk assess whether it is safe to undertake fishing activities in proximity to subsea cables and to make a decision as to whether or not to fish. Fishing activity is considered further in volume 2, chapter 10.

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

Significance of Risk

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

9.11.7 Vessel grounding due to reduced under keel clearance

9.11.7.1 Operation and maintenance phase

This impact refers to a vessel grounding due to reduced under keel clearance associated with external protection measures such as rock berms, in areas where cable burial is not feasible (e.g. due to cable crossings). This could lead to subsequent capsize, injury, loss of life, oil spill, etc. In general, the higher risk areas are coastal waters where existing water depths are shallower.

Cable burial is the preferred option of safeguarding the cables, and no external protection is planned, with the exception of the 32 anticipated cable crossings as outlined in Section 9.8.1. It is noted that no reduction in water depth is anticipated within the Welsh Channel or nearshore areas, with the cable in this area to be buried to 3m below the seabed, which is deeper than the existing gas pipeline.

Severity of Consequence

Should a vessel grounding occur, the most likely consequences are minor damage to property and minor reputational effects on business but no perceptible effect on people. The maximum adverse scenario may include the vessel foundering resulting in PLL and the environmental consequence of pollution.

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

Frequency of Occurrence

The likelihood of a grounding is greater for large commercial vessels with deeper draughts, noting that only a minority of vessels recorded in the vessel traffic survey data were deep draught. Areas where water depth is shallower (e.g. close to the Landfall), also present a higher risk of vessels grounding.

The maximum height of cable protection will be 0.8 m. The average draught of vessels crossing the Physical Work Area was 5.1 m, with a maximum draught of 14 m, recorded crossing the cable route within the Liverpool Bay TSS in approximately 25 m of water depth.

Cable protection is expected to be implemented only at the cable crossings. Water depth at crossings located in shallow water (less than 10m) are most likely to be significantly altered, with these typically associated with the wind farm export cables crossing the Douglas – Point of Ayr cable route. Vessels crossing the cable route in these areas tended to be shallower draught vessels such as wind farm crew transfer vessels, while deep draught vessels were typically recorded further offshore using the Liverpool Bay TSS.

As part of the Scoping Opinion, the MCA noted the requirements of MGN 654 (MCA, 2021a). Where possible, the Applicant intends to follow the guidance provided in MGN 654. It is noted that the cable crossings of the Proposed Development with the Burbo Bank and North Hoyle wind farm cables will exceed a 5% reduction in water depth. The Proposed Development crosses the Burbo Bank cable in depths of 5m, and the North Hoyle cable in depths of 7m. A depth reduction of up to 0.8m therefore constitutes a depth reduction of 16% and 11%. Therefore, a detailed draught assessment will be carried out post-consent to determine any safety risk to navigation, which will be discussed and agreed with the MCA and Trinity House post consent and prior to cable installation as per MGN 654.

When considered with the embedded mitigation of compliance with the requirements in MGN 654 and any change to water depth of more than 5% chart datum requiring further consultation and agreement with the MCA, the frequency is considered to be reduced to low for all vessel types.

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

Significance of Risk

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

9.11.8 Interference with magnetic compasses

A magnetic compass is a navigational instrument for determining direction relative to the earth's magnetic poles. It consists of a magnetised pointer (usually marked on the north end) free to align itself with the earth's magnetic field. Like any magnetic device, compasses are affected by nearby ferrous materials as well as by local electromagnetic forces, such as magnetic fields emitted from power cables. The majority of commercial vessels use a non-magnetic gyrocompass as the primary means of navigation, which is unaffected by the earth's magnetic field. However, as the magnetic compass still serves as an essential means of navigation in the event of power loss or as a secondary source, it must not be affected to the extent that safe navigation is threatened.

The proposed cables will consist of an HVDC power cable with a bundled fibre optic cable. The HVDC cable may result in localised static EMF, with the potential to affect magnetic compasses.

The important mitigating factors to reduce EMF effects on magnetic compasses are listed below:

- Cable spacing;
- Water depth; and
- Burial depth.

The cables will be laid at approximately 30 m spacing and approximately 72% of the cables will be located in water depths greater than 10 m below CD. Therefore, there will be significant vertical distance between the cables and surface vessels along the majority of the cables. The strength of the magnetic fields decreases exponentially with distance from the cables, and as such compass deviation will reduce with increasing water depth. Similarly, increasing burial depth also increases the vertical separation between a surface vessel and the cables in a given water depth.

Severity of Consequence

The majority of commercial vessel traffic uses non-magnetic gyrocompasses as the primary means of navigation, which are unaffected by EMF. Therefore, in general it is considered unlikely that any EMF interference created by the proposed cables will have a significant impact on vessel navigation near the Proposed Development. Nevertheless, since magnetic compasses can still serve as an essential means of navigation in the event of power loss, as a secondary source, or as some smaller craft (fishing or leisure) may rely on it as their sole means of navigation (noting that many smaller craft may use Global Positioning System (GPS), chart plotters, etc. as a further source), it has been assessed within this ES chapter. Vessels in shallower water should also be able to navigate visually using coastal features when conditions are suitable.

The most likely consequences associated with the maximum adverse scenario are anticipated to be limited, noting that 72% of the proposed cables are anticipated to be in water depths greater than 20 m.

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

Frequency of Occurrence

Along the proposed cable routes vessel traffic is assumed to mainly transit perpendicular to the direction of the cables. For vessels transiting over the cables, time spent directly above the cables will be limited given the limited width of the cable corridor.

Given HVDC cables produce static magnetic fields which decrease with the horizontal distance from the cables, magnetic compass interference should only be experienced directly above or in direct proximity to the

cables, noting again that effects decrease quickly with horizontal distance as the vessel moves away from the location of the cables.

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

Significance of the Effect

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

9.11.9 Reduction of emergency response capability due to increased incident rates for SAR responders and increased demand on the available resources

9.11.9.1 All Phases

Increased vessel activity during the construction phase may reduce emergency response capability by increasing the number of incidents, or reducing access for the responders. As an unlikely worst case, the consequences of such a situation could include a failure of emergency response to an incident, resulting in a PLL and pollution.

However, with project vessels to be managed through marine coordination and compliant with Flag State regulations, the likelihood of an incident is minimised. Additionally, should an incident occur, project vessels will be well equipped to assist, either through self-help capability or – for an incident involving a nearby third-party vessel – through SOLAS obligations (IMO, 1974), all in liaison with the MCA.

During the operation and maintenance phase, there is not expected to be a notable increase in vessel numbers, however there may be a period of time when the new Douglas CCS platform and the existing Douglas Complex are in operation simultaneously, which could increase the likelihood of an incident occurring at the Douglas Complex. As the new Douglas CCS platform will be unmanned, any impact is considered to be minimal.

Severity of Consequence

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

Frequency of Occurrence

Due to the limited number of vessels involved and temporary nature of the construction phase works, and given that the proposed new Douglas CCS platform will be unmanned and within the existing Douglas Complex, the frequency of occurrence is considered to be **negligible.**

Significance of Risk

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

9.12 Cumulative Impact Assessment

The Cumulative Impact Assessment takes into account the impact associated with the Proposed Development together with other relevant projects. Cumulative impacts are therefore impacts arising from the Proposed Development together with the impacts from a number of different developments, on the same receptor or resource. Please see Cumulative Effects Assessment – Screening Report (RPS Group, 2023) for detail on CEA methodology.

The specific projects scoped into the cumulative impact assessment for shipping and navigation are presented in Table 9.10.

Table 9.10: Cumulative Projects

Development	Status	Distance from Proposed Development (km)	Spatial/temporal overlap with Proposed Development			Start date	End date
			Spatial	Temporal (construction)	Temporal (Operation)		
Port of Mostyn Expansion	Application submitted	6.9	x	✓	✓	Unknown (Expected 2025/26)	Unknown (Expected 2025/26)
Mostyn Tidal Lagoon Project	Unknown	2.1	x	✓	✓	Unknown (Expected 2023-27)	Unknown
Mersey Tidal Lagoon Project	Early Planning	22 (approximate)	x	Unknown	Unknown	Unknown (Expected by 2040)	Unknown
North Wales Tidal Lagoon Project	Early Planning	5 (approximate)	x	Unknown	Unknown	Unknown	Unknown
Morecambe Offshore Windfarm Generation Assets	Pre-application	12	x	✓	✓	01/01/2026	Unknown
Morgan and Morecambe Offshore Windfarms Transmission Assets	Pre-application	3	x	✓	✓	Unknown	Unknown
Morgan Offshore Wind Project Generation Assets	Pre-application	39	x	✓	✓	Unknown	Unknown
Awel y Môr	Application submitted	2.1	✓	✓	✓	01/01/2020	01/01/2055
Mona Offshore Wind Farm	Pre-application	9.3	x	✓	✓	01/01/2028	31/12/2065
Prestatyn Coastal Defence	Consented /licensed	2	x	✓	x	31/07/2021	31/05/2025
Central Rhyl Coastal Defence Scheme	Consented /licensed	4	x	✓	x	31/03/2023	30/03/2024
Removal of Met Mast at Gwynt y Môr	Unknown	0	✓	✓	x	21/11/2022	30/11/2027
MaresConnect Interconnector	Permitted	0	✓	Unknown	✓	Unknown	Unknown

9.12.1 Vessel displacement leading to increased vessel to vessel collision risk between third-party vessels

9.12.1.1 Construction phase

There is the potential for increased collision risk if cumulative developments encourage third party vessels to deviate towards the areas of construction for the Proposed Development. Vessel movements in the area are expected to be impacted by the construction of the Mona, Morgan and Morecambe OWFs, however given the location of the Proposed Development relative to the OWFs, and the current vessel routeing in the area, any change in vessel routeing relative to the Proposed Development is expected to be minimal. Additional vessel movements in the area due to the construction of the OWFs or transmission assets may cause an increase in vessel-to-vessel collision risk, depending on the location of the transmission assets and routes taken by construction vessels and whether there is an overlap in construction phases.

There may also be an increase in vessel-to-vessel collision risk due to construction vessel movements associated with Awel y Môr OWF and construction of the MaresConnect interconnector if construction periods were to overlap and works were to take place in a similar geographical area at a similar time. The proposed expansion of the Port of Mostyn may also lead to increased vessel movements both during construction and with increased vessel capacity, and therefore increased collision risk during the construction period of the Proposed Development. The Port of Mostyn noted that there are currently 8,600 vessel transits per year in and out of the port, with the potential for this to increase further following expansion. Expansion of the port facilities will also allow the port to accommodate the towage of floating wind turbines. These would be RAM and therefore require careful coordination of vessel movements to avoid increased vessel displacement and therefore collision risk.

Details of construction activities, including any advisory safe passing distances, as defined by risk assessment, will be suitably promulgated via NtM, Kingfisher, Radio Navigational Warnings, NAVTEX and/or broadcast warnings to maximise awareness of ongoing construction activities. Guard vessels and temporary aids to navigation will be used to raise awareness of construction work to passing vessels (if required) to guide vessels around any areas of construction activities.

The appointment of an FLO will aid in ensuring local fishermen are made aware of construction works. Local Notices to Mariners as well as notifying local marinas and sailing clubs of the works will help to inform recreational users. All vessels will be expected to comply with international marine legislation, including the COLREGs and SOLAS.

Collision incidents are local in nature, occurring only when two (or more) vessels pass within a small distance of each other within the same sea area. Accounting for the distance between the Proposed Development and the cumulative developments, the temporary nature of the construction works and noting that there is a low likelihood that construction works for the Proposed Development and cumulative developments will be required within the same geographical area at the same time, the impact is as per the equivalent construction phase impact for the Proposed Development in isolation.

Severity of Consequence

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

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

Frequency of Occurrence

The impact will be present throughout the construction phase which will last up to six months. Given that third-party vessels are expected to be compliant with relevant Flag State regulations including the COLREGs, collision avoidance action ensure that the likelihood of an encounter developing into a collision incident is low. This is furthered by the promulgation of information which will maximise awareness of ongoing construction activities, thus allowing third-party vessels to passage plan in advance, if considered appropriate.

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

Significance of effect

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

9.12.1.2 Decommissioning phase

There may also be a risk of vessel displacement leading to increased vessel to vessel collision risk between third-party vessels created during the decommissioning phase if cumulative developments lead to further displacement of vessels around the developments.

Severity of consequence

Since the numbers and types of vessels used to remove the platform and cables are expected to be similar to those used for construction, this impact is expected to be similar in nature to the equivalent construction phase impact.

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

Frequency of Occurrence

The impact will be present throughout the decommissioning phase which is assumed to last for a similar timeframe as the construction period. Given that third-party vessels are expected to be compliant with Flag State regulations including the COLREGs, the likes of collision avoidance action ensure that the likelihood of an encounter developing into a collision incident is low. This is furthered by the promulgation of information which will maximise awareness of ongoing decommissioning activities, thus allowing third-party vessels to passage plan in advance.

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

Significance of the effect

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

9.12.2 Increased vessel to vessel collision risk between a third-party vessel and a project vessel

9.12.2.1 Construction phase

There is the potential for increased collision risk if cumulative developments encourage third party vessels to deviate towards the project vessels. Vessel movements in the area are expected to be impacted by the construction of the Mona, Morgan and Morecambe OWFs, however given the location of the Proposed Development relative to the OWFs, and the current vessel routeing in the area, any change in vessel routeing relative to the Proposed Development is expected to be minimal. Additional vessel movements in the area due

to the construction of the OWFs or transmission assets may cause an increase in vessel-to-vessel collision risk, depending on the location of the transmission assets and routes taken by construction vessels and whether there is an overlap in construction phases.

There may also be an increase in vessel-to-vessel collision risk between a third-party vessel and a project vessel due to construction vessel movements associated with Awel y Môr OWF and construction of the MaresConnect interconnector if construction periods were to overlap and works were to take place in a similar geographical area at a similar time.

Cumulative developments may lead to an increase in the number of vessels accessing the Port of Mostyn, with works being undertaken on expanding the port facilities in 2025 and 2026 to accommodate the largest of wind farm construction vessels. Additional vessel movements overlapping with the construction period of the Proposed Development may lead to increased vessel encounters and therefore potentially increased collision risk between third-party vessels and project vessels. Liaison with the Port of Mostyn and the approval of construction plans prior to commencing would serve to reduce the risk of increased vessel to vessel collisions due to the overlap of the two projects. Expansion of the port facilities will also allow the port to accommodate the towage of floating wind turbines. These would be RAM and therefore require careful coordination of vessel movements to increased collision risk.

Project vessels, as managed by marine coordination, will display suitable marks and lights, will broadcast on AIS (where appropriate) and will be compliant with relevant Flag State regulations including the COLREGs and SOLAS.

Details of construction activities, including any advisory safe passing distances, as defined by risk assessment, will be suitably promulgated via NtM, Kingfisher, Radio Navigational Warnings, NAVTEX and/or broadcast warnings to maximise awareness of ongoing construction activities. Communication with the Port of Liverpool and Port of Mostyn about the construction work activities and appointment of an FLO will also help to raise awareness of the works and minimise collision risk. Guard vessels and temporary aids to navigation will be used to raise awareness of construction work to passing vessels (if required) to guide vessels around any areas of construction activities.

Collision incidents are local in nature, occurring only when two (or more) vessels pass within a small distance of each other within the same sea area. Accounting for the distance between the Proposed Development and the cumulative developments, the temporary nature of the construction works and noting that there is a low likelihood that construction works for the Proposed Development and cumulative developments will be required within the same geographical area at the same time, the impact is generally as per the equivalent construction phase impact for the Proposed Development in isolation. The exception is within the Welsh Channel close to the landfall, where an overlap in construction periods between the Proposed Development and the Port's expansion works may lead to a small increase in collision risk. Marine coordination and liaison with the Port of Mostyn are anticipated to be sufficient to mitigate this increased risk. The Port of Mostyn also recommended the appointment of a Marine Planning Liaison Officer to manage vessel movements during construction.

Severity of Consequence

In the event of a collision incident between third-party vessels, the most likely consequences are minor contact between the vessels resulting in minor damage to property and minor reputational effects on business but no perceptible effect on people. The worst-case scenario could involve one of the vessels foundering resulting in PLL and the environmental consequence of pollution. Such a scenario would be more likely if one of the vessels involved was a small craft which may have weaker structural integrity than a commercial vessel. It was noted in the feedback from the Port of Mostyn that a collision within the Welsh Channel may lead to a period of reduced port access, leading to CTVs associated with the port being unable to return from nearby wind farms. It is noted that alternative access is possible via the Mid Hoyle Channel.

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

Frequency of Occurrence

The impact will be present throughout the construction phase which will last up to four years, with cable laying works anticipated to take up to two months. The number of vessel movements to and from the Douglas Complex and satellite platforms are relatively low, the majority of which are associated with CTVs. With the embedded mitigation measures noted above implemented, it is considered unlikely that an encounter between a third-party vessel and a project vessel will occur. In the event that such an encounter does occur, collision avoidance action would be implemented by the vessels as per the COLREGs, thus ensuring that the likelihood of the encounter developing into a collision incident is very low.

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

Significance of effect

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

9.12.2.2 Operation and maintenance phase

As per the equivalent construction phase impact, there is the potential for increased collision risk if cumulative developments encourage third party vessels to deviate towards project vessels. During the operation and maintenance phase, there will be up to 15 return trips by jack-up vessels and 15 return trips by other vessels visiting the new Douglas CCS platform, which is significantly fewer visits than currently received by the Douglas Complex. There is therefore not expected to be any additional vessel to vessel collision risk associated with vessels visiting the new Douglas CCS platform.

There will be a requirement to undertake inspection surveys as well as the potential for unplanned repair works on the proposed cables, which could result in an increased collision risk between a third-party vessel and a survey/maintenance vessel. Similar to the construction phase, if inspection or maintenance works were to coincide with construction works on cumulative projects, there could be an increase in vessel-to-vessel collision risk with survey/maintenance vessels, however any inspection or maintenance works are expected to be smaller in scale than construction works.

As per the construction phase, project vessels will be managed by marine coordination, will display suitable marks and lights, will broadcast on AIS and be compliant with relevant Flag State and international regulations including the COLREGs and SOLAS.

Similar to the construction phase, details of major maintenance activities including any advisory safe passing distances, as defined by risk assessment, will be suitably promulgated via NtM, Kingfisher, Radio Navigational Warnings, NAVTEX and/or broadcast warnings to maximise awareness of ongoing major maintenance activities.

As per the equivalent construction phase impact, collision incidents are local in nature, occurring only when two (or more) vessels pass within a small distance of each other within the same sea area.

Severity of Consequence

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

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

Frequency of Occurrence

The impact will be present throughout the operation and maintenance phase which will last for up to 25 years. With implementation of the embedded measures noted above, it is considered unlikely that an encounter between a third-party vessel and a project vessel will occur. In the event that such an encounter does occur, collision avoidance action would be implemented by the vessels as per COLREGs, thus ensuring that the likelihood of the encounter developing into a collision incident is very low.

The likelihood of an encounter is decreased compared to the construction phase given the smaller scale of maintenance activities, although this is somewhat balanced by the much longer duration of the operation and maintenance phase.

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

Significance of effect

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

9.12.2.3 Decommissioning phase

There may also be an increased collision risk created during the decommissioning phase if decommissioning works were to overlap temporally with maintenance or decommissioning works associated with the cumulative developments.

Severity of Consequence

Since the numbers and types of vessels used to remove the platform and cables are expected to be similar to those used for construction, this impact is expected to be similar in nature to the equivalent construction phase impact.

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

Frequency of Occurrence

The impact will be present throughout the decommissioning phase which is assumed to last for a similar timeframe as the construction period. With the embedded mitigation measures previously noted implemented, it is considered unlikely that an encounter between a third-party vessel and a project vessel will occur. As per the equivalent construction phase impact, in the event that such an encounter does occur, collision avoidance action would be implemented by the vessels as per the COLREGs, thus ensuring that the likelihood of the encounter developing into a collision incident is very low.

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

Significance of the effect

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

9.12.3 Vessel to platform allision risk

9.12.3.1 Operation and maintenance phase

There is the potential for increased vessel to structure allision risk if cumulative developments encourage third party vessels to deviate towards the new Douglas CCS platform. Vessel movements in the area are expected

to be impacted by the construction of the Mona, Morgan and Morecambe OWFs, however given the location of the Proposed Development relative to the OWFs, and the current vessel routeing in the area, any change in vessel routeing relative to the new Douglas CCS platform is expected to be minimal. Additional vessel movements in the area due to the construction of the OWFs or transmission assets, and the proposed expansion of the Port of Mostyn, may cause an increase in vessel-to-vessel collision risk, depending on the location of the transmission assets and routes taken by construction vessels and whether there is an overlap in construction phases.

However, due to the location of the platform within a 500 m Safety Zone and ATBA, any deviated vessels are expected to maintain a minimum distance from the new platform and therefore the impact is as per the equivalent operation and maintenance phase impact for the Proposed Development in isolation.

Severity of Consequence

The most likely consequences in the event of an allision incident between a third-party vessel and the new Douglas CCS platform are minor contact and damage to property and minor reputational effects on business, but no perceptible effect on people. The maximum adverse scenario could involve the vessel foundering resulting in PLL and the environmental consequence of pollution. Such a scenario would be more likely if the vessel involved was a small craft which may have weaker structural integrity than a commercial vessel.

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

Frequency of Occurrence

The impact will be present throughout the operation and maintenance phase which will last for up to 25 years. With implementation of the embedded mitigation measures outlined in Section 9.10, including the 500 m Safety Zone and ATBA, and the familiarity of vessels with the existing structures in the Douglas Complex, an allision incident is considered to be unlikely.

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

Significance of Risk

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

9.12.4 Reduced access to local ports

9.12.4.1 Construction Phase

There is the potential for increased disruption to port access due to cumulative developments, particularly if the coastal defence works at Prestatyn and Rhyl were to overlap temporally with the construction works on the cables or if any of the cumulative developments were to increase vessels movements in and out of the Port of Mostyn.

Works being undertaken on expanding the port facilities at the Port of Mostyn in 2025 and 2026 are proposed to accommodate the largest of wind farm construction vessels. Additional vessel movements overlapping with the construction period of the Proposed Development may lead to increased vessel encounters and therefore potentially increased collision risk between third-party vessels and project vessels. Liaison with the Port of Mostyn and the approval of construction plans prior to commencing would serve to manage the reduced access to the port during this time. Expansion of the port facilities will also allow the port to accommodate the towage of floating wind turbines. These would be RAM and therefore require careful coordination of vessel movements to avoid reduction in port access.

Project vessels will be managed by marine coordination, will display appropriate marks and lights, broadcast on AIS and will be compliant with relevant Flag State regulations including the COLREGs, including rule 18

which applies to vessels which are RAM. Liaison with the Port of Mostyn and wind farm operators will help to manage disruption.

With the designed in measures listed above, the effect due to the presence of cumulative developments is anticipated to be manageable.

Severity of Consequence

Construction of the cables within the Welsh Channel will result in temporary disruption to vessels accessing the Port of Mostyn, due to the presence of vessels which may be RAM, such as a cable laying vessel. Cable installation is estimated to take up to two months, with works in the Welsh Channel lasting 12-24 hours. Additional works will be required involving beaching the cable lay vessel close to the landfall, however this will take place outside of the navigational channel. The Port of Mostyn noted in their feedback that disruption of traffic utilising the Welsh Channel would also lead to commercial impact on the Port and tenants, however the focus of the assessment is on safety impacts. The Port of Mostyn also added that a loss of access may lead to crew members being temporarily required to remain on CTVs, which are day boats with limited provisions and facilities on board. It is noted that access to the Port of Mostyn is possible via both the Welsh Channel and the Mid Hoyle Channel, with the Mid Hoyle Channel more typically used by CTVs.

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

Frequency of Occurrence

The impact will be present throughout the construction phase which will last for up to two months, with works on the cable crossing the Welsh Channel lasting 12-24 hours. Additional works will be required involving beaching the cable lay vessel close to the landfall, however this will take place outside of the navigational channel.

An average of 11 vessels per day accessed the Port of Mostyn based on the AIS data, the majority of which were wind farm support vessels. It is noted that there may be additional small craft not broadcasting on AIS also requiring access to the Port of Mostyn. Based on feedback from the Port of Mostyn, there are approximately 8,600 transits per year associated with the Port, corresponding to 23 to 24 vessels per day. Cumulative developments may lead to an increase in the number of vessels accessing the Port of Mostyn, with works being undertaken on expanding the port facilities in 2025 and 2026 to accommodate the largest of wind farm construction vessels. Additional vessel movements overlapping with the construction period of the Proposed Development may lead to increased vessels experiencing a reduction in port access due to the cable lay activities. It is also noted that an overlap in the construction periods of the port developments and the Proposed Development may lead to a greater loss of access. It was stated in feedback from the Port of Mostyn that the Welsh Channel sees significant tidal variations, and that deep-draught vessels such as jack-ups associated with wind farm construction need to pass at high tide. Therefore cable lay within tidal windows should be coordinated with other vessels to ensure that access is available to the port of Mostyn for these deep draught vessels.

It is also noted that tidal lagoon projects in the area may lead to cumulative impacts, should the construction periods overlap. The most likely project to have an overlap is the Port of Mostyn's planned tidal lagoon, extending from the Port's breakwater to the Point of Ayr. Increased vessel movements associated with this construction and the construction of the Proposed Development may exacerbate the loss of access. First power for the lagoon is planned for mid-2027. The construction periods of the other tidal lagoon projects in North Wales and in the Mersey are not anticipated to overlap and therefore are not considered likely to lead to cumulative impacts.

Overall, cable installation works in the Welsh Channel are considered to be short term. The disruption to port access will be mitigated by good communication with the Port of Mostyn during the construction phase, including liaison with the Port to approve the construction methodology, and approval of a vessel management plan from both NRW and the Port of Mostyn. Once a cable lay contractor is appointed, a detailed construction plan, including vessel movements and operations, will be provided to the Port of Mostyn and NRW.

The frequency of occurrence is therefore considered to be **reasonably probable**.

Significance of effect

The severity of consequence is deemed to be moderate and the frequency of occurrence is considered to be reasonably probable, with suitable mitigation in place. The cumulative effect will, therefore, be of **tolerable** adverse significance, which is **not significant** in EIA terms.

9.12.4.2 Operation and maintenance phase

There is the potential for increased disruption to port access during the operational phase due to cumulative developments, for example if surveys or repairs within the Welsh Channel overlap temporally with other cumulative developments.

Similar to the construction phase, details of major maintenance activities including any advisory safe passing distances, as defined by risk assessment, will be suitably promulgated to maximise awareness of ongoing major maintenance activities.

Maintenance/repair vessels will be managed by marine coordination, will display appropriate marks and lights, broadcast on AIS and will be compliant with relevant Flag State regulations including the COLREGs, including rule 18 which applies to vessels which are RAM. Liaison with the Port of Mostyn and FLO will help to manage disruption. Therefore, the impact is as per the equivalent operation and maintenance phase impact for the Proposed Development in isolation.

Severity of Consequence

The overall timescale for any maintenance/repair works is expected to be less than for construction works. Such works may result in limited disruption to vessels crossing the offshore cables within the Welsh Channel to access the Port of Mostyn. Any required maintenance is expected to be localised in one area of the Proposed Development and temporary in nature.

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

Frequency of Occurrence

The reduction in access is decreased compared to the construction phase given the smaller scale of maintenance activities, although this is somewhat balanced by the much longer duration of the operation and maintenance phase.

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

Significance of the effect

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

9.12.4.3 Decommissioning phase

There may be potential for further reduced access to local ports during the decommissioning phase if maintenance or decommissioning works associated with cumulative developments were to overlap temporally with the decommissioning of the Proposed Development.

Project vessels will be managed by marine coordination, will display appropriate marks and lights, broadcast on AIS (where available) and will be compliant with relevant Flag State regulations including the COLREGs, including rule 18 which applies to vessels which are RAM. Liaison with the Port of Mostyn and FLO will help to manage disruption.

With the embedded mitigation measures listed above, the effect due to the presence of cumulative developments is anticipated to be manageable.

Severity of Consequence

Since the numbers and types of vessels used to remove the platform and cables are expected to be similar to those used for construction, this impact is expected to be similar in nature to the equivalent construction phase impact.

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

Frequency of Occurrence

The impact will be present throughout the decommissioning phase which is assumed to last for a similar timeframe as the construction period. Cumulative developments may lead to an increase in the number of vessels crossing the offshore cables within the Welsh Channel.

However, due to the localised and temporary nature of decommissioning works, the disruption to port access is reduced.

The frequency of occurrence is therefore considered to be **reasonably probable.**

Significance of the effect

The severity of consequence is deemed to be moderate and the frequency of occurrence is considered to be reasonably probable. The cumulative effect will, therefore, be of **tolerable** adverse significance, which is **not significant** in EIA terms.

9.12.5 Anchor interaction with subsea cable

9.12.5.1 Construction Phase

The risk of anchor interaction with the proposed cables during the construction phase could be increased if cumulative developments are expected to lead to increased traffic across the cables. Vessel movements in the area are expected to be impacted by the construction of the Mona, Morgan and Morecambe OWFs, which could lead to a change in traffic across the cables if the construction periods were to overlap. However, given the location of the offshore cables relative to the OWFs, and the current vessel routeing in the area, any change in vessel routeing across the cables is expected to be minimal. There is also expected to be an increase in vessel numbers due to the OWFs and port expansion, however the overall impact is expected to be similar.

Severity of Consequence

While exposed any vessel anchor could interact with the cables. If an anchor becomes snagged on the cables, there could be a risk of injury in trying to free it. If the anchor cannot be freed the safest action is to slip it, and not attempt to raise or cut the cable.

The most likely consequences are limited damage to property (anchoring vessel or subsea cable). The maximum adverse scenario may include damage to property including to the vessel's anchor or subsea cable.

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

Frequency of Occurrence

Mitigation includes circulation of information to make mariners aware of the exposed cable and use of guard vessels where cable exposures are considered to present significant risk to navigation.

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

Significance of effect

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

9.12.5.2 Operation and maintenance phase

The risk of anchor interaction with the proposed cables during the operational phase could be increased if cumulative developments are expected to lead to increased traffic across the cables. In particular, there may be deviations in vessel movements and increases in vessel numbers caused by the construction of the Mona, Morgan and Morecambe OWFs, depending on the preferred ports used during the construction and/or operational phases of these OWFs. An increase in vessel numbers is also expected due to the expansion of the Port of Mostyn.

During the operation and maintenance phase the cables will be marked on UKHO Admiralty Charts with associated note/warning about anchoring, trawling or seabed operations.

Severity of Consequence

Once the cables are protected, either through burial and/or other protection measures, larger vessels (e.g. cargo vessels and tankers) are more likely to threaten the cables as their anchors are able to penetrate deeper into the seabed and can cause greater damage than smaller anchors (fishing and recreational vessels) if contact is made. The anchors of smaller vessels (e.g. fishing and recreational craft) are unlikely to penetrate as deeply. Suitable target burial depths, defined in a CBRA, will mitigate the risk from vessel anchors. Periodic monitoring will be undertaken to confirm cable protection remains suitable.

The most likely consequences are limited damage to property (anchoring vessel or subsea cable). The maximum adverse scenario may include damage to property including to the vessel's anchor or subsea cable.

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

Frequency of Occurrence

Protection of the cables via burial will reduce the frequency of occurrence of anchor interaction.

Although there may be limited decision-making time if a vessel is drifting towards a hazard, it is anticipated that the charting of infrastructure including all subsea cables will inform any decision to anchor, as per Regulation 34 of SOLAS (IMO, 1974).

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

Significance of effect

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

9.12.6 Fishing gear interaction with subsea cable

9.12.6.1 Construction Phase

The risk of fishing gear interaction with the cables during the construction phase could be increased if cumulative developments are expected to lead to increased fishing activity across the cables. Construction of the Mona OWF could cause vessels to be displaced towards the proposed cables, however any displacement is expected to be minimal compared to the current fishing levels across the cables.

Therefore, the impact is as per the equivalent construction phase impact for the Proposed Development in isolation.

Mitigation measures including having an FLO in place and circulation of information (e.g. via Kingfisher and local communications) will help ensure any displaced fishermen are aware of the exposed cable and avoid fishing directly over it. In addition, guard vessels will be used in any areas where cable exposures are considered to present significant risk to fishing gear snagging.

Severity of Consequence

The most likely consequences are as per the equivalent impact for the Proposed Development in isolation.

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

Frequency of Occurrence

The frequency of occurrence during the period that the cables are surface-laid is considered to be **remote.**

Significance of effect

Overall, the severity of consequence is deemed to be serious and the frequency of occurrence is considered to be remote. The cumulative effect will, therefore, be of **tolerable adverse** significance, which is **not significant** in EIA terms.

Additional mitigation to reduce this impact to ALARP is to minimise the amount of time between cable lying and installation of cable protection, (e.g. burial).

9.12.6.2 Operation and maintenance phase

The risk of fishing gear interaction with the proposed cables during the operational phase could be increased if cumulative developments are expected to lead to increased fishing activity across the cables. Any displacement is expected to be minimal compared to the current fishing levels across the cables.

Therefore, the impact is as per the equivalent operational phase impact for the Proposed Development in isolation.

During the operation and maintenance phase the cables will be marked on UKHO Admiralty Charts and KIS-ORCA charts with associated note/warning about anchoring, trawling or seabed operations.

A CBRA will be undertaken to provide a detailed assessment of fishing activity along the Proposed Development and fishing gear penetration depths for the various soil conditions in order to determine suitable protection measures for the cables during the operation and maintenance phase.

Severity of Consequence

The planned cable protection is assumed to provide effective mitigation from fishing gear snagging, reducing the risk of serious consequences such as snagging, capsize of the vessel and PLL.

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

Frequency of Occurrence

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

Significance of effect

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

9.12.7 Vessel grounding due to reduced under keel clearance

9.12.7.1 Operation and maintenance phase

There could be an increased risk of vessel grounding due to reduced under keel clearance if cumulative projects were to lead to additional vessel movements over the proposed cables, particularly in areas where water depths are shallow.

This is particularly relevant if there is an increase in wind farm CTVs using the Port of Mostyn. It was noted in feedback from the Port of Mostyn that the Welsh Channel is to be re-dredged, allowing vessels with draughts of up to 11m and under keel clearance of 1.5m to transit to and from Mostyn. The cable in this area will be buried to 3m below the seabed, deeper than the burial of the existing gas pipeline and is not expected to lead to any reduction in under keel clearance.

It is noted that the cable crossings of the Proposed Development with the Burbo Bank and North Hoyle wind farm cables will exceed a 5% reduction in water depth. The Proposed Development crosses the Burbo Bank cable in depths of 5m, and the North Hoyle cable in depths of 7m. A depth reduction of up to 0.8m therefore constitutes a depth reduction of 16% and 11%. Consultation with the MCA on these depth reductions will be required prior to the construction period.

Severity of Consequence

Should a vessel grounding occur, the most likely consequences are minor damage to property and minor reputational effects on business but no perceptible effect on people. The maximum adverse scenario may include the vessel foundering resulting in PLL and the environmental consequence of pollution.

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

Frequency of Occurrence

When considered with the embedded mitigation of compliance with the requirements in MGN 654 and any change to water depth of more than 5% chart datum requiring further consultation and agreement with the MCA, the frequency is considered to be reduced to low for all vessel types.

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

Significance of the Effect

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

9.12.8 Interference with magnetic compasses

Interference with magnetic position fixing equipment is local in nature, occurring only when a vessel is located in proximity to a subsea cable. Accounting for the distance between the proposed cables and the cumulative developments, it is not anticipated that the presence of the cumulative developments will result in any change to this impact.

Severity of Consequence

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

Frequency of Occurrence

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

Significance of the Effect

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

9.12.9 Reduction of emergency response capability due to increased incident rates for SAR responders and increased demand on the available resources

9.12.9.1 All Phases

If construction works for the Proposed Development were to overlap with construction or operational phases of the cumulative developments, there could be increased reduction in emergency response capability. However, due to the temporary nature of the construction works, this impact is expected to be minimised.

Project vessels will be managed through marine coordination and compliant with Flag State regulations. Additionally, should an incident occur, project vessels will be well equipped to assist, either through self-help capability or – for an incident involving a nearby third-party vessel – through SOLAS obligations (IMO, 1974), all in liaison with the MCA.

During the operation and maintenance phase of the Proposed Development, there is not expected to be a notable increase in vessel numbers, however there may be a period of time when the new Douglas CCS platform and the existing Douglas Complex are in operation simultaneously. If this coincides with the construction or operational phases of cumulative projects, this could further reduce emergency response capability. As the new Douglas CCS platform will be unmanned, any impact is considered to be minimal.

Severity of Consequence

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

Frequency of Occurrence

Due to the limited number of vessels involved and temporary nature of the construction phase works, and given that the proposed new Douglas CCS platform will be unmanned and within the existing Douglas Complex, the frequency of occurrence is considered to be **negligible.**

Significance of Risk

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

9.13 Additional Mitigation

Proposed additional mitigation measures to ensure tolerable risks are reduced to ALARP are as follows:

- The period during which the cables are surface laid and not yet buried or protected should be reduced so far as practicable. This reduces the risk of vessel anchors and fishing gear snagging on surface-laid cables
- The Port of Mostyn recommended the appointment of a Marine Planning Liaison Officer to coordinate vessels during the construction period.

9.14 Transboundary effects

Transboundary effects arise when impacts from a development within one European Economic Area (EEA) state's territory affects the environment of another EEA state(s).

Since international shipping has been included in the baseline assessment, there is no potential for transboundary impacts upon shipping and navigation receptors due to construction, operation and maintenance and decommissioning of the Proposed Development. Therefore, transboundary effects for shipping and navigation receptors do not need to be considered further.

9.15 Inter-related effects

Inter-related effects are the potential effects of multiple impacts affecting one receptor or a group of receptors. Inter-related effects include interactions between the impacts of the different stages of the Proposed Development (i.e. interaction of impacts across construction, operation and maintenance and decommissioning), as well as the interaction between impacts on a receptor within a project stage. A description of the likely inter-related effects arising from the Proposed Development on shipping and navigation is provided below.

Displacement of commercial fishing vessels from fishing grounds may lead to an increase in vessel-to-vessel collision risk between third-party vessels. However as this is already considered within the shipping and navigation chapter these inter-related effects are not anticipated to interact in such a way as to result in combined effects of greater significance than the assessments presented for each individual phases. Therefore, these inter-related effects would not be significant in EIA terms.

9.16 Conclusion

Information on shipping and navigation within the Shipping and Navigation Study Area was collected through desktop review of a number of data sources and through consultation with both national and local stakeholders.

The impacts assessed include:

- Vessel displacement leading to increased vessel to vessel collision risk between third-party vessels
- Increased vessel to vessel collision risk between a third-party vessel and a project vessel
- Vessel to platform allision risk
- Reduced access to local ports
- Anchor interaction with subsea cable
- Fishing gear interaction with subsea cable
- Vessel grounding due to reduced under keel clearance
- Reduction of emergency response capability due to increased incident rates for SAR responders and increased demand on the available resources.

Overall, it is concluded that there will be no significant effects arising from the Project during the construction, operational and maintenance *or* decommissioning phases, provided that the mitigation measures identified in Section 9.10 are in place.

The cumulative impacts assessed include all of those assessed for the Proposed Development in isolation. Overall, it is concluded that there will be no significant cumulative effects from the Project alongside other projects/plans.

No potential transboundary impacts have been identified regarding effects of the Project.

9.17 References

Anatec Limited and RPS Group (2023). Liverpool Bay CCS Ltd, HyNet Carbon Dioxide Transportation and Storage Project – Offshore Environmental Statement Volume 3, Navigational Risk Assessment Technical Report.

Department for Environment, Food and Rural Affairs (DEFRA) (2011). UK Marine Policy Statement. Available at: https://www.gov.uk/government/publications/uk-marine-policy-statement. Accessed on: August 2023.

DfT (2023). All UK port ship arrivals, by port, from 2009.

IMO (2018). Revised Guidelines for Formal Safety Assessment (FSA) for Use in the IMO Rule-Making Process. MSC-MEPCC.2/Circ.12/Rev.2. London: IMO.

IMO (1972/78). Convention on the International Regulations for Preventing Collisions at Sea 1972 (COLREGS). Available at: https://www.imo.org/ Accessed on: August 2023.

IMO (1974). International Convention for the Safety of Life at Sea (SOLAS). Available at: https://www.imo.org/ Accessed on: August 2023.

Marine Management Organisation (2021). North West Inshore and North West Offshore Marine Plan. Available at: https://www.gov.uk/government/publications/the-north-west-marine-plans-documents Accessed on: August 2023

MCA (2021a). Marine Guidance Note 654 (Merchant and Fishing) Safety of Navigation: Offshore Renewable Energy Installations (OREIs) – Guidance on UK Navigational Practice, Safety and Emergency Response. Southampton: MCA.

MCA (2021b). MGN 661 (Merchant and Fishing) Navigation – Safe and Responsible Anchoring and Fishing Practices.

MCA (2008). Marine Guidance Note 372 (Merchant and Fishing) Offshore Renewable Energy Installations (OREIs): Guidance to Mariners Operating in the Vicinity of UK OREIs. Southampton: MCA.

RPS Group (2023). Liverpool Bay CCS Ltd, HyNet Carbon Dioxide Transportation and Storage Project – Offshore Environmental Statement Volume 3, Cumulative Effects Assessment – Screening Report.

TCE (2023). GIS for wind farms within England and Wales.

UK Government (1885). Submarine Telegraph Act 1885. Available at: https://www.legislation.gov.uk/ukpga/Vict/48-49/49/contents. Accessed on: August 2023.

UKHO (2023) Admiralty Nautical Charts 1978 and 1826.

UKHO (2022). Admiralty Sailing Directions West Coasts of England and Wales Pilot, NP37.

UNCLOS (1982). United Nations Convention on the Law of the Sea.

Welsh Government (2019). Welsh National Marine Plan