

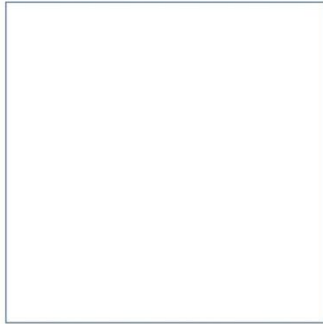
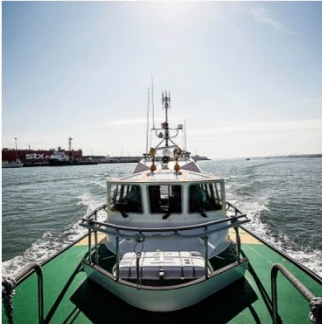
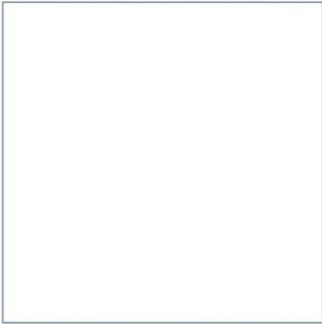
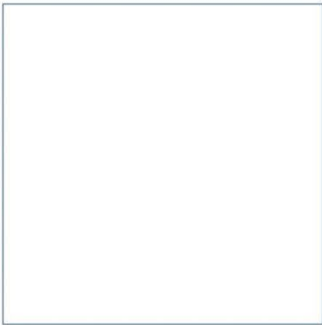
Port of Mostyn

Mostyn Energy Park Extension

Environmental Statement

Chapter 10: Commercial and Recreational Navigation

December 2022



Innovative Thinking - Sustainable Solutions

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Mostyn Energy Park Extension

Environmental Statement



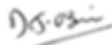
Chapter 10: Commercial and Recreational Navigation

December 2022



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Port of Mostyn

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Contents

10	Commercial and Recreational Navigation.....	1
10.1	Introduction.....	1
10.2	Definition of study area.....	1
10.3	Impact assessment methodology.....	1
10.4	Consultation.....	3
10.5	Implications of legislation, policy and guidance.....	6
10.6	Description of the existing environment.....	7
10.7	Impact assessment.....	11
10.8	Mitigation and residual impacts.....	19
10.9	Summary of impacts.....	20
10.10	References.....	23
10.11	Abbreviations/Acronyms.....	24

Tables

Table 10.1.	Summary of consultation to date.....	4
Table 10.2.	The Port of Mostyn annual vessel movements since 2010.....	10
Table 10.3.	Vessel types and dimensions handled at the Port of Mostyn.....	10
Table 10.4.	Estimated Annual Vessel movements 2022-2030/31..... (1 vessel call = 2 movements).....	14
Table 10.5.	Summary of potential navigational risks.....	21

Figure

Figure 10.1.	Port of Mostyn's Statutory Harbour Authority area.....	7
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10 Commercial and Recreational Navigation

10.1 Introduction

This chapter provides an assessment of the potential significant effects of the Mostyn Energy Park Extension Project (MEPE) Project on the existing and future commercial marine activities at the Port of Mostyn, including the dredging operations and marine maintenance services. The navigational interests of the inshore fishing activities and recreational navigation on the Dee estuary are also considered as part of the navigational impact assessment. This chapter has been prepared by the Port of Mostyn Ltd.

The chapter outlines the navigational impacts and the required controls in relation to the future operation of the MEPE Project as an offshore wind turbine (OWT) construction facility and Operations and Maintenance (O&M) base. These are described in detail in Chapter 2 (Proposed Development).

This chapter is supported by Figure 10.1 which shows the area of jurisdiction of the Port of Mostyn. In addition, Appendix 10.1 includes a description of the terms used to define the 'Likelihood' and 'Consequences', the risk assessment matrix and the tolerability criteria tables used in the impact assessment.

10.2 Definition of study area

For the purpose of this assessment the study area is defined as the Dee Estuary between Connah's Quay downstream to a line drawn between the Point of Ayr in Flintshire and Hilbre Point on the Wirral. This area encompasses the Mostyn harbour and inner navigational channel which are used mainly by commercial vessels and also by a small number of local fishing boats, and infrequently by recreational craft. For practical purposes, the navigational issues on the approaches to the Dee Estuary are also considered in this chapter.

10.3 Impact assessment methodology

10.3.1 Data and information sources

Current baseline conditions have been determined by a desk-based review of available information.

The main desk-based sources of information that have been reviewed to inform the current baseline description within the vicinity of the proposed development include:

- Port of Mostyn vessel traffic data and statistics; and
- Admiralty Chart 1953 – Approaches to the River Dee, and Admiralty Sailing Directions NP37 - West Coast of England and Wales Pilot.

10.3.2 Determining significance of effects

There is no specific guidance on methodology for assessing the implications of marine operations on commercial and recreational navigation in the National Policy Statement for Ports (NPSfP). However, the issues which are pertinent to navigation and marine activities are amongst the key points of the NPSfP when considering proposals for port related developments and include:

- Commercial impacts;
- Coastal change;
- Health and safety;
- Water quality and resources; and
- Non-native species.

These issues are relevant to the protection of interests for people, the environment and assets, which in the Dee Estuary can be characterised as:

- Commercial shipping operations;
- Commercial and recreational fishing activities;
- Recreational Sailing;
- Health and safety of other users of the estuary;
- Effects of the scheme on the hydrodynamics and sedimentary regime of the estuary and the resultant effects on navigation through changes in current flows;
- Protection of water quality from chemical and biological pollution; and
- Protection of the Dee Estuary as a Site of Special Scientific Interest, a Special Area of Conservation, a Special Protection Area and a Ramsar site.

Assessment approach and significance criteria

Mostyn Docks Limited (MDL) as the Statutory Harbour Authority (SHA) has carried out a comprehensive process of determining and assessing navigational risks in order to develop appropriate measures required for safety of navigation and for the protection of users of the Dee Estuary, the local environment and the assets (material assets and the Port's reputation). The MDL Risk Assessment (RA) for Marine Operations covers all marine operations conducted in the Port's jurisdiction and its approaches and specifically addresses those vessels which are subject to compulsory pilotage. These marine operations include the windfarm construction works and O&M operations undertaken from the Port and, therefore, are appropriate to the purpose of the EIA process for the MEPE Project.

For the purpose of this assessment, the methodology of the MDL RA for Marine Operations has been utilised. It considers the risks of marine operations to be a function of a 'Likelihood' of a hazardous event (i.e. possibility) and the degree of its possible 'Consequences' (i.e. impact) on each group of receptors. The 'Likelihood' is determined to be a function of a 'Probability' that a hazardous event would occur and the 'Frequency' of a hazardous event occurring with existing controls in place. 'Consequences' to the three groups of receptors are considered in relative terms to the degree of injury to people, pollution of the environment and/or damage to assets. The descriptive system of the terms used to define the 'Likelihood' and Consequences is enclosed in Appendix 10.1.

On the basis of these criteria the level of risk is established for each identified hazardous event with respect to each of the three groups of receptors. The following terms have been adopted in setting the significance ratings: **Low-Medium-High-Very High**, where Low and Medium Risks are considered to be Tolerable and As Low and Reasonably Practicable (ALARP) with the control measures in place, while any identified High or Very High Risks are considered Unacceptable and require additional safety measures before the proposed marine operations can commence. The Risk Assessment Matrix and the tolerability criteria tables are enclosed in Appendix 10.1.

The above approach broadly conforms to the standard EIA approach of assessing significance as a function of the magnitude of impact and sensitivity of receptors; in this case, Likelihood of Impact and consequences to each group of receptors.

10.4 Consultation

Consultation with regard to the outcomes of the formal scoping process and whether there are any likely effects of the MEPE Project on commercial and recreational navigation has been undertaken as appropriate, with NRW.

The consultation that has been undertaken, along with the outcome of such consultation and how it has influenced the commercial and recreational navigation assessment is provided in Table 10.1.

The Port of Mostyn as the SHA will consult other stakeholders with a navigational interest on the NRA presented in Chapter 10 during the marine licence consultation period. This will include authorities such as the Dee Conservancy Harbour Master, the Maritime and Coastguard Agency (MCA) and Trinity House.

Table 10.1. Summary of consultation to date

Consultee	Reference, Date	Summary of Response	How Comments have Been Addressed in this Chapter
NRW	Scoping Opinion, 06 January 2022	We note that the site falls within the jurisdiction of Port of Mostyn and Dee Conservancy, as the Statutory Harbour Authority (SHA) for the Port of Mostyn and the Dee Conservancy. Port of Mostyn is also the Competent Harbour Authority (CHA) with respect to pilotage for the Port of Mostyn and the River Dee.	Noted.
NRW	Scoping Opinion, 06 January 2022	We agree with the scope of the assessment relating to shipping and navigation. However; the proposed study area for the assessment on navigation only includes Mostyn dredge, disposal and transit areas, and does not factor in potential impacts on channels further upstream used by commercial fishermen, recreational craft and other users. We would therefore expect the study area for the assessment to include the navigable channel up to Greenfield (as a minimum).	The study area has been amended to take account of a larger area (Section 10.2).
NRW	Scoping Opinion, 06 January 2022	Greater consideration should be given to the allision of passing vessels and grounding risk within the assessment, given the narrow channels.	Consideration has been given to these risks in the assessment section of this chapter (Section 10.7).
NRW	Scoping Opinion, 06 January 2022	We agree with the inclusion of a Navigation Risk Assessment (NRA) on the impact of the works on shipping and navigation to support your assessment. This should be considered and agreed by the Port of Mostyn in its role as the Statutory Harbour Authority (SHA) and in accordance with the Port Marine Safety Code and its Guide to Good Practice. The NRA should establish how the phases of the project are managed to a point where risk is reduced and considered to be 'as low as reasonably practicable' (ALARP). The NRA may be provided as an appendix to the Environmental Impact Assessment Report and the outputs will inform the Project's Environmental Impact Assessment Report's chapter for the commercial and recreational navigation topic.	Noted. An NRA has been undertaken by the Port of Mostyn and is incorporated within this ES chapter. Compliance with the Port Marine Safety Code (PMSC) has been considered as part of the NRA.

Consultee	Reference, Date	Summary of Response	How Comments have Been Addressed in this Chapter
NRW	Scoping Opinion, 06 January 2022	To address the ongoing safe operation of the marine interface for this project, the MCA would like to highlight the Port Marine Safety Code (PMSC) and its Guide to Good Practice. Under this code you will need to liaise and consult with the SHA and develop a robust Safety Management System (SMS) for the project.	Noted. Liaison with the SHA has been integral part of the NRA and the preparation of this chapter.
NRW	Scoping Opinion, 06 January 2022	Additionally, there is a British Standards Institution publication on Road Lighting, BS5489. Part 8 relates to a code of practice for lighting which may affect the safe use of aerodromes, railways, harbours and navigable Inland waterways.	Noted. Lighting at the port estate should be a minimum of 5 lux and aiming for an average of 20 lux to allow movement of vehicles. Task lighting or lighting for a working area should be a minimum of 20 lux but an average of 50 lux. The edge of the quay should be a minimum of 30 lux.
NRW	Scoping Opinion, 06 January 2022	The Dee Conservancy have also advised that the survey works undertaken within the Dee Conservancy Authority area (outside Mostyn Docks limits) will require approval of Risk Assessments and Method Statements by the Dee Conservancy Harbour Master. They also note that within Figure 4 (para 3.2) afloat activity within this area comes wholly under the jurisdiction of the Dee Conservancy Harbour Master and therefore reference to Dee Conservancy should be included in the Figure.	The Port of Mostyn will consult and seek approval of Risk Assessments and method statements from Dee Conservancy Authority as appropriate.
NRW	Scoping Opinion, 06 January 2022	Additionally, within para 5.5.2 (Vessels), please note the statement is incorrect and that port owned and operated vessels are registered at Mostyn.	Port of Mostyn is not a recognised MCA port of registry.
NRW	Scoping Opinion, 06 January 2022	Finally, within para 5.6.2 (Commercial Shipping Activity) the A380 operations have now ceased and reference to them should be removed.	There is no reference to A380 operations in this ES chapter.

10.5 Implications of legislation, policy and guidance

This section of the chapter sets out key aspects and implications of policy and guidance that are relevant to the assessment of likely impacts on commercial and recreational navigation. It builds upon the overarching chapter covering Legislation, Policy and Guidance (Chapter 3).

10.5.1 Legislation

International protocols and conventions relating to safety, laws of the sea and pollution apply to shipping and ports. The UK Government has a responsibility to ensure that measures are implemented to honour its commitments to these protocols. Not least of these is the UK's responsibility under Article 60(7) of the United Nations Convention on the Law of the Sea (UNCLOS III) relating to provisions for 'Artificial islands, installations and structures in the exclusive economic zone'. An NRA is one process by which the necessary considerations of developments can be evaluated.

Within UK territorial waters, the UK Government upholds the right of innocent passage, as defined in Article 17 of UNCLOS; shipping has the freedom of navigation beyond the 12 nautical mile limit of UK territorial waters. Shipping should be regulated through the 'flag state control' operated by the country in which the ship is registered. As this arrangement has proved unsatisfactory, 'port state control' has become common in national jurisdictions. Under this regime the UK Government, represented by the inspection division of the MCA, exercises the rights of the port state to inspect and, if appropriate, detain sub-standard ships.

Most port operations are administered by a Statutory Harbour Authority (SHA). Every SHA is self-governed with specific legislation (Acts of Parliament) creating the SHA as an entity, with further powers, duties and amendments made over time in response to the changing scope and remit of the SHA. Underpinning the powers of a SHA is a range of national legislation, which places statutory responsibility on the Harbour Authority to ensure navigation and safety within the harbour limits.

Mostyn Docks Ltd is the SHA for the Port of Mostyn and also a Competent Harbour Authority (CHA) with respect to Pilotage. These two roles provide duties and powers requiring it to run port marine operations safely and efficiently. The Port Marine Safety Code identifies these as:

- *"Taking reasonable care, so long as the harbour/facility is open for public use, that all who may choose to navigate in it may do so without danger to their lives or property.*
- *Conserve and promote the safe use of the harbour/facility and prevent loss or injury through the organisation's negligence.*
- *Have regard to efficiency, economy and safety of operation as respects the services and facilities provided.*
- *Take such action that is necessary or desirable for the maintenance, operation, improvement or conservancy of the harbour/facility".*

Source: DfT/MCA, 2016

A fundamental requirement of a Harbour Authority is to run a safe and efficient port marine operation, in respect of marine risk. The Port Marine Safety Code's 'Guide to Good Practice' identifies that:

"Risks may be identified which are intolerable. Measures must be taken to eliminate these so far as is practicable. This generally requires whatever is technically possible in the light of current knowledge, which the person concerned had or ought to have had at the time. The cost, time and trouble involved are not to be taken into account in deciding what measures are possible to eliminate intolerable risk".

Source: DfT/MCA, 2018

10.5.2 Guidance

The following guidance documents have been used in preparation of the NRA. These documents provide information regarding the issues that should be taken into consideration when assessing the effect on navigational safety:

- The Port Marine Safety Code (DfT, 2016); and
- A Guide to Good Practice on Port Marine Operations (DfT, 2018).

10.6 Description of the existing environment

10.6.1 Regulations and operational procedures

The Dee Conservancy (through NRW) is the Conservancy, SHA and Local Lighthouse Authority for an area of the Dee Estuary that extends from Wilcox Point at Chester downstream to the seaward boundary of the estuary at the Point of Ayr, but excludes the Port of Mostyn’s SHA.

The area of jurisdiction of the Port of Mostyn as the CHA for Pilotage is defined in the Mostyn Docks (Pilotage) Harbour Revision Order 1989 and is shown on Figure 10.1.

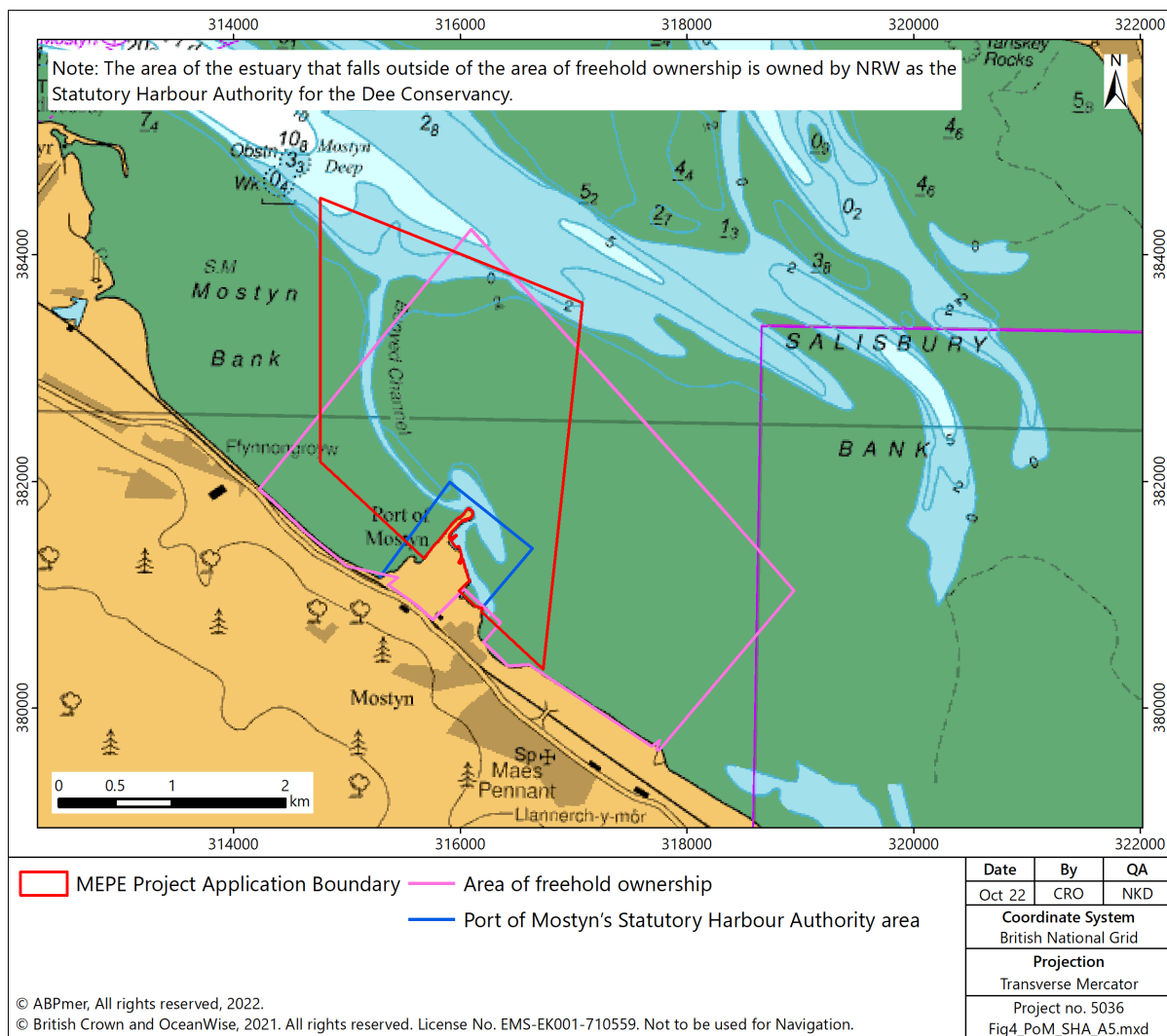


Figure 10.1. Port of Mostyn’s Statutory Harbour Authority area

Within the Dee Conservancy, an area extending from the Port of Mostyn to the seaward approaches to the Dee Estuary known as Mostyn Operational Area (MOA) is subject to a Jointly Agreed Procedures (JAP) Agreement between Mostyn and the Dee Conservancy. The JAP is part of the Dee Conservancy's and the Mostyn Docks Ltd respective Marine Safety Management System (SMS). Its main purpose is to ensure procedures and processes associated with safety of navigation are properly maintained by both Mostyn and the Dee Conservancy in accordance with the requirements of The Port Marine Safety Code (DfT, 2016). Under this agreement, the Port of Mostyn is responsible for day-to-day navigational safety matters within the MOA whilst the Dee Conservancy retains the same responsibilities for the remainder of the estuary with the exception of Pilotage.

The JAP provides a set of operational procedures which have been developed on the basis of a thorough and formal assessment of risks. The procedures apply to vessels operating in the MOA and address the following:

- Management of navigation of vessels;
- Communication protocol;
- Pilotage;
- Safe Anchorage; and
- Contingency planning and emergency response.

The Mostyn Docks Limited SMS Procedure C1.04 states that:

"The process of risk assessments is continuous so that any new hazards to navigation or marine operations are a result of changes in the use of the area of Mostyn Docks Limited jurisdiction and other defined areas in which it undertakes marine operations are identified. Each assessment of risk addresses as applicable, marine safety including the protection of life, health, the marine environment and property. This assessment is used to establish what additional control measures may be required to reduce the assessed risk to as low as is reasonably practicable. The results of these risk assessments are recorded and documented".

10.6.2 Navigational route and conditions

Vessels in transit between the River Dee and the Irish Sea may navigate along both sides of the estuary, however, the main navigation channel is along the Welsh side. The navigational route to the Port of Mostyn is via the South Hoyle Channel (also known as the Outer Channel), thence through Mostyn Deep to the Mostyn Inner Channels (Salisbury and Mostyn channels). The majority of Aids to Navigation along the channels consist of lighted buoys and Port Entry Lights (PEL), and are provided and maintained by the Port of Mostyn.

The navigational route to the Port is approximately 13 nautical miles long with the dredged channels being between 75 m and 100 m wide. The existing navigational parameters along the channel allow it to be used by windfarm service craft with minimal tidal restrictions whilst larger deep draught vessels transit it when suitable tidal conditions prevail. There are two designated anchorage areas (Wild Road and Mostyn Deep) located between the Inner and Outer channels. These anchorages are used by vessels awaiting entry to the Port or for pilotage service.

The upstream side of the harbour has a number of moorings which are owned by the Port, local fishermen and RWE Npower (RWE) for their windfarm service boats.

10.6.3 Port usage and vessel movements

RWE Npower renewables

RWE maintains a number of service boats used in the operational support of the North Hoyle, Rhyl Flats and Gwynt y Môr OWFs. The numbers and types of these vessels varies from time-to-time depending on maintenance requirements. Generally, each vessel will undertake one round trip per day; during periods of adverse weather the vessels would remain in the Port.

An RWE Service Vessel Pontoon Facility at the Port of Mostyn can accommodate up to 12 OWF service boats. These are expected to create up to 24 daily movements during peak periods seven days per week, mainly during daylight hours.

Wind turbine repair vessels

From time-to-time, installation vessels are required in order to carry out repairs to offshore wind turbines. In 2020, the Port of Mostyn undertook a repair campaign on the Walney OWF. In 2021, for example, there were three repair vessel calls for this purpose. The data in Table 10.2 illustrate the year-on-year fluctuations in vessel movements which primarily depend on the individual needs of the OWFs.

Port of Mostyn marine services

The Port of Mostyn's own three vessels are involved in the routine marine maintenance and pilotage services of the Port. The pilot/survey vessel 'Patricia' provides the pilot boarding service for vessels entering or leaving the Port and is also involved in regular hydrographic surveys within the Dee Estuary that take place between 70 and 90 days per year. Marine services such as harbour works and maintenance of the Port's Aids to Navigation are carried out using the multi-purpose workboat 'Eileen'. Routine dredging works within the harbour are conducted by the Port of Mostyn's dredger 'Gwendoline'.

The total volume of maintenance dredge material that is permitted to be dredged from the channel and harbour areas is up to 900,000 tonnes (approximately 600,000 m³) per annum under the existing dredge marine licence (DML1542v2) and an additional 99,990 tonnes (approximately 66,660 m³) per annum under the existing dredge marine licence (DML2001). However, dredging is only carried out when there is a commercial or navigational safety need to do so and involves small regular campaigns as required. The dredging consent permits up to 12,000 m³ of sediment to be deposited in the Mostyn Deep disposal site (IS102) per 24 hours. The Port's own dredger Gwendoline dredges at a rate of approximately 100 m³ per hour and is primarily used in and around the harbour.

Commercial traffic volumes

The usage of the Port of Mostyn has varied significantly in recent years with heavy usage by large vessels (jack-up barges, Lo-Lo and Ro-Ro) during blade upgrade works on Walney Wind farm and for various maintenance tasks on other OWFs.

Table 10.2 summarises the volumes of commercial traffic at the Port over the past twelve years. Due to the project specific nature of the on-going maintenance of OWFs, intermittent periods of low activity are regularly experienced. These figures do not include the daily movements of the OWF Service Operation Vessels (SOVs)/Crew Transfer Vessels (CTVs).

Table 10.2. The Port of Mostyn annual vessel movements since 2010

Year	Commercial Shipping	Dredging Works
2010	212	390
2011	653	184
2012	187	0
2013	400	676
2014	275	232
2015	181	158
2016	198	257
2017	100	242
2018	44	124
2019	42	376
2020	114	242
2021	17	154

Vessel types

To accommodate the various cargoes handled, a variety of vessel types and sizes have used the Port of Mostyn since 2010. Table 10.3 provides the range of vessel involved.

Table 10.3. Vessel types and dimensions handled at the Port of Mostyn

Vessel Type	Length Over All (LOA) (m)	Beam (m)	Draught (m)
Jack-Up barge	90	36	6.7
Ro-Ro vessel	154	24	5.8
Lo-Lo vessel	152	21	5.5

Fishing

Commercial and recreational fishing activity in the Dee Estuary and wider area is described in further detail in the Fisheries ES Chapter (Chapter 9).

According to the latest available Marine Management Organisation (MMO) data (MMO, 2022), there were seven under-10 m vessels registered in 2022 at the Port of Mostyn, however, none of them operate from the Port (Port of Mostyn, *pers. Comm.*). There are further vessels registered in Bagillt (six), Connah's Quay (eight) and Hoylake (one) within the estuary. All the registered vessels belonged to the 10 m or less size class. It should be noted that although these vessels may have registered these ports as their home port, they may not necessarily be operating from these ports. There are currently no commercial fishing vessels operating from Mostyn harbour.

During the cockling season an average of 25 small boats, usually under 10 m in length are used by the cocklers to access the cockle beds. Cockling boats typically operate during low water and undertake outbound transits to the cockle beds approximately 2-2.5 hours after high water and return about 5-6 hours later depending on tidal height.

The Dee Estuary also supports a small prawn fishery with up to six of the local boats fishing the shallows between Flint and Point of Ayr between March-May and August-November. These are the same boats used during the cockling and fin fishery seasons.

For reasons of safety and port security, fishing activities are not allowed from the quays and within the operational areas of the Port of Mostyn.

Recreational navigation

Recreational activities are mainly located on the Wirral side of the Dee Estuary where there are two main sailing clubs – West Kirby and Dee Sailing Clubs (*circa* 4 nautical miles from the Port of Mostyn). Crafts from these clubs usually make transit from the Dee Estuary to Liverpool Bay along the Wirral coast and do not typically cross the estuary due to the presence of sandbanks and the macro tidal conditions.

Due to the strong currents and mobile sandbanks, it is uncommon for sailing, motor or personal watercraft (jet-ski) activities to occur within, or in the immediate vicinity of the Mostyn Harbour or Inner Channel areas. Recreational navigation in the proximity of the Port and along the navigation channel is, therefore, limited to an occasional sailing boat or a small open boat used for long line fishing. There are no berthing facilities at the Port of Mostyn for recreational craft.

10.6.4 Future baseline

In the absence of the MEPE project, activity within the Port of Mostyn would continue to support the O&M of existing OWFs. In the absence of being able to support the construction of OWFs, the Port would revert to general cargo and Ro-Ro operations, involving a greater number of vessel and HGV movements.

The numbers and types of these vessels that use the Port of Mostyn is expected to increase during the O&M phases of Awel y Môr (AyM), Mona and Morgan OWFs if it were to be chosen as the base to provide O&M services (Section 10.7.1).

10.7 Impact assessment

This section identifies the potential likely effects on commercial and recreational navigation as a result of the construction and subsequent operation of the MEPE Project.

The following impact pathways have been assessed:

- Risk of collision between vessels (commercial vessels, small/fishing vessels and dredgers);
- Risk of collision during dredging operations;
- Risk of collision between a vessel and the development structure;
- Interference with other harbour works (including contacts with aids to navigation);
- Grounding or stranding of a vessel (commercial vessel, jack-up barge and small vessel);
- Vessel wake wash effects;
- Pollution of river or estuarine waters;
- Ballast water discharge issues; and
- Cumulative effects with ongoing marine operations.

These navigational issues have been assessed in line with the Mostyn Docks Ltd Risk Assessment for Marine Operations.

In addition, the potential risks to human health, the potential impacts on climate and the vulnerability of the proposed development to climate change, as well as to risks of major accidents and/or disasters have been considered in the context of the potential likely effects on commercial and recreational navigation.

Cumulative impacts on commercial and recreational navigation could arise as a result of other coastal and marine developments and activities. These have been considered as necessary as part of the cumulative impacts and in-combination effects assessment included in Chapter 13 of this ES.

In order to support the assessment of the above impact pathways, the projected marine traffic from the MEPE Project has been estimated based on a review of the anticipated vessel movements associated with the construction and operational phases of the proposed development and is presented in the following sub-section.

10.7.1 Projected marine traffic from MEPE Project

Marine traffic during construction phase

The majority of materials to be used in the construction of the MEPE Project will be delivered by sea. These deliveries will mainly include marine dredged sand and a relatively small number of shipments of structural components such as steel piling, anchor piles, tie rods and reinforcement bars.

An estimated 600,000 m³ of material will be required to infill the reclamation behind the new quay wall. The engineering grade fill requirement within the reclamation is proposed to be fully met by reusing a selected proportion of the suitable capital dredge arisings from the berth pockets and main navigation channel. The remaining capital dredge material will be transported and disposed of at the existing Mostyn Deep disposal site (IS102).

Due to the nature of the material to be dredged, the berth pockets are likely to be dredged by a cutter suction dredger and the main navigation channel is anticipated to be dredged by a trailer suction hopper dredger (TSHD). It is expected that when the sheet piled wall is constructed the required dredge material will be pump directly into the reclamation area. As the dredger will have a discharge pipeline connected to her stern the nature of the work is not classed as a movement or transit in the accepted sense as they are almost stationary. Nonetheless for the sake of completeness, this activity has been included in the vessel movements calculations during mobilisation and demobilisation.

Steel piles will be installed to construct the new quay wall. Based on the estimated total weight of about 17,000 tonnes, these piles will be delivered by sea in 5 or 6 shipments.

The shipping movements associated with the construction phase of the MEPE Project will be of a short-term and temporary nature. If required, the dredging activities will be temporarily suspended, and the dredger moved aside when other piloted vessels are entering or the leaving the harbour. It is, therefore, assessed that the dredging activities can be readily accommodated within the current navigational Safety Management System.

Marine traffic during operational phase

The MEPE Project is designed to accommodate OWF construction vessels such as jack-up crane barges and conventional cargo vessels for wind turbine component delivery and for supporting smaller craft such as tugs and barges. It is planned that the initial use of MEPE will be for the construction of fixed foundation Round 4 projects off the north coast of Wales which are scheduled to be constructed between 2025 and 2030, including AyM, Mona and Morgan OWFs.

The MEPE Project is being designed for multi-purpose use for both fixed foundation and floating offshore windfarm projects in the Irish Sea and beyond. Upon completion of the fixed foundation projects, future use of the new quay and land area will be for the fabrication and assembly of floating turbine structures. Some of these structures may be of concrete construction that will be cast on the

landward areas for storage during the curing period. They will then be lifted into the water and moored alongside the new quays for final assembly and turbine installation before being towed to their offshore operational site as a complete unit.

The capacity of the two fixed foundation Round 4 projects off the Welsh coast is 3.6 GW. Assuming that a variety of turbines with capacities of between 12 MW and 18 MW are used then between 250 and 300 units will need to be installed. Whilst it is too early to know precisely how components (turbines, blades and nacelles) will be shipped to and from the new quay, it is likely to be similar to the shipping methods for previous wind farm projects undertaken from the Port of Mostyn. However, due to the increases in size and weight of the individual components of these future turbines over those used on previous projects, the delivery vessels will be larger also, though not proportionately so. It is worth noting that for the 2015 Round 3 Gwynt y Môr windfarm the heaviest component weighed 310 tonnes whereas component weight for Round 4 projects is projected to be up to 2,750 tonnes. Based on an assumption that the turbines will be delivered at a rate of three per shipment, in the order of 200-230 shipping movements will be required if monopile foundations are used for the 250-300 turbines, based on three monopiles per shipment an additional 200 movements will occur (i.e. 100 inbound and 100 outbound).

RWE is undertaking the construction of the AyM OWF where in the order of 50 turbines are to be installed between 2025 and 2026. Component deliveries to the Port of Mostyn will be made by general cargo vessels or offshore construction vessels. It is planned that related mobilisation shipping deliveries will commence in 2024 and continue until the autumn of 2026 subject to weather conditions. Over the 2-year construction period of the windfarm, a total of 108 vessel movements are expected to be made, equating to 54 calls per year excluding calls by small support vessels such as tugs and barges.

Once the port-based assembly work has been completed, the turbines will be transported to the offshore site by jack-up barges or other specialist installation vessels. Jack-up barges have been commonly used during previous windfarm developments from the Port of Mostyn that can carry three part assembled turbines at a time. For both the AyM and Morgan / Mona projects, two or three different sized wind turbine installation vessels/jack-up barges will be used, probably of similar size and lifting capacity to the vessels 'Voltaire' and 'Vole au Vent'.

From time-to-time, installation vessels are required in order to carry out repairs to offshore wind turbines. In order to reflect the increase in the number of turbines being maintained from the Port of Mostyn by 2025, it is anticipated that up to 10 calls (20 movements) per annum will be required for repairs from 2025 onwards.

Maintenance dredging

The total volume of maintenance dredge material that is permitted to be dredged is up to 900,000 tonnes (approximately 600,000 m³) per annum under the existing dredge marine licence (DML1542v2) and an additional 99,990 tonnes (approximately 66,660 m³) per annum under the existing dredge marine licence (DML2001). The total volume of maintenance dredge material that needs to be removed from the new berth, existing berths, harbour and navigation channel is estimated to be up to 600,000 m³ per annum which remains within the cap set in the existing marine licences.

If it is assumed that when the new quay becomes operational, the full licenced amount is dredged each year using a 4,000 metric tonne (MT) capacity dredger, then up to 450 movements (to and from the disposal site) will take place. As in previous years, dredging will only be undertaken where there is a commercial or navigational safety need to do so and this practice will continue for the foreseeable future.

Projections

The projected vessel movements between 2022 and 2030 are summarised in Table 10.4 below. This information is based on the current vessels movements at the Port of Mostyn together with those associated with the MEPE Project and the envisaged future shipping activities associated with the north Wales OWF developments.

The projected shipping movements will equate to nine vessel movements per week during the construction phase of the MEPE Project. Thereafter, the levels of commercial vessel movements will increase to 11 movements per week during the construction of the AyM OWF between 2025 and 2026 and to 25 movements per week during the construction of Morgan/Mona OWFs between 2027 and 2030. These levels should be compared against the 32 vessel movements per week in 2003 when general cargo ships and a twice daily ferry service was in operation. Furthermore, ongoing dredging operations account for the majority of movements. In practice, the dredger will operate on a continuous basis up and down the channel and will not actually enter the Port except for crew changes and bunkering. It should also be noted that the projected vessel movements are based on initial discussions with OWF developers and that they are given in good faith and likely to change when details of turbine capacities, delivery and installation vessels are confirmed.

Table 10.4. Estimated Annual Vessel movements 2022-2030/31 (1 vessel call = 2 movements)

Period	Vessel	Calls	Movements
2022-2024	Coastal cargo vessels including piling deliveries and dredging vessels associated with the MEPE Project	20	40
	Jack-up barges for repairs and maintenance use	6	12
	Total	26	52
<i>Plus between 8 - 12 service boats undertaking daily passages.</i>			
2024-2027	AyM delivery vessel	25	50
	AyM jack-up vessels	15	30
	Coastal vessel - general cargo	20	40
	Repair vessel	6	12
	Maintenance dredging inner channel	225	450
	Total	291	582
<i>Plus between 8 to 12 service boats undertaking daily passages.</i>			
2027-2030	Morgan/Mona delivery vessels	30	60
	Morgan/Mona jack up vessels	30	60
	Coastal vessels – general cargo	25	50
	Repair vessels	8	16
	Maintenance dredging	225	450
	Total per annum	318	636
<i>Plus 8 service boats undertaking daily passages.</i>			
Note:	At the present time (November 2022) it is not possible to predict the number of vessels that will be engaged on the various projects with accuracy, therefore, certain assumptions have been made. Much will depend on the size of the turbines to be deployed, the availability of suitable construction vessels and the construction programmes for both the AyM and Morgan/Mona projects. The figures should, therefore, be regarded as best indications only to be confirmed as further project details emerge.		

10.7.2 Risk of collision between vessels

The potential risk of collision between vessels is a navigational safety issue and is addressed in the risk assessments and safety procedures contained in the Port's SMS, Sec E1.0 Regulation of vessel movements.

In accordance with the SMS procedures, Pilotage Directions, Pilotage Regulations and the Local Notices to Mariners, vessels transiting the Dee Estuary must adhere to certain 'rules of the road' and use the established means of communication with the Harbour Authority to broadcast their passage on VHF channel 14. This includes information pertaining to their intent to depart the Port or enter the MOA, and subsequently report at key waypoints along the navigational channel.

Mostyn Docks Limited operates a Local Port Service during office hours and periods when vessel movements are scheduled. The port monitors VHF Channel 14, from 1 hour before the scheduled pilot boarding time until a vessel is berthed, and again from the sailing time until 1 hour after the pilot has disembarked.

All vessels over 20 m length overall (LOA) are subject to Pilotage and are required to follow the approved protocol of prior notice to the Port and navigational procedures stated in Local Notices to Mariners. Large vessels are scheduled to arrive and depart typically one hour either side of high water. Under the provisions of the International Regulations for Preventing Collisions at Sea (1972, as amended), other vessels should avoid impeding the safe passage of a vessel constrained by its draught. In practical terms, work boats and other small crafts are required to keep clear of large vessels and not hinder their safe passage. Each vessel is required to follow an agreed passage plan to ensure the most appropriate and safe transit.

The Harbour Master issues Local Notices to Mariners to make river/port users aware of safety of navigation including (but not limited to) any construction activities in the harbour, dredging operations, safe speed and movement/defects to Aids to Navigation.

Fishing and cockling vessels, which operate in the Dee Estuary, and recreational crafts are usually shallow drafted and can generally navigate safely on the periphery of the channel when giving way to larger vessels. Prior to commencing construction works, appropriate advice is promulgated by means of Local Notices to Mariners.

In addition to the above navigation controls, the proposed layout of the MEPE Project has been optimised so that vessels will have a clear line of sight when entering and leaving the harbour area and its approaches.

With the optimised layout of the quay combined with the key controls, the risks to the three main receptors (People, the Environment, and Assets) as a result of collision between vessels due to the MEPE Project is considered to be **Medium** and **Tolerable**.

10.7.3 Risk of collision during dredging operations

During the construction phase of the MEPE Project, the dredger will be working in the harbour area dredging and depositing a suitable proportion of the dredged material directly to the quay infill area. During this process, the dredger will be almost stationary and will not make 'transits' in the accepted sense. Nonetheless, the vessel will still be subject to standard safety of navigation regulations.

When pumping material into the infill area, the dredger will be positioned close to the development site and, therefore, will not obstruct vessels approaching or leaving a berth.

For the purposes of control and safety of navigation, dredging activities within the harbour area and navigational channels have been risk assessed alongside other marine activities, and appropriate control measures have been implemented. It is practice for the Masters and First Mates of dredgers to be the holder of Pilotage Exemption Certificates. For all dredging operations, Local Notices to Mariners are regularly issued to inform all port users about pending and actual dredging operations.

Based on the proposed dredging requirements for the MEPE Project, the relevant risk assessments will be reviewed and where necessary additional control measures implemented to reduce risk. In view of the above and given that the Port of Mostyn has a lengthy experience of dredging campaigns, it is assessed that the proposed dredging operations will not result in a significant change to the risk of collision.

10.7.4 Risk of collision between a vessel and the development structure

During the construction phase of the MEPE Project, temporary marking and lighting will be used to indicate to mariners the presence of the new quay structure and any stationery construction vessel/plant such as a piling barge with information being given in Local Notices to Mariners. Once the proposed development construction works have been completed, permanent marking and lighting will be established by Mostyn Docks Limited as the local lighthouse authority (LLA) after seeking the approval of Trinity House as the General Lighthouse Authority in the England and Wales.

Once consented, details of the MEPE Project will be provided to the United Kingdom Hydrographic Office (UKHO) in order for Admiralty publications (Chart 1953 – Approaches to the River Dee, and Admiralty Sailing Directions NP37 - West Coast of England and Wales Pilot) to be updated as appropriate. With these measures in place, the risks to the main receptors as a result of collision between a vessel and the quay structure are considered to be **Medium** and **Tolerable**.

10.7.5 Interference with other harbour works

Harbour works such as maintenance dredging, hydrographic surveys and servicing of Aids to Navigation are subject to risk assessment by the Port of Mostyn and procedures are detailed in the Port's SMS. Under the SMS, there are strict controls in place which are managed by the marine staff. It is acknowledged that any harbour works in the vicinity of the proposed development site may be restricted for a limited period due to construction vessel movements, however, this should be seen against a background of the relatively low number of movements which are predicted to be taking place during the construction period. It is the responsibility of the Port of Mostyn Harbour Master to prioritize vessels movements with safety of navigation being the first consideration and, therefore, it is considered unlikely that routine survey, maintenance, or dredging operations would be significantly affected.

Overall, it is considered that with coordinated programming of the harbour works and the MEPE Project, the potential effects on harbour works will be minimal.

10.7.6 Grounding or stranding of a vessel

The new quay that will be constructed as part of the MEPE Project will provide for a water depth alongside of 12 m below CD. This will give sufficient under keel clearance for vessels to remain afloat at all states of the tide. The seaward approach to the new quay is from the Mostyn Inner Channel into the Mostyn Harbour turning area and provides sufficient sea room for vessels to safely manoeuvre. The beam of vessels berthing at the new facility is expected to be up to 60 m (jack-up barges which are dynamic positioning (DP) 2). As the navigational channel and harbour area will be dredged to -4 m CD, there will be ample sea-room for vessels to navigate and manoeuvre to and from the berths.

Vessels transiting to the new facility will be subject to pilotage and will be required to follow an agreed passage plan. Tug assistance may be required for some vessels depending on their manoeuvrability, size and the prevailing weather in accordance with the SMS Towage Guidelines.

With the above controls in place, the risk of grounding of a commercial vessel and the resultant consequence to people is predicted to be Low, and to the Environment and Assets, as **Medium** and, therefore, **Tolerable**.

10.7.7 Vessel wake wash effects

Vessels in transit could generate wake wash effects when travelling at high speed and/or in low water depths causing danger to other channel users. This aspect has been risk assessed by the Port of Mostyn and appropriate control measures are already in place. Under the SMS, all vessels are required to observe the above provisions regarding safe speed and to maintain effective communication between vessels.

Based on the review of the risk assessments applicable to marine operations, wake wash between vessels operating in the MOA has been assessed as being of Low risk. Although there will be an increase in the number of service boats (from the current 12 craft up to 16 craft at peak periods), the control measures regarding safe speed are still deemed effective to maintain the level of risk as **Low to Medium** and **Tolerable** within the respective SHA jurisdictions of the Port of Mostyn and the Dee Conservancy. However, it should be noted that there is an increased level of risk in the adjoining waters outside of the SHA jurisdictions. Nonetheless, once the details of the project's marine operations have been finalised, all relevant risk assessments will be reviewed and amended where necessary as part of the SMS.

10.7.8 Pollution of river and estuarine waters

Potential pollution incidents could be caused as a result of oil spill following any of the previously mentioned navigational issues. In addition, the transfer of fuel (bunkering of vessels) and loading/discharging of materials and wastes could lead to a release of pollutants into the estuarine environment.

Bunkering operations have been risk assessed. The Mostyn Docks Limited SMS Procedure G3.0 lists the relevant controls such as a provision of a 'Bunker Checklist' to the Harbour Master prior to any bunkering operation, in addition to method statements and the risk assessments conducted by the bunker suppliers. In the event of a pollution incident, the contingency measures of the 'Dee Estuary Oil Spill Contingency Plan' would be implemented.

Any marine operations involving the handling of hazardous waste substances are subject to the procedures of the Mostyn Docks Limited Waste Management Plan. Established and practiced contingency measures assist in reducing the potential for an environmental incident. With the existing control and management measures in place, the risk of environmental pollution as a result of the MEPE Project is **Medium** and **Tolerable**.

10.7.9 Ballast water discharge issues

Vessels operating in the Dee Estuary are advised against discharging water ballast in order to avoid causing an impact on the marine environment and to minimise the risk of transferring non-native species in ship's ballast water and sediments. The ballast water management advice given to vessels by Port of Mostyn is in compliance with the IMO International Convention for the Control and Management of Ship's Ballast Water and Sediments, 2004.

The majority of the vessels berthing at the Port of Mostyn will be arriving from UK and European ports and, therefore, the potential of non-native species being contained in the ballast water is reduced. Irrespective of the origin of the ballast water, however, all vessels are required to adhere to the appropriate Guidance Note.

Vessels are required to maintain a ballast water management plan and a ballast water record book for inspection by the Harbour Authority and flag state. When a vessel transiting the Dee Conservancy is required to de-ballast for safety or operational reasons, this should be through an approved ballast water treatment system, or a ballast water exchange should have been completed. A ballast water exchange should equate to a 95 % volumetric exchange and be completed at least 50 nautical miles from land or as far as possible from the nearest land within the vessels normal trading pattern. Where possible, the exchange should be completed in waters of at least 200 m deep.

With these measures in place, the predicted effects of introducing non-native species in the Dee Estuary as a result of the MEPE Project is expected to remain **Low** and **Tolerable**.

10.7.10 Cumulative effects with ongoing marine operations

In consideration of the on-going marine operations, the land-based part of the MEPE Project will not directly impact on navigational operations. Nonetheless, their proximity to the harbour during the construction phase of the MEPE Project and the potential cumulative navigational effects that could occur with the RWE's existing O&M operations and ongoing dredging works in the navigational channel following have been assessed. In the wider Dee Estuary, the on-going local fishing and cockling activities are expected to continue as normal during this period.

Traffic volumes at Mostyn have experienced fluctuations in the past (Table 10.2). Currently 95% of the Port's business is related to offshore renewables and is likely to continue with the MEPE Project. During construction of the MEPE Project, related shipping projections combined with on-going marine operations of the Port will continue to be within previously experienced operational levels (Table 10.4).

The volume of the marine traffic associated with the MEPE Project combined with the number and frequency of existing vessel movements will be managed and controlled through the already established procedures of the SMS. Any new issues resulting from cumulative navigational effects will be addressed through revisions of the established navigational and pilotage controls of the SMS. Relevant construction and marine operations of the MEPE which are not covered by the existing provisions of the SMS will be reviewed in terms of their risk to navigation to ensure compliance with the Port Marine Safety Code as stated in the SMS Procedure C1.04.

Operators of small vessels navigating the Dee Estuary should comply with Local Notices to Mariners, however, they may not always follow these procedures diligently as required. In particular, a potential non-compliance with speed restrictions by small boats could result in a slight increase in navigational risks. In order to minimise any such risks, the Port of Mostyn Harbour Master and Dee Conservancy Harbour Master will undertake liaison meetings with the service boat operators and local fishing community.

10.7.11 Potential risks to human health

There have been no recorded injuries at the Port of Mostyn for the last two decades. All vessel navigation related impacts have the potential to lead to injuries or fatalities for those on the vessels. There is no direct effect on health for the general public associated with the navigation of vessels associated with the MEPE Project. The level of injury following a marine accident generally relates to the speed at which it happens and, for a collision, the difference in size between the two vessels involved.

The maritime sector is highly regulated with requirements for procedures and safe systems of work to eliminate risk to human health where possible and otherwise minimise it. This means that whilst there is potential for injuries, the likelihood is low.

10.7.12 Potential impacts on climate and vulnerability of proposed development to climate change

There are impacts on climate change associated with shipping and the emissions from engines. This means that any increase in the amount or size of vessels using a port has the potential to affect climate change. In other words, there will be an effect on climate change if more or larger vessels are using the port. However, in the longer term, with advances in technology and shifts in policy, there is expected to be a step-change towards alternative low-emission fuels and eventually alternative vessel propulsion systems, for example hydrogen or electricity powered.

The effect on climate change is considered to be minimal due to the national and international requirements placed on vessels regarding the use of fuels and the emissions standards within Emission Control Areas (ECAs) reduces the effect of Nitrogen oxide (NO_x) and Sulphur oxides (SO_x) from vessel discharge.

10.7.13 Risks of major accidents and/or disasters

The vessels using the berths for the MEPE Project will likely be supporting the offshore wind industry and so will be limited in the cargo carried onboard. This means that there are unlikely to be any large-scale accidents or disasters associated with the MEPE Project in terms of commercial and recreational navigation.

10.8 Mitigation and residual impacts

10.8.1 Secondary mitigation

Secondary mitigation measures are actions that will require further activity in order to achieve the anticipated outcome and identified as necessary through the assessment process. The navigational risks and project related issues associated with the safety of navigation and marine activities in the Dee Estuary have been assessed as ALARP and, therefore, there is no need for additional navigational measures beyond those already described.

10.8.2 Tertiary mitigation

Tertiary mitigation measures (i.e. actions that would occur with or without input from an environmental impact assessment process) will be undertaken to comply with the Port Marine Safety Code, which is considered standard good practice. In terms of commercial and recreational navigation, these are as follows:

- **Review of risk assessments:** The Port of Mostyn is committed to a continuous review of all relevant risk assessments of marine related activities. Should these reviews indicate a need to introduce further navigation control measures to reflect the changes to the operational practices and/or to cover any additional operations, any new control measures will be implemented in agreement with the Dee Conservancy.

By combining the design incorporated mitigation measures with the proven marine safety management controls and risk assessment approach, it is considered that the residual risks of any assessed navigational hazards on relevant receptors will be tolerable and ALARP.

10.9 Summary of impacts

The MEPE Project will have certain marine traffic impacts associated with the construction phase during 2023 and 2024, during its operation as an OWF construction facility from 2025 onwards, and also an increase in O&M activities from 2026 onwards. As part of these operations, various types of vessels including general cargo vessels, jack-up crane barges, service boats and dredgers will berth at the new quay. The projected vessel movements of the development have been estimated based on best information currently available from OWF developers and it has been assessed that these will be within the normal range of commercial traffic volumes at Mostyn and considerably below the historically high levels of commercial shipping at the Port.

The marine safety management and traffic management procedures within the MOA are set out and jointly agreed procedures between Mostyn and the Dee Conservancy are supported by the already established SMS. Under this Agreement, a set of operational procedures have been developed based on a thorough and formal assessment, and regular reviews of risks from potential navigational hazardous events.

A summary of the impact pathways that have been assessed is presented in Table 10.5. The conclusions of the risk assessment demonstrate that the MEPE Project will not increase the navigational risks to the three main groups of receptors (People, the Environment and Assets).

The existing marine and traffic management procedures are in place to prevent (where possible) and mitigate against the potential navigational hazards from the MEPE Project in isolation and in combination with other on-going commercial operations at the Port of Mostyn. Further mitigation measures in relation to the safety of navigation have been incorporated into the design and site layout of the MEPE Project. The combined approach of these in-built mitigation measures with the proven marine safety management controls and risk assessment approach, it is considered that the Residual Risks of any of the assessed navigational hazards will be insignificant and Tolerable.

Table 10.5. Summary of potential navigational risks

Hazardous Event	Controls in Place	Likelihood	Consequences	Risk Group		
				People	Environment	Assets
Collision between commercial vessels	<ul style="list-style-type: none"> ▪ Pilotage Directions & Regulations; ▪ Local Port Service; ▪ Towage Guidelines; ▪ Collision Regulations (COLREG) Safety broadcasts; and ▪ Advice in Local Notices to Mariners, Admiralty List of Radio Signals, Sailing Directions, Charts. 	Unlikely	Major – people, environment, assets	Medium	Medium	Medium
Collision between commercial and small/fishing vessels	<ul style="list-style-type: none"> ▪ Pilotage Directions & Regulations; ▪ Local Port Service; ▪ Towage Guidelines; ▪ COLREG Safety broadcasts; and ▪ Advice in Local Notices to Mariners, Admiralty List of Radio Signals, Sailing Directions, Charts. 	Unlikely	Major - people Minor – environment Major - assets	Medium	Medium	Medium
Collision between a commercial vessel and a development structure	<ul style="list-style-type: none"> ▪ Pilotage Directions & Regulations; and ▪ Local Port Service Towage Guidelines Advice in Local Notices to Mariners Safety broadcasts Fendering systems. 	Unlikely	Major – people, environment, assets	Medium	Medium	Medium
Interference with other harbour works	<ul style="list-style-type: none"> ▪ Pilotage Directions & Regulations Local Notices to Mariners; ▪ Radar & radar reflectors; and ▪ Safety broadcasts. 	Unlikely	Trivial- people, environment Minor - assets	Low	Low	Medium
Grounding / stranding of a commercial vessel	<ul style="list-style-type: none"> ▪ Pilotage Directions & Regulations Real time tidal information available Radar; ▪ Advice given in Local Notices to Mariners, Admiralty List of Radio Signals, Sailing Directions, Charts Pilot/Master Information Exchange Sheet Local Port Service; ▪ Aids to Navigation (maintained by Port of Mostyn), Promulgation of hydrographical surveys. 	Unlikely	Trivial - people Major – environment and assets	Low	Medium	Medium

Hazardous Event	Controls in Place	Likelihood	Consequences	Risk Group		
				People	Environment	Assets
Grounding of a self-propelled Jack-up barge	<ul style="list-style-type: none"> Pilotage Directions & Regulations Real time tidal information available Radar; Advice given in Local Notices to Mariners, Admiralty List of Radio Signals, Sailing Directions, Charts Pilot/Master Information Exchange Sheet Local Port Service; Aids to Navigation (maintained by Port of Mostyn), Promulgation of hydrographical surveys; Use of Dynamic Positioning System; Berthing/sailing over the HW period; and Appropriate tug escort when required. 	Unlikely	Trivial – people Major – environment Severe - assets	Low	Low-Medium	Medium
Grounding of a small vessel	<ul style="list-style-type: none"> Advice in Local Notices to Mariners; Real time tidal information available Radars on some vessels Maintenance of Aids to Navigation; and Promulgation of hydrographical surveys. 	Unlikely	Trivial – people Minor – environment and assets	Low	Low-Medium	Medium
Wake wash effects resulting in grounding, capsize or sinking of a small/fishing vessel	<ul style="list-style-type: none"> Advice in Local Notices to Mariners. 	Very unlikely	Severe - people Minor – environment Major - assets	High*	Low	Medium
Pollution of river or estuarine waters	<ul style="list-style-type: none"> Statutory Legislation; Oil Spill Contingency Plan; and Port of Mostyn Waste Management Plan. 	Unlikely	Trivial – people Major – environment Minor - assets	Low	Medium	Low-Medium
Ballast water discharge issues	<ul style="list-style-type: none"> Provision of ballast water management advice; and Maintain ballast water management plan and a ballast water record book. 	Unlikely	Trivial – people and assets Minor – environment	Low	Medium	Low
* Within the tolerable region – risk is considered ALARP (this is particularly for the area outside of SHA and CHA where only advice can be given)						

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10.11 Abbreviations/Acronyms

ALARP	As Low As Reasonably Practicable
AyM	Awel y Môr
CD	Chart Datum
CHA	Competent Harbour Authority
COLREG	Collision Regulations
CTVs	Crew Transfer Vessels
DP	Dynamic positioning
ECAs	Emission Control Areas
EIA	Environmental Impact Assessment
ES	Environmental Statement
GW	Gigawatt
HGV	Heavy Goods Vehicle
HW	High Water
IMO	International Maritime Organisation
JAP	Jointly Agreed Procedures
LLA	Local Lighthouse Authority
LOA	Length Over All
MCA	Marine Coastguard Agency
MDL	Mostyn Docks Limited
MEPE	Mostyn Energy Park Extension
MMO	Marine Management Organisation
MOA	Mostyn Operational Area
MT	Metric tonne
MW	Megawatt
NO _x	Nitrogen oxide
NRA	Navigational Risk Assessment
NRW	Natural Resources Wales
NPSfP	National Policy Statement for Ports
O&M	Operations and Maintenance
OWF	Offshore Wind Farm
OWT	Offshore wind turbine
PEL	Port Entry Lights
PMSC	Port Marine Safety Code
RA	Risk Assessment
SHA	Statutory Harbour Authority
SMS	Safety Management System
SOVs	Service Operation Vessels
SO _x	Sulphur oxides
TSHD	Trailing Suction Hopper Dredger
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
UNCLOS	United Nations Convention on the Law of the Sea
VHF	Very High Frequency

Cardinal points/directions are used unless otherwise stated.

SI units are used unless otherwise stated.

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