Port of Mostyn

Mostyn Energy Park Extension

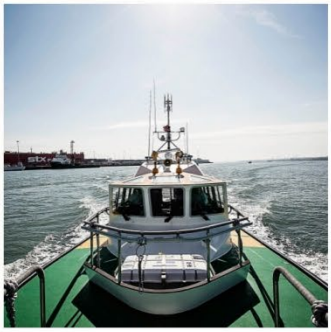
Environmental Statement

Appendix 8.5: Habitats Regulations Assessment

December 2022







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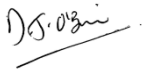
Document Information

Document History and Authorisation		
Title	Mostyn Energy Park Extension Environmental Statement Appendix 8.5: Habitats Regulations Assessment	
Commissioned by	Port of Mostyn	
Issue date	December 2022	
Document ref	R.4052 App 8.5	
Project no	R/5036/4	
Date	**Version**	**Revision Details**
18/11/2022	1	Initial draft version for client review
12/12/2022	2	Issued for client use

Prepared (PM)	Approved (QM)	Authorised (PD)
E San Martin	S C Hull	D O'Brien
		

Suggested Citation

ABPmer, (2022). Mostyn Energy Park Extension, Environmental Statement Appendix 8.5: Habitats Regulations Assessment, ABPmer Report No. R.4052 App 8.5. A report produced by ABPmer for Port of Mostyn, December 2022.

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1 Introduction

This Habitats Regulations Assessment (HRA) has been prepared to support the Port of Mostyn's marine licence application to extend the Mostyn Energy Park (MEP) so that the Port can continue to support and service current and anticipated future offshore wind development. This proposed development is to be known as the Mostyn Energy Park Extension (MEPE) Project. The location of the MEPE Project is shown in Figure 1.

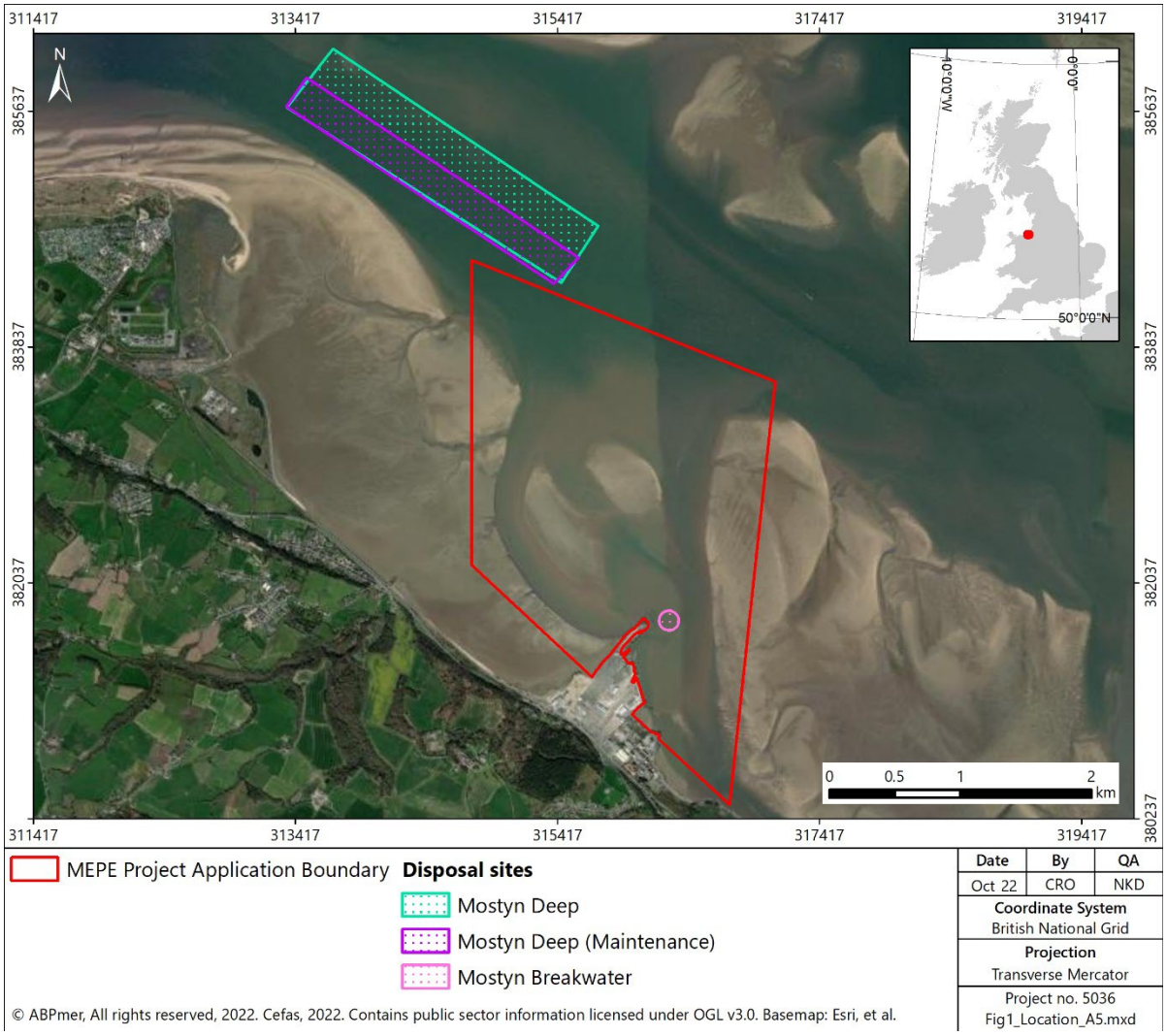

Figure 1. Location of MEPE Project

1.1 Project background

The proposed development will involve marine works and associated landside works.

Marine works – The marine works will comprise the construction of a new quay wall so as to provide, together with a retained section of existing quay, a continuous berthing frontage. This will involve undertaking a capital dredge to create a new berth pocket along the new quay wall and the dredging of the existing berth pocket along the existing quay wall. The existing main navigation channel will also need to be deepened as is currently permitted under the Port's existing maintenance dredge and

disposal licence (DML1542v2) to provide access to vessels that will use the new berthing frontage. A proportion of the suitable capital dredge arisings is proposed to be reused as infill material for the landside works (see below) and the remainder disposed of at the existing marine disposal site. A Roll-on Roll-off (Ro-Ro) pontoon linkspan may need to be constructed and two alignment options are being considered, one set within the new quay wall and one along the existing harbour frontage. In addition, four existing dolphins (piles) at the Port may need to be relocated and installed within the harbour area to create a berth for Service Operation Vessels (SOVs) that provide operation and maintenance (O&M) requirements for the offshore wind sector. Once the constructed quay is operational, a maintenance dredging and disposal programme for the new berth, harbour area and navigation channel will be put in place. The maintenance dredge area comprises a polygon that shows where maintenance dredging of the navigation channel may take place in response to the natural movement of the existing channels in the area. The maintenance dredge material will be disposed of at the existing marine disposal sites and/or reused as is currently undertaken under the existing maintenance dredge and disposal licences.

Landside works – The landside works will involve an infill behind the newly created quay wall (i.e. a small reclamation of the harbour area). The reclaimed area will comprise hardstanding that will be used as a storage/laydown area. There is no requirement for any other associated landside infrastructure.

The consenting process will comprise the following:

i) The majority of the proposed development will take place below mean high water springs (MHWS) and within the Statutory Harbour Area (SHA), therefore, a marine licence will be required from the marine licensing authority (Natural Resources Wales (NRW)) under the Marine and Coastal Access Act 2009. This single marine licence will subsume the existing dredging related marine licences for ongoing maintenance dredge and disposal activities in the harbour and its approaches (DML1542v2 and DML2001). It will also replace the existing construction marine licence to build a new quay and extend the MEP development (CML1343v3); and
ii) As a Statutory Undertaker and under the Harbours Act 1964, the Port of Mostyn has Permitted Development Rights which allows it to undertake development associated with the movement of goods and passengers. As there are no non-marine activities being required for the MEPE Project (other than those covered by the permitted development rights), there is no need for a planning application to be submitted to the local planning authority.

ABPmer was commissioned to prepare an HRA to consider the potential impacts of the proposed development on internationally designated interest features. The information within this HRA will assist the Competent Authority, in this case NRW, with their review under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) (commonly referred to as the 'Habitats Regulations')[1] and with the production of an Appropriate Assessment (AA).

This HRA has been informed by the outcomes of the physical processes assessment (Chapter 6 of the Environmental Statement (ES)), the water and sediment quality (Chapter 7 of the ES), and the nature conservation and marine ecology assessment (Chapter 8 of the ES). A more detailed description of the proposed development, its needs and consideration of alternatives is included in Chapter 2 of the ES. Further details of the construction and operational methodology on which this assessment is based on is included in Chapter 3 of the ES.

[1] These have been modified by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Available at: https://www.legislation.gov.uk/uksi/2019/579/contents/made (accessed September 2022).

1.1 Need for a Habitats Regulations Assessment

The requirements of Council Directive 92/43/EEC (as amended) on the conservation of natural habitats and of wild fauna and flora (the 'Habitats Directive') and Council Directive 2009/147/EC on the conservation of wild birds (the 'Birds Directive') have been transposed into UK legislation through, most recently, the Habitats Regulations.

The Habitats Regulations provide for the protection of European protected sites known as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). In Wales and the UK, Ramsar sites (identified under the Ramsar Convention) are also afforded the same level of protection as fully designated Natura 2000 sites[2]. Collectively, these sites are referred to as European/Ramsar sites in this HRA (unless they are referring only to a specific European site and/or Ramsar site alone).

As competent authority, NRW is required to take account of the Habitats Regulations and produce an AA for any plans or projects that have the potential to directly and/or indirectly affect European/Ramsar sites. As summarised above, Regulation 63 of the Habitats Regulations states that:

> *"A competent authority, before deciding to undertake, or give any consent, permission, or other authorisation for a plan or project which:*
>
> *a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects); and*
> *b) is not directly connected with or necessary to the management of the site*
>
> *must make an appropriate assessment of the implications for the site in view of that site's conservation objectives".*

The decision as to whether an AA is required is based on an assessment of likely significant effect (LSE). LSE is recognised as being a 'coarse filter' judgement or a statement that the anticipated effects of the proposal will be more than trivial (i.e. that the anticipated changes resulting from a proposal have the potential to impact on an interest feature of a European/Ramsar site). If a project (or plan) could have an LSE on a European/Ramsar site, it does not automatically follow that an impact will occur. The decision of LSE is purely an indication of the need for an AA.

In an AA, it is necessary to determine whether the project or plan would result in an adverse effect on the integrity (AEOI) of the European/Ramsar site(s) in view of the site's conservation objectives. The integrity of a site has been defined as the coherence of its ecological structure and function, across its whole area that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified (Department of the Environment, Transport and the Regions (DETR), 1994).

Where it cannot be demonstrated that a project will not have an AEOI, or there is insufficient certainty of an avoidance of an adverse effect, the activities can only proceed if it can be demonstrated that there are no more suitable (less damaging) alternatives, and that there are Imperative Reasons of Overriding Public Interest (IROPI) sufficient to justify the proposed project. In certain circumstances, the Secretary of State may be required to ensure that adequate compensation, usually in the form of replacement habitat, has been provided to protect the overall coherence of the Natura 2000 network (i.e. European/Ramsar sites).

[2] NRW (2022). How a Habitats Regulations Assessment (HRA) is undertaken in the marine licensing process. Available at: https://naturalresources.wales/permits-and-permissions/marine-licensing/marine-licence-habitats-regulations-assessment/?lang=en (accessed November 2022).

The decision as to whether the integrity of the site is adversely affected will be made by the NRW, as competent authority, in consultation with the relevant Statutory Nature Conservation Body (SNCB), in this case NRW-Advisory.

1.2 Report structure

This report has been structured as follows:

- **Section 1:** **Introduction** provides a brief description of the proposed development and an overview of the need for an HRA;
- **Section 2:** **Consultation** presents the outcome of the consultation that has been undertaken to date, along with how it has influenced the HRA;
- **Section 3:** **Screening and Test of Likely Significant Effect** reviews if there is the potential for the proposed development to result in an LSE on the interest features of European/ Ramsar sites;
- **Section 4:** **Assessment** reviews the potential for the proposed development to result in an AEOI on the interest features of European/ Ramsar sites, including in-combination effects; and
- **Section 5:** **Conclusions** presents a brief summary of the findings of this report.

2 Consultation

Consultation with regard to the outcomes of the formal scoping process and whether there are any likely effects of the MEPE Project on European/Ramsar sites and interest features 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 HRA is provided in Table 1.

Table 1. Summary of consultation to date

Consultee	Reference, Date	Summary of Response	How Comments have Been Addressed in this Report
NRW Advisory	Scoping Opinion, 6 January 2022	It is important to note that the HRA and Water Framework Directive assessment (WFD), and any other assessment, are separate processes to the EIA.	The HRA is understood to be a separate process to the EIA and is included as an appendix to the ES (this appendix).
NRW Advisory	Scoping Opinion, 6 January 2022	We agree with the scoping report that the risk of spills can be scoped out of the EIA due to mitigation and recommend a Construction Environment Management Plan (CEMP) is drawn up to manage the risk of spills to the marine environment. We also recommend the applicant take note of the Guidance for Pollution Prevention (GPP) (particularly GPP5 although others are also relevant). However; please note that the risk of spills cannot be screened/scoped out of the HRA or WFD compliance assessment and a full assessment will be required for both.	The risks of spills have not been screened out of the HRA and are fully considered and assessed in the assessment stage of the process (Section 4.2).
NRW Advisory	Scoping Opinion, 6 January 2022	The survey detailed within Section 5.4.2: "The Mostyn Energy Park Biotope Survey: The Mostyn Energy Park Biotope Survey was undertaken in November 2012 jointly by staff members from both ABPmer and NRW. The survey extent approximately covered the Port of Mostyn Statutory Harbour Area (Port of Mostyn, 2013)" may be useful to inform the EIA, it is also likely the data could be out of date given the highly dynamic environment of the Dee Estuary. For instance, areas that were subtidal and "Estuaries" feature during the 2012 survey may now be part of the intertidal now and thus potentially another feature e.g., "Mudflat and sandflat not covered by seawater at low tide". We therefore advise any data derived from the 2012 survey to inform the EIA should be used with caution and that the recent survey data should be used to define the existing extent of the benthic features that might be potentially impacted by the development. It will be important to have an up to date understanding of the extent of these features in relation to the Project to accurately quantify any potential habitat losses within the specific designated features of the Dee Estuary SAC that might potentially arise as a result of the development.	Recent survey data has been used to define the extent of protected habitat features that might be affected by the proposed development. A summary of the outcomes of this survey is provided in the Nature Conservation and Marine Ecology Chapter of the ES (Chapter 8) and the detailed survey report is included in Appendix 8.1 of the ES. This information has been used to support the assessment stage of the HRA (Section 4).

Consultee	Reference, Date	Summary of Response	How Comments have Been Addressed in this Report
NRW Advisory	Scoping Opinion, 6 January 2022	There is the potential for impacts from the Project, particularly those in relation to direct habitat loss of "Mudflats and Sandflats not covered by seawater at low tide" feature, to result in an adverse effect on the site integrity (AEOSI) of the Dee Estuary SAC. NRW advise when preparing the EIA and the report to inform appropriate assessment the applicant carefully considers the distribution of habitats in the SAC and quantifies the potential losses resulting from the development to the "Estuaries" and to the "Mudflats and Sandflats not covered by seawater at low tide" features of the Dee Estuary SAC separately.	The distribution of SAC habitat features has been reviewed based on site specific survey data (see response to previous comment). The potential effects on these features have been assessed in the HRA (Section 4).
NRW Advisory	Scoping Opinion, 6 January 2022	The applicant should also consider and assess as noted above, the potential for changes in hydrodynamics and impacts from coastal squeeze to result in indirect habitat loss of the designated features of the Dee Estuary SAC. Indirect habitat losses to designated features also have the potential to result in an adverse effect on the site integrity (AEOSI) of the Dee Estuary SAC.	The potential indirect effects on interest features of the Dee Estuary SAC have been assessed in the HRA (Section 4).
NRW Advisory	Scoping Opinion, 6 January 2022	Effects on the fish features of the River Dee and Bala Lake SAC should be scoped into the assessment as they may be migrating through the Dee Estuary and interact with the Project. European smelt (*Osmerus eperlanus*) are also present within the Dee Estuary.	The potential effects of the MEPE Project on relevant fish interest features of the River Dee and Bala have assessed in the HRA (Sections 3 and 4).
NRW Advisory	Scoping Opinion, 6 January 2022	We consider the Marine Mammal Management Unit (MMMU) as the most appropriate spatial scale to assess populations of marine mammals and to scope in relevant protected sites. For each Annex II marine mammal species, the SACs in Wales within the relevant MMMU are as follows: Harbour porpoise Management Unit: Celtic & Irish Sea SACs in Welsh waters with harbour porpoise as a feature within the Management Unit: ▪ Gogledd Môn Forol / North Anglesey Marine ▪ Gorllewin Cymru Forol / West Wales Marine ▪ Dynesfeydd Môr Hafren / Bristol Channel Approaches	The SACs with marine mammal interest features that have been screened into the assessment stage of the HRA are detailed in Section 3 and assessed in Section 4.

Consultee	Reference, Date	Summary of Response	How Comments have Been Addressed in this Report
		Bottlenose dolphin Management Unit: Irish Sea Welsh SACs with bottlenose dolphin as a feature within the Management Unit: ▪ Pen Llŷn a'r Sarnau / Lleyn Peninsula and the Sarnau ▪ Cardigan Bay / Bae Ceredigion Grey Seal Management Unit: OSPAR Region III Welsh SACs with grey seal as a feature within the Management Unit: ▪ Pen Llŷn a'r Sarnau / Lleyn Peninsula and the Sarnau ▪ Cardigan Bay / Bae Ceredigion ▪ Pembrokeshire Marine / Sir Benfro Forol	
NRW Advisory	Scoping Opinion, 6 January 2022	We advise that limiting projects for cumulative/in-combination assessment to within 2 km of the project is not sufficient for mobile species such as fish and, as per our comments above, we consider MMMUs the appropriate scale to consider impacts on marine mammals.	The study area for the cumulative and in-combination effects assessment takes on board the movements of mobile interest features and the potential interactions with other plans and projects. The other plans and projects that have been assessed as part of the cumulative and in-combination assessment are detailed in Section 3.
NRW Senior Marine Advisor	Telephone discussion, 20 May 2022	Telephone discussion to confirm the need to consider otter in the HRA given records of their presence within the Dee Estuary, and to discuss the scope and approach to the assessment of otter.	The potential effects of the MEPE Project on the otter interest feature have been considered at the screening and assessments stages of the HRA (Sections 3 and 4).
NRW Senior Marine Advisor	Telephone discussion, 20 May 2022	An example HRA that NRW had previously prepared on behalf of Welsh Government was provided to demonstrate the structure and level of detail that is considered appropriate to support the preparation of an AA.	A similar structure and tabular approach to the screening and AA stages of the HRA that NRW use in their HRAs has been applied in this HRA (Sections 3 and 4).

3 Screening and Test of Likely Significant Effect

3.1 European/Ramsar sites which might be affected by the proposed development

The first stage of the HRA is the test of LSE which is a screening assessment of impacts to determine if an AA is required. This involves considering if the plan or project is likely to have a significant effect on interest features of a European/Ramsar site. Unless this screening assessment enables significant effects on any European/Ramsar site to be ruled out, the project will need to be subject to an AA.

The legislation requires consideration of plans and projects "*either alone or in combination with other plans and projects*". The test of LSE is initially carried out by considering the proposed development on its own (i.e. rather than in-combination with other plans or projects). If it is decided that the proposed development alone is likely to have a significant effect, it is subject to AA alone. An assessment in combination with other plans projects is only required if the proposed development would be insignificant on its own, but has effects which may be significant if combined with the effects of other plans/projects which are also insignificant on their own. This is considered further in Section 4.

The MEPE Project is located within the Dee Estuary SAC, SPA and Ramsar site. The application boundary is also around 2 km from Liverpool Bay SPA. The Mersey Narrows and North Wirral Foreshore SPA and Ramsar site is located approximately 8 km away and the River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC approximately 18 km away. These sites have the potential to be affected as they are designated for a range of mobile features, namely birds, migratory fish and otters, that have the potential to overlap with the effects of the proposed development. In addition, following advice from NRW, there are a number of SACs in Wales within the relevant MMMUs for marine mammal species that also have the potential to be affected (Table 1).

Given the proposed development overlaps and/or is in close proximity to interest features of European/Ramsar sites, and is not directly connected with or necessary to the management of these sites, the proposed development triggers the requirement for an HRA to be undertaken. Based on the current understanding of the proposed development and worst case project risk envelope as set out in Chapters 2 and 3 of the ES, and advice from NRW (Table 1), the following European/Ramsar sites have interest features which could be affected by the project:

- Dee Estuary/Aber Dyfrdwy SAC (site code UK0030131);
- The Dee Estuary SPA (site code UK9013011);
- The Dee Estuary Ramsar site (site code UK11082);
- Liverpool Bay / Bae Lerpwl SPA (site code UK9020294);
- Mersey Narrows and North Wirral Foreshore SPA (site code UK9020287);
- Mersey Narrows and North Wirral Foreshore Ramsar site (site code UK11042);
- River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC (site code UK0030252);
- Gogledd Môn Forol / North Anglesey Marine SAC (site code UK0030398);
- Gorllewin Cymru Forol / West Wales Marine SAC (site code UK0030397);
- Dynesfeydd Môr Hafren / Bristol Channel Approaches SAC (site code UK0030396);
- Pen Llŷn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC (site code UK0013117);
- Cardigan Bay / Bae Ceredigion SAC (site code UK0012712); and
- Pembrokeshire Marine / Sir Benfro Forol (site code UK0013116).

The likelihood of significant effect on the features for which the above sites are designated is considered further in Section 3.1.1. It is not considered necessary to address potential impacts of the proposed development on any other European/Ramsar sites.

The screening assessment and test of LSE is based on the approach that Welsh Government on advice from NRW follow when undertaking their own HRAs.

3.1.1 Transboundary screening

Under the Transboundary Regulation 17 of the Marine Works EIA Regulations, the potential for the proposed development to result in a significant effect on the environment in an European Economic Area (EEA) State needs to be considered.

Taking a precautionary view, the operational vessel movements associated with the MEPE Project, combined with the overlap of the proposed development with European/Ramsar sites, could lead to potential impacts on marine mammal and bird populations associated with EEA States.

The interest features of the Dee Estuary SPA and Ramsar site include the following species associated with populations in EEA states:

- Pintail comprising 9 % of the North-western Europe Population;
- Teal comprising 1.3 % of the North-western Europe Population;
- Dunlin comprising 2 % of the Northern Siberia/Europe/Western Africa population;
- Knot comprising 3.5 % of the North-eastern Canada/Greenland/Iceland/ North-western Europe Population;
- Oystercatcher comprising 2.5 % of the Europe and Northern/Western Africa Population;
- Curlew comprising 1.1 % of the European Breeding Population;
- Shelduck comprising 2.6 % of the North-western Europe Population; and
- Bar-tailed Godwit comprising 1.2% of the Europe Population.

The records of these birds in the area of the proposed development are described in detail in the Nature Conservation and Marine Ecology Chapter 8 of the ES. As detailed in the screening assessment (Section 3.2), there is considered to be a potential for LSE on these interest features and, therefore, these interest features have been taken forward into the assessment stage of the HRA (Section 4).

In addition, any SACs of other EEA States within the relevant MMMUs that have a qualifying marine mammal feature have the potential to be affected by the proposed development. As marine mammals are wide-ranging within their respective MMMU, no discrete population can be assigned to an SAC. It is assumed that, at any one time, a marine mammal interest feature within the vicinity of the proposed development could be associated with any of the SACs within the MMMUs, where they are a qualifying feature. It should be noted that the assessments of effects on marine mammal species are relevant for all the SACs within the MMMUs where they are a qualifying feature and that the sites screened in are those where a potential connectivity and more realistic pathway for a potential effect has been determined.

3.2 Screening assessment

The screening assessment presented in Table 2 indicates the possible pathways by which the proposed development may impact upon the relevant European/Ramsar site features. The interest features that have been designated at each European/Ramsar site are taken from the official Natural 2000 standard data forms for SACs/SPAs and Information Sheets on Ramsar Wetlands) and are recorded in the left hand column in Table 2.

The screening assessment provided in the right hand column in Table 2 has been made in view of the conservation objectives for the European/Ramsar sites concerned. These are set out in the relevant SNCB advice documents produced under Regulation 37 of the Conservation of Habitats and Species Regulations 2017 for the following sites:

- The Dee Estuary European Marine Site comprising Dee Estuary / Aber Dyfrdwy Special Area of Conservation, The Dee Estuary Special Protection Area and The Dee Estuary Ramsar Site (Natural England and CCW, 2010);
- European Site Conservation Objectives for Dee Estuary/Aber Dyfrdwy Special Area of Conservation Site code: UK0030131 (Natural England, 2018a);
- European Site Conservation Objectives for The Dee Estuary Special Protection Area Site Code: UK9013011 (Natural England, 2019a);
- European Site Conservation Objectives for Liverpool Bay / Bae Lerpwl Special Protection Area Site Code: UK9020294 (Natural England, 2019b);
- European Site Conservation Objectives for Mersey Narrows and North Wirral Foreshore Special Protection Area Site Code: UK9020287 (Natural England, 2019c);
- European Site Conservation Objectives for River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid Special Area of Conservation Site code: UK0030252 (Natural England, 2018b);
- Core Management Plan Including Conservation Objectives For River Dee And Bala Lake/Afon Dyfrdwy A Llyn Tegid SAC (NRW, 2008).
- Harbour Porpoise (*Phocoena phocoena*) Special Area of Conservation: North Anglesey Marine/Gogledd Môn Forol, Conservation Objectives and Advice on Operations (JNCC, NRW and DAERA 2019);
- Harbour Porpoise (*Phocoena phocoena*) Special Area of Conservation: West Wales Marine / Gorllewin Cymru Forol (JNCC and NRW, 2019a);
- Harbour Porpoise (*Phocoena phocoena*) Special Area of Conservation: Bristol Channel Approaches / Dynesfeydd Môr Hafren (JNCC and NRW, 2019b);
- Pen Llŷn a'r Sarnau /Lleyn Peninsula and the Sarnau European Marine Site comprising: Pen Llŷn a'r Sarnau /Lleyn Peninsula and the Sarnau Special Area of Conservation (NRW, 2009);
- Cardigan Bay/ Bae Ceredigion Special Area of Conservation (NRW, 2018a); and
- Pembrokeshire Marine / Sir Benfro Forol Special Area of Conservation (NRW, 2018b).

Colour coding in Table 2 is as follows:

= There is no impact pathway from the proposal to the designated feature
= There is an impact pathway in principle, but significant effects can be ruled out
= There is an impact pathway and significant effects cannot be ruled out

In addition, the following numbers are used to describe the type of impact pathway considered to be present:

1 = Direct capture, damage or harm to a designated species feature.
2 = Damage to a designated habitat feature (including through direct physical impact, pollution, changes in thermal regime, hydrodynamics, light etc).
3 = Damage to the habitat of designated species features (including through direct physical impact, pollution, changes in thermal regime, hydrodynamics, light etc).
4 = Damage to a designated habitat feature via removal of, or other detrimental impact on, typical species.
5 = Removal of prey species of a designated species feature.
6 = Damage to habitat of prey species.

Note that several impact pathways may be relevant to the same designated feature.

If all rows in the right hand column of the Table 2 are blue or green, it can be concluded that the proposed development is not likely to have a significant effect on any European/Ramsar site, and no further consideration under the Habitats Regulations is considered necessary at this stage. Otherwise, an AA is required.

For the MEPE Project, thirty-five features have been identified as yellow (= There is an impact pathway and significant effects cannot be ruled out), and therefore there is a need to progress to the assessment stage of the HRA (see Section 4).

Table 2. Screening assessment

European/ Ramsar Site and Conservation Features	Assessment of Likelihood of Significant Effect	
	Relevant Conservation Objectives	Potential Impact Pathway
Dee Estuary/Aber Dyfrdwy SAC		
Mudflats and sandflats not covered by seawater at low tide	▪ Range ▪ Structure and function ▪ Typical species	2, 4
Salicornia and other annuals colonising mud and sand	▪ Extent ▪ Distribution ▪ Condition	This habitat interest feature is located near to the proposed development but does not overlap with the zone of influence of the proposed development as demonstrated by the outcomes of the numerical modelling and physical processes assessment (Chapter 6 of the main ES).
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	▪ Range ▪ Structure and function ▪ Typical species	This habitat interest feature is located near to the proposed development but does not overlap with the zone of influence of the proposed development as demonstrated by the outcomes of the numerical modelling and physical processes assessment (Chapter 6 of the main ES).
Estuaries	▪ Range ▪ Structure and function ▪ Typical species	2, 4
Annual vegetation of drift lines	▪ Extent ▪ Distribution ▪ Condition	This habitat interest feature is located more than 2 km from the proposed development in the outer part of the Dee Estuary and does not overlap with the zone of influence of the proposed development as demonstrated by the outcomes of the numerical modelling and physical processes assessment (Chapter 6 of the main ES).
Vegetated sea cliffs of the Atlantic and Baltic coasts	▪ Extent ▪ Distribution ▪ Condition	This habitat interest feature is located outside of the marine environment above the Highest Astronomical Tide (HAT) and is, therefore, not hydrodynamically linked to the proposed development.

European/ Ramsar Site and Conservation Features	Assessment of Likelihood of Significant Effect	
	Relevant Conservation Objectives	Potential Impact Pathway
Embryonic shifting dunes	▪ Extent ▪ Distribution ▪ Condition	This habitat interest feature is located outside of the marine environment above the Highest Astronomical Tide (HAT) and is, therefore, not hydrodynamically linked to the proposed development.
Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")	▪ Extent ▪ Distribution ▪ Condition	This habitat interest feature is located outside of the marine environment above the Highest Astronomical Tide (HAT) and is, therefore, not hydrodynamically linked to the proposed development.
Fixed dunes with herbaceous vegetation ("grey dunes")	▪ Extent ▪ Distribution ▪ Condition	This habitat interest feature is located outside of the marine environment above the Highest Astronomical Tide (HAT) and is, therefore, not hydrodynamically linked to the proposed development.
Humid dune slacks	▪ Extent ▪ Distribution ▪ Condition	This habitat interest feature is located outside of the marine environment above the Highest Astronomical Tide (HAT) and is, therefore, not hydrodynamically linked to the proposed development.
River lamprey *Lampreta fluviatilis*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and recovery	1, 3, 5, 6
Sea lamprey *Petromyzon marinus*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and recovery	1, 3, 5, 6
Petalwort *Petalophyllum ralfsii*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and recovery	This interest feature is located outside of the marine environment above the Highest Astronomical Tide (HAT) and is, therefore, not hydrodynamically linked to the proposed development.
Dee Estuary SPA		
Little Tern *Sterna albifrons*	▪ Population size ▪ Habitat extent	1, 3, 5, 6

European/ Ramsar Site and Conservation Features	Assessment of Likelihood of Significant Effect	
	Relevant Conservation Objectives	Potential Impact Pathway
Common Tern *Sterna hirundo*	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Bar-tailed Godwit *Limosa lapponica*	▪ Population size ▪ Habitat extent	While this species is widely distributed throughout the estuary, the species is only very infrequently recorded in the vicinity of the proposed development in very low numbers (<5 individuals) as summarised in Section 8.6.5 of the nature conservation and marine ecology assessment (Chapter 8 of the ES). The area is, therefore, considered to be of very limited functional value for the species. On this basis, there is considered to be no potential for an LSE on this interest feature either alone or in-combination with other plans and projects.
Sandwich Tern *Sterna sandvicensis*	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Pintail *Anas acuta*	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Teal *Anas crecca*	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Dunlin *Calidris alpina*	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Red Knot *Calidris canutus*	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Oystercatcher *Haematopus ostralegus*	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Black-tailed Godwit *Limosa limosa islandica*	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Curlew *Numenius arquata*	▪ Population size ▪ Habitat extent	1, 3, 5, 6

European/ Ramsar Site and Conservation Features	Assessment of Likelihood of Significant Effect	
	Relevant Conservation Objectives	Potential Impact Pathway
Grey Plover *Pluvialis squatarola*	▪ Population size ▪ Habitat extent	While this species is widely distributed throughout the estuary, the species is only very infrequently recorded in the vicinity of the proposed development in very low numbers (<7 individuals) as summarised in Section 8.6.5 of the nature conservation and marine ecology assessment (Chapter 8 of the ES). The area is, therefore, considered to be of very limited functional value for the species. On this basis, there is considered to be no potential for an LSE on this interest feature either alone or in-combination with other plans and projects.
Shelduck *Tadorna tadorna*	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Redshank *Tringa totanus*	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Waterbird assemblage	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Dee Estuary Ramsar site[3]		
Natterjack toad *Epidalea calamita*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and recovery	This interest feature is located on dune habitat which occurs outside of the marine environment above the Highest Astronomical Tide (HAT) and is, therefore, not hydrodynamically linked to the proposed development.
Liverpool Bay / Bae Lerpwl SPA		
Red-throated Diver *Gavia stellata*	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Little Gull *Hydrocoloeus minutus*	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Common Scoter *Melanitta nigra*	▪ Population size ▪ Habitat extent	1, 3, 5, 6

[3] The Dee Estuary qualifies as a Ramsar site for the same habitat interest features as the Dee Estuary SAC and the same bird interest features as the Dee Estuary SPA. These are already considered above for these other sites and are, therefore, not considered again here to avoid repetition.

European/ Ramsar Site and Conservation Features	Assessment of Likelihood of Significant Effect	
	Relevant Conservation Objectives	Potential Impact Pathway
Little Tern *Sterna albifrons*	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Common Tern *Sterna hirundo*	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Waterbird assemblage	▪ Population size ▪ Habitat extent	1, 3, 5, 6
Mersey Narrows and North Wirral Foreshore SPA		
Bar-tailed Godwit *Limosa lapponica*	▪ Population size ▪ Habitat extent	The site is located approximately 8 km from proposed development and this bird interest feature is not significantly using the Dee Estuary on passage. The proposed development will not significantly affect the fly-way used by this species through blocking or habitat displacement effects.
Little Gull *Hydrocoloeus minutus*	▪ Population size ▪ Habitat extent	The site is located approximately 8 km from proposed development and this bird interest feature is not significantly using the Dee Estuary on passage. The proposed development will not significantly affect the fly-way used by this species through blocking or habitat displacement effects.
Knot *Calidris canutus islandica*	▪ Population size ▪ Habitat extent	The site is located approximately 8 km from proposed development and this bird interest feature is not significantly using the Dee Estuary on passage. The proposed development will not significantly affect the fly-way used by this species through blocking or habitat displacement effects.
Common Tern *Sterna hirundo*	▪ Population size ▪ Habitat extent	The site is located approximately 8 km from proposed development and this bird interest feature is not significantly using the Dee Estuary on passage. The proposed development will not significantly affect the fly-way used by this species through blocking or habitat displacement effects.

European/ Ramsar Site and Conservation Features	Assessment of Likelihood of Significant Effect	
	Relevant Conservation Objectives	Potential Impact Pathway
Waterbird assemblage	▪ Population size ▪ Habitat extent	The site is located approximately 8 km from proposed development and this bird interest feature is not significantly using the Dee Estuary on passage. The proposed development will not significantly affect the fly-way used by this species through blocking or habitat displacement effects.
River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC		
Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho Batrachion* vegetation; Rivers with floating vegetation often dominated by water-crowfoot	▪ Extent ▪ Distribution ▪ Condition	Site is located approximately 18 km from the proposed development and this freshwater habitat interest feature occurs outside of the marine environment and zone of influence of the proposed development.
Floating water-plantain *Luronium natans*	▪ Extent ▪ Distribution ▪ Condition	Site is located approximately 18 km from the proposed development and this freshwater habitat interest feature occurs outside of the marine environment and zone of influence of the proposed development.
Brook Lamprey *Lampetra planeri*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and recovery	Site is located approximately 18 km from the proposed development and this non-migratory freshwater fish interest feature occurs outside of the marine environment and zone of influence of the proposed development.
Bullhead *Cottus gobio*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and recovery	Site is located approximately 18 km from the proposed development and this non-migratory freshwater fish interest feature occurs outside of the marine environment and zone of influence of the proposed development.
River lamprey *Lampetra fluviatilis*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and recovery	1, 3, 5, 6

European/ Ramsar Site and Conservation Features	Assessment of Likelihood of Significant Effect	
	Relevant Conservation Objectives	Potential Impact Pathway
Sea Lamprey *Petromyzon marinus*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and recovery	1, 3, 5, 6
Atlantic salmon *Salmo salar*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and recovery	1, 3, 5, 6
Otter *Lutra lutra*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and recovery	1, 3, 5, 6
Gogledd Môn Forol / North Anglesey Marine SAC		
Harbour porpoise *Phocoena phocoena*	▪ Species is a viable component of the site ▪ No significant disturbance of the site ▪ Supporting habitat and species are maintained	1, 3, 5, 6
Gorllewin Cymru Forol / West Wales Marine SAC		
Harbour porpoise *Phocoena phocoena*	▪ Species is a viable component of the site ▪ No significant disturbance of the site ▪ Supporting habitat and species are maintained	1, 3, 5, 6
Dynesfeydd Môr Hafren / Bristol Channel Approaches SAC		
Harbour porpoise *Phocoena phocoena*	▪ Species is a viable component of the site ▪ No significant disturbance of the site ▪ Supporting habitat and species are maintained	1, 3, 5, 6
Pen Llŷn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC		
Sandbanks which are slightly covered by sea water all the time	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 50 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.

European/ Ramsar Site and Conservation Features	Assessment of Likelihood of Significant Effect	
	Relevant Conservation Objectives	Potential Impact Pathway
Estuaries	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 50 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Coastal lagoons	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 50 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Large shallow inlets and bays	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 50 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Reefs	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 50 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Mudflats and sandflats not covered by seawater at low tide	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 50 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Salicornia and other annuals colonizing mud and sand	▪ Extent ▪ Distribution ▪ Condition	Site is located more than 50 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Atlantic salt meadows (*Glauco-Puccinellietalia maritimae)*	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 50 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Submerged or partially submerged sea caves	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 50 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Bottlenose dolphin *Tursiops truncatus*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and Recovery	1, 3, 5, 6

European/ Ramsar Site and Conservation Features	Assessment of Likelihood of Significant Effect	
	Relevant Conservation Objectives	Potential Impact Pathway
Otter *Lutra lutra*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and recovery	Site is located more than 50 km from the proposed development and the otter interest feature is outside of the zone of influence of the proposed development.
Grey seal *Halichoerus grypus*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and recovery	1, 3, 5, 6
Cardigan Bay / Bae Ceredigion SAC		
Sandbanks which are slightly covered by seawater all the time	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 100 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Reefs	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 100 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Submerged or partially submerged sea caves	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 100 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Bottlenose dolphin *Tursiops truncates*	▪ Populations ▪ Range ▪ Supporting habitats and species ▪ Restoration and recovery	1, 3, 5, 6
Grey seal *Halichoerus grypus*	▪ Populations ▪ Range ▪ Supporting habitats and species ▪ Restoration and recovery	1, 3, 5, 6
River lamprey *Lampetra fluviatilis*	▪ Populations ▪ Range ▪ Supporting habitats and species ▪ Restoration and recovery	Site is located more than 100 km from the proposed development and this fish interest feature is outside of the zone of influence of the proposed development.

European/ Ramsar Site and Conservation Features	Assessment of Likelihood of Significant Effect	
	Relevant Conservation Objectives	Potential Impact Pathway
Sea lamprey *Petromyzon marinus*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and recovery	Site is located more than 100 km from the proposed development and this fish interest feature is outside of the zone of influence of the proposed development.
Pembrokeshire Marine / Sir Benfro Forol SAC		
Sandbanks which are slightly covered by seawater all the time	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 200 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Estuaries	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 200 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Mudflats and sandflats not covered by seawater at low tide	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 200 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Coastal lagoons	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 200 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Large shallow inlets and bays	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 200 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Reefs	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 200 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Submerged or partially submerged sea caves	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 200 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.
Atlantic salt meadows	▪ Range ▪ Structure and function ▪ Typical species	Site is located more than 200 km from the proposed development and this habitat interest feature is outside of the zone of influence of the proposed development.

European/ Ramsar Site and Conservation Features	Assessment of Likelihood of Significant Effect	
	Relevant Conservation Objectives	Potential Impact Pathway
Grey seal *Halichoerus grypus*	▪ Populations ▪ Range ▪ Supporting habitats and species ▪ Restoration and recovery	1, 3, 5, 6
Otter *Lutra lutra*	▪ Populations ▪ Range ▪ Supporting habitats and species ▪ Restoration and recovery	Site is located more than 200 km from the proposed development and the otter interest feature is outside of the zone of influence of the proposed development.
Allis shad *Alosa alosa*	▪ Populations ▪ Range ▪ Supporting habitats and species ▪ Restoration and recovery	Site is located more than 200 km from the proposed development and this fish interest feature is outside of the zone of influence of the proposed development.
Twaite shad *Alosa fallax*	▪ Populations ▪ Range ▪ Supporting habitats and species ▪ Restoration and recovery	Site is located more than 200 km from the proposed development and this fish interest feature is outside of the zone of influence of the proposed development.
River lamprey *Lampetra fluviatilis*	▪ Populations ▪ Range ▪ Supporting habitats and species ▪ Restoration and recovery	Site is located more than 200 km from the proposed development and this fish interest feature is outside of the zone of influence of the proposed development.
Sea lamprey *Petromyzon marinus*	▪ Populations ▪ Range ▪ Supporting habitat and species ▪ Restoration and recovery	Site is located more than 200 km from the proposed development and this fish interest feature is outside of the zone of influence of the proposed development.
Shore dock *Rumex rupestris*	▪ Populations ▪ Range ▪ Supporting habitats and species ▪ Restoration and recovery	Site is located more than 200 km from the proposed development and this plant species interest feature is outside of the zone of influence of the proposed development.

4 Assessment

4.1 Assessment in advance of any mitigation

Table 3 reviews the potential impacts in the absence of any mitigation measures to avoid or minimise adverse effects. The two left hand columns list the designated interest features and the impact pathways identified from the screening assessment where a LSE is anticipated or cannot be ruled out. Any interest features recorded in the screening assessment as blue or green are not considered further at this assessment stage.

If all adverse effects can be ruled out (i.e. the right hand column is 'Y' for all features), no further consideration under the Habitats Directive/Regulations is required in order to determine the application. If adverse effect cannot be ruled out for specific features (i.e. any row in the right hand column is 'N') the assessment must go on to consider whether additional conditions or restrictions could enable adverse effects on the integrity of the European site(s) to be ruled out.

Table 3. Assessment in advance of any mitigation

Feature (from Table 2)	Impact Pathway(s) (from Table 2)	Description of Impacts	Assessment in View of Conservation Objectives	Can Adverse Effect be Ruled Out? (Y or N)
Mudflats and sandflats not covered by seawater at low tide	2, 4	Damage to a designated habitat feature. Damage to a designated habitat feature via removal of, or other detrimental impact on, typical species.	The following impact pathways have been assessed in Section 8.7 (Nature Conservation and Marine Ecology Chapter 8 of the ES) in relation to this habitat feature and supporting species: ▪ Direct loss of intertidal habitat as a result of capital dredging; ▪ Direct loss of intertidal habitats and species as a result of the new quay wall; ▪ Changes to habitats and species as a result of sediment deposition during construction; ▪ Indirect changes to seabed habitats and species as a result of changes to hydrodynamic and sedimentary processes; ▪ Changes in water and sediment quality during construction; ▪ Underwater noise and vibration disturbance during construction; ▪ Introduction and spread of non-native species during construction; ▪ Changes to benthic habitats and species as a result of seabed removal during maintenance dredging; ▪ Changes to habitats and species as a result of sediment deposition during maintenance dredging and dredge disposal; ▪ Indirect changes to benthic habitats and species as a result of changes to hydrodynamic and sedimentary processes during the operational phase; ▪ Changes in water and sediment quality during maintenance dredging and dredge disposal; ▪ Underwater noise and vibration disturbance during operation; and ▪ Introduction and spread of non-native species during operation. In the absence of any mitigation, the impacts are assessed as insignificant apart from the potential introduction and spread of non-native species during construction and operation which is assessed as insignificant to minor adverse[4]. This impact has the	N

[4] It should be noted that the Port of Mostyn already manage biosecurity risk of ongoing port operations in accordance with specific procedures to minimise the risk of introduction and/or spread of non-native species where possible. In accordance with HRA guidance, however, there is a need to assess the potential impacts of a project in the absence of any mitigation measures, and therefore, this pathway has been considered at this assessment stage of the HRA.

Feature (from Table 2)	Impact Pathway(s) (from Table 2)	Description of Impacts	Assessment in View of Conservation Objectives	Can Adverse Effect be Ruled Out? (Y or N)
			potential to result in a change to the 'structure and function' and 'typical species' conservation objectives but no change in the 'range' conservation objective. The intertidal habitat that will be lost within the harbour and under the footprint of the new quay wall and reclamation comprises 2.57 ha of soft/fluid sandy mud. This unconsolidated habitat is highly impoverished with a very low number of species recorded within it and does not represent the standard and more stable physical form and ecological structure and function of the intertidal mudflat that is found in the Dee Estuary beyond the immediate area of the harbour and existing berths which is more consolidated, stable and ecological diverse. Based on a review of past cases, the most influential factors considered by decision-makers when determining the significance of small scale effects to qualifying habitat features of SACs is the relative importance of the area affected in terms of the rarity, location, distribution, vulnerability to change and ecological structure (Chapman and Tyldesley, 2016). The contribution the affected area makes to the overall integrity of the site (and hence that site's contribution to the conservation status of that habitat type) exerts a stronger influence than the spatial extent of the effect. The poorer quality and more unstable soft/fluid sandy mud habitat within the footprint of the reclamation is not representative of the ecological structure and function of the 'Mudflats and sandflats not covered by seawater at low tide' qualifying feature of the Dee Estuary SAC and Ramsar site. Given that this habitat does not contribute to the integrity of the SAC and Ramsar site, its loss is considered to be *de minimus* and insignificant in terms of the 'range', 'structure and function' and 'typical species' conservation objectives. It should be noted that the rubble from the toe of the rock armour along the western side of the dock estate is proposed to be scrapped back as part of the proposed development to expose mudflat habitat on the Mostyn Bank ((Section 3.1.7 in Project Methodology Chapter 3). This ecological enhancement will allow silt to settle in the areas where the rubble is scraped back and support natural mudflat restoration.	

Feature (from Table 2)	Impact Pathway(s) (from Table 2)	Description of Impacts	Assessment in View of Conservation Objectives	Can Adverse Effect be Ruled Out? (Y or N)
			In the context of the site's conservation objectives, the range of this habitat feature will be maintained but there is a risk that its structure and function, and typical species will not be maintained due to the potential introduction and spread of non-native species. In other words, there could be a discernible change to the structure and function and characterising species of this feature. Overall, there is considered to be a potential for an AEOI on this habitat interest feature of the Dee Estuary/Aber Dyfrdwy SAC and Dee Estuary Ramsar site in advance of any mitigation.	
Estuaries	2, 4	Damage to a designated habitat feature. Damage to a designated habitat feature via removal of, or other detrimental impact on, typical species.	The following impact pathways have been assessed in Section 8.7 (Nature Conservation and Marine Ecology Chapter 8 of the ES) in relation to this habitat feature and supporting species: ▪ Direct loss of intertidal habitat as a result of capital dredging; ▪ Direct loss of intertidal and subtidal habitats and species as a result of the new quay wall; ▪ Changes to subtidal habitats and species as result of the removal of seabed material during dredging; ▪ Changes to habitats and species as a result of sediment deposition during construction; ▪ Indirect changes to seabed habitats and species as a result of changes to hydrodynamic and sedimentary processes; ▪ Changes in water and sediment quality during construction; ▪ Underwater noise and vibration disturbance during construction; ▪ Introduction and spread of non-native species during construction; ▪ Changes to benthic habitats and species as a result of seabed removal during maintenance dredging; ▪ Changes to habitats and species as a result of sediment deposition during maintenance dredging and dredge disposal; ▪ Indirect changes to benthic habitats and species as a result of changes to hydrodynamic and sedimentary processes during the operational phase; ▪ Changes in water and sediment quality during maintenance dredging and dredge disposal; ▪ Underwater noise and vibration disturbance during operation; ▪ Introduction and spread of non-native species during operation.	N

Feature (from Table 2)	Impact Pathway(s) (from Table 2)	Description of Impacts	Assessment in View of Conservation Objectives	Can Adverse Effect be Ruled Out? (Y or N)
			In the absence of any mitigation, the impacts are assessed as insignificant apart for those associated with the direct loss of seabed habitat as a result of the new quay wall and reclamation which are assessed as insignificant to minor adverse on intertidal hard substrate habitats. The intertidal habitat that will be lost under the footprint of the new quay wall and reclamation comprises 2.57 ha of soft/fluid sandy mud and 0.27 ha of intertidal hard substrate habitat. The loss of sandy mud habitat is already reviewed above under the assessment for the 'Mudflats and sandflats not covered by seawater at low tide' qualifying feature and is, therefore, not repeated here. The intertidal hard substrate habitat comprises tipped slag waste deposits from the historic iron industry[5] which have partly fragmented into artificial hard substrate of varying sizes (rock, boulders and cobble-sized deposits) grading into sand and silt closer to the lower shore. This habitat provides a similar ecological function to the 'estuarine rocky habitats' Habitat of Principal Importance in Wales listed under the NERC Act 2006 Section 42 but given its artificial nature, it is not strictly considered to be characteristic of this habitat and does not form a component of the 'Estuaries' qualifying feature of the Dee Estuary SAC and Ramsar site. However, it is considered to be of some functional value for feeding and roosting waterbirds such as Turnstone and this is considered as part of the assessment below on bird interest features. Overall, on this basis, the magnitude of the loss of intertidal hard substrate habitat is considered negligible as a proportion of the SAC/Ramsar site. This loss is, therefore, considered to be insignificant in terms of the 'range', 'structure and function' and 'typical species' conservation objective. The subtidal channel that will be lost under the footprint of the new quay wall and reclamation comprises 0.65 ha of subtidal habitat. This subtidal habitat consists predominantly of slightly gravelly sand or slightly gravelly muddy sand mud. The benthic community of this habitat is impoverished and characterised by low numbers of species. The subtidal channel habitat is of low conservation concern with the habitats not characteristic of any protected habitats although it is noted that subtidal habitats form a component of the 'Estuaries' feature of the SAC. The loss of this habitat is considered to	

[5] The 1899 breakwater was constructed from industrial slag waste from the Darwen and Mostyn Iron Works. Slag is a by-product of smelting ores and used metals.

Feature (from Table 2)	Impact Pathway(s) (from Table 2)	Description of Impacts	Assessment in View of Conservation Objectives	Can Adverse Effect be Ruled Out? (Y or N)
			be negligible in the context of the size of the estuary and as a proportion of the SAC/Ramsar site. As a consequence, this loss is inconsequential in terms of the 'range' conservation objective. A loss on this scale is also considered to be insignificant in terms of the 'structure and function' and 'typical species' conservation objectives. In the absence of any mitigation, the potential introduction and spread of non-native species during construction and operation is also assessed as insignificant to minor adverse[6]. This impact has the potential to result in a change to the 'structure and function' and 'typical species' conservation objectives but no change in the 'range' conservation objective. In the context of the site's conservation objectives, the range of this habitat feature will be maintained but there is a risk that its structure and function, and typical species will not be maintained due to the potential introduction and spread of non-native species. In other words, there could be a discernible change to the structure and function and characterising species of this feature. Overall, there is considered to be a potential for an AEOI on this habitat interest feature of the Dee Estuary/Aber Dyfrdwy SAC and Dee Estuary Ramsar site in advance of any mitigation.	
River lamprey *Lampetra fluviatilis* Sea Lamprey *Petromyzon marinus*	1, 3, 5, 6	Direct capture, damage or harm to a designated species feature. Damage to the habitat of designated species features.	The following impact pathways have been assessed in Section 8.7 (Nature Conservation and Marine Ecology Chapter 8 of the ES) in relation to these fish interest features and supporting habitats and prey species: ▪ Direct loss or changes to fish and shellfish populations and habitat; ▪ Indirect changes to seabed habitats for fish during construction; ▪ Changes in water and sediment quality during construction; ▪ Underwater noise and vibration disturbance during construction; ▪ Changes to fish populations and fish habitat during maintenance dredging and dredge disposal;	N

[6] It should be noted that the Port of Mostyn already manage biosecurity risk of ongoing port operations in accordance with specific procedures to minimise the risk of introduction and/or spread of non-native species where possible. In accordance with HRA guidance, however, there is a need to assess the potential impacts of a project in the absence of any mitigation measures, and therefore, this pathway has been considered at this assessment stage of the HRA.

Feature (from Table 2)	Impact Pathway(s) (from Table 2)	Description of Impacts	Assessment in View of Conservation Objectives	Can Adverse Effect be Ruled Out? (Y or N)
		Removal of prey species of a designated species feature. Damage to habitat of prey species.	▪ Changes in water and sediment quality during maintenance dredging and dredge disposal; and ▪ Underwater noise and vibration disturbance during operation. In the absence of any mitigation, the impacts are assessed as insignificant apart from the potential effects of underwater noise during percussive piling on migratory fish, which are assessed as minor adverse for lamprey species. In addition, the direct loss or changes to fish populations and habitat during construction and operation are assessed as insignificant to minor adverse. The underwater noise levels during piling have the potential to result in potential injury/mortality in migrating lamprey species within a relatively localised area around the piling activity and behavioural reactions over a larger area. On this basis, in advance of any mitigation measures, underwater noise effects on lamprey species during piling is has the potential to cause changes to the 'populations', 'range' and 'restoration and recovery' conservation objectives. Adult lamprey that are migrating through the Dee Estuary could either be swimming freely or in the parasitic stage whereby they attach themselves to other fish (the 'host fish'). The sedimentary habitats in the dredge footprint and area of reclamation are impoverished with low abundances of prey items for potential lamprey and/or host fish. Most fish species (including lamprey and hosts that they could be attached to) are opportunistic and generalist feeders, which means that they are generally not reliant on a single prey item. Lamprey and/or host fish will also be mobile and able to easily move away from the zone of influence and utilise other nearby areas for foraging. Furthermore, the area of habitat loss and change will only represent a small proportion of the foraging ranges of lamprey and/or host fish. The disposal ground is likely to provide limited prey resources for lamprey and/or host fish that lamprey are attached as it is located in a highly dynamic area. Overall, the direct loss or changes to fish populations and habitat during construction and operation are unlikely to result in a significant change to the 'supporting habitat and species' conservation objective.	

Feature (from Table 2)	Impact Pathway(s) (from Table 2)	Description of Impacts	Assessment in View of Conservation Objectives	Can Adverse Effect be Ruled Out? (Y or N)
			In the context of the site's conservation objectives, there is a potential risk that the populations, range and restoration and recovery of these lamprey interest features will not be maintained due to underwater noise during piling. In other words, there is the potential for a discernible change to occur to the overall populations, range and restoration and recovery of these fish interest features. Overall, there is considered to be a potential for an AEOI on the lamprey interest features of the Dee Estuary/Aber Dyfrdwy SAC and River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC in advance of any mitigation.	
Atlantic salmon *Salmo salar*	1, 3, 5, 6	Direct capture, damage or harm to a designated species feature. Damage to the habitat of designated species features. Removal of prey species of a designated species feature. Damage to habitat of prey species.	The following impact pathways have been assessed in Section 8.7 (Nature Conservation and Marine Ecology Chapter 8 of the ES) in relation to this fish interest feature and supporting habitats and prey species: ▪ Direct loss or changes to fish and shellfish populations and habitat; ▪ Indirect changes to seabed habitats for fish during construction; ▪ Changes in water and sediment quality during construction; ▪ Underwater noise and vibration disturbance during construction; ▪ Changes to fish populations and fish habitat during maintenance dredging and dredge disposal; ▪ Changes in water and sediment quality during maintenance dredging and dredge disposal; and ▪ Underwater noise and vibration disturbance during operation. In the absence of any mitigation, the impacts are assessed as insignificant apart from the potential effects of underwater noise during percussive piling on migratory fish, which are assessed as moderate adverse for Atlantic salmon. In addition, the direct loss or changes to fish populations and habitat during construction and operation are assessed as insignificant to minor adverse. The underwater noise levels during piling have the potential to result in potential injury/mortality in migrating Atlantic salmon within a relatively localised area around the piling activity and behavioural reactions over a larger area. On this basis, in advance of any mitigation measures, underwater noise effects on Atlantic salmon during piling is	N

Feature (from Table 2)	Impact Pathway(s) (from Table 2)	Description of Impacts	Assessment in View of Conservation Objectives	Can Adverse Effect be Ruled Out? (Y or N)
			considered likely to cause changes to the 'populations', 'range' and 'restoration and recovery' conservation objectives. The sedimentary habitats in the dredge footprint and area of reclamation are impoverished with low abundances of prey items for fish. Atlantic salmon are opportunistic and generalist feeders, which means that they are generally not reliant on a single prey item. They are also highly mobile and able to easily move away from the zone of influence and utilise other nearby areas for foraging if required during their migration through the estuary. Furthermore, the area of habitat loss and change will only represent a small proportion of the foraging ranges of migrating Atlantic salmon. The disposal ground is likely to provide limited prey resources for fish as it is located in a highly dynamic area. Overall, the direct loss or changes to fish populations and habitat during construction and operation are unlikely to result in a significant change to the 'supporting habitat and species' conservation objective. In the context of the site's conservation objectives, there is a potential risk that the populations, range and restoration and recovery of the Atlantic salmon interest feature will not be maintained due to underwater noise during piling. In other words, there is the potential for a discernible change to occur to the overall populations, range and restoration and recovery of this fish interest feature. Overall, there is considered to be a potential for an AEOI on the Atlantic salmon interest feature of the River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC in advance of any mitigation.	
Pintail *Anas acuta* Teal *Anas crecca* Dunlin *Calidris alpina* Red knot *Calidris canutus*	1, 3, 5, 6	Direct capture, damage or harm to a designated species feature. Damage to the habitat of designated species features.	The following impact pathways have been assessed in Section 8.7 (Nature Conservation and Marine Ecology Chapter 8 of the ES) in relation to these bird interest features and supporting habitats and prey species: ▪ Direct loss and change to intertidal feeding and roosting habitat; ▪ Airborne noise and visual disturbance during construction; and ▪ Disturbance of waterbirds during operation. In the absence of any mitigation, the direct loss and change to intertidal feeding and roosting habitat due to the quayside works and capital dredging is assessed as minor adverse. The temporary noise and visual disturbance during construction is assessed as	N

Feature (from Table 2)	Impact Pathway(s) (from Table 2)	Description of Impacts	Assessment in View of Conservation Objectives	Can Adverse Effect be Ruled Out? (Y or N)
Oystercatcher *Haematopus ostralegus* Black-tailed godwit *Limosa limosa islandica* Curlew *Numenius arquata* Shelduck *Tadorna tadorna* Redshank *Tringa tetanus* Waterbird assemblage		Removal of prey species of a designated species feature. Damage to habitat of prey species.	minor to moderate adverse. The disturbance of waterbirds during operation is assessed as minor adverse. The direct loss and change to intertidal feeding and roosting habitat will not cause changes to the 'population size' conservation objective of each bird interest feature. This is because the scale of loss is unlikely to be of a magnitude that would cause changes to diet or prey consumption levels to an extent that individual survival rates or local population levels (either directly through mortality or due to birds dispersing to new feeding areas in other areas of the Dee Estuary) are affected. The footprint of habitat loss already provides very limited feeding opportunities. This loss is considered negligible in the context of available feeding habitat even at a local scale and the amount of similar habitat in the region (and as a proportion of the SPA). The effects of the habitat loss will also be highly limited in terms of the overall wider functionality of the local habitats for feeding birds. On this basis any change to the 'habitat extent' conservation objective is considered inconsequential. The disturbance and temporary displacement of bird interest features which is expected to occur as a result of construction activity will cause a change to their distribution. This change is anticipated to be relatively localised (with birds expected to redistribute to nearby foreshore and continue to feed and roost in these alternative locations following dispersal). Furthermore, following completion of the construction phase, birds would be expected to return to broadly use the same or nearby areas as used prior to construction with any effects considered temporary. However, in advance of any mitigation, the predicted disturbance responses during construction have the potential to result in changes to the 'population size' conservation objective. Disturbance responses during operation are generally expected to be localised given the tolerance that coastal waterbirds typically show to existing port operations, and expected habituation to disturbance stimuli resulting directly from the proposed development that will occur in advance of any mitigation. The predicted disturbance responses of waterbirds are considered unlikely to cause any changes to the 'population size' conservation objective. This is because any responses are considered to be relatively limited and mild and are unlikely to cause birds to disperse out of the Dee Estuary to	

Feature (from Table 2)	Impact Pathway(s) (from Table 2)	Description of Impacts	Assessment in View of Conservation Objectives	Can Adverse Effect be Ruled Out? (Y or N)
			another region. Furthermore, based on the magnitude of disturbance effects, population level consequences (at both a local and fly way level) in terms of mortality or changes in breeding success is considered highly unlikely. In the context of the site's conservation objectives, there is a potential risk that the population size of a number of bird interest features will not be maintained due to disturbance during construction. In other words, there is the potential for a discernible change to occur to the overall populations of these bird interest features. Overall, there is considered to be a potential for an AEOI on these bird interest features of the Dee Estuary SPA/Ramsar site and Liverpool Bay / Bae Lerpwl SPA in advance of any mitigation.	
Little tern *Sterna albifrons* Common tern *Sterna hirundo* Sandwich tern *Sterna sandvicensis* Red-throated Diver *Gavia stellata* Little Gull *Hydrocoloeus minutus* Common Scoter *Melanitta nigra*	1, 3, 5, 6	Direct capture, damage or harm to a designated species feature. Damage to the habitat of designated species features. Removal of prey species of a designated species feature. Damage to habitat of prey species.	The breeding success of some surface-feeding species, such as Little Tern and Common Tern, is negatively affected by changes in food availability due to reliance of prey brought to the sea surface (Furness and Tasker, 2000). Diving species, such as Red-throated Diver, with high wing loading have high energetic cost during flight, thought to be linked with adaptation of wings for underwater locomotion (Gaston and Jones, 1998; Thaxter *et al.*, 2010). Thus, while they have the potential to forage far from colonies, their typical ranges may be smaller than those of other species, i.e. 20-40 km (Thaxter *et al.*, 2010), and they may be less flexible in making changes in the event of reduced prey availability (Enstipp *et al.*, 2006). In summary, diving species are considered to have a medium sensitivity to this effect, and surface-feeding species have a low sensitivity. The proposed development footprint and disposal sites are not considered to be valuable supporting habitat for these bird interest features. A variety of species have been recorded foraging in the harbour and approaches to Port of Mostyn. However, the area is not known to support large aggregations of seabirds and other diving birds or provide habitat known to be of particularly high functional importance for these species. This is expected given that Red-throated Diver and Common Scoter typically avoid areas with high shipping intensity, including shipping lanes. Research has shown that disturbance to birds from vessel movements generally occurs within 50 to 100 m with vessels approaching at faster speeds eliciting higher disturbance (Rodgers and Schwikert, 2002; Burger, 1998; Schwemmer *et al.*, 2011).	Y

Feature (from Table 2)	Impact Pathway(s) (from Table 2)	Description of Impacts	Assessment in View of Conservation Objectives	Can Adverse Effect be Ruled Out? (Y or N)
			There is limited data available regarding noise and vibration during dredging, although underwater noise levels are generally comparable to other types of commercial marine traffic. Research suggests that gulls can be highly tolerant to disturbance stimuli with generally only very intensive, prolonged disturbance causing avoidance of foraging or breeding areas (Calladine *et al.*, 2006). When foraging at sea, tern species are also reported to be relatively insensitive to disturbance by shipping activities (Natural England and JNCC, 2019). Other species such as Red-throated Diver, and Common Scoter are considered particularly sensitive to disturbance from vessels and construction activity compared with other species (Jarret *et al.*, 2018; Natural England and JNCC, 2019; Kaiser, 2002). Vessels and other activity has been shown to elicit flushing responses at maximum distances of 1-2 km from a disturbance source in these species although most disturbance typically occurs within <1 km (Schwemmer *et al.*, 2011; Kaiser, 2002; Garthe and Hüppop, 2004; HELCOM, 2013). Dredging and dredge disposal could potentially cause infrequent, mild behavioural responses in a localised area in the vicinity of the vessel for most species. The responses observed are likely to range from increased vigilance to short flights, with birds rapidly resettling and resuming feeding near their original location. More sensitive species (such as Red-throated Diver or Common Scoter) could show localised avoidance and larger disturbance events (causing birds to flush and temporarily disperse from the vicinity of the dredge area). Rather than dispersing the area completely, birds would be expected to temporarily redistribute within the local area. In addition, it should be noted that due to the high levels of existing vessel and dredging activities within the area, seabirds and other diving birds foraging in the dredge footprint would be expected to be reasonably habituated to vessels near the proposed development and disposal site with more sensitive species already likely to be avoiding this area. Overall, utilisation of the proposed development footprint and disposal sites by these bird interest features for foraging is considered to be limited, particularly given that it is a busy shipping area. The proposed development and dredge disposal will not cause a change to the overall extent of habitat available for seabirds and other diving birds with the foraging ranges of these species encompassing an extensive area which will not be spatially restricted to the proposed development or dredge disposal footprints. Any	

Feature (from Table 2)	Impact Pathway(s) (from Table 2)	Description of Impacts	Assessment in View of Conservation Objectives	Can Adverse Effect be Ruled Out? (Y or N)
			changes in foraging habitat and prey resources will, therefore, represent only a small proportion of habitat available for these species. Furthermore, the potential for disturbance from this potential foraging area during the proposed development and disposal activities is short-term and comparable to existing maintenance dredging and disposal activities. In terms of the key prey items for bird interest features of the SPAs: Red-throated Divers mainly feed on fish but also molluscs, crustaceans and fish spawn. Herring and sprat are amongst the most frequently recorded prey species of Red-throated divers, although this species is considered to be an opportunistic feeder, taking a rather broad range of fish species (Guse *et al.*, 2009). Terns mainly feed on fish, but also shrimps and other crustaceans, small squid and marine worms. The ability of these species to catch prey items is not considered to be impaired given the scale of their foraging ranges. Common scoters are almost exclusively benthic feeders and thus depend heavily on the quality of the seabed. Common scoters forage mainly on marine bivalves less than 40 mm long (Fox, 2003; Kaiser *et al.*, 2006). In the context of the site's conservation objectives, the population size and habitat extent will be maintained. In other words, there is no potential for a discernible change to occur to the overall populations of these diving bird interest features or supporting habitat and availability of prey. Overall, there is considered to be no potential for an AEOI on the diving bird interest features of the Dee Estuary SPA/Ramsar site and Liverpool Bay / Bae Lerpwl SPA in advance of any mitigation.	
Otter *Lutra lutra*	1, 3, 5, 6	Direct capture, damage or harm to a designated species feature. Damage to the habitat of designated species features.	The following impact pathways have been assessed in Section 8.7 (Nature Conservation and Marine Ecology Chapter 8 of the ES) in relation to the otter interest feature and supporting habitats and prey species: ▪ Direct loss or changes to otter populations and habitat; and ▪ Noise and visual disturbance during construction. In the absence of any mitigation, the impacts are assessed as insignificant apart from the potential effects of noise and visual disturbance during construction, which are assessed as insignificant to minor adverse.	Y

Feature (from Table 2)	Impact Pathway(s) (from Table 2)	Description of Impacts	Assessment in View of Conservation Objectives	Can Adverse Effect be Ruled Out? (Y or N)
		Removal of prey species of a designated species feature. Damage to habitat of prey species.	There is the potential that otters could be deterred from using the area of the estuary close to the proposed development during construction. However, the disturbance effects will be temporary and short term in nature. Furthermore, there is considered to be very limited presence of otter in the vicinity of the proposed development. On this basis, disturbance effects on otters are unlikely to cause significant changes to the 'populations', 'range' and 'restoration and recovery' conservation objectives. In the context of the site's conservation objectives, the populations, range and restoration and recovery of the otter interest feature will be maintained. In other words, there is no potential for a discernible change to occur to the overall populations, range and restoration and recovery of this interest feature. Overall, there is considered to be no potential for an AEOI on the otter interest feature of the River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC in advance of any mitigation. It should be noted, however, that the mitigation measures that will be implemented to reduce the level of impact associated with airborne noise and visual disturbance on bird interest features, and underwater noise and vibration on fish and marine mammal interest features in Table 4 are anticipated to also benefit otters.	
Harbour porpoise *Phocoena phocoena* Bottlenose dolphin *Tursiops truncates* Grey seal *Halichoerus grypus*	1, 3, 5, 6	Direct capture, damage or harm to a designated species feature. Damage to the habitat of designated species features. Removal of prey species of a designated species feature. Damage to habitat of prey species.	The following impact pathways have been assessed in Section 8.7 (Nature Conservation and Marine Ecology Chapter 8 of the ES) in relation to these marine mammal interest features and supporting habitats and prey species: ▪ Direct loss or changes in marine mammal foraging habitat; ▪ Changes in water and sediment quality during construction; ▪ Collision risk during construction; ▪ Underwater noise and vibration disturbance during construction; ▪ Collision risk during operation; and ▪ Underwater noise and vibration disturbance during operation. In the absence of any mitigation, the impacts are assessed as insignificant apart from the potential effects of underwater noise during percussive piling, which are assessed as minor to moderate adverse.	N

Feature (from Table 2)	Impact Pathway(s) (from Table 2)	Description of Impacts	Assessment in View of Conservation Objectives	Can Adverse Effect be Ruled Out? (Y or N)
			Underwater noise might cause some temporary changes to the movement patterns of foraging marine mammal interest features with piling causing avoidance responses and intermittent barrier effects during piling operations. Therefore, short term changes in the local distribution of marine mammal interest features could occur but no permanent changes in their overall distribution in the region will occur. Potential injury or lethal effects to marine mammal interest features would be expected to be restricted to a very localised area in the direct vicinity of piling operations. In advance of any mitigation, there is the potential for injury effects and on this basis, the 'species as a viable component of the site', 'no significant disturbance of the site', 'populations', 'range' and 'restoration and recovery' conservation objectives could be compromised. In the context of the site's conservation objectives, there is a potential risk that the species as a viable component of the site and no significant disturbance of the site, populations, range and restoration and recovery of the interest features will not be maintained due to underwater noise during piling. Overall, in advance of any mitigation, there is considered to be a potential for an AEOI on the harbour porpoise interest feature of the Gogledd Môn Forol / North Anglesey Marine SAC, Gorllewin Cymru Forol / West Wales Marine SAC, Dynesfeydd Môr Hafren / Bristol Channel Approaches SAC. There is also considered to be a potential AEOI on the bottlenose dolphin interest feature of the Pen Llŷn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC, Cardigan Bay / Bae Ceredigion SAC, and the grey seal interest feature of the Pen Llŷn a'r Sarnau / Lleyn Peninsula, the Sarnau SAC, Cardigan Bay / Bae Ceredigion SAC and Pembrokeshire Marine / Sir Benfro Forol SAC.	

4.2 Assessment taking into account of mitigation

Table 4 reviews the application of mitigation measures to avoid or minimise potential impacts that could result in an AEOI as identified in Table 3.

In addition to the measures included in Table 4, it is recognised that there is the potential for accidental releases from plant and equipment to enter the water environment and in turn affect the interest features of European/Ramsar sites. Such releases are considered to be unlikely as legislative requirements for pollution prevention require strict adherence e.g. the Oil Storage Regulations. Best practice pollution prevention guidelines will be followed to minimise the risk of accidental releases and the risk of introduction of contaminants throughout the construction period. These will be set out in a Construction Environment Management Plan (CEMP). During operation, the Port of Mostyn will follow existing control and management measures in place to minimise the risk of causing or contributing to marine pollution incidents, including the 'Dee Estuary Oil Spill Contingency Plan', 'Bunker Checklist' and 'Mostyn Docks Limited Waste Management Plan'. These measures are further detailed in the ES, specifically the Project Methodology Chapter 3, the Water and Sediment Quality Chapter 7 and the Commercial and Recreational Navigation Chapter 10.

Table 4. Assessment taking into account of proposed mitigation

Feature (from Table 3)	Description of Adverse Effect(s)	Can Adverse Effect(s) be Mitigated Y or N	Description of Mitigation Measures, and How They Would be Applied	Can Adverse Effect be Ruled Out? (Y or N)
Mudflats and sandflats not covered by seawater at low tide	Introduction and spread of non-native species during construction and operation.	Y	In order to manage the potential introduction and spread of non-native species, biosecurity management procedures will be included within the CEMP that is prepared by the contractor for the works. In the context of the site's conservation objectives, the range, structure and function, and typical species associated with this habitat feature will be maintained with the application of this mitigation. In other words, there is not expected to be a discernible change to the overall extent or distribution of mudflats and sandflats not covered by seawater at low tide (and associated species) or a change to the structure and function of this feature. Overall, there is considered to be no potential for an AEOI on this habitat interest feature of the Dee Estuary/Aber Dyfrdwy SAC and Dee Estuary Ramsar site with the proposed mitigation.	Y
Estuaries	Introduction and spread of non-native species during construction and operation.	Y	In order to manage the potential introduction and spread of non-native species, biosecurity management procedures will be included within the CEMP that is prepared by the contractor for the works. In the context of the site's conservation objectives, the range, structure and function, and typical species associated with this habitat feature will be maintained with the application of this mitigation. In other words, there is not expected to be a discernible change to the overall extent or distribution of estuaries (and associated species) or a change to the structure and function of this feature. Overall, there is considered to be no potential for an AEOI on this habitat interest feature of the Dee Estuary/Aber Dyfrdwy SAC and Dee Estuary Ramsar site with the proposed mitigation.	Y
River lamprey *Lampreta fluviatilis* Sea lamprey *Petromyzon marinus*	Underwater noise and vibration disturbance during construction.	Y	In order to reduce the level of impact associated with underwater noise and vibration on fish interest features, the following mitigation measures will be implemented during piling:	Y

Feature (from Table 3)	Description of Adverse Effect(s)	Can Adverse Effect(s) be Mitigated Y or N	Description of Mitigation Measures, and How They Would be Applied	Can Adverse Effect be Ruled Out? (Y or N)
Atlantic salmon *Salmo salar*			▪ **Soft start:** The gradual increase of piling power, incrementally, until full operational power is achieved will be used as part of the piling methodology. This will give fish interest features the opportunity to move away from the area before the onset of full impact strikes. The duration of the soft start is proposed to be 20 minutes in line with the JNCC piling protocol (JNCC, 2010); and ▪ **Vibro piling:** Vibro piling is proposed to be used where possible (which produces lower peak source noise levels than percussive piling). However, in order to drive the piles to the required design level percussive piling is likely to be required. In the context of the site's conservation objectives, the populations, range and restoration and recovery of these fish interest features will be maintained with the application of this mitigation. In other words, there is not expected to be a discernible change to the overall populations, range and restoration and recovery of these fish interest features. Overall, there is considered to be no potential for an AEOI on these fish interest features of the Dee Estuary/Aber Dyfrdwy SAC and River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC with the proposed mitigation.	
Pintail *Anas acuta* Teal *Anas crecca* Dunlin *Calidris alpina* Red knot *Calidris canutus*	Airborne noise and visual disturbance during construction.	Y	In order to reduce the level of impact associated with noise and visual disturbance on bird interest features, the following mitigation measures will be implemented during construction: ▪ **Soft starts:** Using soft starts (as outlined above) will allow birds to become more tolerant to piling noise by allowing a more gradual increase in noise levels which will reduce the potential for birds to become startled; ▪ **Cold weather construction restriction**: Coastal waterbirds are considered particularly vulnerable to bird disturbance during periods of extreme winter weather. On this basis, it is proposed that a temporary cessation of piling and any activities taking place along the new quay	Y

Feature (from Table 3)	Description of Adverse Effect(s)	Can Adverse Effect(s) be Mitigated Y or N	Description of Mitigation Measures, and How They Would be Applied	Can Adverse Effect be Ruled Out? (Y or N)
Oystercatcher *Haematopus ostralegus* Black-tailed godwit *Limosa limosa islandica* Curlew *Numenius arquata* Shelduck *Tadorna tadorna* Redshank *Tringa tetanus* Waterbird assemblage			wall is implemented following seven consecutive days of freezing (zero or sub-zero temperature) weather conditions. The restriction should not be lifted until after 24 hours of above freezing temperatures and also that Metrological Office weather forecasts indicate that freezing conditions will not return for the next five days; ▪ **Acoustic barrier/visual screening:** In order to reduce potential visual and/or noise disturbance stimuli to waterbirds on the Mostyn Bank or breakwater roost, an acoustic barrier/visual screen will be installed along the breakwater prior to the commencement of construction so that movements of construction workers or vehicles will not be as visible and the levels of noise will be attenuated. Screens (such as fences and other barriers) are a widely used measure to help reduce potential disturbance to coastal waterbirds (Ikuta and Blumstein, 2003; Liley and Tyldesley, 2013; Hockin *et al.*, 1992) and has been successfully applied as mitigation to reduce disturbance at a number of port locations including the Port of Mostyn (GoBe Consultants Ltd, 2011, ABPmer, 2014; MMO, 2018). These screens should be opaque or made out of material that distorts outlines of anthropogenic activity; and ▪ **Noise suppression system:** It is proposed that a noise suppression system (consisting of a pile shroud or sleeve with noise insulating properties) is used during percussive piling activities of the tube piles for the new quay wall to reduce noise levels on the Mostyn Bank and breakwater roost. Although mitigation is not specifically required for bird disturbance during operation as the impact during this phase of the development is not considered significant, on a precautionary basis, it is proposed that the screens that are installed during construction remain in place initially during the operational phase also. The use of screens is considered likely to be most effective initially during operation when birds are less likely to be as habituated to any sources of new operational noise and visual disturbance stimuli. Over time as the birds	

Feature (from Table 3)	Description of Adverse Effect(s)	Can Adverse Effect(s) be Mitigated Y or N	Description of Mitigation Measures, and How They Would be Applied	Can Adverse Effect be Ruled Out? (Y or N)
			would be expected to become habituated to such disturbance events and as such a phased removal of the screens is proposed after 2 years. In the context of the site's conservation objectives, the population size of a number of bird interest features will be maintained with the application of this mitigation. In other words, there is not expected to be a discernible change to occur to the overall populations of these bird interest features. Overall, there is considered to be no potential for an AEOI on these bird interest features of the Dee Estuary SPA/Ramsar site and Liverpool Bay SPA with the proposed mitigation.	
Harbour porpoise *Phocoena phocoena* Bottlenose dolphin *Tursiops truncates* Grey seal *Halichoerus grypus*	Underwater noise and vibration disturbance during construction.	Y	In order to reduce the level of impact associated with underwater noise and vibration on marine mammal interest features during construction, the following mitigation measures will be implemented during piling: ▪ **Soft start:** The gradual increase of piling power, incrementally, until full operational power is achieved will be used as part of the piling methodology. This will give fish interest features the opportunity to move away from the area before the onset of full impact strikes. The duration of the soft start is proposed to be 20 minutes in line with the JNCC piling protocol (JNCC, 2010); ▪ **Vibro piling:** Vibro piling is proposed to be used where possible (which produces lower peak source noise levels than percussive piling). However, in order to drive the piles to the required design level percussive piling is likely to be required; and ▪ **Marine Mammal Observer:** In addition, in order to further reduce the significance of the impact to marine mammals the JNCC "Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals during piling" (JNCC, 2010) will be followed during percussive piling. The key procedures highlighted in this document include the following:	Y

Feature (from Table 3)	Description of Adverse Effect(s)	Can Adverse Effect(s) be Mitigated Y or N	Description of Mitigation Measures, and How They Would be Applied	Can Adverse Effect be Ruled Out? (Y or N)
			○ Establishment of a 'mitigation zone' of a pre-defined radius (e.g. 500 m) from the piling locations, prior to any percussive piling. Within this mitigation zone, observations of marine mammals will be undertaken by a trained member of the construction team using marine mammal identification resources; ○ 30 minutes prior to the commencement of percussive piling, a search should be undertaken by the Marine Mammal Observer to determine that no marine mammals are within the mitigation zone. Percussive piling activity should not be commenced if marine mammals are detected within the mitigation zone or until 20 minutes after the last visual detection; ○ During percussive piling, the Marine Mammal Observer should observe the mitigation zone to determine that no marine mammals are within this area. Construction workers will be alerted if marine mammals are identified, and piling will cease whilst any marine mammals are within the mitigation zone. Piling can recommence when the marine mammal exits the mitigation zone and there is no further detection after an agreed period of time (suggested to be 20 minutes); and ○ If there is a pause in percussive piling operations for any reason over an agreed period of time, then another search (and soft-start procedures for piling) should be repeated before activity recommences. If, however, the mitigation zone has been observed while piling has ceased and no marine mammals have entered the zone, piling activity can recommence immediately. In the context of the site's conservation objectives, the populations, range and restoration and recovery of the site will be maintained with the application of this mitigation. In other words, there is not expected to be a discernible change to	

Feature (from Table 3)	Description of Adverse Effect(s)	Can Adverse Effect(s) be Mitigated Y or N	Description of Mitigation Measures, and How They Would be Applied	Can Adverse Effect be Ruled Out? (Y or N)
			the overall populations, range and restoration and recovery of these marine mammal interest features. Overall, there is considered to be no potential for an AEOI on the marine mammal interest features of the Gogledd Môn Forol / North Anglesey Marine SAC, Gorllewin Cymru Forol / West Wales Marine SAC, Dynesfeydd Môr Hafren / Bristol Channel Approaches SAC, Pen Llŷn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC, Cardigan Bay / Bae Ceredigion SAC and Pembrokeshire Marine / Sir Benfro Forol SAC with the proposed mitigation.	

4.3 In-combination assessment

The other plans or projects which should be considered for potential in-combination effects with the proposed development under consideration are those that fall into all of the following 3 categories:

(1) They have been subject to HRA and the HRA has either concluded no LSE or no AEOI, but residual effects remain;

(2) Their residual effects (net of any mitigation measures) could interact with the residual effects of the proposed development under consideration, for example, by magnifying the effects of the proposed development, or making a habitat or species feature more sensitive to the effects of the proposed development; and

(3) They are one of the following:

- Project started but not yet completed;
- Projects consented but not started;
- Ongoing projects subject to repeated authorisations (e.g. annual licences);
- Applications lodged but not yet determined;
- Refusals subject to appeals procedures not yet determined;
- Projects not requiring consent but which have been approved by the competent authority concerned ;
- Proposals in adopted plans;
- Proposals in draft plans published for consultation;
- Allocations or other forms of proposals in adopted development plans; and
- Allocations or other forms of proposals in draft development plans published for consultation.

Projects that have not yet submitted their licence applications are not considered in the in-combination assessment as there is insufficient publicly available information to be able to undertake a meaningful assessment at this stage, such as is the case for Mona Offshore Wind Farm and Morecambe Offshore Wind Farm, which are all in the pre-application stage of the National Infrastructure Planning process.

Projects that do not result in any LSE or residual effects, have no potential to affect any interest features in-combination with the proposed development and have, therefore, not been considered further in the in-combination assessment, for example Hynet Carbon Dioxide Pipeline, the Holyhead Waterfront Redevelopment Scheme Project and aggregate dredging at Areas 392 and 393 (also known as Hilbre Swash) in Liverpool Bay. Further details of these project is included in the Cumulative and In-combination Effects Chapter 13 of the ES.

Table 5 reviews the in-combination residual effects of the proposed development with other relevant plans or projects. No potential AEOI of the interest features or conservation objectives of European/Ramsar sites has been identified as a result of this in-combination assessment.

Table 5 In-combination assessment

Nature of Residual Effect Resulting from the Proposal	European Site Feature(s) Subject to Residual Effect (from Table 2, Table 3 or Table 4)	Other Plans/Projects with Effects that Could Render the Residual Effect of the Proposal Significant	Nature of the in-Combination Effect and Consideration of Likelihood of Adverse Effect	Can Adverse Effect be Ruled Out? (Y or N)
Introduction and spread of non-native species during construction and operation	Estuaries Mudflats and sandflats not covered by seawater at low tide	Awel y Môr (AyM) Offshore Wind Farm[7]	The HRA for the AyM Offshore Wind Farm Project indicates that relevant best practice guidelines will be followed through the implementation of a Biosecurity Plan to minimise invasive non-native species (INNS) introduction/ spread. Any vessels used for the delivery of materials to the site will adhere to industry legislation, codes of conduct and/or best practice to reduce the risk of introduction or spread of INNS. Together with the distance between the Dee Estuary/Aber Dyfrdwy SAC and the AyM Offshore Wind Farm Project, and the expectation that the project will have a CEMP and biosecurity plan (or similar documentation) to manage the risk of marine INNS, there is considered to be no potential for any significant in-combination effect with the MEPE Project.	Y
		Holyhead Deep Project	The Holyhead Deep Project is located over 100 km from the MEPE Project and will not result in any significant effects with the application of mitigation on benthic ecology. Overall, there is no potential for any cumulative and/or in-combination effects to occur with the MEPE Project.	
		Holyhead Port Expansion Project	Smothering of benthic habitats and species is assessed as negligible during dredging and minor adverse during disposal activities associated with the Holyhead Port Expansion Project. The Holyhead Port Expansion Project is located approximately 90 km from the MEPE Project and there will, therefore, be no overlap or potential for cumulative and/or in-combination effects on benthic habitats and species.	
		Morlais Tidal Energy Project	The potential effects of the Morlais Tidal Energy Project on benthic ecology will be managed as part of a Marine Biodiversity Enhancement Strategy and an Invasive Non-native Species Management Plan. This will include the provision of pre-construction surveys, micro-siting and mitigation that would offset the potential loss of Annex 1 marine habitats and/or OSPAR/Section 7 habitats potentially impacted by the project. The Morlais Tidal Energy Project	

[7] Awel y Môr Offshore Wind Farm | National Infrastructure Planning (planninginspectorate.gov.uk)

Nature of Residual Effect Resulting from the Proposal	European Site Feature(s) Subject to Residual Effect (from Table 2, Table 3 or Table 4)	Other Plans/Projects with Effects that Could Render the Residual Effect of the Proposal Significant	Nature of the in-Combination Effect and Consideration of Likelihood of Adverse Effect	Can Adverse Effect be Ruled Out? (Y or N)
			is located approximately 90 km from the MEPE Project and there will, therefore, be no overlap or potential for cumulative and/or in-combination effects on benthic habitats and species.	
		Regional Maintenance activities for Royal National Lifeboat Institution (RNLI) stations cited around the coast of Wales (including Flint Lifeboat station and Connah's Quay on the Dee Estuary)[8]	The proposed regional maintenance activities for RNLI stations around the coast of Wales, including Flint Lifeboat station and Connah's Quay located on the Dee Estuary, are not considered to have a significant effect on any protected sites, including the Dee Estuary SSSI/SAC/SPA/Ramsar site. A biosecurity plan for the maintenance works has been prepared and there is a condition in the marine licence (Ref: CML1820, condition 8.7) which states "*The Licence Holder must ensure all equipment, materials, machinery and PPE used are in a clean condition prior to their arrival on site, and upon removal from site, to minimise risk of introducing non-native species into the marine environment.*" There is, therefore, considered to be no potential for any significant in-combination effect with the MEPE Project.	Y
		Conclusion:	In the context of the site's conservation objectives, the range, structure and function, and typical species associated with the 'estuary' and 'mudflats and sandflats not covered by seawater at low tide habitat features' will be maintained. In other words, there is not expected to be a discernible change to the overall extent or distribution of these habitat interest features (and associated species) or a change to their structure and function. Overall, there is considered to be no potential for the proposed development to result in an AEOI on these habitat interest features of the Dee Estuary/Aber Dyfrdwy SAC in-combination with any other plans or projects.	Y
Underwater noise and vibration disturbance during construction	River lamprey *Lampreta fluviatilis* Sea lamprey *Petromyzon marinus*	AyM Offshore Wind Farm[9]	For a project or plan to act in-combination with respect to disturbance resulting from underwater noise, there needs to be temporal overlap between the activities. The underwater noise impact from UXO and piling for the AyM Project is limited to 2027-2029 inclusive. There is, therefore, no potential overlap with the construction of the MEPE Project and no potential for any significant in-combination effect.	Y

8 Public register - Customer Portal (naturalresources.wales)

9 Awel y Môr Offshore Wind Farm | National Infrastructure Planning (planninginspectorate.gov.uk)

Nature of Residual Effect Resulting from the Proposal	European Site Feature(s) Subject to Residual Effect (from Table 2, Table 3 or Table 4)	Other Plans/Projects with Effects that Could Render the Residual Effect of the Proposal Significant	Nature of the in-Combination Effect and Consideration of Likelihood of Adverse Effect	Can Adverse Effect be Ruled Out? (Y or N)
	Atlantic salmon *Salmo salar*		Furthermore, a piling Marine Mammal Mitigation Protocol (MMMP) will be developed for the AyM Project which will include proposals for soft start and ramp-up of piling to help reduce disturbance impacts on marine mammals. While none of the mitigation measures detailed in the MMMP are focused on fish features, it is likely that there will be incidental benefits to non-mammal receptors (including fish). Taking into account the distance of the Dee Estuary/Aber Dyfrdwy SAC and River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC from the AyM project array (>20 km at its nearest point), the short-term and localised nature of the impact arising during construction, the likelihood of the instinct for migration overriding any potential disturbance effects from noise and no noise from AyM activities entering the River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC, it is not anticipated that significant impacts in relation to underwater noise from piling within the array will occur on lamprey or Atlantic salmon, with no impacts to the population or distribution of the fish interest features within the sites.	
		Holyhead Deep Project	The Holyhead Deep Project is located over 100 km from the MEPE Project and will not result in any significant effects with the application of mitigation on fish. Overall, there is no potential for any cumulative and/or in-combination effects to occur with the MEPE Project.	
		Holyhead Port Expansion Project	Potential impacts on fish and shellfish within Holyhead Bay is assessed as negligible and minor adverse on fish populations within the vicinity of the Holyhead North disposal site. The Holyhead Port Expansion Project is located approximately 90 km from the MEPE Project and there will, therefore, be no overlap or potential for cumulative and/or in-combination effects on fish populations.	
		Morlais Tidal Energy Project	The potential effects of the Morlais Tidal Energy Project on migratory fish are assessed as minor adverse and not significant in the ES. The HRA also concluded that there will be no AEOI in relation to migratory fish species.	

Nature of Residual Effect Resulting from the Proposal	European Site Feature(s) Subject to Residual Effect (from Table 2, Table 3 or Table 4)	Other Plans/Projects with Effects that Could Render the Residual Effect of the Proposal Significant	Nature of the in-Combination Effect and Consideration of Likelihood of Adverse Effect	Can Adverse Effect be Ruled Out? (Y or N)
			Potential collision risk on migratory risk will be managed through the monitoring measures included in an Environmental Mitigation and Monitoring Plan (EMMP). There will, therefore, be no potential for cumulative and/or in-combination effects on migratory fish.	
		Conclusion:	In the context of the site's conservation objectives, the populations, range and restoration and recovery of these fish interest features will be maintained. In other words, there is not expected to be a discernible change to the overall populations, range and restoration and recovery of these fish interest features. Overall, there is considered to be no potential for the proposed development to result in an AEOI on these fish interest features of the Dee Estuary/Aber Dyfrdwy SAC and River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC in-combination with other plans or projects.	Y
Airborne noise and visual disturbance during construction. Disturbance of waterbirds during operation.	All bird interest features of Dee Estuary SPA/Ramsar site (see Table 3.2)	Awel y Môr (AyM) Offshore Wind Farm[10]	For a project or plan to act in-combination with respect to disturbance resulting from underwater noise, there needs to be temporal overlap between the activities. The underwater noise impact from UXO and piling for the AyM Project is limited to 2027-2029 inclusive. There is, therefore, no potential overlap with the construction of the MEPE Project and no potential for any significant in-combination effect. Furthermore, a piling MMMP will be developed for the AyM Project which will include proposals for soft start and ramp-up of piling to help reduce disturbance impacts on marine mammals. While none of the mitigation measures detailed in the MMMP are focused on ornithological features, it is likely that there will be incidental benefits to non-mammal receptors (including birds). Based on the onshore and intertidal components of the AyM Project being a significant distance beyond 500 m from the Dee Estuary SPA/Ramsar site or areas of functionally linked habitat, it is highly unlikely that construction, operation and maintenance (O&M), and to a lesser extent, decommissioning	Y

[10] ibid

Nature of Residual Effect Resulting from the Proposal	European Site Feature(s) Subject to Residual Effect (from Table 2, Table 3 or Table 4)	Other Plans/Projects with Effects that Could Render the Residual Effect of the Proposal Significant	Nature of the in-Combination Effect and Consideration of Likelihood of Adverse Effect	Can Adverse Effect be Ruled Out? (Y or N)
			activity of the AyM Project will result in significant visual and/ or noise disturbance to species associated with the Dee Estuary SPA/Ramsar site.	
		Morlais Tidal Energy Project	If full deployment of the Morlais Tidal Energy Project took place, a potential for a major adverse effect on Guillemot and Razorbill populations has been predicted in the ES due to the collision risk with tidal turbines. The potential adverse impacts will be mitigated by proceeding with the regulated activity in phases using an adaptive management approach. Therefore, the deployments of the initial phase and any further deployments (scaling-up), will only occur at a scale that will not lead to an adverse effect on diving seabirds in line with the EMMP. There will, therefore, be no potential for cumulative and/or in-combination effects on waterbirds.	
		Conclusion:	In the context of the site's conservation objectives, the population size of a number of bird interest features will be maintained. In other words, there is not expected to be a discernible change to occur to the overall populations of these bird interest features. Overall, there is considered to be no potential for the proposed development to result in an AEOI on these bird interest features of the Dee Estuary SPA/Ramsar site in-combination with other plans or projects.	
Underwater noise and vibration disturbance during construction	Harbour porpoise *Phocoena phocoena* Bottlenose dolphin *Tursiops truncates* Grey seal *Halichoerus grypus*	Awel y Môr (AyM) Offshore Wind Farm[11]	For a project or plan to act in-combination with respect to disturbance resulting from underwater noise, there needs to be temporal overlap between the activities. The underwater noise impact from UXO and piling for the AyM Project is limited to 2027-2029 inclusive. There is, therefore, no potential overlap with the construction of the MEPE Project and no potential for any significant in-combination effect. In any case, a piling MMMP will be drafted and implemented in order to reduce to negligible the risk of Permanent Threshold Shift (PTS) auditory injury to any marine mammal species in close proximity of the pile driving for the installation of AyM foundation structures. The MMMP draws on the	Y

[11] ibid

Nature of Residual Effect Resulting from the Proposal	European Site Feature(s) Subject to Residual Effect (from Table 2, Table 3 or Table 4)	Other Plans/Projects with Effects that Could Render the Residual Effect of the Proposal Significant	Nature of the in-Combination Effect and Consideration of Likelihood of Adverse Effect	Can Adverse Effect be Ruled Out? (Y or N)
			guidance provided by the Joint Nature Conservation Committee (JNCC) (2010) and Statutory Nature Conservation Bodies (SNCB) recommendations. Overall, there is no potential for in-combination auditory injury or disturbance effects from the proposed development and the AyM project. Therefore, there would be no significant displacement and no AEOI of any European site.	
		Holyhead Deep Project[12]	An updated underwater noise assessment has been completed for the Holyhead Deep Project on the basis of the revised injury and disturbance threshold criteria proposed by NOAA (2018). In summary, use of the DP vessel and operations as part of the Holyhead Deep Project would not have an adverse impact on marine mammal species. The operational noise levels of the Minesto kite are below the marine mammal injury and disturbance thresholds. Measurements of underwater noise during operation have validated the findings of the EIA. Overall, there is no potential for any in-combination effects to occur with the MEPE Project.	Y
		Holyhead Port Expansion Project[13]	The potential collision risk from construction vessels associated with the Holyhead Port Expansion Project is assessed as negligible for all marine mammal species apart from minor adverse and not significant for bottlenose dolphin. Changes in prey availability are assessed as minor adverse and not significant for Risso's dolphin and negligible for all other species. The impacts of changes in water quality during dredging and disposal activities are assessed as negligible for marine mammals. Due to the temporary nature, and limited range of impacts, the Holyhead Port Expansion Project (Ref: CML1931) will not result in an AEOI on any European sites with marine mammal features. Mitigation measures to reduce the impact of underwater	

12 Public register - Customer Portal (naturalresources.wales)

13 Public register - Customer Portal (naturalresources.wales)

Nature of Residual Effect Resulting from the Proposal	European Site Feature(s) Subject to Residual Effect (from Table 2, Table 3 or Table 4)	Other Plans/Projects with Effects that Could Render the Residual Effect of the Proposal Significant	Nature of the in-Combination Effect and Consideration of Likelihood of Adverse Effect	Can Adverse Effect be Ruled Out? (Y or N)
			noise on marine mammals have been included as a condition in the marine licence (para 3.25). There is, therefore, no potential for any in-combination effects with the proposed development.	
		Conclusion:	In the context of the site's conservation objectives, the populations, range and restoration and recovery of the site will be maintained with the application of this mitigation. In other words, there is not expected to be a discernible change to the overall populations, range and restoration and recovery of these mammal interest features. Overall, there is considered to be no potential for the proposed development to result in an AEOI on the marine mammal interest features of the Gogledd Môn Forol / North Anglesey Marine SAC, Gorllewin Cymru Forol / West Wales Marine SAC, Dynesfeydd Môr Hafren / Bristol Channel Approaches SAC, Pen Llŷn a'r Sarnau / Lleyn Peninsula and the Sarnau SAC, Cardigan Bay / Bae Ceredigion SAC and Pembrokeshire Marine / Sir Benfro Forol SAC in-combination with other plans or projects.	Y

5 Conclusions

The MEPE Project overlaps the Dee Estuary SAC, SPA and Ramsar site, and is located around 2 km from Liverpool Bay SPA. In addition, the River Dee and Bala Lake/ Afon Dyfrdwy a Llyn Tegid SAC has the potential to be affected as it is designated for a range of mobile features, namely migratory fish and otters. Following advice from NRW, there are also a number of SACs in Wales within the relevant MMMUs for marine mammal species that have the potential to be affected.

As the proposed development is a licensable activity that is neither directly connected with nor necessary to the management of these sites, it is considered to have the potential to result in a LSE on these European/Ramsar sites.

The potential impact pathways on these sites and interest features have been assessed in the context of the nature and scale of the construction and operational activities associated with the proposed development, and the conservation objectives of the relevant sites and interest features, both in advance of any mitigation and following the application of mitigation measures to avoid or minimise potential impacts that could result in an AEOI. The assessment has taken into account the geographic location of the project activities relative to the distribution of the interest features, their supporting habitats and prey distribution and the sensitivities of the interest features to the environmental pressures/changes brought about by the project activities. The potential in-combination effects with other relevant plans and project has also been assessed.

Based on available evidence, there is considered to be no potential for an AEOI of the interest features or conservation objectives of European/Ramsar sites either alone and/or in-combination with other plans and projects.

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7 Abbreviations/Acronyms

AA	Appropriate Assessment
AEOI	Adverse Effect On the Integrity
AEOSI	Adverse Effect On The Site Integrity
CCW	Countryside Council for Wales
CEMP	Construction Environmental Management Plan
COWRIE	Collaborative Offshore Wind Research into the Environment
DAERA	Department of Agriculture, Environment and Rural Affairs
DETR	Department of the Environment, Transport and the Regions
DP	Dynamic Positioning
EC	European Commission
EEA	European Economic Area
EEC	European Economic Community
EIA	Environmental Impact Assessment
EMMP	Environmental Mitigation and Monitoring Plan
ES	Environmental Statement
GPP	Guidance for Pollution Prevention
HAT	Highest Astronomical Tide
HELCOM	Baltic Marine Environment Protection Commission
HRA	Habitats Regulations Assessment
INNS	Invasive Non-Native Species
IROPI	Imperative Reasons of Overriding Public Interest
JNCC	Joint Nature Conservation Committee
LSE	Likely Significant Effect
MEP	Mostyn Energy Park
MEPE	Mostyn Energy Park Extension
MHWS	Mean High Water Springs
MLA	Marine Licence Application
MMMP	Marine Mammal Mitigation Protocol
MMMU	Marine Mammal Management Unit
MMO	Marine Management Organisation
NERC	Natural Environment Research Council
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRW	Natural Resources Wales
O&M	Operation and Maintenance
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
PPE	Personal protective equipment
PTS	Permanent Threshold Shift
RNLI	Royal National Lifeboat Institution
SAC	Special Area of Conservation

SHA	Statutory Harbour Area
SNCB	Statutory Nature Conservation Bodies
SOV	Service Operation Vessel
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
UK	United Kingdom
UXO	Unexploded Ordnance
WFD	Water Framework Directive

Cardinal points/directions are used unless otherwise stated.

SI units are used unless otherwise stated.

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