Morecambe Offshore Windfarm: Generation Assets

Environmental Statement

Volume 5

Appendix 11.4 Marine Mammal CEA Project Screening

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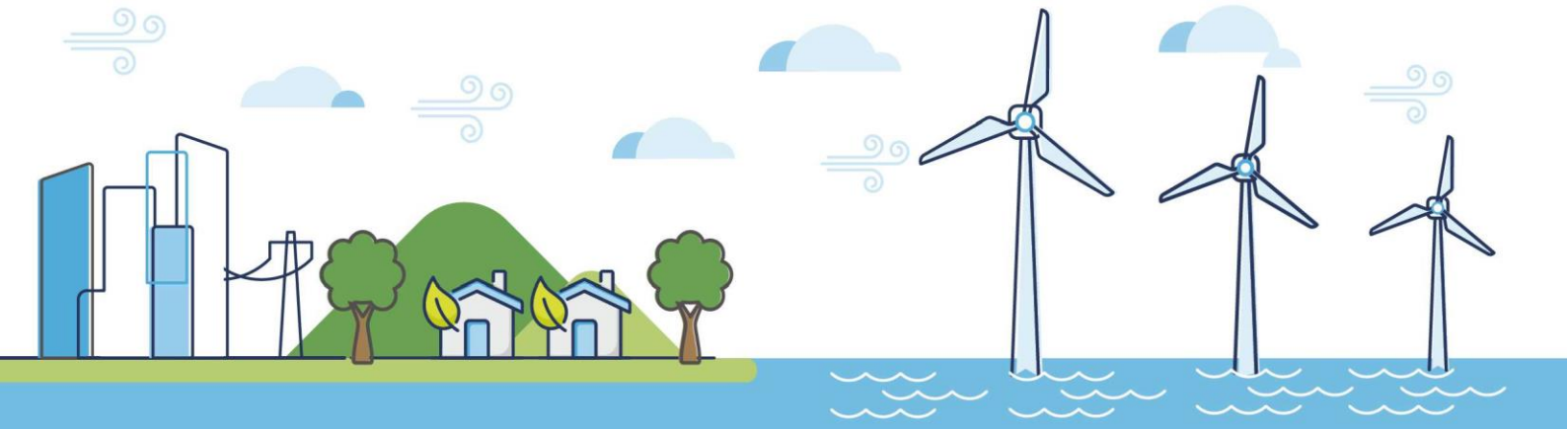
Rev 02



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Glossary of Acronyms

BEIS	Department for Business, Energy & Industrial Strategy[1]
BND	Bottlenose dolphin
CCS	Carbon Capture and Storage
CEA	Cumulative Effects Assessment
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CGNS	Celtic and Greater North Seas
CIS	Celtic and Irish Sea
DAERA	Department of Agriculture, Environment and Rural Affairs
Defra	Department for Environment, Food and Rural Affairs
DESNZ	Department for Energy Security and Net Zero
EIS	East Irish Sea
EMODnet	European Marine Observation and Data Network
ES	Environmental Statement
FCS	Favourable Conservation Status
GS	Grey seal
HP	Harbour porpoise
HRA	Habitats Regulation Assessment
HS	Harbour seal
IAMMWG	Inter-Agency Marine Mammal Working Group
IoM	Isle of Man
IS	Irish Sea
JNCC	Joint Nature Conservation Committee
MAC	Maritime Area Consent
MBES	Multibeam Echo Sounder
MMO	Marine Management Organisation
MRE	Marine Renewable Energy
MU	Management Unit
NI	Northern Ireland
NSIP	Nationally Significant Infrastructure Project

[1] As of February 2023, BEIS is known as the Department for Energy Security and Net Zero (DESNZ)

NW	North West
O&G	Oil and gas
ORESS	Offshore Renewable Electricity Support Scheme
OSP	Offshore substation platform
OWF	Offshore windfarm
PDAs	Project Development Areas
PEIR	Preliminary Environmental Impact Report
PINS	Planning Inspectorate
PTS	Permanent Threshold Shift
RoC	Review of Consents
RoI	Republic of Ireland
SAC	Special Area of Conservation
SBP	Sub-Bottom Profiler
SCANS	Small Cetaceans in the European Atlantic and North Sea
SCOS	Special Committee on Seals
SNS	Southern North Sea
SSS	Side Scan Sonar
TTS	Temporary Threshold Shift
UK	United Kingdom
USBL	Ultra-Short Baseline
UXO	Unexploded Ordnance
WTG	Wind turbine generator

Glossary of Unit Terms

dB	Decibel
kHz	Kilohertz
Tbps	Terrabyte per second

Glossary of Terminology

Applicant	Morecambe Offshore Windfarm Ltd
Application	This refers to the Applicant's application for a Development Consent Order (DCO). An application consists of a series of documents and plans which are published on the Planning Inspectorate's (PINS) website.
Generation Assets (the Project)	Generation assets associated with the Morecambe Offshore Windfarm. This is infrastructure in connection with electricity production, namely the fixed foundation wind turbine generators (WTGs), inter-array cables, offshore substation platform(s) (OSP(s)) and possible platform link cables to connect OSP(s).
Inter-array cables	Cables which link the WTGs to each other and the OSP(s).
Landfall	Where the offshore export cables would come ashore.
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	The transmission assets for the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm. This includes the OSPs[2], interconnector cables, Morgan offshore booster station, offshore export cables, landfall site, onshore export cables, onshore substations, 400kV cables and associated grid connection infrastructure such as circuit breaker infrastructure. Also referred to in this chapter as the Transmission Assets, for ease of reading.
Offshore export cables	The cables which would bring electricity from the OSP(s) to the landfall.
Offshore substation platform(s) (OSP(s))	A fixed structure located within the windfarm site, containing electrical equipment to aggregate the power from the WTGs and convert it into a more suitable form for export to shore.
Onshore export cables	The cables which would bring electricity from landfall to the onshore project substation and from the onshore project substation to a National Grid substation.
Onshore substation	Part of an electrical transmission and distribution system. Substations transform voltage from high to low, or the reverse by means of electrical transformers.
Windfarm site	The area within which the WTGs, inter-array cables, OSP(s) and platform link cables will be present.
Wind turbine generator (WTG)	A fixed structure located within the windfarm site that converts the kinetic energy of wind into electrical energy.

[2] At the time of writing the Environmental Statement (ES), a decision had been taken that the offshore substation platforms (OSPs) would remain solely within the Generation Assets application and would not be included within the Development Consent Order application for the Transmission Assets. This decision post-dated the Preliminary Environmental Information Report (PEIR) that was prepared for the Transmission Assets. The OSPs are still included in the description of the Transmission Assets for the purposes of this ES as the cumulative effects assessment carried out in respect of the Generation/Transmission Assets is based on the information available from the Transmission Assets PEIR

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11.4 The future of renewable energy

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1 Introduction

1. The Cumulative Effects Assessment (CEA) for marine mammals considers plans, projects and activities where their predicted effects have the potential to interact with the potential effects of the Morecambe Offshore Windfarm Generation Assets (the Project).

2. The identification of which individual impacts assessed for the Project have the potential for a cumulative effect on receptors (impact screening) is set out in Section 11.7.1 of **Chapter 11 Marine Mammals** (Document Reference 5.1.11) of the Environmental Statement (ES).

3. This Appendix sets out the screening process undertaken to identify other plans, projects and activities that may result in cumulative effects for inclusion in the CEA (described as 'project screening'). This includes additional information to support the screening out of certain industries and activities from the marine mammal CEA.

4. The species included in the CEA were harbour porpoise, bottlenose dolphin, common dolphin, Risso's dolphin, white-beaked dolphin, minke whale, grey seal and harbour seal.

5. For the marine mammal assessment, the projects, plans and activities screened into the CEA were located in the relevant marine mammal reference population areas (the relevant Management Units as per Inter-Agency Marine Mammal Working Group (IAMMWG) (2023) and Special Committee on Seals (SCOS) (2022) detailed in **Section 2.5**) and the overall CEA screening area.

6. Section 11.7 of **Chapter 11 Marine Mammals** details the findings of the marine mammal CEA, considering the projects, plans and activities screened into the CEA process as set out in this appendix.

2 Project screening process for CEA

7. The CEA project screening involved the identifcation of an initial list of projects, plans and activities with the potential to interact with the Project, based on the mechanism of interaction and spatial extent of the reference population for each marine mammal species (as outlined in **Section 2.5**). At a high level, the projects, plans and activities that were included in the CEA were:

    - Projects, plans and activities within the agreed reference population boundary for the given receptor
    - Offshore projects and developments, if there was the potential for cumulative effects during the construction, operational and maintenance, or decommissioning phases of the proposed projects

- Offshore windfarm (OWF) developments, if the construction and/or piling period could overlap with the proposed construction and/or piling period of the Project, based on best available information on when the OWF developments were likely to be constructed

8. A wide range of data sources and information has been used for the CEA project screening, including, but not limited to:

- Developer websites
- 4C Offshore Wind Farm Database (http://www.4coffshore.com/offshorewind/)
- Renewable UK website (http://www.renewableuk.com)
- The Crown Estate website
- Oil and gas (O&G) United Kingdom (UK) licensing rounds website (https://www.gov.uk/guidance/oil-and-gas-licensing-rounds#past-licensing-rounds)
- O&G environmental submissions and determinations (https://www.gov.uk/guidance/oil-and-gas-environmental-data)
- Cefas (Centre for Environment, Fisheries and Aquaculture Science) website (e.g. http://data.cefas.co.uk/#/View/407)
- Planning Inspectorate (PINS) National Infrastructure Planning website
- The Marine Management Organisation (MMO) public register
- European Marine Observation and Data Network (EMODnet) data
- North Sea Transition Authority Open Data

9. The initial project screening process has been based on the estimated offshore construction dates for the Project, with earliest construction in 2027. Dates were reviewed until six months prior to the submision of the Project ES alongside published information and timing of other projects in development.

10. Any plans or projects that were operational prior to the start of the Project baseline aerial surveys (which began in March 2021) have not been taken forward in the CEA, as they were considered to be part of the baseline environment.

11. The list of projects was then refined based on the level of information available for the projects to enable further assessment and consideration of potential interactions of effects. The CEA considered projects, plans and activities which had sufficient information available to undertake the assessment. Insufficient information would preclude a meaningful quantitative assessment,

and it was not appropriate to make assumptions about the detail of future projects under such circumstances.

12. Given the fast moving nature of offshore development, it is likely that new projects relevant to the assessment will arise throughout the Project DCO pre-application period. In order to finalise the CEA, a cut-off period at six months prior to the submission of the DCO (after which no more projects/activities have been included) has been applied.

13. For the marine mammal assessment, the different stages (maturity) of project development, especially for other offshore windfarm projects have been taken into account within the CEA. These project stages (outlined below) were based on the PINS (2019) Advice Note 17, and were used alongside the tiers illustrated in the Natural England Guidance (Natural England and Defra, 2022). This approach allowed for the different levels of 'uncertainty' to be taken into account in the CEA, as well as the quality of the data available (as outlined in Section 11.7 of **Chapter 11 Marine Mammals**).

2.1 Tier 1 projects

14. Tier 1 projects include:

- **I.** Operational projects, which means there was no potential for any overlap in the construction of these projects with the construction of the Project. Most Tier 1 projects were part of the baseline because they were fully operational in March 2021; and these were therefore not included in the CEA.
- **II.** Marine infrastructure projects currently under construction, and which were due to be commissioned prior to the construction of the Project. There was no potential for any overlap in the construction of these projects with the construction and piling of the Project.
- **III.** Marine infrastructure projects which have been consented, but for which construction has not yet commenced. Therefore, there was more certainty that these projects will be constructed compared to projects for which an application has not yet been determined. For consented OWF projects there was also more information on when construction was likely to be undertaken and an assessment of the potential impacts during construction activities has been provided in the project ESs, which allowed quantified assessment of the potential impacts of these projects in the CEA. However, there was still significant uncertainty associated with these projects, for example, in terms of the scale of the final development that will be constructed, construction programme dates and the likely final impacts. In particular, OWF projects aim to get consent for a maximum design scenario, based on the worst-case parameters, and

then these parameters are generally refined and reduced prior to construction.

  - As an example, consented OWFs could have possible cumulative construction impacts

- **IV.** Projects that were relevant marine infrastructure projects, and which had an application submitted to the appropriate regulatory body but that had not yet been determined, or projects that were consented but on hold at the time of assessment due to judicial challenge or appeal process. There was increased uncertainty about these projects, especially where the projects were currently on-hold, as to when or if they could be constructed and what changes could be made to the scale of the developments.

  - As an example, OWFs which have an application submitted could have possible cumulative construction impacts if approved

- **V.** Projects that were relevant marine infrastructure projects, and which had produced a Preliminary Environmental Impact Report (PEIR) and had characterisation data within the public domain. There was increased uncertainty about these projects as to when or if they could be constructed and what changes could be made to the scale of the developments.

  - As an example, OWFs which have an PEIR submitted could have possible cumulative construction impacts if approved

2.2 Tier 2 projects

15. Tier 2 projects include:

- **VI.** Relevant marine infrastructure projects that the regulatory body was expecting to be submitted for determination (e.g. projects listed under the PINS programme of projects where a Scoping Report had been submitted). For these projects, there was considerable uncertainty and not enough information to allow a robust assessment. However, following a precautionary approach, relevant OWF projects have been considered in the CEA.

  - As an example, OWFs where a Scoping Report has been submitted could have possible cumulative construction impacts if approved

2.3 Tier 3 projects

16. Tier 3 projects include:

- **VII.** Projects on the PINS Programme of Projects where a Scoping Report has not been submitted. Projects that have identified in the

relevant Development Plan (and emerging Development Plans – with appropriate weight being given as they move closer to adoption) recognising that there will be limited information available on the relevant proposals. Tier 3 also includes projects identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development was reasonably likely to come forward. Given the uncertainty of timescales and lack of maturity of project details, Tier 3 projects were typically screened out for further assessment.

2.4 Summary of stages considered in the CEA

17. A description of the project Tiers as they relate to each project stage considered in the CEA, along with their relevance to the CEA screening, is included in **Table 2.1**.

Table 2.1 Description of project stages for CEA screening with PINS Tiers (with Natural England/Defra criteria shown for reference)

PINS Tier	Natural England / Defra Tier	Project stage	Relevance for CEA screening	Types of projects
N/A	I	Built and operational projects	All built and operational projects were considered to be part of the existing baseline environment if they were operational prior to the start of the baseline surveys in March 2021.	▪ Other OWFs ▪ Marine Renewable Energy (MRE) developments (wave and tidal) ▪ Aggregate extraction and dredging ▪ Licenced disposal sites ▪ O&G development, operation and decommissioning ▪ Planned construction of sub-sea cables and pipelines ▪ Gas storage ▪ Offshore mining ▪ Carbon Capture Storage (CCS) activities ▪ Licences for Unexploded ordnance (UXO) clearance and seismic surveys
1	II	Projects under construction	Projects under construction were likely to be commissioned prior to the construction of the Project, and therefore there was no potential for any overlap in the construction of these projects with the construction and piling of the Project.	
1	III	Projects that have been consented (but construction had not yet commenced)	Relevant marine infrastructure projects which have been consented, but for which construction has not yet commenced. Therefore, there was more certainty that these projects will be constructed compared to projects for which an application has not yet been determined. For these projects, there was also more information on when construction was likely to be undertaken and an assessment of the potential impacts during construction activities has been provided in the projects' ES, which allows quantified assessment of the potential impacts of these projects in the CEA. However, there was still significant uncertainty associated with these projects, for example, in terms of the scale of the final development that will be constructed, construction programme dates and the likely final impacts. In particular, OWFs aim to get consent for a maximum design scenario, based on the worst-case parameters, and then these parameters are generally refined and reduced prior to construction.	

PINS Tier	Natural England / Defra Tier	Project stage	Relevance for CEA screening	Types of projects
			OWFs could have possible cumulative construction impacts.	
1	IV	Projects that had an application submitted to the appropriate regulatory body, but that had not yet been determined	Relevant marine infrastructure projects which had an application submitted to the appropriate regulatory body but that had not yet been determined, or projects that were consented but currently on hold due to judicial challenge or appeal process. There was increased uncertainty about these projects, especially where the projects were currently on-hold, as to when or if they could be constructed and what changes could be made to the scale of the developments. OWFs could have possible cumulative construction impacts if approved.	▪ Other OWFs ▪ MRE developments (wave and tidal) ▪ O&G development, operation and decommissioning ▪ Planned construction of sub-sea cables and pipelines ▪ Gas Storage ▪ Offshore Mining ▪ CCS activities ▪ Applications for UXO clearance and seismic surveys
1	V	Projects that had produced a PEIR and had characterisation data within the public domain	Relevant marine infrastructure projects which had submitted a PEIR to the appropriate regulatory body but that had not yet been determined, or projects that were consented but currently on hold due to judicial challenge or appeal process. There was increased uncertainty about these projects, especially where the projects were currently on-hold, as to when or if they could be constructed and what changes could be made to the scale of the developments. OWFs could have possible cumulative construction impacts if approved.	▪ Other OWFs ▪ MRE developments (wave and tidal) ▪ Planned construction of sub-sea cables and pipelines ▪ Gas Storage ▪ CCS activities

PINS Tier	Natural England / Defra Tier	Project stage	Relevance for CEA screening	Types of projects
2	VI	Projects that the regulatory body is expecting an application to be submitted for (e.g. projects listed under the PINS programme of projects)	Relevant marine infrastructure projects that the regulatory body was expecting to be submitted for determination (e.g. projects listed under the PINS programme of projects). For these projects, there was a lot of uncertainty and not enough information to allow a robust assessment. However, as a very precautionary approach, the OWFs that we were aware of at the time of assessment have been considered in the CEA. OWFs could have possible cumulative construction impacts if approved.	▪ Other OWFs ▪ MRE developments (wave and tidal) ▪ O&G development, operation and decommissioning ▪ Planned construction of sub-sea cables and pipelines ▪ Gas storage ▪ Offshore mining ▪ CCS activities
3	VII	Projects that had been identified in relevant strategic plans or programmes	Licence areas for future developments.	▪ Concept renewable projects ▪ CCS licencing rounds ▪ Potential seismic survyes ▪ Potential geophysical sureys

2.5 Screening area considered in the CEA

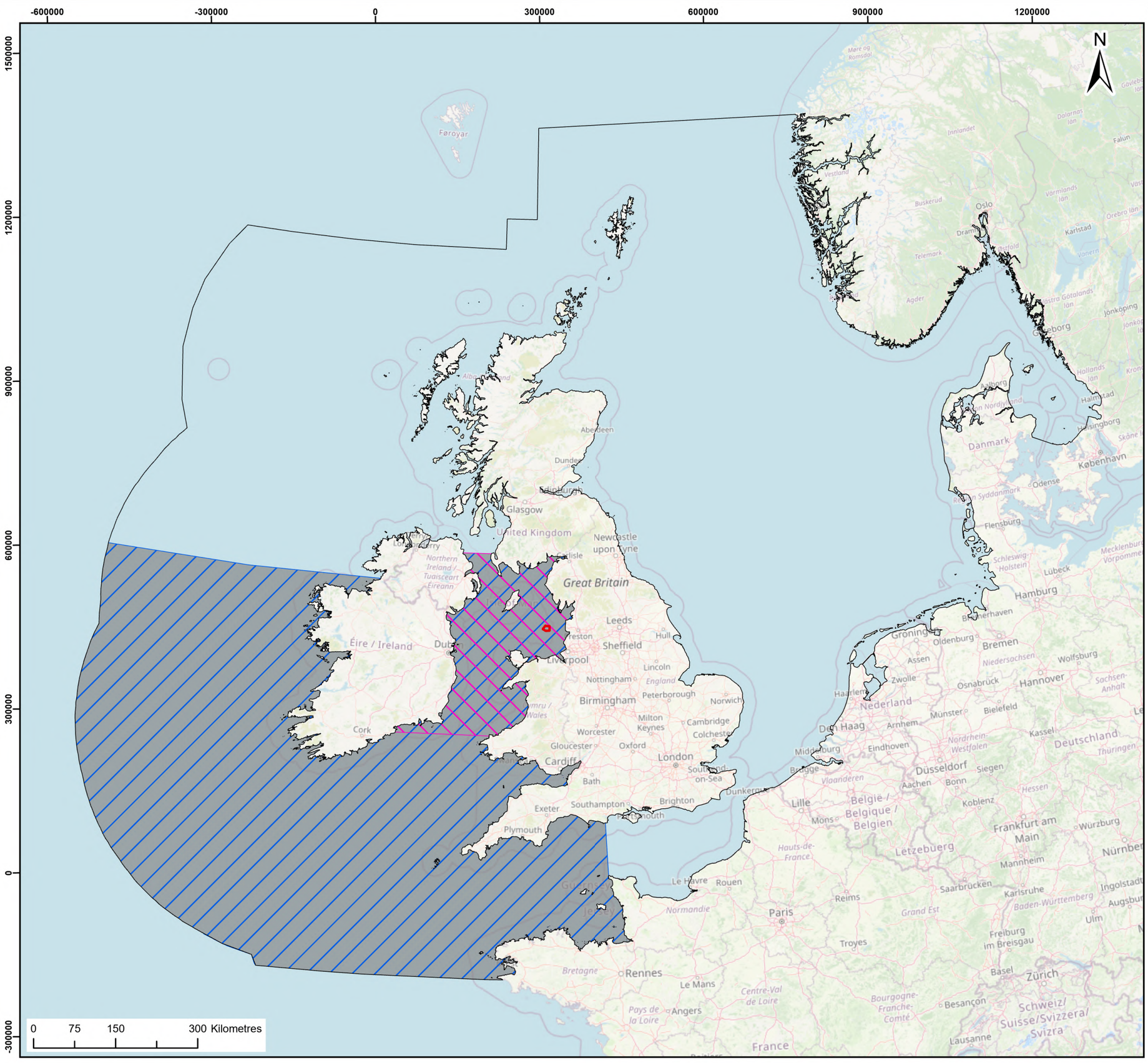
18. The study area for marine mammals has been defined on the basis that marine mammals are highly mobile and transitory in nature. It was, therefore, necessary to examine species occurrence not only within the Project windfarm site, but also over the wider area.

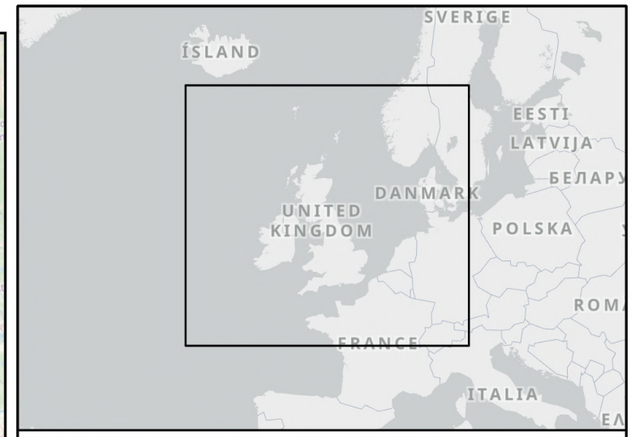
19. For the marine mammal species in the assessments, the following study areas have been defined, based on the relevant Management Units (MU) (IAMMWG, 2023) and current knowledge and understanding of the biology of each species (see **Appendix 11.2 Marine Mammal Information and Survey Data** (Document Reference 5.2.11.2).

20. As highlighted in Section 11.3.1 in **Chapter 11 Marine Mammals,** the following marine mammal MU population reference areas were relevant (defined for individual species):

- Harbour porpoise (*Phocoena phocoena*): Celtic and Irish Sea (CIS) MU
- Bottlenose dolphin (*Tursiops truncatus*): Irish Sea (IS) MU
- Common dolphin (*Delphinus delphis*): Celtic and Greater North Seas (CGNS) MU
- Risso's dolphin (*Grampus griseus*): CGNS MU
- White-beaked dolphin (*Lagenorhynchus albirostris*): CGNS MU
- Minke whale (*Balaenoptera acutorostrata*): CGNS MU
- Grey seal (GS) *Halichoerus grypus*: North-West (NW; Seal - 13) England (within which the Project is located), Southwest (SW) Scotland MU (Seal – 1), Wales MU (Seal – 12), Northern Ireland (NI; Seal - 14) MU, Isle of Man (IoM) and Republic of Ireland (RoI) east and southeast MUs
- Harbour seal (HS) *Phoca vitulina*: North-West (NW; Seal - 13)) England (within which the Project is located), Northern Ireland (NI; Seal - 14) MU

21. For the marine mammal assessment the area used for the CEA project screening was based on that of the CIS MU for harbour porpoise, common dolphin, Risso's dolphin, white-beaked dolphin, and minke whale (**Figure 2.1**) due to the extensive swimming ranges and transboundary connectivity causing a temporal overlap. The entire population from the CGNS MU has been considered in the assessment, there is no accurate way to apportion the population. As such, there is the potential for the assessment to underestimate the significance level of the impacts. For bottlenose dolphin, the CEA screening area boundary was that of the IS MU (**Figure 2.1**), and the boundaries for grey and harbour seal were those of all the relevant seal MUs mentioned above (**Figure 2.2**).





Legend:

- Morecambe Offshore Windfarm Site
- CGNS MU - White-Beaked Dolphin, Common Dolphin, Risso's Dolphin, Minke Whale
- CIS MU - Harbour Porpoise
- IS MU - Bottlenose Dolphin
- Cumulative Study Area

Report: Morecambe Offshore Windfarm: Generation Assets Environmental Statement

Title: Cumulative Study Area for Cetacean

Figure: 2.1 | Drawing No: PC1165-RHD-ES-OF-DR-Z-0095

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P01	10/11/2023	JH	SB	A3	1:7,000,000
P02	03/04/2024	JH	SB	A3	1:7,000,000

Co-ordinate system: WGS 1984 UTM Zone 30N

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650000

460000

270000

80000

N

1

14

Isle Of Man

13

East RoI

South-East RoI

12

0 25 50 100 Kilometres

Legend

- Morecambe Offshore Windfarm Site
- Management Unit - Grey Seal
- Management Unit - Harbour Seal
- Cumulative Study Area

Report: Morecambe Offshore Windfarm: Generation Assets Environmental Statement

Title: Cumulative Study Area for Grey Seals and Harbour Seals

Figure: 2.2 | Drawing No: PC1165-RHD-ES-OF-DR-Z-0096

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P02	03/04/2024	JH	SB	A3	1:2,500,000

Co-ordinate system: WGS 1984 UTM Zone 30N

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2.6 Summary of species densities

22. Where a quantitative assessment has been possible, the potential magnitude of disturbance at other projects has been based on the publicly available project-specific density estimates.

23. For those screened-in projects where project-specific densities were missing, a worst-case density was derived from either Small Cetaceans in the European Atlantic and North Sea (SCANS)-IV block CS-E, or by applying data from Waggitt *et al.* (2019), or Evans & Waggitt (2023) over the CS-E block. For bottlenose dolphin, the same data were applied over the whole IS MU, however the SCANS-IV block CS-E density presented the worst-case.

24. The cetacean worst-case densities are:

- Harbour porpoise - 0.515 per km^2 (SCANS-IV block CS-E)
- Bottlenose dolphin - 0.0104per km^2 (SCANS-IV block CS-E)
- Common dolphin - 0.028 per km^2 (Waggitt *et al.* (2019) over block CS-E)
- Risso's dolphin - 0.0006 per km^2 (Waggitt *et al*. (2019) over block CS-E)
- White-beaked dolphin - 0.007 per km^2 (Waggitt *et al*. (2019) over block CS-E)
- Minke whale - 0.0088 per km^2 (SCANS-IV block CS-E)

25. The densities for Irish OWF projects have been derived from the ObSERVE aerial surveys of cetaceans and seabirds in Irish waters (Rogan *et al*., 2018), for which the model-based density in the relevant stratum was used. SCANS-IV (Gilles *et al*., 2023) block CS-D encompassed stratum 5, thus the density presenting the worst-case was applied to Irish projects along the east coast:

- Harbour porpoise
  - ObSERVE stratum 5: 0.942 per km^2
  - ObSERVE stratum 7: 0.092 per km^2
- Bottlenose dolphin
  - SCANS-IV block CS-D: 0.2352 per km^2
  - ObSERVE stratum 7: outside the IS MU
- Common dolphin
  - SCANS-IV block CS-D: 0.0272 per km^2
  - ObSERVE stratum 7: 0.233 per km^2

- Risso's dolphin
  - ObSERVE stratum 5: 0.0032 per km^2
  - ObSERVE stratum 7: *n/a*
- White-beaked dolphin
  - ObSERVE stratum 5: *n/a*
  - ObSERVE stratum 7: 0.048 per km^2
- Minke whale
  - ObSERVE stratum 5: 0.014 per km^2
  - ObSERVE stratum 7: 0.030 per km^2

26. For grey and harbour seal, densities have been calculated for the entire area of the relevant MU, based on the grid cells that overlap with the area, using the most recent grey and harbour seal population estimates to convert the Carter *et al*. (2022) relative densities to absolute densities as follows:

- Grey seal:
  - 0.083 per km^2 for MU 1
  - 0.07 per km^2 for MU 12
  - 0.152 per km^2 for MU 13
  - 0.165 per km^2 for MU 14
  - 0.269 per km^2 for RoI E MU
  - 0.175 per km^2 for RoI SE MU
  - 0.107 per km^2 for IoM
- Harbour seal:
  - 0.0012 per km^2 for MU 13
  - 0.118 per km^2 for MU 14
  - 0.0015 per km^2 for IoM

3 Screening out of certain industries and activities

27. The noise levels associated with some activites at an industry level are such that there are no potential for cumulative effects and therefore these activities were screened out of the CEA. These activities have been described below in this section.

28. Remaining projects/activities that were further considered in the CEA project screening are set out in **Section 4**.

3.1 Underwater noise from maintenance activities for operational OWFs

29. Maintenance activities at operational OWFs, such as additional rock placement or cable reburial/replacement, would be very localised, short in duration and temporary. Noise levels from such activities would be below injury range and barely audible above vessel noise (further information has been provided in **Appendix 11.1 Underwater Noise Assessment** (Document Reference 5.2.11.1) regarding noise source levels).

30. Additionally, the potential for cumulative noise impacts arising from maintenance activities, including vessels at OWFs would be less than the cumulative impacts assessed for construction activities (including construction activities when piling was not occurring) at other OWFs. The noise impacts of the construction phase of other OWFs have been screened into the CEA, as set out in **Section 4**.

31. Underwater noise from OWFs maintainence activity has therefore been screened out from further consideration within the CEA screening.

3.2 Underwater noise from OWF decommissioning activities

32. No information was available at the time of assessment on any OWFs that could be decommissioned during the construction phase of the Project. Decommissioning impacts of OWFs has therefore been screened out from further consideration within the CEA screening.

33. The potential for cumulative impacts during the decommissioning of the Project were unknown at the time of the assessment. The potential impacts for the decommissioning of the Project, including CEA, would be assessed prior to any decommissioning activities. Decommissioning impacts of the Project have therefore also been screened out from further consideration within this CEA screening.

3.3 Underwater noise and increase of collision risk due to existing shipping

34. Shipping is considered to be part of the baseline environment. Accordingly, all shipping has been screened out from further consideration in the CEA.

35. This approach was in accordance with the PINS (2019) Advice Note 17 Cumulative Effects Assessment, which stated that:

> *"Where other projects are expected to be completed before construction of the proposed NSIP[3] and the effects of those projects are fully determined, effects arising from them should be considered as part of the baseline".*

3.4 Commercial fishing

36. Commercial fishing has been scoped out of the CEA, as it is an ongoing activity that was considered to be part of the baseline environment. Further detail on the reasoning for this screening decision has been provided below.

37. Commercial fisheries within the Irish Sea have the potential to cause a cumulative impact on marine mammals directly, by accidentally catching marine mammals as by-catch in their fishing nets, and indirectly by reducing the fish available for marine mammals to eat. Furthermore there are potential underwater noise disturbance impacts from fisheries vessel presence.

38. By-catch as a result of commercial fisheries is recognised as a historic and continuing cause of harbour porpoise mortality (OSPAR, 2017), and has therefore been a factor in shaping the size of the latest CIS MU population. The available prey resource for harbour porpoise has also been influenced by historic and ongoing commercial fishing. Noise from fishing vessels has also been considered to be part of the baseline conditions.

39. This approach was in accordance with the PINS (2019) Advice Note 17 Cumulative Effects Assessment, which stated that:

> *"Where other projects are expected to be completed before construction of the proposed NSIP and the effects of those projects are fully determined, effects arising from them should be considered as part of the baseline".*

[3] Nationally Significant Infrastructure Projects (NSIPs)

40. No specific guidance exists for the Irish Sea, however the potential for cumulative impacts associated with commercial fisheries within the Southern North Sea (SNS) Special Area of Conservation (SAC) site has been considered in the Review of Consents (RoC) Habitats Regulation Assessment (HRA) (Department for Business, Energy & Industrial Strategy (BEIS), 2020). With regard to effects on habitats, the RoC HRA stated:

"18.120 There have been no quantified assessments undertaken on the extent impacts from commercial fishing may have within the SAC and therefore information to inform this assessment is not available.

18.122 Without knowing the extent of impact on the seabed arising from the fishing industry …it is not possible to undertake an in-combination assessment that addresses all the potential impacts on the habitats within the SAC."

41. With regard to direct effects on harbour porpoise, the RoC HRA (BEIS, 2020) also stated that:

"18.203 Commercial fishing has occurred within the SAC for many years and has had, and will continue to have, direct and indirect impacts on harbour porpoise, their habitat and prey within the SAC. As the conservation status of harbour porpoise in UK waters and the SAC is considered favourable (Joint Nature Conservation Committee (JNCC), 2019; JNCC and Natural England, 2019) current and historical levels of fishing in the SAC are not considered to have affected the conservation status of the species.

18.210 There are no known plans to suggest that the level of fishing within the SAC will significantly increase over the period the consented windfarms are planned to be constructed, such that, it is predicted that the current level of impacts from fishing on harbour porpoise within the SAC will not increase."

42. Natural England's Deadline 4 Response to the Examining Authority's Further Written Questions and Requests for information for Hornsea Project 3 (15th January 2019) (page 46, Q 2.2.73) was that:

"Where there is ongoing fishing activity in the site, it is important that the impacts of the activity are captured within the assessment in the context of the conservation objectives of the affected designated site(s). This assessment will likely take place as part of the baseline characterisation of the development area, however, as fishing activity is mobile, variable, and subject to change, there may be instances whereby fishing impacts are not adequately captured in the baseline characterisation and therefore may need to be considered as part of the in-combination assessment. This could be due to a change in effort; change in management; or a change in legislation amongst other things, and fishery managers (i.e. Marine Management Organisation (MMO)) would be best placed to advise on this.

In relation to the assessment of impacts on the SNS SAC, Natural England……. are not currently aware of anything that would have significantly altered the levels of fishing activity within the site; any current plans for new fisheries, or changes to existing fisheries that have not been

captured, but we would look to fisheries managers to advise more definitively on these points."

43. The RoC HRA (BEIS, 2020) suggested that by-catch had not affected a population considered to be in Favourable Conservation Status (FCS), whilst the above response from Natural England acknowledged that there was then no evidence to suggest that the existing levels of fishing would significantly alter in the future. As previously stated, no guidance exists specific to the Irish Sea and as such, the principles laid out for the SNS SAC have been applied to the Irish Sea and the marine mammal populations therein.

44. The potential impacts from commercial fishing (including by-catch and loss of prey species) and from the underwater noise associated with vessels were therefore considered to be a part of the environmental baseline for marine mammals of the Irish Sea, including for harbour porpoise, and have therefore been screened out of further assessment.

4 CEA project screening

4.1 Screening of other offshore windfarms

45. Where the construction phases of other OWFs could overlap with the construction phase of the Project and where sufficient information and certainty in project programmes allowed for a meaningful assessment, then these OWF projects have been considered for potential cumulative effects. This included consideration of projects for which consent applications were in preparation.

46. Where possible, known dates of OWF construction were used to assess whether there was the potential for construction periods to overlap with the Project. Where construction dates were not known, it was assumed that there was no overlap with either Project construction or operation as the information was too limited to make assumptions on the OWF's timelines. For all OWF projects where the consent application had been submitted, the possible construction or piling windows assumed in the CEA were based on the best available information.

47. The initial screening process identified a list of 100 OWF projects and five early project development zones within the relevant screening areas for harbour porpoise, bottlenose dolphin, common dolphin, Risso's dolphin, white-beaked dolphin, minke whale, grey seal or harbour seal (**Table 4.1**).

48. OWFs were considered part of the baseline if they were operational at the time when Project site-specific surveys commenced (in March 2021). From a total of 14 OWFs identified as being operational at this time, 12 were UK projects and two were Irish projects. These were therefore considered part of the baseline and screened out at this stage. One further project, Saint-Brieuc,

became operational in October 2023, and was screened into the operational scenario.

49. Four Tier 1 OWF projects were identified that either had submitted applications, were consented, or were under construction in the UK. Only one project, TwinHub, was likely to have completed its piling programme prior to piling activities at the Project and would be operational by the time the Project commences construction. The remaining three projects identified with the potential for overlap of piling activities at the same time as the Project were:

- Awel y Môr
- Erebus
- White Cross

50. A total of 81 OWF projects were identified as in early development (i.e. Tier 2 and 3), with no submitted planning application at the time of this assessment.

51. Of these 81 OWFs, 16 were Tier 2 projects, of which seven were in the UK and nine were Irish OWF projects. Three of these Tier 2 projects (proposed to be located in the Eastern Irish Sea) were identified as having a published PEIR:

- Mona Offshore Wind Project
- Morgan Offshore Wind Project Generation Assets
- Morgan and Morecambe Offshore Windfarms: Transmission Assets

52. The remaining Tier 2 projects had submitted a Scoping Report to the regulators for their Scoping Opinion:

- Mooir Vannin OWF
- Llŷr 1 Floating OWF
- Llŷr 2 Floating OWF
- Pembrokeshire Demonstration Zone Floating OWF
- Arklow Bank Phase 2
- Codling Wind Park OWF
- Dublin Array OWF
- Inis Ealga Floating OWF
- North Irish Sea Array OWF
- Oriel OWF
- Sceirde (Skerd) Rocks OWF

- Shelmalere OWF
- Western Star Floating OWF

53. Arklow Bank Phase 2, Shelmalere and Inis Ealga OWFs were awarded a Maritime Area Consent (MAC) in 2022, but were not successful in the Offshore Renewable Electricity Support Scheme (ORESS) auction. As such, there is uncertainty on the consenting timescale for these projects and it was considered there would be no construction overlap with the Project. These projects were therefore screened out of the CEA.

54. The four Irish projects that were successful in the ORESS auction were considered to have the potential for construction overlap with the construction phase of the Project and were therefore screened into the CEA:

- Codling Wind Park OWF
- Dublin Array OWF
- North Irish Sea Array OWF
- Sceirde (Skerd) Rocks OWF

55. Of the remaining nine Tier 2 OWFs, four had unknown or vague consenting and construction windows and were therefore screened out of the CEA. Two floating OWFs (Llŷr 1 and 2) were due to become operational before the Project commences construction and therefore were considered in the CEA operational scenario.

56. The three Tier 2 projects with pubilished PEIRs, were identified to have potential for an overlap in piling activity windows with the Project piling:

- Mona Offshore Wind Project
- Morgan Offshore Wind Project Generation Assets
- Morgan and Morecambe Offshore Windfarms: Transmission Assets

57. Based on information available at the time of the screening, four Tier 1 or 2 OWFs were expected to be fully constructed and operational prior to construction at the Project. These projects were therefore screened into the operational scenario:

- Llŷr 1 OWF
- Llŷr 2 OWF
- Saint – Brieuc OWF
- TwinHub OWF

58. Of the 65 Tier 3 projects, 13 were identified with the potential for overlap in construction periods with the Project construction period. Given the

uncertainity of these projects coming forward and the associated scheduling, no Tier 3 projects were screened into the CEA. The results of the screening for UK OWFs are presented in **Table 4.1**.

59. Five project development areas (PDAs) of which two are in the UK and three are in Ireland were identified during the project screening process (listed at the end of **Table 4.1**). PDAs are broad areas of seabed that define the boundaries in which there is potential for floating offshore wind development. As such, the PDAs are considered to be in a very early planning stage and thus have been screened out from further assessment.

Table 4.1 CEA Screening for all offshore windfarm projects within the relevant spatial area for each species and potential to overlap with the Project construction (2027-2029) (HP = harbour porpoise, BND = bottlenose dolphin, CGNS = Celtic and Greater North Seas, RoI = Republic of Ireland, Y = Yes, N = No, Un = Unknown)

Name of Project	Country	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Construction / piling window	Date operational	Potential for overlap of OWF construction with Project construction[4]?
Tier 1												
Arklow Bank Phase 1	Ireland	Operational	Y	Y	Y	N	N	N	Y	N/A	2004	No - included in baseline
Awel y Môr	UK	Consent awarded	Y	Y	Y	Y	N	N	N	2027 – 2029	2030	Yes - included in piling scenario
Barrow	UK	Operational	Y	Y	Y	N	Y	N	N	N/A	2006	No - included in baseline
Burbo Bank	UK	Operational	Y	Y	Y	N	Y	N	N	N/A	2007	No - included in baseline
Burbo Bank Extension	UK	Operational	Y	Y	Y	N	Y	N	N	N/A	2017	No - included in baseline
Erebus (Floating)	UK	Application submitted	Y	N	Y	Y	N	N	N	Q2 2027	2027	Yes - included in piling scenario
Gwynt y Môr	UK	Operational	Y	Y	Y	Y	Y	N	N	N/A	2015	No - included in baseline
North Hoyle	UK	Operational	Y	Y	Y	Y	N	N	N	N/A	2004	No - included in baseline

[4] Construction window of 2027-2029

Name of Project	Country	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Construction / piling window	Date operational	Potential for overlap of OWF construction with Project construction[4]?
Ormonde	UK	Operational	Y	Y	Y	N	Y	N	N	N/A	2012	No - included in baseline
Rhyl Flats	UK	Operational	Y	Y	Y	Y	N	N	N	N/A	2009	No - included in baseline
Robin Rigg	UK	Operational	Y	Y	Y	N	Y	Y	N	N/A	2010	No - included in baseline
Saint-Brieuc	France	Operational	Y	N	N	N	N	N	N	2022 – 2023	2023	No - included in operational scenario
SmartBay	Ireland	Operational	Y	N	Y	N	N	N	N	N/A	2018	No - included in baseline
TwinHub (Floating)	UK	Scoping report submitted	Y	N	Y	N	N	N	N	Q3 2023 – 2024	2026	No - included in operational scenario
Walney Extension	UK	Operational	Y	Y	Y	N	Y	N	N	N/A	2018	No - included in baseline
Walney Phase 1	UK	Operational	Y	Y	Y	N	Y	N	N	N/A	2011	No - included in baseline
Walney Phase 2	UK	Operational	Y	Y	Y	N	Y	N	N	N/A	2012	No - included in baseline
West of Duddon Sands	UK	Operational	Y	Y	Y	N	Y	N	N	N/A	2014	No - included in baseline

Name of Project	Country	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Construction / piling window	Date operational	Potential for overlap of OWF construction with Project construction[4]?
White Cross (Floating)	UK	ES submitted	Y	N	Y	N	N	N	N	Q2 2025-Q3 2027	2027	Yes - included in piling scenario
Tier 2												
Arklow Bank Phase 2	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	Y	Un	2028	No, limited info available
Codling	Ireland	Scoping report submitted	Y	Y	Y	N	N	N	Y	2026 – 2028	2029	Yes - included in construction scenario
Dublin Array	Ireland	Early Planning	Y	Y	Y	N	N	N	Y	2026 – 2028	2028	Yes - included in construction scenario
Inis Ealga	Ireland	Scoping report submitted	Y	N	Y	N	N	N	Y	Un	2030	No, limited info available
Llŷr 1 (Floating)	UK	Scoping report submitted	Y	N	Y	Y	N	N	N	Q3 2025	2027	No - included in operational scenario
Llŷr 2 (Floating)	UK	Scoping report submitted	Y	N	Y	Y	N	N	N	Q3 2025	2027	No - included in operational scenario
Mona Offshore Wind Project	UK	PEIR published	Y	Y	Y	Y	N	N	N	2026/ 27	2028/ 29	Yes - included in piling scenario

Name of Project	Country	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Construction / piling window	Date operational	Potential for overlap of OWF construction with Project construction[4]?
Mooir Vannin	UK	Scoping report submitted	Y	Y	Y	N	Y	N	N	Q1 – Q4 2032	2033	No, Project would be operational prior to Mooir Vannin construction
Morgan and Morecambe Offshore Windfarms: Transmission Assets	UK	PEIR published	Y	Y	Y	N	Y	N	N	2026/ 27	2028/ 29	Yes - included in piling scenario
Morgan Offshore Wind Project Generation Assets	UK	PEIR published	Y	Y	Y	N	Y	N	N	2026/ 27	2028/ 29	Yes - included in piling scenario
North Irish Sea Array	Ireland	Scoping report submitted	Y	Y	Y	N	N	N	Y	2025	2028/ 29	Yes - included in construction scenario
Oriel	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	Y	Un	Un	No, limited info available
Pembroke-shire Demon-stration Zone (Floating)	UK	Scoping report submitted	Y	N	Y	N	N	N	N	Un	Un	No, limited info available

Name of Project	Country	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Construction / piling window	Date operational	Potential for overlap of OWF construction with Project construction[4]?
Sceirde Rocks Windfarm	Ireland	Concept/ Early Planning	Y	N	Y	N	N	N	Y	2026 – 2029	2030	Yes - included in construction scenario
Shelmalere	Ireland	Scoping report submitted	Y	Y	Y	N	N	N	Y	Un	2030	No, limited info available
Western Star (Floating)	Ireland	Scoping report submitted	Y	N	Y	N	N	N	Y	Un	Un	No, limited info available
Tier 3												
ANIAR Offshore Array - phase 1	Ireland	Concept & Early Planning	Y	N	Y	N	N	N	N	Un	Un	No -Tier 3 limited info available
Atlantic Marine Energy Test Site	Ireland	Concept & Early Planning	Y	N	Y	N	N	N	N	Un	Un	No -Tier 3 limited info available
Banba Wind	Ireland	Concept & Early Planning	Y	N	Y	N	N	N	Y	Un	2030	No -Tier 3 limited info available
Blackwater	Ireland	Concept & Early Planning	Y	N	Y	N	N	N	Y	Un	2030	No -Tier 3 limited info available

Name of Project	Country	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Construction / piling window	Date operational	Potential for overlap of OWF construction with Project construction[4]?
Bore Array OWF	Ireland	Concept & Early Planning	Y	N	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available
Braymore Wind Park (Setanta)	Ireland	Concept & Early Planning	Y	Y	Y	N	N	N	Y	Un	2030	No -Tier 3 limited info available
Celtic Deep phase 1 (Floating)	UK	Concept & Early Planning	Y	N	Y	Y	N	N	N	Un	2030	No -Tier 3 limited info available
Celtic Deep phase 2 (Floating)	UK	Concept & Early Planning	Y	N	Y	Y	N	N	N	Un	2030	No -Tier 3 limited info available
Celtic Horizon	Ireland	Concept & Early Planning	Y	N	Y	N	N	N	Y	Un	2030	No – Tier 3 limited info available
Celtic Offshore Renewable Energy	Ireland	Concept & Early Planning	Y	N	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available
Celtic Sea Array	Ireland	Concept & Early Planning	Y	N	Y	N	N	N	Y	Un	2030	No -Tier 3 limited info available
Celtic Sea Ocean Winds	UK	Concept & Early Planning	Y	N	Y	N	N	N	N	Un	2031	No -Tier 3 limited info available

Name of Project	Country	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Construction / piling window	Date operational	Potential for overlap of OWF construction with Project construction[4]?
Clarus	Ireland	Concept & Early Planning	Y	N	Y	N	N	N	Y	Un	2030	No -Tier 3 limited info available
Clogherhead (Cooley Point)	Ireland	Concept & Early Planning	Y	Y	Y	N	N	Y	Y	2023	2027	No, unlikely to overlap due to timescale uncertainity
Cork Offshore Wind	Ireland	Concept & Early Planning	Y	N	Y	N	N	Y	Y	Un	Un	No -Tier 3 limited info available
Draig y Môr (Floating)	UK	Concept & Early Planning	Y	Y	Y	Y	N	N	N	Un	2030	No -Tier 3 limited info available
Dylan (Floating)	UK	Concept & Early Planning	Y	N	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available
Dylan Extension	UK	Concept & Early Planning	Y	N	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available
East Celtic	UK	Concept & Early Planning	Y	N	Y	N	N	N	Y	Un	2030	No -Tier 3 limited info available
Emerald	Ireland	Concept/ Early Planning	Y	N	Y	N	N	N	Y	Un	2038	No -Tier 3 limited info available

Name of Project	Country	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Construction / piling window	Date operational	Potential for overlap of OWF construction with Project construction[4]?
Emerald (demonstration) (Floating)	Ireland	Concept/ Early Planning	Y	N	Y	N	N	N	Y	Un	2030	No -Tier 3 limited info available
EOLINK Pilot Wind Farm (Floating)	France	Concept & Early Planning	Y	N	Y	N	N	N	N	Un	2024	No -Tier 3 limited info available
Erebus commercial (Floating)	UK	Concept/ Early Planning	Y	N	Y	Y	N	N	Y	Un	2032	No -Tier 3 limited info available
Greystone	Ireland	Concept & Early Planning	Y	Y	Y	N	N	N	Y	2027-2028	2030	No -Tier 3 limited info available
Helvick Head	Ireland	Concept & Early Planning	Y	N	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available
Ilen Array	Ireland	Concept & Early Planning	N	Y	N	N	N	Y	N	Un	Un	No -Tier 3 limited info available
Inis Offshore Wind Leinster	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	Y	Un	2030	No -Tier 3 limited info available
Inis Offshore Wind Kerry	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available

Name of Project	Country	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Construction / piling window	Date operational	Potential for overlap of OWF construction with Project construction[4]?
Inis Offshore Wind Kinsale	Ireland	Concept/ Early Planning	Y	N	Y	N	N	N	N	2028	2030	No -Tier 3 limited info available
Inis Munster Sea Wind	Ireland	Concept/ Early Planning	Y	N	Y	N	N	N	N	Un	Un	No -Tier 3 limited info available
Inis Offshore Wind Wicklow	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	Y	2028	2030	No -Tier 3 limited info available
Inis Offshore Windfarm Péarla	Ireland	Concept/ Early Planning	Y	N	Y	N	N	N	N	2028	2031	No -Tier 3 limited info available
Kilmichael Point	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available
Latitude 52	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available
Lir Offshore Array	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	N	Un	Un	No -Tier 3 limited info available
Llywelyn	UK	Concept/ Early Planning	Y	N	Y	N	N	N	N	Floating	2029	No -Tier 3 limited info available

Name of Project	Country	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Construction / piling window	Date operational	Potential for overlap of OWF construction with Project construction[4]?
Loch Garman	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available
Mac Lir Offshore Wind	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	Y	2027-2030	2030	No -Tier 3 limited info available
Merlin (Floating)	UK	Concept/ Early Planning	Y	N	Y	N	N	N	N	Un	2028	No -Tier 3 limited info available
Myrddin	UK	Concept/ Early Planning	Y	N	Y	Y	N	N	N	2029	2031	No -Tier 3 limited info available
Nomadic Offshore Wind (Floating)	UK	Concept/ Early Planning	Y	N	Y	N	N	N	N	Un	2030	No -Tier 3 limited info available
North Celtic Sea	Ireland	Concept/ Early Planning	Y	N	Y	N	N	N	Y	2026 – 2029	2029	No -Tier 3 limited info available
North Channel Wind 1 (Floating)	UK	Concept/ Early Planning	Y	Y	Y	N	N	Y	N	Un	2030	No -Tier 3 limited info available
North Channel Wind 2	UK	Concept/ Early Planning	Y	Y	Y	N	N	Y	N	Un	2029	No -Tier 3 limited info available

Name of Project	Country	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Construction / piling window	Date operational	Potential for overlap of OWF construction with Project construction[4]?
(Floating)												
North East Wind	UK	Concept/ Early Planning	Y	Y	Y	N	N	N	N	2027-2030	2030	No -Tier 3 limited info available
North Irish Sea Array 2	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	N	2025	2028	No -Tier 3 limited info available
North Irish Sea Array 3	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	N	Un	Un	No -Tier 3 limited info available
Olympic Wind	UK	Concept & Early Planning	Y	Y	Y	N	N	Y	N	Un	Un	No -Tier 3 limited info available
Réalt na Mara	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	N	2028	2030	No -Tier 3 limited info available
Rian Offshore Array (Phase 1)	Ireland	Concept/ Early Planning	Y	N	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available

Name of Project	Country	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Construction / piling window	Date operational	Potential for overlap of OWF construction with Project construction[4]?
Rian Offshore Array (Phase 2)	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available
Sea Stacks	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	Y	Un	2030	No -Tier 3 limited info available
South East Wind	Ireland	Concept/ Early Planning	Y	N	Y	N	N	N	Y	2027-2030	2030	No -Tier 3 limited info available
South Irish Sea	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	Y	2026-2029	2029	No -Tier 3 limited info available
South West Wind	Ireland	Concept/ Early Planning	Y	N	Y	N	N	N	Y	2027-2030	2030	No -Tier 3 limited info available
Sunrise Wind	Ireland	Concept/ Early Planning	Y	Y	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available
Trivane Demonstrator (Floating)	UK	Concept/ Early Planning	Y	N	Y	N	N	N	N	Un	Un	No -Tier 3 limited info available
Tulca Offshore Array Phase 1	Ireland	Concept/ Early Planning	Y	N	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available

Name of Project	Country	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Construction / piling window	Date operational	Potential for overlap of OWF construction with Project construction[4]?
Urban Sea (Floating)	Ireland	Concept/ Early Planning	Y	N	N	N	N	N	Y	Un	Un	No -Tier 3 limited info available
Valentia	Ireland	Concept/ Early Planning	Y	N	N	N	N	N	Y	Un	Un	No -Tier 3 limited info available
Valentia Phase 2	Ireland	Concept/ Early Planning	Y	N	N	N	N	N	Y	Un	Un	No -Tier 3 limited info available
Voyage Offshore Array	Ireland	Concept/ Early Planning	Y	N	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available
Wexford	Ireland	Concept/ Early Planning	Y	N	Y	Y	N	N	Y	Un	Un	No -Tier 3 limited info available
Project Development Areas (PDA) – Tier 3												
Areas of Search 1, 3, 4, 5 (Floating)	UK	Crown Estate Leasing Round 5	Y	N	Y	Y	N	N	N	Un	Un	No -Tier 3 limited info available
PDA 1, 2 and 3 (within Area of Search 2) (Floating)	UK	Crown Estate Leasing Round 5	Y	N	Y	Y	N	N	N	Un	Un	No -Tier 3 limited info available

Name of Project	Country	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Construction / piling window	Date operational	Potential for overlap of OWF construction with Project construction[4]?
Celtic Sea East Broad Area	Irleand	OREDP II *	Y	N	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available
Mid-West Broad Area Floating Wind	Ireland	OREDP II *	Y	N	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available
North-West Broad Area Floating Wind	Ireland	OREDP II *	Y	N	Y	N	N	N	Y	Un	Un	No -Tier 3 limited info available

* Offshore Renewable Energy Development Plan II

4.2 Screening of marine renewable energy (wave and tidal) projects

60. Both UK and European marine renewable energy (MRE) projects (e.g. wave and tidal) have been considered in the CEA screening in regard to both underwater noise and collision risk.

61. Piling is highly unlikely to be used during the installation of wave and tidal projects. The installation of wave/tidal projects has typically been carried out using drilled pins or gravity bases. Given percussive piling is not anticipated to be used as an installation method for these projects, the noise impacts during construction would have a very limited impact range, especially compared to offshore windfarms.

62. The construction of wave or tidal developments is highly unlikely to significantly contribute to the cumulative impacts of the disturbance of marine mammals from underwater noise sources. However, any projects within the CEA screening areas which have the potential for overlap in construction windows with that of the Project have been screened in for further assessment.

63. MRE projects have also been considered for potential operational cumulative effects, if this phase could overlap with the proposed construction of the Project, and if sufficient information was available to determine this. Including operational MREs is a precautiounary approach as operation and maintenance acivities are unlikely to contribute to the cumulative effects of the disturbance of marine mammals from underwater noise sources.

64. Potential impacts during the operation of tidal projects include collision risk. However, tidal projects would be required to have effective mitigation and monitoring in place to reduce the collision risk for marine mammals. Wave energy devices have fewer submerged moving parts, and are mostly located above the water surface, thus presenting a much lower risk to marine mammals (Greaves *et al*., 2016). Collision risk from tidal and wave devices have therefore been screened out of the CEA.

65. Where no information was known on the potential construction phases of the other MRE projects, it was assumed that all projects currently operational, under construction, or consented would have completed construction prior to the construction of the Project.

66. Projects that had been cancelled or were inactive were not screened into the CEA.

67. Three MRE projects were identified that were operational prior to the commencement of the Project baseline surveys (in March 2021). These were

therefore considered to be part of the baseline and screened out from further assessment in the CEA.

68. Two Tier 2 projects, of which one is in the UK and one in France, were identified with the potential for an overlap of their operation whilst the Project was under construction:

- FloWatt Tidal
- Morlais

69. A number of Tier 3 MRE projects with the potential for overlap with the proposed construction of the Project were identified, but these projects were still in the planning phase at the time of the screening/assessment and timelines were likely to change. MREs with unknown construction windows were screened out.

70. The results of the MRE project screening are presented in **Table 4.2**.

Table 4.2 CEA screening for marine renewable energy projects within relevant spatial areas and potential overlap with the Project construction (2027-2029) (HP = harbour porpoise, BND = bottlenose dolphin, CGNS = Celtic and Greater North Seas, RoI = Republic of Ireland, NI = Northern Ireland, Y = Yes, N = No, Un = Unknown)

Name of project	Country	Type of project	Project status (at the time of assessment)	HP - CIS	BND - IS	CGNS	Seal - 12	Seal - 13	Seal - 14	Seal RoI	Potential for overlap of MRE construction with the Project construction?[5]	Potential for overlap of MRE operation with Project construction[5]?
Tier 1												
Holyhead Deep 0.5MW Site	UK	Tidal	Active/In Operation	Y	Y	Y	Y	Y	N	Y	No	No - included in baseline
Strangford Lough	NI	Tidal	Active/In Operation	Y	Y	Y	N	N	Y	N	No	No - included in baseline
La Rance	France	Tidal	Active/In Operation	Y	N	Y	N	N	N	N	No	No - included in baseline
META Dale Road	UK	Wave	Active/In Operation	Y	Y	Y	Y	Y	N	N	No	No - these testing sites have been used by developers for testing, but their operation cannot be forseen at this point.
META East Pickard Bay	UK	Wave	Active/In Operation	Y	Y	Y	Y	Y	N	N	No	
META Warrior Way	UK	Tidal	Active/In Operation	Y	Y	Y	Y	Y	N	N	No	

[5] Construction window of 2027-2029

Name of project	Country	Type of project	Project status (at the time of assessment)	HP - CIS	BND - IS	CGNS	Seal - 12	Seal - 13	Seal - 14	Seal RoI	Potential for overlap of MRE construction with the Project construction?[5]	Potential for overlap of MRE operation with Project construction[5]?
Tier 2												
FloWatt Tidal Pilot	France	Tidal	Consented	Y	N	Y	N	N	N	N	No	Yes - expected in 2026
Holyhead Deep	UK	Tidal	Consented	Y	Y	Y	Y	Y	N	Y	No	Unknown
Morlais	UK	Tidal	Consented	Y	Y	Y	Y	Y	N	Y	No	Yes - expected in 2027
Tier 3												
Blue Eden Tidal Lagoon	UK	Tidal	In planning	Y	Y	Y	Y	Y	N	N	No	No -Tier 3 limited info available
Colwyn Bay Lagoon	UK	Tidal	Pre-planning/ concept	Y	Y	Y	Y	N	N	N	Un	No -Tier 3 limited info available
Deep Green OceanKite	RoI	Tidal	Pre-planning/ concept	Y	Y	Y	Y	N	N	Y	No	No - Marine licence only until 2025
Flex Marine Swimmer Turbine Demonstration	RoI	Tidal	Pre-planning/ concept	Y	Y	Y	Y	N	N	Y	No	No - Marine licence only until 2025
mWave Bombora	UK	Wave	In planning	Y	N	Y	Y	N	N	N	Un	No -Tier 3 limited info available

Name of project	Country	Type of project	Project status (at the time of assessment)	HP - CIS	BND - IS	CGNS	Seal - 12	Seal - 13	Seal - 14	Seal RoI	Potential for overlap of MRE construction with the Project construction?[5]	Potential for overlap of MRE operation with Project construction[5]?
Pembrokeshire Demonstrator Zone	UK	Wave	Scoping reports submitted	Y	Y	Y	Y	N	N	N	Un	No -Tier 3 limited info available
Port of Mostyn Tidal Lagoon	UK	Tidal	Pre-planning/ concept	Y	Y	Y	Y	N	N	N	Potentially in 2028	No -Tier 3 limited info available
Ramsey Sound	UK	Tidal	In planning	Y	N	Y	Y	N	N	N	Un	No -Tier 3 limited info available
Saoirse Wave Energy	RoI	Wave	Early Development	Y	N	Y	N	N	N	Y	Yes, potentially in 2028/29	No -Tier 3 limited info available
WaveHub	UK	Wave	Early Development	Y	Y	N	N	N	N	N	Un	No -Tier 3 limited info available

4.3 Screening of aggregate and dredging projects

71. Aggregate extraction and dredging projects considered during the CEA screening included operational projects (production agreement areas) and those UK based projects expected to be used in the future (exploration and option areas) (see **Table 4.3**). There were no projects in the Scottish and the Northern Irish part of the CIS MU Screening area.

72. No European projects (*i.e* France and RoI as part of the CIS MU) were screened into the CEA due to a lack information on project locations, phases, and programmes. Furthermore, it was assumed that the impact ranges from such activities would only cause localised effects on short, perhaps medium-term behavioural reactions and masking of low-frequency calls in baleen whales and seals (Todd *et al*., 2015).

73. Dredging activities could cause local displacement as demonstrated in a study on bottlenose dolphins in Aberdeen harbour. The study found that if dredging intensity increased, dolphins spent less time in the harbour, despite high baseline levels of disturbance and the presence of a qualitative foraging habitat (Pirotta *et al*., 2013). Indication that harbour porpoise were displaced within 600m of dredging operations was evident through more qualitative data (Diederichs *et al*., 2010), as outlined in the BEIS (2020) RoC HRA for the SNS SAC.

74. When in transit, noise arising from dredging vessels is comparable with that from similar sized vessels and can therefore be considered as part of the baseline noise levels.

75. When undertaking dredging activities, higher levels of broadband noise at frequencies above 1kHz are produced due to the impact or abrasion of aggregate material passing through the draghead, suction pipe and pump. The overall level of noise was found to be higher when extracting gravel compared to when extracting sand (Robinson *et al*., 2011).

76. Taking into account the small potential noise impact ranges and distances of the aggregate extraction and dredging projects from the Project, the potential for contribution to cumulative impacts is very small. Therefore, risk of Permanent Threshold Shift (PTS) or Temporary Threshold Shift (TTS) for all marine mammal species from aggregate extraction and dredging has been screened out from further consideration in the CEA.

77. Given marine mammals have the potential to be disturbed from such activities, as a worst-case, dredging and extraction projects that have an overlap with the construction period of the Project were screened in for disturbance effects.

78. All aggregate extraction and dredging projects were considered to be part of the existing baseline environment if operational prior to the start of the

baseline surveys for the Project, in March 2021. Out of the initial list of nine aggregate projects within the CEA screening area, seven were screened out as being operational prior to March 2021.

79. Two projects became operational just after the baseline surveys and have been screened in for assessing disturbance in the CEA:

- North Bristol Deep 1601
- North Bristol Deep 1602

80. The results of the screening of aggregate extraction and dredging projects is presented in **Table 4.3**.

Table 4.3 CEA Screening for UK Aggregate and Dredging Projects within the Relevant Spatial Areas and Potential to Overlap with the Project Construction (2027-2029) (HP = harbour porpoise, BND = bottlenose dolphin, CGNS = Celtic and Greater North Seas, RoI = Republic of Ireland, Y = Yes, N = No)

Name of project	Area number	Status (at the time of assessment)	Licence start date	Licence end date	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Potential for overlap of aggregate extraction with the Project construction?[6]
Culver Extension	526	Production Agreement Area	Jan-19	Dec-34	Y	N	Y	N	Y	N	Y	No - included in baseline
Hilbre Swash	393	Production Agreement Area	Jan-15	Dec-29	Y	Y	Y	N	Y	N	N	No - included in baseline
Liverpool Bay	457	Production Agreement Area	Dec-12	Marine licence submitted to extend to beyond 2035	Y	Y	Y	N	Y	N	N	No - included in baseline
Liverpool Bay	1808	Exploration and Option Area	Sep-19	Aug-24	Y	Y	Y	N	Y	N	N	No - included in baseline
NOBEL Banks	476	Production Agreement Area	Dec-12	Jun-31	Y	N	Y	Y	N	N	N	No - included in baseline

[6] Construction window of 2027-2029

Name of project	Area number	Status (at the time of assessment)	Licence start date	Licence end date	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Potential for overlap of aggregate extraction with the Project construction?[6]
North Bristol Deep	1602	Production Agreement Area	Jul-21	Apr-30	Y	N	Y	Y	N	N	N	Yes
North Bristol Deep	1601	Production Agreement Area	Jul-21	Apr-30	Y	N	Y	Y	N	N	N	Yes
North Middle Ground	455	Production Agreement Area	Jul-16	Jun-31	Y	N	Y	Y	N	N	N	No - included in baseline
North Middle Ground	459	Production Agreement Area	Jul-16	Jun-31	Y	N	Y	Y	N	N	N	No - included in baseline

4.4 Screening of licenced disposal sites

81. The licenced marine disposal sites that have been screened cover the whole of the UK, which includes data from England, Wales, Scotland, Northern Ireland as well as Jersey, Guernsey and Isle of Man (Cefas, 2022).

82. No European projects (i.e France and RoI as part of the CIS MU) were screened in due to a lack of information and range of effect.

83. Of the 108 licensed disposal sites identified, 34 are considered ‘disused’, indicating that there were no disposals made in more than 5 years and were therfore screened out. Of the remaining 74 ‘open’ sites, 22 disposal sites were considered to be part of the existing baseline environment, as they were all operational prior to the start of the Project baseline surveys in March 2021, and have been screened out from further assessment.

84. The remaining 42 ‘open’ disposal sites had no information listed regarding dates when the sites became first operational. Due to a lack of information, consideration of pathways and assumption that many would have been operational prior to the 2021 surveys, these sites have not been considered further in the assessment.

85. Five disposal sites, associated with the Erebus OWF, were opened after the Project baseline surveys, and have a marine licence application with Natural Resources Wales. There is the potential for an indirect impact on marine mammal receptors through the disposal of sediment. Water quality can be affected through sediment plumes, which subsequently can affect prey species. As outlined in the ES for the Erebus OWF, all impacts with regard to sediment disposal on prey species or water quality have been assessed as not significant in EIA terms (Blue Gem Wind, 2021).

86. As these five sites have been indirectly assessed as not significant for marine mammals as part of the Erebus OWF, they have been screened out from further assessment from the CEA.

87. No disposal sites were screened in to the CEA.

88. The results of the screening of licenced disposal sites are presented in **Table 4.4**.

Table 4.4 CEA Screening for disposal sites within the Relevant Spatial Areas and Potential to Overlap with the Project Construction (2027-2029) (HP = harbour porpoise, BD = bottlenose dolphin, CGNS = Celtic and Greater North Seas, RoI = Republic of Ireland, IoM = Isle of Man, Y = Yes, N = No)

Name of project	Reference	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Operational prior to baseline surveys in 2021[7]
Dolau Beach	IS014	Open	Y	Y	Y	Y	N	N	N	Yes
Newquay Track	IS015	Open	Y	Y	Y	Y	N	N	N	Unknown
Spending Harbour	ISO16	Open	Y	Y	Y	Y	N	N	N	Unknown
South Beach	IS017	Open	Y	Y	Y	Y	N	N	N	Unknown
Shell Lagoon, Llanbedr	IS018	Open	Y	Y	Y	Y	N	N	N	Unknown
New South Beach	IS021	Open	Y	Y	Y	Y	N	N	N	Unknown
Degabwy Beneficial Use	IS035	Open	Y	Y	Y	Y	N	N	N	Unknown
Holyhead North	IS043	Open	Y	Y	Y	Y	N	N	N	Yes
Conwy Beneficial Use	IS065	Disused	Y	Y	Y	Y	N	N	N	Yes
Conwy Beneficial Use	IS066	Open	Y	Y	Y	Y	N	N	N	Yes

[7] Where the opening of the disposal site and activity was unknown, it has been assumed it was part of the baseline.

Name of project	Reference	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Operational prior to baseline surveys in 2021[7]
Broughton	IS099	Open	Y	Y	Y	N	Y	N	N	Yes
Mostyn Deep (Maintenance)	IS102	Open	Y	Y	Y	Y	N	N	N	Unknown
Mostyn Breakwater	IS103	Open	Y	Y	Y	Y	N	N	N	Yes
Mersey (Garston Site)	IS110	Open	Y	Y	Y	N	Y	N	N	Unknown
Mersey (Mid-River Site)	IS120	Open	Y	Y	Y	N	Y	N	N	Unknown
Canning Half Tide	IS126	Open	Y	Y	Y	N	Y	N	N	Yes
Mersey Of Bromborough 2	IS128	Disused	Y	Y	Y	N	Y	N	N	Unknown
Mersey (Liverpool Marina)	IS129	Open	Y	Y	Y	N	Y	N	N	Yes
Formby & Taylors Point	IS132	Disused	Y	Y	Y	N	Y	N	N	Unknown
Burbo Bank Extension OWF	IS135	Open	Y	Y	Y	N	Y	N	N	Yes
Site Z	IS140	Open	Y	Y	Y	N	Y	N	N	Unknown
Site Y	IS150	Open	Y	Y	Y	N	Y	N	N	Yes

Name of project	Reference	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Operational prior to baseline surveys in 2021[7]
East Lytham	IS163	Open	Y	Y	Y	N	Y	N	N	Unknown
Ribble Link	IS164	Disused	Y	Y	Y	N	Y	N	N	Unknown
Savick Brook	IS165	Disused	Y	Y	Y	N	Y	N	N	Unknown
Morecambe Bay: Lune Deep	IS170	Open	Y	Y	Y	N	Y	N	N	Yes
Barrow A	IS180	Disused	Y	Y	Y	N	Y	N	N	Yes
Lune River B	IS192	Open	Y	Y	Y	N	Y	N	N	Unknown
Gateway Gas Storage Project	IS195	Disused	Y	Y	Y	N	Y	N	N	Unknown
Morecambe Bay B	IS200	Open	Y	Y	Y	N	Y	N	N	Yes
Barrow D	IS205	Open	Y	Y	Y	N	Y	N	N	Unknown
Walney OWF	IS215	Disused	Y	Y	Y	N	Y	N	N	Unknown
Harrington Harbour	IS231	Disused	Y	Y	Y	N	Y	N	N	Unknown
Solway Firth	IS240	Open	Y	Y	Y	N	Y	N	N	Yes
Workington Anchorage	IS241	Open	Y	Y	Y	N	Y	N	N	Unknown
Maryport Harbour	IS244	Disused	Y	Y	Y	N	Y	N	N	Unknown

Name of project	Reference	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Operational prior to baseline surveys in 2021[7]
Dispersive Site B										
Silloth B	IS251	Open	Y	Y	Y	N	Y	N	N	Unknown
West Balnapaling	IS320	Open	Y	Y	Y	N	N	N	N	Unknown
Douglas (IoM)	IS400	Open	Y	Y	Y	N	Y	N	N	Unknown
Peel (IoM)	IS420	Open	Y	Y	Y	N	Y	N	N	Unknown
Douglas Harbour (IoM)	IS445	Open	Y	Y	Y	N	Y	N	N	Unknown
Belfast Dredgings C	IS591	Open	Y	Y	Y	N	N	Y	N	Unknown
Portavogie	IS620	Open	Y	Y	Y	N	N	Y	N	Unknown
Ardglass B	IS636	Disused	Y	Y	Y	N	N	Y	N	Unknown
Kilkeel	IS650	Open	Y	Y	Y	N	N	Y	N	Unknown
Warrenpoint B	IS671	Open	Y	Y	Y	N	N	Y	N	Unknown
Foul Ground	JE001	Open	Y	N	Y	N	N	N	N	Unknown
Grouville Bay	JE002	Open	Y	N	Y	N	N	N	N	Unknown
Padstow Bay	LU010	Open	Y	N	Y	N	N	N	N	Yes
Watchet Harbour	LU055	Open	Y	N	Y	N	N	N	N	Unknown

Name of project	Reference	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Operational prior to baseline surveys in 2021[7]
Bristol Holm Deep	LU065	Disused	Y	N	Y	N	N	N	N	Unknown
Clevedon Lake	LU067	Disused	Y	N	Y	N	N	N	N	Unknown
Clevedon Lake	LU068	Open	Y	N	Y	N	N	N	N	Yes
Portishead	LU070	Open	Y	N	Y	N	N	N	N	Yes
Avonmouth (Inner)	LU080	Open	Y	N	Y	N	N	N	N	Yes
Royal Portbury Entrance	LU083	Disused	Y	N	Y	N	N	N	N	Unknown
Royal Portbury Pier	LU084	Open	Y	N	Y	N	N	N	N	Unknown
Royal Edward Entrance	LU085	Open	Y	N	Y	N	N	N	N	Unknown
Bristol City Docks Entrance	LU086	Disused	Y	N	Y	N	N	N	N	Unknown
Oldbury Power Station	LU087	Disused	Y	N	Y	N	N	N	N	Unknown
Oldbury Power Station B	LU088	Disused	Y	N	Y	N	N	N	N	Unknown
Cardiff Grounds	LU110	Open	Y	N	Y	Y	N	N	N	Yes
Merkur Buoy	LU115	Open	Y	N	Y	Y	N	N	N	Unknown

Name of project	Reference	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Operational prior to baseline surveys in 2021[7]
Monkstone Cill	LU125	Disused	Y	N	Y	Y	N	N	N	Unknown
Swansea Bay (Outer)	LU130	Open	Y	N	Y	Y	N	N	N	Yes
Newport	LU140	Open	Y	N	Y	Y	N	N	N	Yes
Burry Port	LU145	Disused	Y	N	Y	Y	N	N	N	Unknown
Erebus OWF Cable Site 5	LU163	Open	Y	N	Y	Y	N	N	N	No – screened out due to minimal effects on marine mammals as per Erebus EIA
Erebus OWF Cable Site 4	LU164	Open	Y	N	Y	Y	N	N	N	
Erebus OWF Cable Site 3	LU165	Open	Y	N	Y	Y	N	N	N	
Erebus OWF Cable Site 2	LU166	Open	Y	N	Y	Y	N	N	N	
Erebus OWF Cable Site 1	LU167	Open	Y	N	Y	Y	N	N	N	
Milford Haven 2	LU168	Open	Y	N	Y	Y	N	N	N	Unknown
Milford Haven 3	LU169	Open	Y	N	Y	Y	N	N	N	Unknown
Neyland (Off Milford Haven)	LU190	Open	Y	N	Y	Y	N	N	N	Unknown
Weston Foreshore	LU191	Disused	Y	N	Y	N	N	N	N	Unknown

Name of project	Reference	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Operational prior to baseline surveys in 2021[7]
Weston Foreshore 2	LU192	Disused	Y	N	Y	N	N	N	N	Unknown
Weston Foreshore 3	LU193	Open	Y	N	Y	N	N	N	N	Unknown
Hinkley Outfalls	LU201	Disused	Y	N	Y	N	N	N	N	Unknown
Hinkley C	LU202	Disused	Y	N	Y	N	N	N	N	Unknown
Hinkley Intake 1	LU203	Disused	Y	N	Y	N	N	N	N	Unknown
Hinkley Intake 2	LU204	Disused	Y	N	Y	N	N	N	N	Unknown
Hinkley Intake 3	LU205	Disused	Y	N	Y	N	N	N	N	Unknown
Hinkley Intake 4	LU206	Disused	Y	N	Y	N	N	N	N	Unknown
Kirkcudbright	MA01	Open	Y	Y	Y	N	N	N	N	Unknown
North Channel, Scotland	MA010	Open	Y	Y	Y	N	N	N	N	Unknown
Larne A	MA605	Disused	Y	Y	Y	N	N	Y	N	Unknown
Fort Picklecombe Y	PL021	Disused	Y	N	Y	N	N	N	N	Unknown
Fort Picklecombe Y	PL022	Disused	Y	N	Y	N	N	N	N	Unknown
Rame Head South	PL031	Open	Y	N	Y	N	N	N	N	Unknown

Name of project	Reference	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Operational prior to baseline surveys in 2021[7]
Plymouth Deep	PL035	Open	Y	N	Y	N	N	N	N	Yes
Lantic Bay	PL060	Open	Y	N	Y	N	N	N	N	Yes
Truro	PL069	Open	Y	N	Y	N	N	N	N	Unknown
Falmouth Marina	PL072	Disused	Y	N	Y	N	N	N	N	Unknown
Falmouth Bay (B)	PL075	Open	Y	N	Y	N	N	N	N	Unknown
Marazion Beach	PL095	Disused	Y	N	Y	N	N	N	N	Unknown
Mounts Bay	PL100	Open	Y	N	Y	N	N	N	N	Yes
Seaton	PO026	Open	Y	N	Y	N	N	N	N	Unknown
Lyme Bay 2	PO050	Open	Y	N	Y	N	N	N	N	Unknown
Sprey Point	PO070	Open	Y	N	Y	N	N	N	N	Unknown
Bundle Head	PO090	Disused	Y	N	Y	N	N	N	N	Unknown
Deep Water Relocation	PO111	Open	Y	N	Y	N	N	N	N	Unknown
Portland Harbour Deep Water Relocation	PO112	Open	Y	N	Y	N	N	N	N	Unknown
St. Aubins	PO501	Open	Y	N	Y	N	N	N	N	Unknown

Name of project	Reference	Status (at the time of assessment)	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Operational prior to baseline surveys in 2021[7]
St. Aubins East	PO502	Disused	Y	N	Y	N	N	N	N	Unknown
St Bredlades Bay	PO503	Open	Y	N	Y	N	N	N	N	Unknown
Greve D'azette	PO504	Open	Y	N	Y	N	N	N	N	Unknown

4.5 Screening of O&G projects

89. Existing O&G projects were considered to be part of the baseline, noting that operation and maintenance activities would be of minimal magnitude, spatially confined and temporary. O&G construction and decommissioning projects could have the potential for cumulative impacts during the construction of the Project. UK plans or projects considered during the CEA screening were either operational or those with either construction or decommissioning currently underway, consented, or with an application submitted.

90. No European projects were assessed due to a lack of information on project locations, phases, and programme.

91. Projects were initially considered for potential cumulative impacts, if those projects could temporarily overlap with the construction of the Project.

92. As outlined in the BEIS (2020) RoC HRA for the SNS SAC, the use of cutting equipment was predicted to be required primarily during decommissioning activities. There was limited information on the level of noise arising from cutting equipment. However, one published study measured the level of noise from a diamond wire cutter at an offshore gas platform (Pangerc *et al*., 2016). The results indicated that increases in noise of between 4dB and 15dB at frequencies predominantly above 5kHz could be attributed to the cutting equipment. There was no increase in sound above that from the associated vessels detected at lower frequencies.

93. Based on information available at the time of assessment, underwater noise during decommissioning of O&G infrastructure would be less than levels for PTS to occur, and any disturbance to marine mammals would be localised and not be significantly greater than that arising from vessels. Therefore, potential cumulative impacts from O&G decommissioning activities, such as cutting equipment have been screened out from further consideration in the CEA.

94. The potential impacts of vessels associated with the decommissioning of O&G infrastucture is unlikely to be significantly greater than vessel activity during the operational phase. Therefore, potential cumulative impacts from vessels during decommissioning of O&G installations have been screened out from further consideration in the CEA.

95. Of the 13 O&G projects identified in the screening, two platforms have been decommissioned and removed (South Morecambe DP3 and DP4 are considered as one project). Of the other twelve projects considered, none have sufficient information available to assess the potential to overlap with construction or decommissioning activities which could take place during the construction of the Project.

96. The results of the O&G project screening are presented in **Table 4.5.**

Table 4.5 CEA screening for O&G projects (both decommissioning and production projects included) within relevant spatial areas and with the potential to overlap with the Project construction (2027-2029) (HP = harbour porpoise, BND = bottlenose dolphin, CGNS = Celtic and Greater North Seas, RoI = Republic of Ireland, Y = Yes, N = No)

Name of O&G field	Type of project	Project status (at the time of assessment)	Expected date of installation / decommissioning	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Potential for overlap of O&G activities with the Project construction?
Bains,UK	Decommissioned		2002 - Decom in 2018	Y	Y	Y	Y	N	N	N	No
Calder, UK	Construction/ decommissioning	Operational	2004 (decom unknown)	Y	Y	Y	N	Y	N	N	No
Conwy, UK	Construction/ decommissioning	Operational	2013 (decom unknown)	Y	Y	Y	Y	N	N	N	No
Dalton, UK	Construction/ decommissioning	Operational	1999-2071 (decom unknown)	Y	Y	Y	Y	N	N	N	No
Douglas, UK	Construction/ decommissioning	Operational	1996- 2031 (decom unknown)	Y	Y	Y	Y	N	N	N	No
Hamilton East, UK	Construction/ decommissioning	Operational	1997-2023 (decom unknown)	Y	Y	Y	Y	N	N	N	No
Hamilton North, UK	Construction/ decommissioning	Operational	1994- 2025	Y	Y	Y	Y	N	N	N	No

Name of O&G field	Type of project	Project status (at the time of assessment)	Expected date of installation / decommissioning	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Potential for overlap of O&G activities with the Project construction?
			(decom unknown)								
Kinsale Area Gas Fields, RoI	Decommissioned		Decom in 2020	Y	N	Y	N	N	N	Y	No
Lennox, UK	Construction/ decommissioning	Operational	1996-2024 (decom unknown)	Y	Y	Y	Y	N	N	N	No
Millom, UK	Construction/ decommissioning	Operational	1999-2030 (decom unknown)	Y	Y	Y	N	Y	N	N	No
North and South Morecambe (excluding DP3 and DP4), UK	Construction/ decommissioning	Operational	1994- 2026 (decom unknown)	Y	Y	Y	Y	Y	N	N	No
Rhyl, UK	Construction/ decommissioning	Operational	2013-2033 (decom unknown)	Y	Y	Y	Y	N	Y	N	No
South Morecambe DP3-DP4, UK	Decommissioned		Decom in 2023	Y	Y	Y	N	Y	N	N	No – platform and jacket infrastrucure removed in 2023

4.6 Screening of subsea cables and pipelines

97. Subsea cables and pipelines that were operational, had construction underway, were consented, or had a planning application submitted were part of the initial screening process.

98. Existing projects prior to the baseline surveys (March 2021) have been considered as part of the baseline. Only those subsea cables and pipelines with potential to contribute to cumulative impacts with the Project during their construction phase have been considered in the CEA.

99. A total of 13 cable projects were identified in the full CEA screening area. Of these, six were operational projects that had already been installed. These were therefore considered part of the baseline and have been screened out from the CEA.

100. Two projects, Greenlink and Celtic Interconnector, were screened out from further assessment on the basis that construction would be complete prior to construction at the Project commencing.

101. Two pipelines (one carbon dioxide and one hydrogen), associated with HyNet North West, were in concept/early planning and had unknown construction windows. It is anticipated that existing O&G offshore infrastructure would be used and as such these have been screened out from the assessment.

102. At the time of the assessment, a plan for a new interconnector cable between the Isle of Man and England was still in early development, with no project details in the public domain and no certainty around timelines. The project was therefore screened out.

103. The remaining two projects were interconnector cable installation projects which both have potential for overlap in construction window with that of the Project:

- MaresConnect
- France Alderney Britain (FAB) Interconnector Link

104. The planning application for MaresConnect is anticipated to be submitted in 2025 and would then give indication as to what extent marine mammals have been assessed and what impacts could arise. While the timeline for construction activities remain unclear, the project was screened out and has not been further assessed in the CEA.

105. FAB Link was granted planning permission in October 2023, but did not consider marine mammals in the EIA Offshore Screening Report (FAB Link Ltd, 2015), nor in the Environmental Risk Assessment Report (FAB Link Ltd, 2016). This project has also not been carried forward for CEA assessment.

106. The results of the CEA screening for subsea cables and pipelines are presented in **Table 4.6**.

Table 4.6 CEA screening for subsea cables and pipelines within relevant spatial areas and with the potential to overlap with the Projects construction (2027-2029) (HP = harbour porpoise, BND = bottlenose dolphin, CGNS = Celtic and Greater North Seas, RoI = Republic of Ireland, Y = Yes, N = No)

Name of Project	Project status (at the time of assessment)	Landfall Point 1	Landfall Point 2	Type of cable / pipeline	HP – CIS MU	BND – ISMU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Potential for overlap of cable construction with the Project construction?[8]
IRIS	Operational	Ballyloughane Strand, Irleand	Iceland	108Tbps	Y	N	Y	N	N	N	Y	No – operational prior to construction
East West Interconnector EWIC	Operational	Shotton, Wales	Portan, County Meath	500MW	Y	Y	Y	Y	N	N	Y	No - included in baseline
Western HVDC Link	Operational	Ardneil Bay,UK	Leasow, UK	2200 MW	Y	Y	Y	Y	N	Y	N	No - included in baseline
Isle of Man to England	Operational	Port Skillion, IoM	Bispham, UK	60MW	Y	Y	Y	N	Y	N	N	No - included in baseline
Isles of Scilly Interconnector	Operational	Cornwall	Isles of Scilly	7MW	Y	N	Y	Y	N	N	N	No - included in baseline
Moffat to RoI	Operational	Moffatt, UK	County Dublin, RoI	Gas pipeline	Y	Y	Y	N	N	N	Y	No - included in baseline
Greenlink	Under construction	Pembrokeshire	County Wexford, RoI	500MW	Y	Y	Y	Y	N	N	Y	No – operational prior to construction

[8] Construction window of 2027-2029

Name of Project	Project status (at the time of assessment)	Landfall Point 1	Landfall Point 2	Type of cable / pipeline	HP – CIS MU	BND – IS MU	CGNS	Seal – MU 12	Seal – MU 13	Seal – MU 14	Seal MU RoI	Potential for overlap of cable construction with the Project construction?[8]
Celtic Interconnector	Early concept/ planning	Knockraha, Cork, Ireland	La Martyre, France	700MW	Y	N	Y	N	N	N	Y	No – operational prior to construction
HyNet North West Carbon Dioxide Pipeline	Early concept/ planning	Cheshire	Talacre Beach, Wales	Pipeline	Y	Y	Y	Y	Y	N	N	No – no information at the time of assessment for offshore elements of the wider Hynet project anticipated to use existing O&G infrastructure
HyNet North West Hydrogen Pipeline	Early concept/ planning	Stanlow, UK	Talacre Beach, Wales	Pipeline	Y	Y	Y	Y	Y	N	N	
MaresConnect	Early concept/ planning	Bodelwyddan, Wales	Maynoot, RoI	750MW	Y	Y	Y	Y	Y	N	Y	Yes - construction planned for 2026, to be operational by 2029
FAB Link	Early concept/ planning	Menue, Normandy, France	Exeter, UK	1250 MW	Y	N	Y	N	N	N	N	Yes - construction planned for 2026, to be operational by 2030/31
Isle of Man Interconnector (New)	Early concept/ planning	Isle of Man	England	>100 MW	Y	Y	Y	Y	Y	Y	N	Yes – but timelines vague (potentially 2028, with full capacity by 2037), no project details available yet

4.7 Screening of other industries

4.7.1 Screening of gas storage projects

107. For gas storage projects, three were identified within the relevant screening area, one of which was on hold (Gateway Project), and one which has a Marine Licence (valid until end of 2026), but is currently under judicial review (Larne Lough). A third was listed as an area offered for applications (East Irish Sea (EIS) Area 1). Within this area lies the carbon capture storage project Morecambe Net Zero Cluster. Due to the unknown timeline for construction periods of these projects, gas storage projects have been screened out from further consideration in the CEA. Other European projects have also been screened out due to a lack of information and negligible range of impact effect.

108. The results of the CEA screening for gas storage projects is presented in **Table 4.7**.

4.7.2 Screening of offshore mining projects

109. Offshore mining projects considered for the CEA screening were operational, under construction, or consented projects. European projects were not screened due to a lack of information on project locations and, programmes, and the negligible range of impact effect.

110. Four UK offshore mining projects were identified in the screening area. These were Exploration and Option licencing blocks (Areas 1901 - 1904) that have been licenced from 2020 until 2032 and 2035. These have the potential for overlap during their operation with Project construction.

111. The results of the CEA screening for offshore mining are presented in **Table 4.7**.

4.7.3 Screening of carbon capture and storage projects

112. UK carbon capture projects considered in the screening area were still in early development and did not have enough certainty or information available for assessment.

113. France released in July 2023 its Carbon Capture and Storage Strategy with consultations closing in September 2023. The strategy lists industrial focal areas that did not fall into the screening area (Global CCS Institute, 2023).

114. In the RoI, the infrastructure of Kinsale Head has been dismantled (Murray, 2023). There were no other known projects within the public domain.

115. Carbon capture and storage projects are unlikely to contribute significantly to any potential cumulative impacts for underwater noise, as most construction

work would be on land and seek to use existing offshore infrastructure as far as possible. Therefore, all carbon capture projects have been screened out of the CEA. The results of the CEA screening for carbon capture projects are presented in **Table 4.7**.

Table 4.7 CEA screening for other industries (offshore mines and carbon capture and storage projects) within the relevant spatial areas and with the potential to overlap with the Project construction (2027-2029) (HP = harbour porpoise, BND = bottlenose dolphin, GS = grey seal, HS = harbour seal, Y = Yes, N = No)

Name of project	Status (at the time of assessment)	HP - CIS	BND - IS	CGNS	Seal - 12	Seal - 13	Seal - 14	Seal RoI	Potential for overlap of with the Project construction?[9]
Gas storage projects									
Gateway Project - Stag Energy	On Hold	Y	Y	Y	N	Y	N	N	Unknown
Larne Lough	Under judical review	Y	Y	Y	N	N	Y	N	Unknown
EIS Area 1 (licence area)	Concept & Early Planning	Y	Y	Y	N	Y	N	N	Unknown
Offshore mining projects									
Area 1901	Exploration and Option Agreement	Y	N	Y	N	N	Y	N	No, part of the baseline
Area 1902	Exploration and Option Agreement	Y	N	Y	N	N	Y	N	No, part of the baseline
Area 1903	Exploration and Option Agreement	N	N	Y	N	N	N	N	No, part of the baseline
Area 1904	Exploration and Option Agreement	N	N	Y	N	N	N	N	No, part of the baseline

[9] Construction window of 2027-2029

Name of project	Status (at the time of assessment)	HP - CIS	BND - IS	CGNS	Seal - 12	Seal - 13	Seal - 14	Seal RoI	Potential for overlap of with the Project construction?[9]
Carbon capture and storage projects									
Hamilton	Portfolio for development	Y	Y	Y	Y	N	Y	N	Unknown
HyNet North West	Early development opportunities	Y	Y	Y	Y	Y	N	N	Unknown, but could be operational after 2025[10]
Morecambe Net Zero Cluster	Early development opportunities	Y	Y	Y	N	Y	N	N	Unknown[11]
South Wales Industrial Cluster (SWIC)	Early development opportunities	Y	Y	Y	N	N	N	N	Unknown

[10] There was no application for offshore works in the public domain, possibly due to planned utilisation of existing offshore infrastructure.

[11] This project was awarded a licence as part of the EIS area 1 in 2023 and is undergoing exploration works. Unlikely to have an impact as existing offshore infrastructure may be used.

4.8 Screening of coastal developments

116. Coastal development projects include ports, harbours, and coastal defence schemes. All marine licences that started after the Project baseline surveys (in March 2021) were screened and considered if they were Tier 1 or 2 projects. All coastal developments that were completed prior to March 2021 were considered to be part of the baseline.

117. All marine licences in England registered on the Marine Case Management System were screened for the activities under the type 'construction of new works' and 'construction of other works' in the relevant marine areas (North West, Western, South West, Western, Southern, Merseyside and Fylde).

118. The marine licences in Wales registered on the Natural Resources Wales Public Register were filtered through searching by key words 'harbour construction', 'port construction', 'coastal defence', and 'offshore windfarm'.

119. The marine licences in Scotland registered on the Marine Scotland website were screened, but no activities were found in the relevant part of the screening area.

120. The search for marine licences in Northern Ireland registered on the Department of Agriculture, Environment and Rural Affairs (DAERA) Public register returned three activities, of which two were tidal testing sites (see **Table 4.2**) and the other being the construction of new berthing facilities which was screened out as it had no overlap in construction.

121. Registered Foreshore licences in the RoI were screened and returned four activities/projects, but these were screened out due to no overlap in construction windows.

122. No coastal development projects in France were considered due to a lack of available information and negligible impact ranges.

123. **Table 4.8** provides the screening results for coastal developments. Only two of 26 projects had marine licences that were overlapping in time with the construction phase of the Project:

- Plymouth Sound breakwater maintenance
- Cardiff Coastal Defence Scheme

124. The activities associated with both of these breakwater projects were not expected to cause any significant effect to any marine mammal species. Furthermore, there was a lack of information on exact construction timelines and insufficient certainty to inform a cumulative assessment.

125. Therefore, all coastal development projects have been screened out from further assessment within the CEA.

Table 4.8 CEA screening for coastal developments with an approved status (such as ports, harbour, coastal defence schemes) with the potential to overlap with the Project construction [Y = Yes, N = No]

Project	Country	Marine Licence number	Marine licence dates	Type of project/ activity	Potential for overlap of with the Project construction?[12]
Maintenance works, Walney Extension	England	MLA/2023/00259	n/a	Blade upgrade at OWF	No
Upgrade works, Burbo Bank	England	EIA/2023/00017	n/a	Blade maintenance at OWF	Unknown
Wyre Beach and Dune Management Scheme Phases 1 and 2	England	MLA/2022/00176	May 2023 to December 2026	Coastal defence	No
St Annes Seawall coast protection scheme	England	MLA/2022/00559	On hold	Coastal defence	Unknown
Plymouth Sound break water Maintenance, including casting and depositing 100 tonne concrete blocks	England	MLA/2023/00119	July 2023 to October 2033	Breakwater maintenance	Yes, however unlikely to cause a cumulative impact
Isles of Scilly Dune & Coastal Flood Defence Scheme: St Agnes and Bryher	England	MLA/2022/00478	July 2023 to November 2024	Coastal defence	No
Isles of Scilly Dune & Coastal Flood Defence Scheme	England	MLA/2022/00280	July 2022 to July 2024	Coastal defence	No

[12] Construction window of 2027-2029

Project	Country	Marine Licence number	Marine licence dates	Type of project/ activity	Potential for overlap of with the Project construction?[12]
2AFRICA Submarine Cable System	England	MLA/2021/00398/1	June 2023 to June 2025	Submarine cable	No
CBC1 W21050 Parton to Harrington Sea Wall No 3	England	L/2021/00198	Apr 2021 to Jul 2026	Coastal defence	No
Construction of new berthing facilities at D3, Belfast Harbour	Northern Ireland	ML 122_15	1st August 2022 to 31st July 2025	Berth construction	No
Central Rhyl Coastal Defences Scheme	Wales	CML2152	April 2023 to 31st December 2026	Coastal defence	No
Kinmel Bay Coastal Defence Improvements Scheme	Wales	CML2272	April 2023 to December 2024	Coastal defence	No
Coastal defence works at Aberaeron, Ceredigion	Wales	CML2133	January 2023 to June 2025	Coastal defence	No
Coastal defence repair works to four areas at Sandy Bay and Trecco Bay, Porthcaw	Wales	CML1936	October 2022 to September 2023	Coastal defence	No
Cardiff Coastal Defence Scheme	Wales	CML2147	July 2022 to July 2029	Coastal defence	Yes, however unlikely to cause a cumulative impact
Penrhyn Bay Coastal Defence and Public Realm Improvements	Wales	CML2159	February 2022 to May 2024	Coastal defence	No
Central Prestatyn Coastal Defence Enhancement	Wales	CML2140	March 2022 to April 2024	Coastal defence	No
Porthdinllaen Seagrass Restoration Project	Wales	CML2125	May 2023 to September 2026	Seagrass restoration	No

Project	Country	Marine Licence number	Marine licence dates	Type of project/ activity	Potential for overlap of with the Project construction?[12]
Removal of the Gwynt y Mor Wind Farm Meteorological Mast	Wales	RML2109	November 2021 to September 2025	Removal works	No
Iarnród Éireann - Rosslare Europort Berth 3 Extension	RoI	FS007224	December 2022 to January 2023	Port development	No
Beaufort Sub-sea Fibre Optic Cable System	RoI	FS007361	1st March 2023 to 31st March 2023	Sub-sea cable installation	No
Waterford City and County Council - Waterford City Marina	RoI	FS007479	Applied on 21st December 2021	Marina development	No
Tralee Golf Club Coastal Protection, Barrow Co. Kerry	RoI	FS007117	Submitted 13th July 2023	Coastal defence	Unknown
ESB Networks - Achill Island Submarine Cables Installation	RoI	FS007130	July 2022 to August 2022	Coastal defence	No

4.9 Screening of seismic and geophysical surveys

4.9.1 Seismic surveys

126. It was not possible to estimate the location or number of potential seismic surveys that could be undertaken at the same time as construction and potential piling activity at the Project. A marine licence exemption application is only required to be submitted at least 28 days prior to the start of a relevant survey (MMO, 2022). Seismic survey licences for oil and gas are issued separately through the Oil and Gas Authority.

127. Currently Spirit Energy have a licence to undertake seismic survey in respect of selecting a site for carbon dioxide storage at North and South Morecambe. Six weeks notice is required prior to mobilisation and surveys are to be completed by the 31st December 2024, before construction of the Project. Given the short seismic survey authorisation timeframes, the number and duration of seismic survey campaigns was difficult to estimate with any certainty.

128. For information purposes, the potential for cumulative impacts from seismic surveys has been screened into the CEA for further consideration. For the ES, it has been assumed, as a worst-case scenario, that there could be one seismic survey undertaken at the same time as the construction of the Project.

4.9.2 Geophysical surveys

129. Prior to construction, marine development projects (e.g. OWF, MRE and port expansions) conduct geophysical surveys to determine seabed conditions, check for debris and other anomalies.

130. These geophysical surveys can involve different equipment, such as:

- Sub-Bottom Profilers (SBP) (such as pingers, sparkers, boomers and CHIRP systems)
- Ultra-Short Baseline (USBL) systems
- Multibeam Echo Sounder (MBES) system
- Side Scan Sonar (SSS)

131. Due to the high amplitude of MBES and SSS, there is the potential for injury to marine mammal species, however this is highly unlikely as an animal would need to be within very close proximity (only several meters) to the source.

132. It is also unlikely that the MBES and SSS could cause disturbance due to the operating frequencies being outside the audible range of marine mammals (JNCC *et al*., 2010). MBES and SSS surveys that are carried out in waters of

less than 200m in depth are not considered to be a risk to marine mammals, as the higher frequencies typically used fall outside of their hearing ranges, and the sounds are likely to attenuate quickly due to the high frequencies used. Therefore, geophysical surveys using MBES and SSS have been screened out of the CEA.

133. The SBP and USBL frequency ranges are within marine mammal hearing range (JNCC, 2017), and would therefore be audible to the marine mammals that could be present in the area. Geophysical surveys using SBP and USBL have the potential to disturb marine mammals and have therefore been screened into the CEA.

134. Auditory injury effects from SBP and USBL were not predicted, as an animal would need to remain in the very small zone of ensonification for a prolonged period, which was highly unlikely (JNCC *et al*., 2010). Most of the sound energy generated by the SBP or USBL equipment would be directed towards the seabed and the pulse duration would be extremely short, with the continuous movement of the survey.

135. For geophysical surveys with SBP, it is realistic and appropriate to base the assessments on the potential impact area around the vessel, as the potential for disturbance would be around the vessel at any one time. Marine mammals would not be at risk throughout the entire area surveyed in a day, as animals would return once the vessel had passed, and the disturbance had ceased.

136. For the same reason as with seismic surveys, it was not possible to estimate the location or number of potential geophysical surveys that could be undertaken at the same time as construction and potential piling activity at the Project. It was therefore assumed, as a worst-case scenario, that there could potentially be up to two geophysical surveys in the Irish Sea at any one time during construction of the Project.

137. Geophysical surveys for the Project will be assessed separately, prior to the surveys being undertaken, based on the type of survey required, equipment used, area covered, time of year and duration, including cumulative impacts during geophysical surveys. Therefore, geophysical surveys for the Project have not been included in this CEA.

4.9.3 Screening of UXO clearance

138. As outlined in Section 11.7 of **Chapter 11 Marine Mammals**, the potential risk of PTS in marine mammals from cumulative impacts has been screened out from further consideration in the CEA. This was because if there was the potential for any PTS from any planned project or activity, suitable mitigation would be put in place to reduce any risk to marine mammals.

139. The potential for cumulative disturbance effects from UXO clearance at other projects during construction of the Project have been screened into the CEA.

140. Alternative methods for UXO clearance include the use of low-order clearance techniques, which could include a small donor charge, rather than full high-order detonation.

141. It was therefore considered highly unlikely that more than one UXO high-order detonation would occur at exactly the same time or on the same day as another UXO detonation, even if they had overlapping UXO clearance operation durations. The CEA has therefore been based on potential for disturbance from one UXO high-order detonation without mitigation (worst-case), as well as one low-order clearance. However, it is noted there was low certainty of the schedule for these activities and likelihood of temporal overlap.

142. UXO clearance activities for the Project would be assessed as part of a separate Marine Licence. The assessment prior to any UXO clearance would be based on the latest information for the types, size, number, location and latest UXO clearance methods and mitigation measures, including cumulative impacts during UXO clearance at the Project. Therefore, UXO clearance for the Project has not been specifically included in this CEA.

5 Summary of CEA project screening

143. Section 11.7 in **Chapter 11 Marine Mammals** provides information on the impacts screened into the marine mammal CEA. **Table 5.1** below summarises the projects, plans and activities screened into the marine mammal CEA.

Table 5.1 Summary of projects, plans and activities screened into the marine mammal CEA

Impact	Potential for cumulative effect	Projects
Disturbance from underwater noise	Piling at OWFs	OWFs that could be piling at the same time as the Project and screened into the CEA were: ▪ Awel y Môr ▪ Erebus ▪ Mona Offshore Wind Project ▪ Morgan Offshore Wind Project Generation Assets ▪ Morgan and Morecambe Transmission Assets ▪ White Cross
	Other construction activities at OWFs (other than piling) including vessels, cable installation works, dredging, seabed preparation and rock placement	OWFs screened in for other construction activities that could have cumulative effects with construction activities at the Project were: ▪ Codling Wind Park ▪ Dublin Array ▪ North Irish Sea Array ▪ Sceirde (Skerd) Rocks
	Operational projects	Projects that would be operational after the baseline surveys commenced (in March 2021) have been screened into the CEA: OWFs: ▪ Llŷr 1 Floating OWF ▪ Llŷr 2 Floating OWF ▪ Saint-Brieuc ▪ TwinHub MREs: ▪ FloWatt Tidal Pilot ▪ Morlais
	Geophysical surveys using SBP and USBL	Unknown. It was therefore assumed, for information purposes, that there could potentially be up to two geophysical surveys at OWFs in the Irish Sea at any one time, during construction of the Project.

Impact	Potential for cumulative effect	Projects
	Aggregate extraction and dredging	Projects screened in for construction activities that could have cumulative effects with construction activities at the Project were: ▪ North Bristol Deep 1601 ▪ North Bristol Deep 1602
	Seismic surveys	Unknown. There were no licences for seismic surveys, however for information purposes, an assessment has been made based on the assumption that there would be at least one seismic survey in the Irish Sea at any one time, during construction of the Project.
	UXO clearance	Unknown. It has been assumed UXO clearance would use low-order technique. However, for information purposes, the CEA included potential for one UXO high-order detonation and one low-order clearance (no mitigation) in the Irish Sea at the same time as piling at the Project. The likelihood of high order use and temporal overlap with the Project was low.

144. **Table 5.2** summarises the projects, plans and activities screened out of the marine mammal CEA.

Table 5.2 Summary of projects, plans and activities screened out of the marine mammal CEA

Impact	Potential for cumulative effect	Projects, plans and activities screened out
Disturbance from underwater noise	No	The activities and types of projects screened out of the CEA, as no potential for significant contribution to underwater noise cumulative impacts during the Project construction, were: ▪ Maintenance of operational OWFs ▪ Decommissioning of OWFs ▪ Operational OWFs before March 2021 ▪ Operational cables and pipelines before March 2021 ▪ Shipping ▪ Commercial fisheries ▪ O&G infrastructure (construction, operation and decommissioning) ▪ Gas storage, offshore mining, and carbon capture and storage projects ▪ Coastal developments ▪ Disturbance from operational windfarms (after the baseline survey in 2021) ▪ Geophysical surveys using MBES and SSS
Collision risk	No	▪ Shipping ▪ Wave and tidal during operation

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