



# MORECAMBE



FLOTATION ENERGY

## Morecambe Offshore Windfarm: Generation Assets Development Consent Order Documents

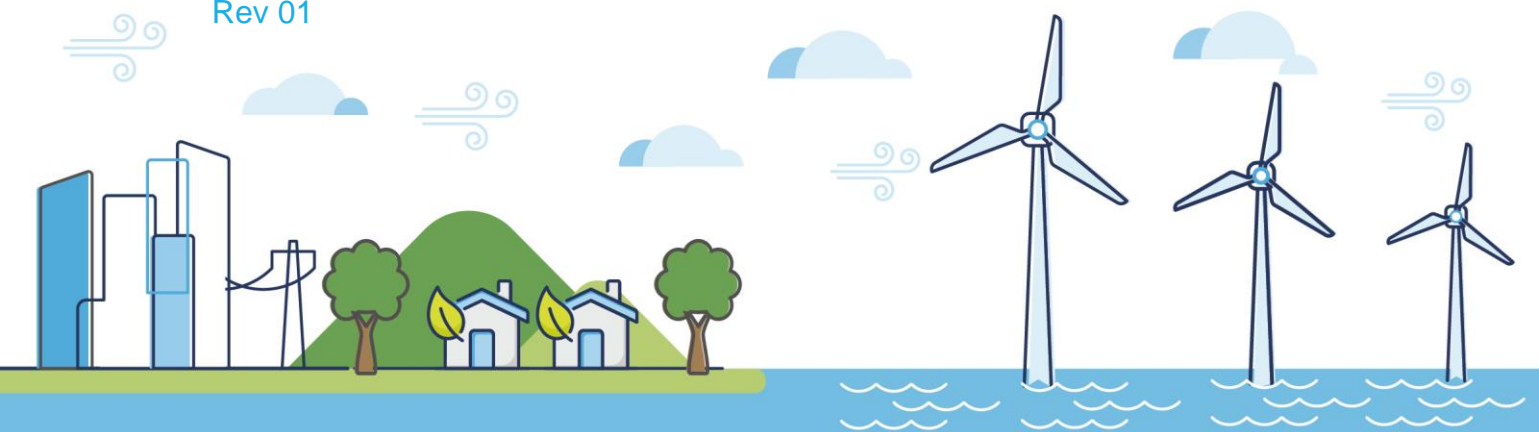
### Volume 4

### Marine Conservation Zone Assessment Screening Report

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## Glossary of Acronyms

AA	Appropriate Assessment
AC	Alternating Current
AfL	Agreement for Lease
BAS	Burial Assessment Study
BDMPS	Biologically Defined Minimum Population Scales
CBRA	Cable Burial Risk Assessment
Cefas	Centre for Environment, Fisheries and Aquaculture
CI	Confidence Interval
CIA	Cumulative Impact Assessment
CEA	Cumulative Effects Assessment
CIS	Celtic and Irish Seas
cSACs	Candidate SACs
CV	Coefficient of Variation
DCO	Development Consent Order
DECC	Department of Energy and Climate Change <sup>1</sup>
Defra	Department for Environment, Food and Rural Affairs
DML	Deemed Marine Licence
DP	Dynamic Positioning
EC	European Commission
EIA	Environmental Impact Assessment
EMF	Electromagnetic Field
EPP	Evidence Plan Process
EPS	European Protected Species
ETG	Expert Topic Groups
EU	European Union
EUNIS	European Nature Information System
FCS	Favourable Conservation Status
GBS	Gravity Based Structures
GIS	Geographical Information System
HAT	Highest Astronomical Tide

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<sup>1</sup> The Department of Energy and Climate Change (DECC) was disbanded and merged with the Department for Business, Innovation and Skills to form the Department for Business, Energy and Industrial Strategy (BEIS) in 2016. As of February 2023, BEIS is known as the Department for Energy Security and Net Zero (DESNZ).

HDD	Horizontal Directional Drilling
HPMA	Highly Protected Marine Area
HRA	Habitat Regulations Assessment
IEMA	Institute of Environmental Management and Assessment
IFCA	Inshore Fisheries Conservation Authority
IMO	International Maritime Organisation
INNS	Invasive Non-Native Species
IPCC	Intergovernmental Panel on Climate Change
IROPI	Imperative Reasons of Overriding Public Interest
JNAPC	Joint Nautical Archaeology Policy Committee
JNCC	Joint Nature Conservation Committee
LAT	Lowest Astronomical Tide
LEP	Local Enterprise Partnership
LNR	Local Nature Reserve
LSE	Likely Significant Effects
MARPOL	International Convention for the Prevention of Pollution from Ships
MCA	Maritime and Coastguard Agency
MCAA	Marine and Coastal Access Act
MCZ	Marine Conservation Zone
MCZA	Marine Conservation Zone Assessment
MEEB	Measures of equivalent environmental benefit
MGN	Marine Guidance Note
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MMO	Marine Management Organisation
MPCP	Marine Pollution Contingency Plan
MRE	Marine Renewable Energy
NGET	National Grid Energy Transmission
NGOs	Non-Governmental Organisations
NSIP	Nationally Significant Infrastructure Project
O&M	Operation and Maintenance
OFGEM	Office of Gas and Electricity Markets
OFTO	Offshore Transmission Operator
OS	Ordnance Survey
OSP(s)	Offshore substation platform(s)
OTNR	Offshore Transmission Network Review



PEIR	Preliminary Environmental Information Report
PEMP	Project Environment Management Plan
PINS	Planning Inspectorate
PLC	Public limited company
pSACs	Possible SACs
pSPA	Potential SPA
PTS	Permanent Threshold Shift
ROV	Remotely Operated Vehicles
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SACO	Supplementary Advice on Conservation Objectives
SCI	Sites of Community Importance
SCOS	Special Committee on Seals
SNCBs	Statutory Nature Conservation Bodies
SoCG	Statements of Common Ground
SoS	Secretary of State
SPA	Special Protection Area
SPZ	Source Protection Zone
SSC	Suspended Sediment Concentration
SSSI	Site of Special Scientific Interest
TH	Trinity House
TTS	Temporary Threshold Shift
TWT	The Wildlife Trusts
UK	United Kingdom
UXO	Unexploded Ordnance
WTG(s)	Wind turbine generator(s)
ZoI	Zone of Influence

## Glossary of Unit Terms

dB	Decibels
GW	Gigawatt
km	Kilometre
kV	Kilovolt
m	Metre
MW	Megawatt
MWh	Megawatt hour
nm	Nautical mile

## Glossary of Terminology

Applicant	Morecambe Offshore Windfarm Ltd
Agreement for Lease (AfL)	Agreements under which seabed rights are awarded following the completion of The Crown Estate tender process.
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.
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach, and information to support, the Environmental Impact Assessment (EIA) and Habitats Regulations Assessment (HRA) for certain topics. The EPP provides a mechanism to agree the information required to be submitted to PINS as part of the DCO Application. This function of the EPP helps Applicants to provide sufficient information in their application, so that the Examining Authority can recommend to the Secretary of State whether or not to accept the application for examination and whether an appropriate assessment is required.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
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).
In-row	The distance separating WTGs in the main rows.
Inter-row	The distance between the main rows.
Landfall	Where the offshore export cables would come ashore.
Marine Conservation Zones (MCZs)	MCZs are areas that protect a range of nationally important, rare or threatened habitats and species. MCZs in English, Welsh and Northern Irish offshore waters are designated under the Marine and Coastal Access Act (2009). The Marine Act (Northern Ireland) 2013 makes provisions for MCZs in Northern Irish territorial waters.
Morgan and Morecambe Offshore Wind Farms:	The transmission assets for the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm. This includes the OSP(s) <sup>2</sup> , interconnector cables, Morgan offshore booster station, offshore export cables, landfall site, onshore export cables, onshore substations, 400kV

<sup>2</sup> At the time of writing the Environmental Statement (ES), a decision had been taken that the offshore substation platforms (OSP(s)) would remain solely within the Generation Assets application and would not be included within the Development Consent Order (DCO) application for the Transmission Assets. This decision post-dated the Preliminary Environmental Information Report (PEIR) that was prepared for the Transmission Assets. The OSP(s) are still included in the description of the Transmission Assets for the purposes of this document as the in-combination effects assessment carried out in respect of the Generation/Transmission Assets is based on the information available from the Transmission Assets PEIR and associated Marine Conservation Zone Assessment (MCZA) documentation.

Transmission Assets	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) platform to the landfall.
Offshore substation platform(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.
Platform link cable	An electrical cable which links one or more OSP(s).
Project Design Envelope (PDE)	A PDE provides maximum and minimum parameters, where appropriate, to ensure the worst-case scenario can be quantified and assessed in the EIA, while maintaining flexibility.
Safety Zones	An area around a structure or vessel which should be avoided, as set out in Section 95 of the Energy Act 2004 and the Electricity (Offshore Generating Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations 2007.
Scour protection	Protective materials to avoid sediment being eroded away from the base of the foundations due to the flow of water.
Technical stakeholders	Technical consultees are organisations with detailed knowledge or experience of the area within which the Project is located and/or receptors which are considered in the EIA and HRA. Examples of technical stakeholders include Marine Management Organisation (MMO), local authorities, Natural England and the Royal Society for the Protection of Birds (RSPB).
Steering Group	The Applicant and key stakeholders responsible for overseeing EPP.
Windfarm site	The area within which the WTG, 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.
Zone of Influence (Zoi)	The maximum anticipated spatial extent of a given potential impact.



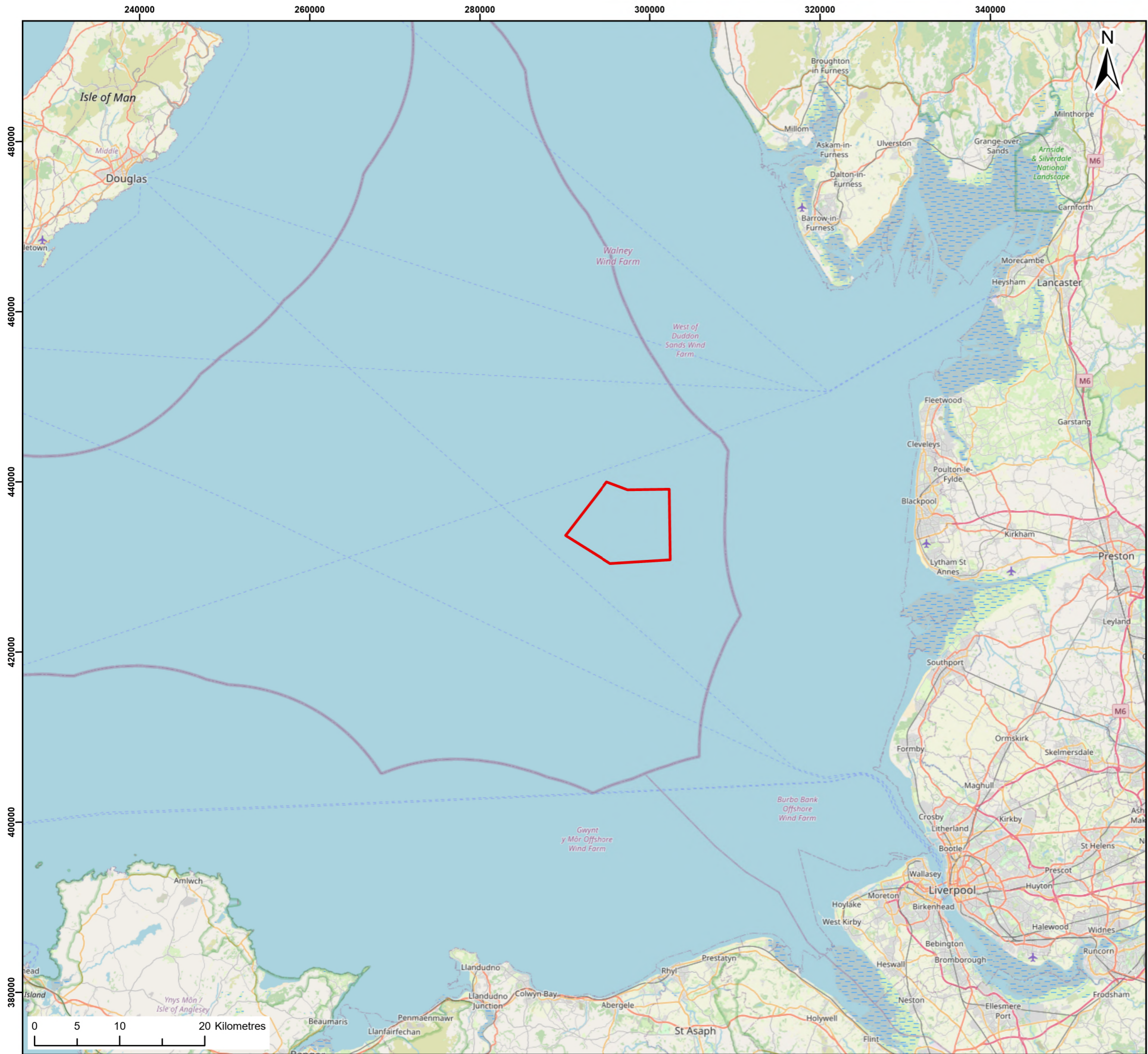
# The future of renewable energy

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# 1 Introduction

## 1.1 The Project

1. Morecambe Offshore Windfarm: Generation Assets (hereafter referred to as the “Project”) is a proposed offshore windfarm located in the Eastern Irish Sea, with an expected nominal capacity of 480 megawatts (MW). The Project is located approximately 30km off the Lancashire coast, as illustrated in **Figure 1.1**. It is being developed by Morecambe Offshore Windfarm Ltd (the Applicant).
2. As the Project windfarm is an offshore generating station of over 100MW, it is defined under the Planning Act 2008 as a Nationally Significant Infrastructure Project (NSIP) and, as such, it requires a Development Consent Order (DCO), which would include the grant of Deemed Marine Licence(s) (DML).
3. A Government-initiated review of offshore windfarm transmission connections has concluded that the Morecambe Offshore Windfarm would share a grid connection location at Penwortham, in Lancashire, with the Morgan Offshore Wind Project, also located in the Eastern Irish Sea, as shown in **Figure 1.2**. Given this, the Applicant intends to deliver a coordinated grid connection with the Morgan Offshore Wind Project and submit a separate DCO application for the Morgan and Morecambe Offshore Wind Farms: Transmission Assets (referred to as the “Transmission Assets”). For the purposes of this document the “Project” refers only to the Generation Assets of the Morecambe Offshore Windfarm.
4. The Project includes the Generation Assets to be located within the windfarm site (wind turbine generators (WTGs), inter-array cables, offshore substation platform(s) (OSP(s)) and possible platform link cables to connect OSP(s)). The Environmental Impact Assessment (EIA) of the Transmission Assets, including offshore export cables to landfall and onshore infrastructure, is part of a separate DCO application as outlined in **Chapter 1 Introduction** of the Environmental Statement (ES) (Document Reference 5.1.1).
5. **Plate 1.1** provides an overview of the Project infrastructure, as well as the Transmission Assets for context.



Legend:  
 Morecambe Offshore Windfarm Site

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Report:  
**Morecambe Offshore Windfarm: Generation Assets  
 MCZ Screening**

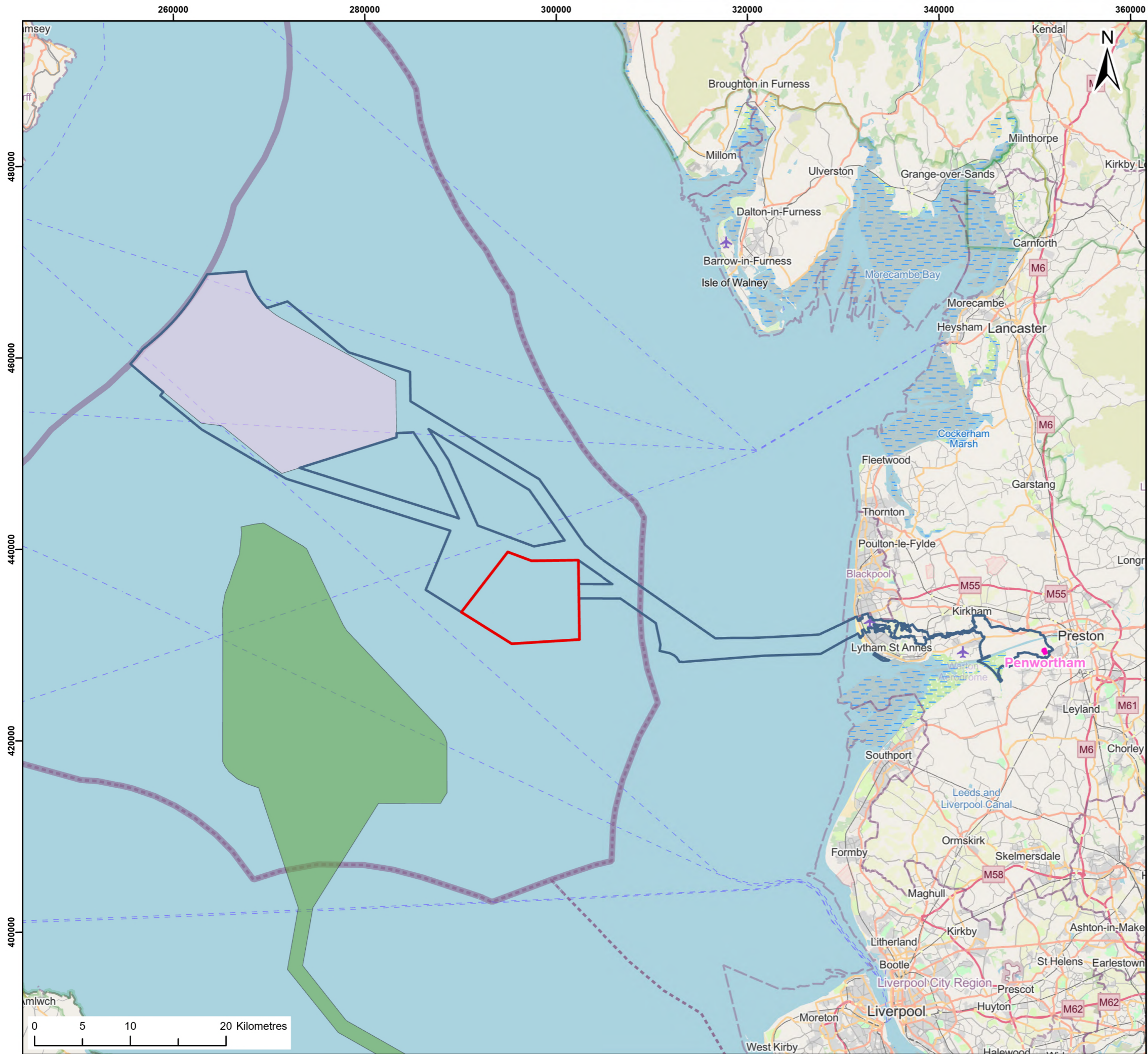
Title:  
**Morecambe Offshore Windfarm location**

Figure: 1.1      Drawing No: PC1165-RHD-ZZ-OF-DR-Z-0110

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P02	05/03/2024	JH	SB	A3	1:450,000
P03	09/04/2024	JH	SB	A3	1:450,000

Co-ordinate system: WGS 1984 UTM Zone 30N





- Legend:**
- Morecambe Offshore Windfarm Site
  - Morgan and Morecambe Offshore Wind Farms: Transmission Assets
  - Morgan Offshore Wind Project Generation Assets
  - Mona Offshore Wind Project
  - National Grid Onshore Substation

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**Report:**  
Morecambe Offshore Windfarm: Generation Assets  
MCZ Screening

**Title:**  
Morecambe Offshore Windfarm location  
with other Round 4 Projects

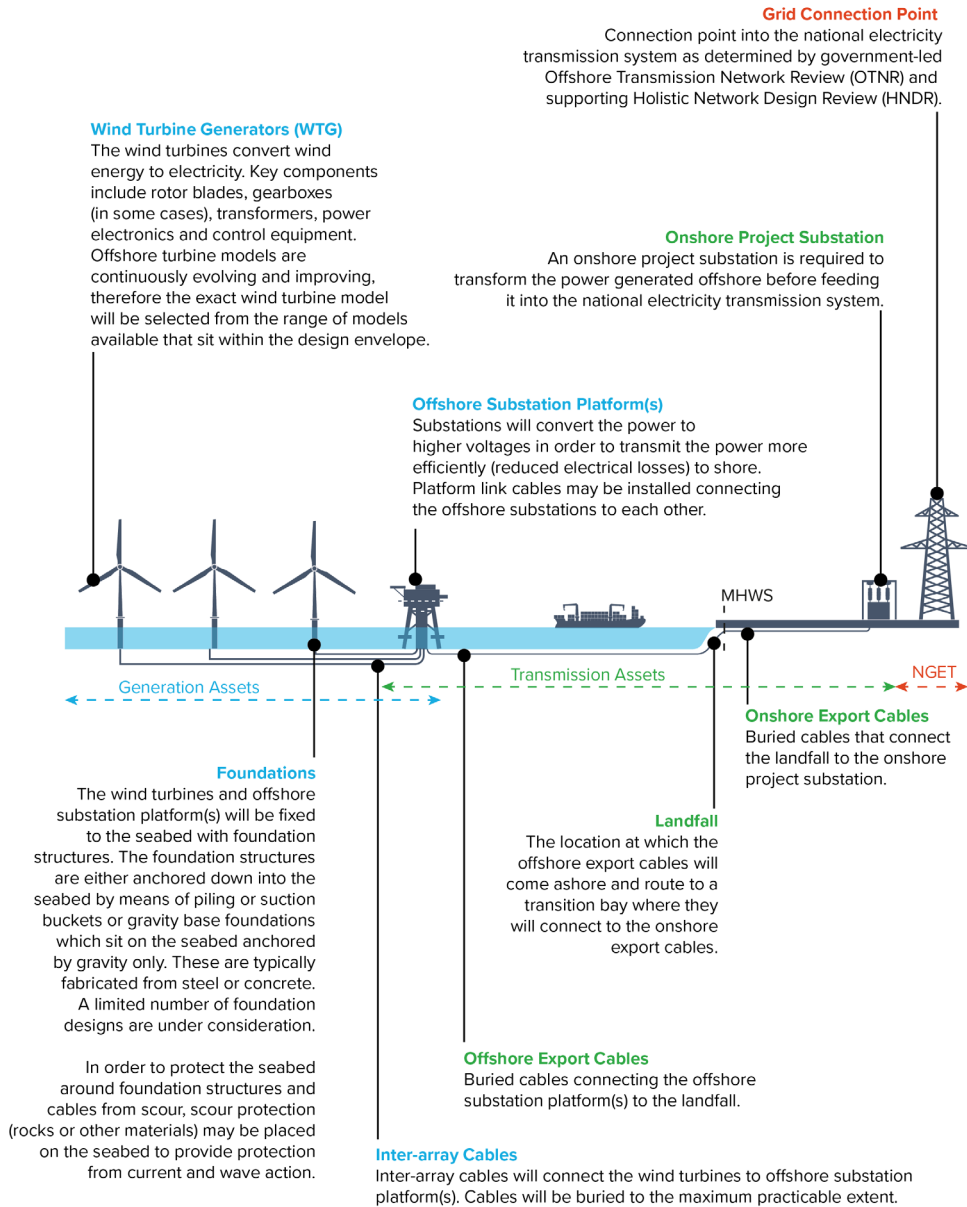
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Co-ordinate system: WGS 1984 UTM Zone 30N







*Plate 1.1 Components of Morecambe Offshore Windfarm (note the components in blue are Generation Assets and those in green are anticipated Transmission Assets)*

## 1.2 Purpose of this document

6. This document provides the screening stage of the Marine Conservation Zone Assessment (MCZA) process for the Project.
7. The MCZA process comprises up to three stages (see **Section 4.2**). The aim of this screening stage is to determine whether or not an activity is capable of affecting (other than insignificantly) the protected features or physical processes of a Marine Conservation Zone (MCZ), either directly or indirectly. This enables the competent authority to ensure compliance with the Marine and Coastal Access Act 2009 (MCAA).
8. Where it was considered that there was no potential for a significant effect as a result of the Project, it was proposed that the MCZ (or relevant feature of the MCZ) was to be ‘screened out’ from further consideration. Where the potential for a significant effect on the conservation objectives could not be discounted, it remained ‘screened in’ and further assessment has been undertaken within the Marine Conservation Zone Assessment (Document Reference 4.13).
9. A draft MCZA was provided alongside the Preliminary Environmental Information Report (PEIR) for the Project during statutory consultation for the Project in 2023. Following PEIR and subsequent consultation, the MCZA has been revised, updated, and finalised for submission as part of the Project DCO Application. The windfarm site boundary has also been refined since the PEIR through the amendment of the western boundary and the MCZA Screening Report and MCZA have also been updated to reflect this reduced windfarm site boundary (which is shown in **Figure 1.1**).
10. Agreement on whether sites and features should or should not be screened out has been sought through the Project Evidence Plan Process (EPP) by way of the Expert Topic Groups (ETGs) (comprising technical consultees), as described in **Appendix 1 – Consultation comments and responses relevant to the MCZA screening**.
11. In addition, a Habitats Regulations Assessment (HRA) screening and assessment has been undertaken separately and in parallel to the MCZA process. These processes also align with the Environmental Impact Assessment (EIA) undertaken for the Project.

## 1.3 Structure of this document

12. This MCZA Screening Report is set out in the following stages:
  - Summary of the relevant consultation undertaken (**Section 2**)
  - Brief summary of the main components of the Project (**Section 3**)
  - Brief summary of the MCZA Process (**Section 4**)

- MCZA screening exercise, for the relevant receptors (**Section 5 – Section 7**)
- Summary of the MCZA screening exercise (**Section 8**)
- References (**Section 9**)
- Consultation (**Appendix 1**)

## 2 Consultation

### 2.1 Approach to consultation

13. As part of the DCO process, the Applicant has undertaken consultation with prescribed bodies, and stakeholders (under Section 42 of the Planning Act (2008)), with local communities (under Section 47) and more widely with the public, through the publication of a proposed application (under Section 48).
14. The Applicant has undertaken consultation with technical regulators and stakeholders and facilitated an EPP with key stakeholders. The EPP is an integral tool for the structure and delivery of the MCZA, EIA and HRA during the DCO pre-application phase, as well as setting the basis of Statements of Common Ground (SoCG) with relevant stakeholders.
15. As part of the Project EPP, ETGs were established where it was relevant for multiple agencies to collectively engage in topic specific technical discussions, including those related to the Project HRA and MCZA process. From experience on other NSIPs, the EPP is very beneficial, enabling early engagement and discussion over evidence needs between applicants and relevant stakeholders. The EPP helps to identify and address evidence gaps and issues faced by projects in the DCO pre-application stage.

### 2.2 Consultation

16. The Applicant has proactively initiated engagement with several stakeholders from an early stage in the Project. **Table 2.1** provides an overview of stakeholder consultation undertaken relevant to the MCZA process.
17. A draft screening report was also submitted to the MMO and Natural England for comments, which have been accommodated in this report (as shown in **Appendix 1**). A draft Marine Conservation Zone Assessment Report was submitted to the MMO and Natural England.

Table 2.1 Early initial consultation relevant to the MCZA screening process

Dates	Topic	Organisation consulted
October 2021 – June 2022	Introductory meetings	Blackpool Airport, Cumbria Local Enterprise Partnership (LEP), Environment Agency, Isle of Man Government, Isle of Man Steam Packet Company, Historic England, Isle of Man Harbours and Coastguard, Lancaster City Council, Lancashire County Council, Marine Management Organisation (MMO), Maritime Coastguard Agency, Natural England, Ministry of Defence, The National Federation of Fishermen’s Organisations, North West Inshore Fisheries and Conservation Authorities (IFCA), North West Wildlife Trusts (Cumbria, Lancashire & Cheshire), Peel Ports, Associated British Ports, Port of Barrow, Royal Society for the Protection of Birds (RSPB), Royal Yachting Association, Sea Truck Ferries, Stena Line Ferries, Trinity House (TH), The Planning Inspectorate (PINS), United Kingdom (UK) Chamber of Shipping, the Welsh Government, Wyre Council, Royal Yachting Association
March 2022, September 2022, June 2023 and February 2024	EPP Steering Group Meetings	Natural England, MMO, Environment Agency, Historic England, PINS
May 2022 – January 2024	Marine Mammal Expert Topic Group (ETG) meetings	Natural England, The Wildlife Trusts (TWT), MMO, Isle of Man Government
May 2022 – January 2024	Marine Archaeology and Cultural Heritage ETG meetings	Historic England, MMO
May 2022 – January 2024	Offshore Ornithology ETG meetings	Natural England, MMO
May 2022 – January 2024	Marine Ecology ETG meetings	Natural England, MMO, TWT, North West IFCA, Environment Agency, Isle of Man Government
September 2022	Comments on draft MCZA screening	Natural England
November 2022	Comments on draft MCZA screening	MMO
May 2023	Comments on draft MCZA assessment	Natural England
May 2023	Comments on draft MCZA assessment	MMO

## 3 Description of the Project

18. This section provides an overview of the main components of the Project, which, for the purposes of this MCZA screening report, covers the Generation Assets (wind turbines, inter-array cables, OSP(s) and possible platform link cables to connect OSP(s)).
19. It also summarises the main licensable activities that would occur during construction, operation and maintenance and decommissioning. A separate MCZA screening has been undertaken for the Transmission Assets and as such this associated infrastructure is not described, although considered in the cumulative screening.

### 3.1 Design envelope approach

20. The Project Design Envelope (PDE) has been developed in parallel with the EIA and HRA process with the Project design outlined in **Chapter 5 Project Description** (Document Reference 5.1.5) of the ES.
21. The PDE provides maximum and minimum parameters, where appropriate, to ensure the worst-case scenario can be quantified and assessed in the MCZA, whilst maintaining design flexibility. Therefore, the description of the Project provided here is indicative at this stage and intended to provide context for the wider document and the basis of the assessment.

### 3.2 Project infrastructure overview

#### 3.2.1 Windfarm site

22. The Project windfarm site would contain all generation infrastructure. The key characteristics of the Project windfarm site are summarised in **Table 3.1**.

*Table 3.1 Morecambe offshore windfarm site overview*

Area	Parameters	Values
Windfarm site	Area (km <sup>2</sup> )	87
	Closest distance to shore (km)	30 (approximate)
	Water depth (m below Lowest Astronomical Tide (LAT))	18-40

23. The Agreement for Lease (AfL) area awarded by The Crown Estate spanned 125km<sup>2</sup>. Following consultation on the PEIR, the proposed windfarm site was reduced to approximately 87km<sup>2</sup>, as further described in **Chapter 4 Site Selection and Assessment of Alternatives** of the ES (Document Reference 5.1.4).

### 3.2.2 Wind turbine generators

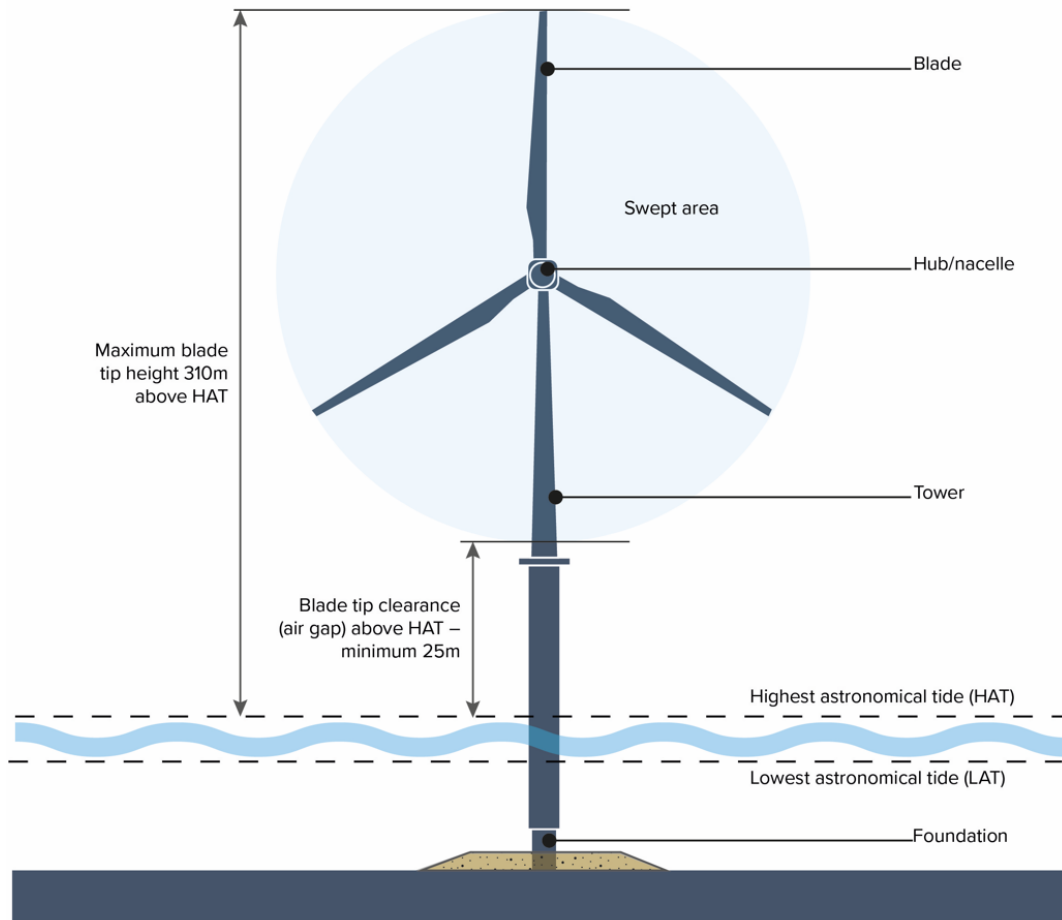
24. The WTG PDE is outlined in **Table 3.2**, illustrated in **Plate 3.1** and subsequently described, noting this considers both up to 30 ‘larger turbines’ and up to 35 ‘smaller turbines’.
25. The information presented in **Table 3.2** includes a range of WTGs with varying parameters and capacity, to accommodate the ongoing rapid development in WTG technology. Accounting for this range, there could be up to 30 ‘larger’ or 35 ‘smaller’ WTGs installed within the windfarm site to generate the nominal export capacity of 480MW.

*Table 3.2 WTG design envelope*

Parameter	Smaller WTGs	Larger WTGs
Maximum number of WTGs	35	30
Maximum rotor diameter (m)	260	280
Blade tip height (m) above highest astronomical tide (HAT)	290	310
Maximum hub height (m above HAT)	160	170
Minimum rotor clearance above sea level (m above HAT)	25 <sup>3</sup>	
Indicative rotor speed range (rotations per minute (RPM))	8.42	7.09
Maximum rotor swept area for total windfarm site (km <sup>2</sup> )	1.858	
Minimum separation between WTGs (m) in-row	1,060	1,260
Minimum separation between WTGs (m) inter-row	1,410	1,680

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<sup>3</sup> Equivalent to 34.56m above LAT; 26.07m above MHWS; 29.82m above mean sea level (MSL)



*Plate 3.1 Schematic of a WTG*

26. The layout of WTGs would be finalised post-consent in consideration of design rules (as detailed in Marine Guidance Note (MGN) 654) and in consultation with relevant authorities e.g., MMO, Maritime and Coastguard Agency (MCA) and TH. The required lighting and navigational markings would also be agreed post-consent.

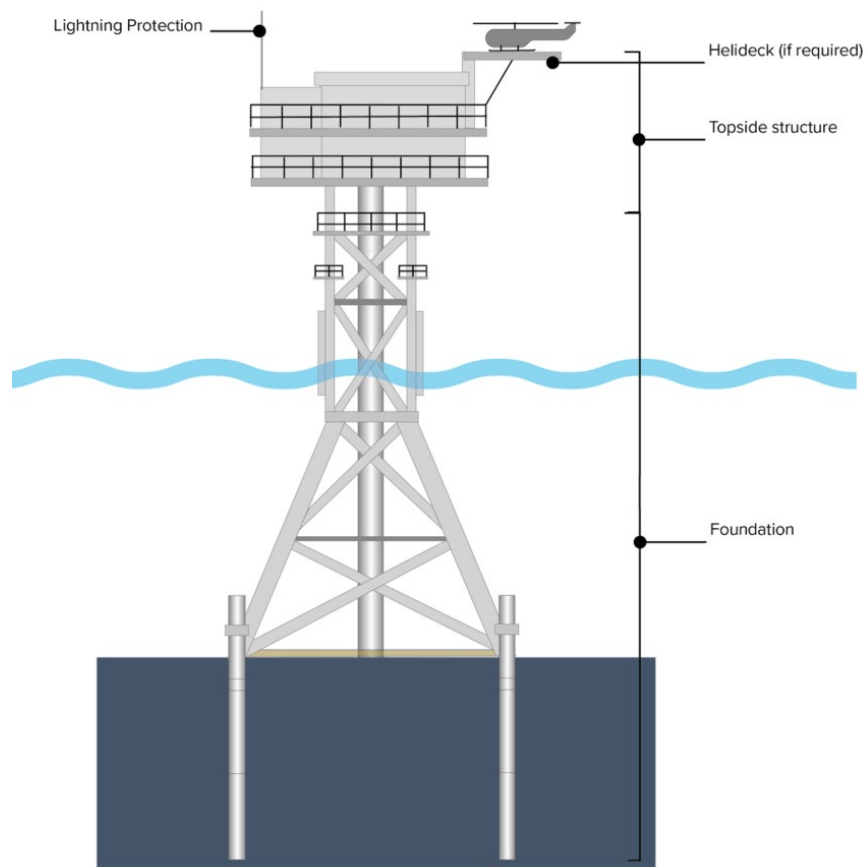
### 3.2.3 Offshore substations platform(s)

27. The Project would require a maximum of two OSPs, depending on the electrical system voltage and final layout. The OSP(s) provide a centralised connection point for the inter-array cable circuits and contain primary electrical equipment and ancillary components that are required to transform the voltage of the electricity generated at the WTGs to a higher voltage suitable for transporting power to the onshore electrical transmission network.
28. The OSP(s) would be situated within the windfarm site and would comprise the following components:
- Transformers
  - Batteries

- Generators
- Switchgear
- Fire systems
- Modular facilities for operational and maintenance activities

29. The design of the OSP(s) would include a platform ‘topside’, supported above sea level on a foundation structure.

30. The typical deck plan of the OSP(s) would be a maximum of 50m by 50m, with the topsides comprising several layers/decks stacked on top of another, as required. **Plate 3.2** shows a schematic of a typical OSP.



*Plate 3.2 Schematic of an OSP. Note: The schematic shows a 'jacket on pin piles' foundation, however, the actual foundation type may differ e.g. monopile.*

31. The topside design envelope for the OSP(s) is given in **Table 3.3**.

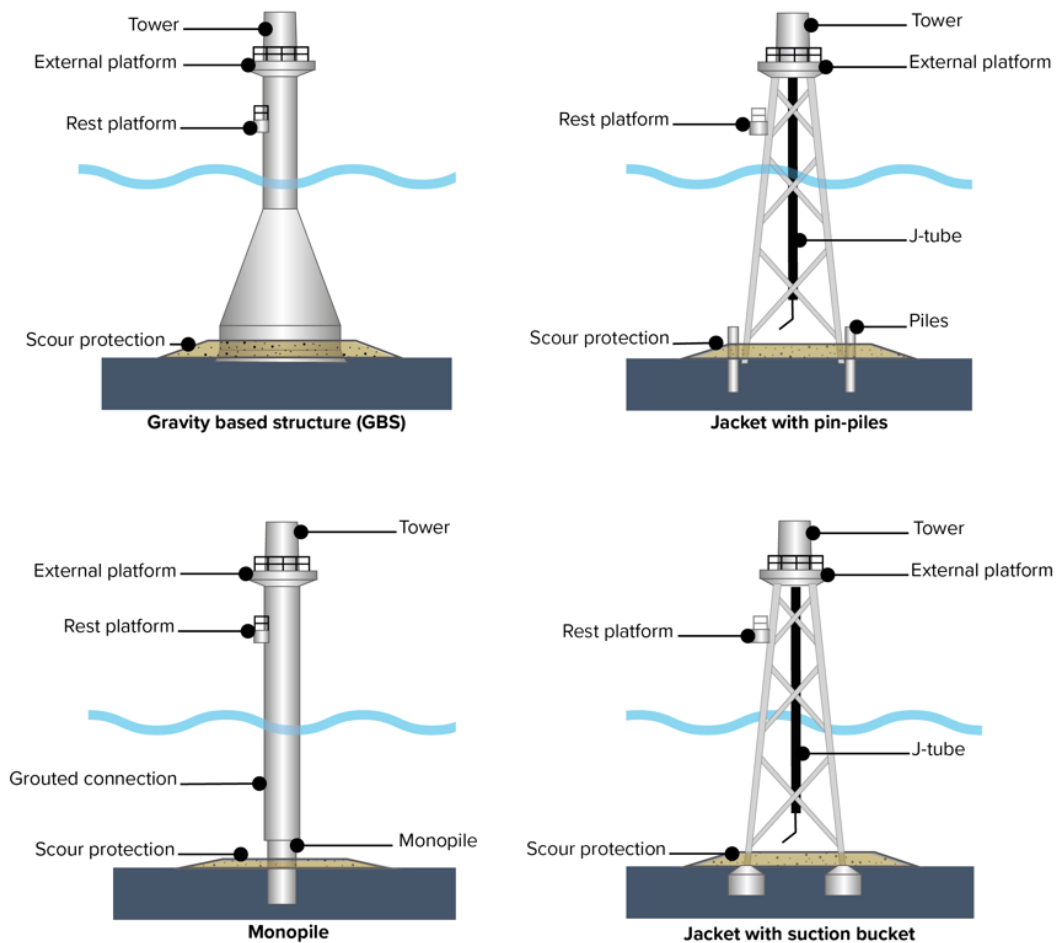


Table 3.3 OSP(s) topside design envelope

Parameter	Value
Maximum number of OSP(s)	2
Maximum topside width (m)	50
Maximum topside length (m)	50
Highest point of topside above HAT (m) (excluding helideck and lightning protection)	50
Highest point of topside above HAT (m) (including helideck and lightning protection)	70

### 3.2.4 Foundations

32. This section provides an overview of the foundations and substructures that are under consideration and assessed for the Project WTGs and OSP(s). The decision on the types of foundation and substructure to support the WTGs and OSP(s) would be made post-consent.
33. The WTG/OSP(s) foundation types and parameters are listed in **Table 3.4** and illustrated in **Plate 3.3**. Options are described in detail in **Chapter 5 Project Description** of the ES, and briefly described below:
- Gravity based structures (GBS). GBS usually comprise a base supporting a conical section, which tapers to an upper cylindrical section (shaft)
  - Multi-legged pin-piled jacket (three-legged or four-legged jackets). A steel lattice construction (tubular steel and welded joints) secured to the seabed by hollow steel pin piles
  - Monopile foundations are welded hollow tubular steel structures
  - Multi-legged suction bucket jacket (three-legged jackets). A jacket that would be installed on three suction bucket 'legs'



*Plate 3.3 WTG/OSP foundation options*

*Table 3.4 WTG/OSP design envelope*

Foundation types	Parameter	Maximum values
GBS	Maximum base slab diameter (m)	65
	Maximum cone bottom diameter (m)	55
	Maximum cone top/shaft diameter (m)	15
	Maximum cone height (m)	40
	Maximum footprint on the seabed per WTG/OSP <sup>4</sup> (m <sup>2</sup> )	3,318
	Maximum footprint on the seabed for WTGs/OSP(s) (m <sup>2</sup> )	122,766 (116,130m <sup>2</sup> for 35 WTGs <sup>5</sup> and 6,636m <sup>2</sup> for 2 x OSPs)

<sup>4</sup> A circular base is assumed as a worst-case

<sup>5</sup> Noting that both smaller and larger WTGs have the same GBS foundation footprint.

Foundation types	Parameter	Maximum values
Multi-legged pin-piled jacket	Maximum legs per jacket foundation	4
	Maximum pile diameter (m)	3
	Maximum leg spacing at seabed (m)	35
	Maximum footprint on the seabed, pile-edge to pile-edge, per WTG/OSP (m <sup>2</sup> )	28.5
	Maximum footprint on the seabed for total WTGs/OSPs (m <sup>2</sup> )	1,055 (998m <sup>2</sup> for 35 x WTGs and 57m <sup>2</sup> for 2 x OSPs)
	Maximum pile penetration depth (m)	56
Monopile	Maximum pile diameter (m)	12
	Maximum footprint on the seabed per WTG/OSP (m <sup>2</sup> )	114
	Maximum footprint on the seabed for total WTGs/OSPs (m <sup>2</sup> )	3,648 (3,420m <sup>2</sup> for 30 x WTGs and 228m <sup>2</sup> for 2 x OSPs)
	Maximum pile penetration depth (m)	56
Multi-legged suction bucket jacket	Maximum legs per suction bucket (jacket) foundation	3
	Maximum bucket diameter (m)	20
	Maximum leg spacing at seabed (m)	35
	Maximum footprint on the seabed per WTG/OSP (m <sup>2</sup> )	945
	Maximum footprint on the seabed for WTGs/OSPs (m <sup>2</sup> )	34,965 (33,075m <sup>2</sup> for 35 x WTGs and 1,890m <sup>2</sup> for 2 x OSPs)

34. Foundation types would be selected following detailed design, based on suitability of the ground conditions, water depths and WTG/OSP(s) models or design. There may be only one type used, or a combination of foundation types may be used across the windfarm site.

### 3.2.5 Inter-array cables

35. Subsea inter-array cables would be installed to connect the individual WTGs and also connect the WTGs to the OSP(s).
36. Where possible, inter-array cables would be buried, with a target burial depth of 1.5m, where conditions allow, and a burial range expected to be between 0.5m and 3m. Where cable burial is not possible, alternative cable protection

measures could be used. This may include rock placement, grout/sandbags, concrete mattresses and polyethylene ducting. The appropriate level of protection would be determined based on an assessment of the risks posed to the Project, in specific areas.

37. It is assumed that 10% of the inter-array cable length would require additional cable protection due to ground conditions. Protection would also be required at the entry points of each WTG and OSP(s) foundation, and at cable crossings. These are outlined in more detail in **Chapter 5 Project Description** of the ES.
38. The inter-array cables are expected to operate at 66kV or 132kV alternating current (AC). It is expected that 132kV AC cables may not be sufficiently ready, or available, on an industry-wide level, for installation, but this higher voltage has been retained, pending further electrical studies.
39. The diameter of the inter-array cables may be up to 220mm. The design envelope for inter-array cables, crossings and entry to WTGs/OSP(s) is given in **Table 3.5**.

*Table 3.5 Inter-array cable design envelope*

Parameter	Value
<b>General parameters</b>	
Maximum length of inter-array cables (km)	70
Burial depth range (m)	0.5 – 3 (target burial depth of 1.5)
Maximum installation corridor disturbance width (m)	25
<b>Unburied cable parameters</b>	
Maximum height protection (m)	2
Maximum width protection (m)	13
Anticipated % cable unburied due to ground conditions <sup>6</sup>	10
Estimated total length of unburied cable due to ground conditions (km)	7
<b>Cable protection at entry of cables to WTG/OSP(s)</b>	
Number of entry points to WTGs and OSP(s)	63

<sup>6</sup> The percentage of cable that remains unburied due to ground conditions is dependent on the results of a cable burial survey. As such, 10% has been used a worst-case assumption.

Parameter	Value
Maximum length of cable protection required at each entry point (m)	50
Maximum length of protected cable (m)	3,150
Maximum width of rock berm protection at the bottom (m)	13
Maximum width at top of rock berm protection (m)	1
Maximum height protection (m)	2
<b>Cable protection at crossings</b>	
Maximum number of cable/pipeline crossings	9
Maximum cable/pipeline crossing height per crossing (m)	2.8
Maximum side slope	3:1
Maximum cable/pipeline crossing top width (m)	1
Maximum cable/pipeline crossing bottom width per crossing (m)	17.8
Maximum cable/pipeline crossing length per crossing (m)	250

### 3.2.6 Platform link cables

40. Should the Project require two OSPs, then platform link cables would be required to connect each of the OSP(s), to enable transfer of generated power from one OSP to the other, and to ensure that electricity transmission can continue in the event of one cable failing. The platform link cables are expected to operate at up to 275kV AC.
41. Cables may require protection where they cannot be buried, due to ground conditions. Additionally, cables would require protection at cable crossings and at entry points to the OSP(s). The exact requirements would be identified post-consent, prior to the start of construction, based on the final WTG and OSP(s) locations and detailed site surveys.
42. The design envelope for platform link cables is provided in **Table 3.6**.

Table 3.6 Platform link cable design envelope

Parameter	Value
<b>General parameters</b>	
Maximum length of platform link cables (km)	10
Burial depth range (m)	0.5 – 3 (target burial depth of 1.5)
Maximum installation corridor disturbance width (m)	25
<b>Unburied cable parameters</b>	
Maximum height protection (m)	2
Maximum width protection (m)	13
Anticipated % cable unburied due to ground conditions <sup>7</sup>	10
Estimated total length of unburied cable due to ground conditions (km)	1
<b>Cable protection at entry of cables to WTG/OSP(s)</b>	
Number of entry points to WTGs and OSP(s)	7
Maximum length of cable protection required at each entry point (m)	50
Maximum length of protected cable (m)	350
Maximum width of rock berm protection at the bottom (m)	13
Maximum width at top of rock berm protection (m)	1
Maximum height protection (m)	2
<b>Cable protection at crossings</b>	
Maximum number of cable/pipeline crossings	6
Maximum cable/pipeline crossing height per crossing (m)	2.8
Maximum side slope	3:1
Maximum cable/pipeline crossing top width (m)	1
Maximum cable/pipeline crossing bottom width per crossing (m)	17.8

<sup>7</sup> The percentage of cable that remains unburied due to ground conditions is dependent on the results of a cable burial survey. As such, 10% has been used a worst-case assumption.

Parameter	Value
Maximum cable/pipeline crossing length per crossing (m)	250

### 3.3 Construction

43. Construction activities may include seabed preparation, Unexploded Ordnance (UXO) clearance<sup>8</sup>, foundation installation (which may include pile driving and drilling), cable installation and deployment of cable protection and scour protection. The works would require a range of vessel types, including Dynamic Positioning (DP) and jack-up barges, which could require anchoring.
44. Construction would typically be performed on a 24-hour basis, depending on suitable construction weather windows. During the construction phase, there would be 500m radius Safety Zones around installation vessels, foundation structures, WTGs and OSP(s).
45. Offshore construction is anticipated over a two-and-a-half-year construction programme.

### 3.4 Operation and maintenance

46. During the operation and maintenance period, scheduled and unscheduled monitoring and maintenance of infrastructure would be required. During the Project life, it is likely that some refurbishment or replacement of offshore infrastructure would be required. Activities, such as cable repair or reburial, are also anticipated. All offshore infrastructure, including WTGs, foundations, cables and OSP(s) would be included in monitoring and maintenance programmes.
47. For this Screening Report, it was assumed the operation and maintenance duration is 35 years from the date of commercial export, which would then be followed by decommissioning activities. The duration of the lease (with The Crown Estate) of the windfarm site is 60 years and, as such, repowering activities could be expected to extend the operations life, however, separate consent would be required for repowering and, as such, is not considered in this report.

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<sup>8</sup> Permissions for UXO removal would be sought in a future Marine Licence application and European Protected Species (EPS) licence post-consent.

### 3.5 Decommissioning

48. At the end of the operational lifetime of the Project, offshore decommissioning would include the removal of all of the WTG and OSP(s) components and cutting of foundations to below seabed level. Cables, cable protection, some parts of the foundations and scour protection may be left *in situ*.
49. The detail and scope of the decommissioning works would be determined by the relevant legislation and guidance at the time of decommissioning and agreed with the regulator.

### 3.6 Transmission Assets

50. As described in **Section 1.1**, a separate DCO is being sought for the Transmission Assets for the Morecambe and Morgan projects. The key components of the Transmission Assets (as presented in the Transmission Asset PEIR (Morgan Offshore Wind Limited and Morecambe Offshore Windfarm Ltd (2023)) include:
  - OSP(s) - to transform electricity generated by the Morgan and Morecambe Generation Assets to a higher voltage, allowing the power to be efficiently transmitted to shore from each windfarm site (noting that the OSP(s) are also included in the Application for the Project and the Morgan Generation Assets<sup>9</sup>)
  - Interconnector cables (also known as platform link cables) - to connect OSP(s) within each windfarm site to each other
  - Morgan offshore booster station – a potential mid-point reactive power compensation substation
  - Offshore export cables – to link the Generation Assets of each windfarm site to the landfall site
  - Landfall – where the offshore export cables are joined to the onshore cables
  - Onshore export cables - to link the landfall with the onshore substations
  - Onshore substations - substations (containing the components for transforming the power supplied via the onshore export cables) and associated grid connection infrastructure
51. The Transmission Assets PEIR Red Line Boundary (including both the offshore and onshore elements) is approximately 697.8km<sup>2</sup> in area. The

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<sup>9</sup> At the time of writing the ES, a decision had been taken that the OSP(s) would remain solely within the Generation Assets application and would not be included within the DCO application for the Transmission Assets. This decision post-dated the PEIR that was prepared for the Transmission Assets. The OSP(s) are still included in the description of the Transmission Assets for the purposes of this document as the in-combination effects assessment carried out in respect of the Generation/Transmission Assets is based on the information available from the Transmission Assets PEIR and associated MCZA documentation.



offshore elements of the Transmission Assets are located in the Eastern Irish Sea. The offshore elements connect the Morgan and Morecambe array areas to the coast, south of Blackpool. The onshore elements of the Transmission Assets are located within the local authority areas of Fylde Council, Blackpool Council, South Ribble Borough Council, Preston City Council (and Lancashire County Council, at the County level).

## 4 The MCZA process

### 4.1 Legislative Context

#### 4.1.1 Marine & Coastal Access Act (2009)

52. Statutory Nature Conservation Bodies (SNCBs) (in this case Natural England) have responsibility under the MCAA via a range of measures to manage the marine environment, including establishing MCZs. The MCZ Project was established in 2008 by the Joint Nature Conservation Committee (JNCC) and Natural England to work with regional stakeholder led projects to identify and recommend MCZs to Government. MCZs were designated in three tranches (2013, 2016 and 2019).
53. Section 126 of the MCAA describes the duties of public authorities in relation to certain decisions and applies where:
  - A public authority has the function of determining an application (whenever made) for authorisation of the doing of an act, and
  - The act is capable of affecting (other than insignificantly)
    - The protected features of an MCZ
    - Any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent
54. SNCBs have responsibility under the MCAA to give advice on how to further the conservation objectives for the MCZ and identify the activities that are capable of affecting the designated features and the processes which they are dependent upon.
55. Under the MCAA, pilot Highly Protected Marine Areas (HPMAs) were announced in 2022. These are areas of the sea designated for the protection and recovery of marine ecosystems and would be considered as appropriate if any pilot sites are relevant to the Project. At the time of writing, the closest proposed site is Allonby Bay, but at nearly 100km from the windfarm site this HPMAs is screened out (**Section 5**).

### 4.1.2 Guidance

56. The MCZ Screening gives consideration to the MMO Marine Conservation Zones and Marine Licensing guidance (2013).
57. The Stage 1 MCZA is informed by Supplementary Advice on Conservation Objectives (SACO) for each relevant site, where available.
58. To undertake its marine licensing function, the MMO has introduced a three stage sequential assessment process for considering impacts on MCZs, in order for it to deliver its duties under Section 126 of the MCAA. Section 126 places specific duties on all public bodies in undertaking their licensing activities where those activities are capable of hindering the conservation objectives of an MCZ. The MCZ assessment process is similar to, but separate from, the HRA process. The three stages of MCZ assessment are presented below and summarised in **Plate 4.1**.

## 4.2 MCZA process

### 4.2.1 Screening (this report)

59. The screening process is required to determine whether Section 126 of the MCAA should apply to the application. All relevant applications go through an initial screening stage to determine whether:
  - The licensable activity is taking place within or near to an MCZ
  - The licensable activity is capable of significantly affecting (without mitigation) (i) the protected features of an MCZ, or (ii) any ecological or geomorphological processes on which the conservation of the features depends

### 4.2.2 Stage 1 assessment

60. The Stage 1 assessment considers the extent of the potential impact of the licensable activity on the MCZs screened in. The Stage 1 assessment looks at whether the licensable activity could significantly affect the conservation objectives for the site, i.e. impact the site so that the features are no longer in favourable condition, or prevent the features from recovering to favourable condition. If mitigation to reduce identified impacts cannot be secured, and there are no other alternative locations, then the licensable activity will be considered under Stage 2 of the assessment process.

### 4.2.3 Stage 2 assessment

61. The Stage 2 assessment considers the socio-economic impact of the licensable activity, together with the risk of environmental damage. There are two parts to the Stage 2 assessment process:

- Does the public benefit in proceeding with the licensable activity clearly outweigh the risk of damage to the environment that will be created by proceeding with it? If so,
- Can the applicant secure, or undertake arrangements to secure, measures of equivalent environmental benefit (MEEB) for the damage the licensable activity will have on the MCZ features?

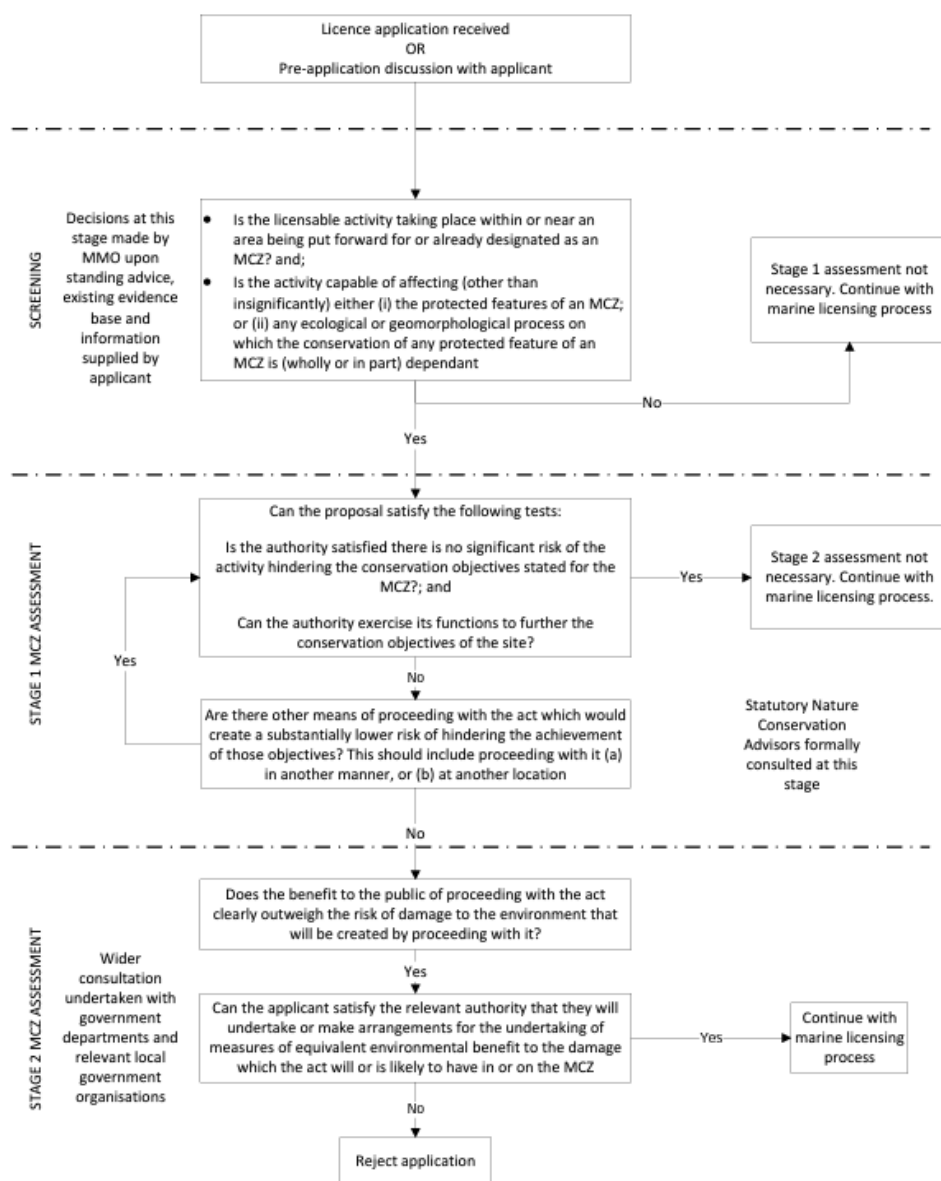


Plate 4.1 MCZ screening process (source MMO, 2013)

#### 4.2.4 Cumulative effects

62. The MCAA does not provide any legislative requirement for explicit consideration of cumulative effects on the protected features of MCZs. However, the MMO guidelines (MMO, 2013) state that the MMO considers that, in order for the MMO to fully discharge its duties under section 69 (1) of the MCAA, cumulative effects must be considered.
63. PINS Advice Note Seventeen<sup>10</sup> (PINS, 2019) provides guidance on plans and projects that should be considered in the Cumulative Effect Assessment (CEA), including:
- Projects that are under construction
  - Permitted applications, not yet implemented
  - Submitted applications not yet determined
  - Projects on the PINS's Program of Projects
  - Development identified in relevant Development Plans, with weight being given as they move closer to adoption and recognising that much information on any relevant proposals will be limited
  - Sites identified in other policy documents as development reasonably likely to come forward
64. Only projects which are reasonably well described and sufficiently advanced to provide information on which to base a meaningful and robust assessment have been included in the cumulative assessment.
65. Offshore cumulative impacts may come from interactions with the following activities and industries:
- Other windfarms and renewable energy projects
  - Transmission works, including proposed co-located transmission works for Morecambe Offshore Windfarm and the Morgan Offshore Wind Project
  - Aggregate extraction and dredging
  - Licensed disposal sites
  - Navigation and shipping
  - Commercial fisheries
  - Subsea cables and pipelines
  - Port/harbour development

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<sup>10</sup> While this guidance is in the context of EIA it can be applied to MCZA

- Oil and gas activities
- Fisheries management areas

66. Plans and projects that existed at the time of the relevant MCZ designation or the latest status reports undertaken every six years (whichever is most recent), are considered to be part of the baseline environment unless a cumulative impact with maintenance activities is identified.
67. Cumulative effects of projects have considered based on their stage of development using the tiered approach, as per PINS Advice Note 17 (PINS, 2019), as presented in **Table 4.1**.

*Table 4.1 Cumulative tiers (PINS, 2019)*

Topic	Morecambe position
Tier 1	<ul style="list-style-type: none"> <li>▪ Under construction Permitted application(s), whether under the Planning Act 2008 or other regimes, but not yet implemented</li> <li>▪ Submitted application(s) whether under the Planning Act 2008 or other regimes but not yet determined</li> </ul>
Tier 2	<ul style="list-style-type: none"> <li>▪ Projects on the PINS Programme of Projects where a scoping report has been submitted</li> </ul>
Tier 3	<ul style="list-style-type: none"> <li>▪ Projects on the PINS Programme of Projects where a scoping report has not been submitted</li> <li>▪ 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</li> <li>▪ Identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward</li> </ul>

68. Projects classified under Tiers 1-3 are included in the MCZA screening, where sufficient information is available. **Section 6** highlights plans and projects that have been considered in this screening report and those that are proposed to be included in the cumulative assessments within Stage 2 of the MCZA.
69. For this screening assessment, project activities and associated pressures are reviewed to determine whether they are capable of significantly affecting MCZs when combined with equivalent activities and associated pressures from other plans and projects. The potential for projects to act cumulatively on MCZs is considered in the context of the likely spatial and temporal extent of pressures.

## 5 Is the activity within or near to a MCZ?

70. The first stage of the screening assessment is to determine whether the Project and associated licensable activities take place within or near an MCZ.
71. An initial area of search of 100km has been used to determine which MCZs surround the windfarm site. The 100km distance was set to exceed the regional study area for coastal processes, where a potential pathway to receptors may exist. **Figure 5.1** and **Table 5.1** shows the MCZs within this search area, along with the distances measured to the nearest point of the windfarm site.
72. Following a review of the area of search, a Zone of Influence (Zoi) has been analysed based on an understanding of the tidal regime overlapping the Project windfarm site. The Zoi was based on the understanding that effects arising from WTG and OSP(s) foundations and cables are relatively small in magnitude, and localised, with a conservative 15km Zoi encompassing direct and indirect effects to benthic and fish habitat (with the exception of noise). 15km covers in excess of a typical tidal excursion and also reflects the distance used in the Round 4 plan level HRA screening (NIRAS, 2021), which is relevant for fish and benthic habitats. Analysis of ABPmer tidal ellipse data identified a spring tidal excursion of approximately 10km in an east-west orientation at the windfarm site.
73. An assessment of all impacts from the Project on physical processes, including increases in suspended sediment concentrations (SSCs) and subsequent deposition, bedload sediment transport and changes to the wave and tidal regime has been undertaken and, in all cases, impacts are limited to a 10km distance from the site. This considered the sediment type found within the windfarm site, the specific Project parameters and modelling and monitoring from other existing windfarms, or those in the planning process (including modelling undertaken for Awel y Môr and the Mona and Morgan Offshore Wind projects). As such, a Zoi of 15km was considered conservative.
74. For underwater noise impacts, a Zoi of 50km is used, which is a conservative estimate of the range of noise impacts to fish. The 50km range reflects a worst-case scenario, considering herring as a noise sensitive species, along with pile driving, which is considered one of the noisiest construction activities. Initial results from underwater noise modelling for the Project have found a worst-case behavioural disturbance of 47km for herring, a hearing specialist species (assuming a 135dB threshold and that fish are stationary).
75. **Table 5.1** identifies the MCZs within the 15km and 50km Zoi, along with the distances from the Project windfarm site.

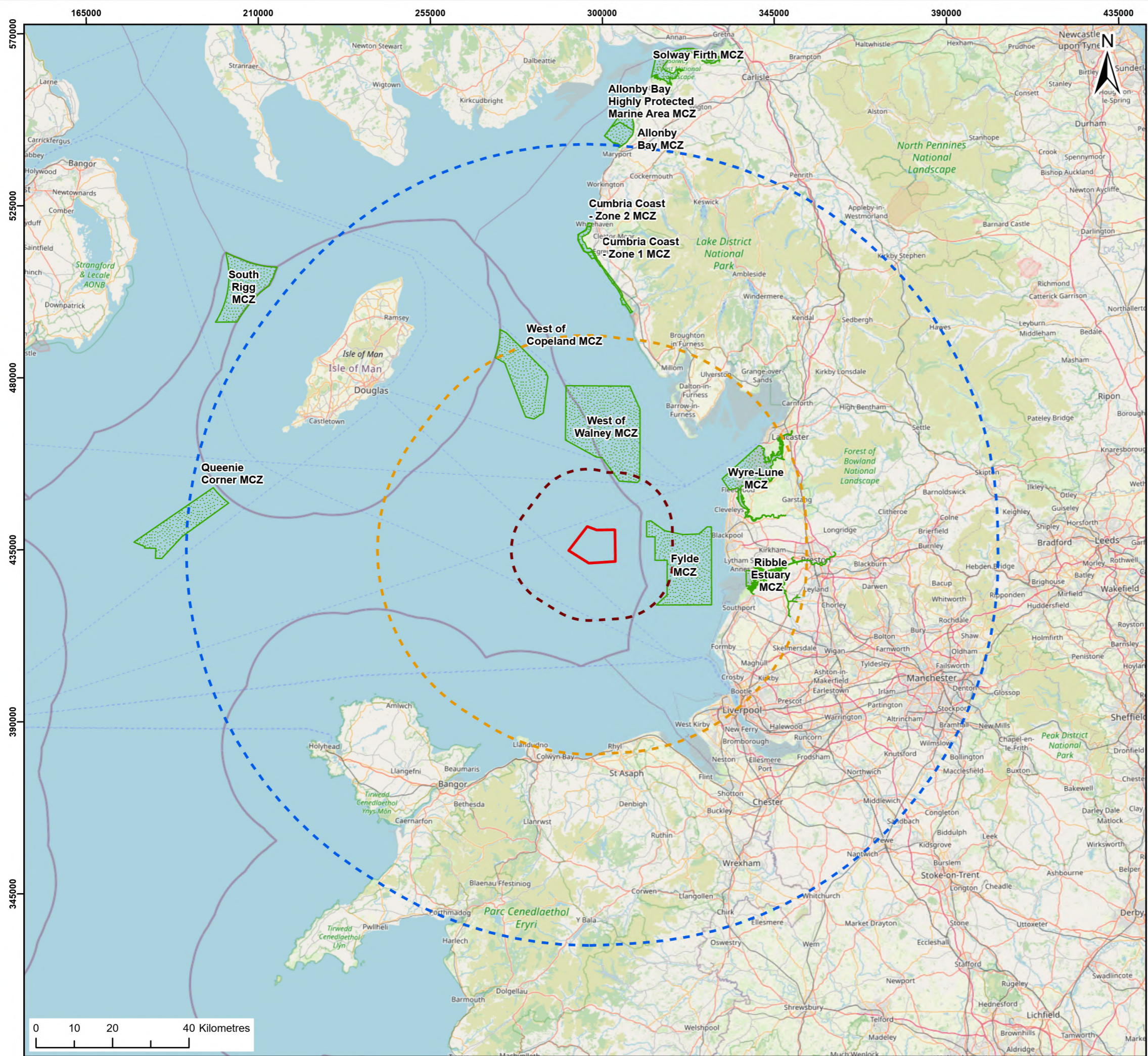
76. For all MCZs located over 50km from the windfarm site, there is no potential pathway for impact from the Project, alone or cumulatively with other projects, and these were screened out. Only MCZs found over 15km from the Project windfarm site, which are designated for fish, were screened in, as there are no indirect effects to benthic or physical features.
77. The MCZs screened in (**Table 5.1**) were considered further in **Section 6**.

Table 5.1 Distances from windfarm site to MCZs in the screening search area

Designation name	Distance from the windfarm site	Screened in /out	Protected features	Rationale
Fylde MCZ	8.7km	In	Subtidal sand. Subtidal mud.	Within Zol for indirect impacts.
West of Walney MCZ	12.8km	In	Subtidal sand. Subtidal mud. Sea-pen and burrowing megafauna communities.	Within Zol for indirect impacts.
West of Copeland MCZ	31.4km	Out	Subtidal coarse sediment, subtidal sand, subtidal mixed sediments	Beyond the Zol for direct and indirect impacts.
Wyre-Lune MCZ	31.1km	In	Smelt <i>Osmerus eperlanus</i> .	Within the Zol for noise impacts to fish.
Ribble Estuary MCZ	34.4km	In	Smelt.	Within the Zol for noise impacts to fish.
Cumbria Coast MCZ	56.9km	Out	High energy intertidal rock. Honeycomb worm <i>Sabellaria alveolata</i> reefs. Intertidal biogenic reefs. Intertidal sand and muddy sand. Intertidal underboulder communities. Moderate energy infralittoral rock. Peat and clay exposures. Razorbill <i>Alca torda</i> .	Beyond the Zol for direct and indirect impacts. While the windfarm site is within the foraging range for Razorbill the MCZ boundary is over 50km. The Project would not impact Razorbills nesting area (the MCZ designation) on the Cumbria Coast MCZ. Impacts to Razorbill however have been part of the EIA assessment.
Queenie Corner MCZ	89.8km	Out	Sea-pen & burrowing megafauna communities. Subtidal mud.	Beyond the Zol for direct and indirect impacts.



Designation name	Distance from the windfarm site	Screened in /out	Protected features	Rationale
Allonby Bay MCZ	99.5km	Out	<p>Low energy intertidal rock.  Moderate energy intertidal rock.  High energy intertidal rock.  Intertidal biogenic reefs.  Intertidal coarse sediment.  Intertidal sand and muddy sand. Moderate energy infralittoral rock. Subtidal biogenic reefs.  Subtidal coarse sediment.  Subtidal mixed sediments.  Subtidal sand.  Peat and clay. Blue mussel <i>Mytilus edulis</i>.  Honeycomb worm <i>Sabellaria alveolata</i> reefs.</p>	Beyond the ZoI for direct and indirect impacts.
South Rigg MCZ	>100km	Out	<p>Moderate energy circalittoral rock. Subtidal mixed sediments.  Sea-pen &amp; burrowing megafauna communities.  Subtidal coarse sediment.  Subtidal mud.  Subtidal sand.</p>	Beyond the ZoI for direct and indirect impacts.



- Legend:**
- Morecambe Offshore Windfarm Site
  - Morecambe Offshore Windfarm Site 100km buffer
  - Morecambe Offshore Windfarm Site 50km buffer
  - Morecambe Offshore Windfarm Site 15km buffer
  - Marine Conservation Zones (MCZ)

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**Report:**  
Morecambe Offshore Windfarm: Generation Assets  
MCZ Screening

**Title:**  
Morecambe Offshore Windfarm location  
with Marine Conservation Zones

Figure: 5.1      Drawing No: PC1165-RHD-ZZ-OF-DR-Z-0103

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P03	01/03/2024	JH	SB	A3	1:1,000,000
P04	09/04/2024	JH	SB	A3	1:1,000,000

Co-ordinate system: WGS 1984 UTM Zone 30N



## 6 Screening of impacts on protected features

78. Of the MCZs identified in **Section 5**, this section considers the potential for any impacts as a result of the Project, alone or cumulatively with other plans and projects, on the protected features of the MCZ or any physical processes on which the features are dependent.

### 6.1 Fylde MCZ

79. Fylde MCZ is located in Liverpool Bay, lying between 3km and 20km off the Fylde coast and Ribble estuary. The Fylde MCZ protects an area of approximately 260km<sup>2</sup>. The depth of the seabed within the site ranges from almost being exposed on low tide (just 35cm depth) to 22m at its deepest part.

#### 6.1.1 Protected features

80. The Fylde MCZ is designated for two broadscale marine habitat features (**Table 6.1**).

*Table 6.1 Protected features of the Fylde MCZ (source: Department for Environment, Food and Rural Affairs (Defra), 2016a)*

Protected feature	Type of feature	Management approach
Subtidal sand	Broadscale marine habitat	Maintain in favourable condition
Subtidal mud	Broadscale marine habitat	Maintain in favourable condition

81. The Fylde MCZ contains the extensive areas of subtidal sediment habitats and plant and animal communities present. These are considered to be good representatives of the seabed habitats and communities found on the eastern side of Liverpool Bay. The sediment habitats are known to support rich bivalve mollusc populations.

82. The site includes important nursery and spawning grounds for several commercially important fish species, including sole *Solea solea*, plaice *Pleuronectes platessa* and whiting *Merlangius merlangus* (Defra 2016a).

83. The subtidal sediments within the site are sand and mud. The seabed in this area is highly productive. It supports an abundance of animals, such as crabs, starfish, shrimp-like crustaceans and bivalve shellfish, including the commonly found small nut-shell *Nucula nitidosa*, a razor shell *Pharus legumen* and the white furrow shell *Abra alba*. Flatfish, including sole and plaice, are also supported by the habitat within the site (Defra, 2016a).

### 6.1.2 Conservation Objectives

84. The overarching conservation objective for the site is for its designated features to be maintained in favourable condition (see **Table 6.1**).
85. For each protected feature, favourable condition means that:
- Its extent is stable or increasing
  - Its structure and functions, its quality, and the composition of its characteristic biological communities (including diversity and abundance of species forming part or inhabiting the habitat) are sufficient to ensure that its condition remains healthy and does not deteriorate
86. The reference to the composition of the characteristic biological communities of a habitat includes a reference to the diversity and abundance of species forming part of, or inhabiting, that habitat.
87. For the purposes of this MCZ, any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery. For the purpose of determining whether a protected feature is in favourable condition, within the meaning of this designation, any alteration to that feature brought about entirely by natural processes is to be disregarded.

### 6.1.3 Potential impacts

88. The potential impacts from the Project have been identified within the Scoping Report (Document Reference 5.4) submitted to PINS in June 2022. This section summarises the sources of pressures with the potential to have significant effects on the protected features of the Fylde MCZ.
89. As shown in **Table 5.1** and **Figure 5.1**, the windfarm site is 8.7km away from the MCZ, therefore, there is no potential direct impacts (which are screened out) which include electromagnetic effects, physical disturbance and habitat loss and the physical presence of infrastructure. There is, however, the potential for indirect impacts to the MCZ, which are screened in for construction, operation and maintenance, and decommissioning, as described below.
90. Due to the presence and movements of construction vessels/equipment, there is the potential for spills and leaks, which could result in changes to water and sediment quality. All vessels involved would be required to comply with the International Convention for the Prevention of Pollution from Ships (MARPOL) 73/78. A Project Environment Management Plan (PEMP) (or similar, for individual packages of works) would also be put in place for the Project, to ensure all works are undertaken in line with best practice for working in the marine environment (an Outline PEMP has been submitted with the DCO Application (Document Reference 6.2)). A PEMP would also be finalised for

the Project post-consent and implemented to cover the construction and operation and maintenance phases of the Project. This would set out all procedures and measures (in the form of a Marine Pollution Contingency Plan (MPCP) to manage a pollution event, if one should occur, to be implemented during construction and operation to minimise the risk of, and subsequently manage any accidental spills. The final PEMP(s) would be developed in consultation with key stakeholders for approval by the MMO. It is therefore determined that accidental spills and leaks are screened out of the assessment.

91. The impacts screened in (discussed below) are assessed for the Project-alone and cumulatively with other plans and projects, as well as considering the interaction of multiple impacts on the same receptor.

#### **6.1.3.1 Construction phase**

92. During construction of the Project, the seabed preparation, foundation installation, vessel jack-up and inter-array and platform link cable installation within the windfarm site would have an indirect effect on the surrounding seabed habitats and associated communities.
93. Indirect effects of seabed disturbance would be increased SSCs and subsequent sediment deposition, and where sediments are remobilised, there is potential to release sediment-bound contaminants into the water, if present. Effects to hydrodynamics and bedload sediment transport also have the potential for indirect effects on the surrounding seabed through changes to the physical processes supplying and maintaining sediment at designated sites.
94. Construction activities may also displace fishing activity within the windfarm site and cause activity to move into the Fylde MCZ. Additionally, construction vessel operations increase the potential for introduction of marine invasive non-native species (INNS).
95. Similarly, there is a potential pathway for underwater noise and vibration effects from construction activities on the communities supported by the protected habitats.

#### **6.1.3.2 Operation and maintenance phase**

96. Maintenance activities also have the potential to result in temporary indirect impacts, similar to those seen during construction, but significantly lower in magnitude. Effects to hydrodynamics and bedload sediment transport as a result of the Project infrastructure also have the potential for indirect effects on the surrounding seabed.

97. Maintenance activities and change in fishing activity during operation may also displace fishing activity within the windfarm site and cause activity to move into the Fylde MCZ.
98. Noise and vibration generated by the operational WTGs can be conducted through the tower and foundations into the water column. Monitoring studies of underwater noise from operational WTGs have shown the noise levels from North Hoyle, Scroby Sands, Kentish Flats and Barrow windfarms to be only marginally above ambient noise levels (Stober and Thomsen, 2021). Operational WTG noise impact ranges have been modelled for the Project, using the continuous noise criteria from Popper *et al.* (2014) for fish (swim bladder involved in hearing) and were found to be less than 50m. As such, operational noise impacts are scoped out, given the highly localised effects.

### 6.1.3.3 Decommissioning phase

99. The potential impacts arising during the decommissioning phase are envisaged to be similar to those described for the construction phase.

### 6.1.4 Summary of pressures screened into MCZA

100. Screening of pressures associated with construction, operation and maintenance and decommissioning of the Project is shown in **Table 6.2** for each feature of the MCZ.

*Table 6.2 Summary of potential pressures, and those screened in (✓) and screened out (X) for subtidal mud features of the Fylde MCZ*

Pressure	Construction phase	Operation and maintenance phase	Decommissioning phase
Physical disturbance and habitat loss	X	X	X
Changes to the physical processes supplying and maintaining sediment	✓	✓	✓
Fishing displacement	✓	✓	✓
Changes to the physical processes supplying and maintaining sediment	✓	✓	✓
Increased SSC	✓	✓	✓
Re-mobilisation of contaminated sediments	✓	✓	✓
Sediment deposition (smothering)	✓	✓	✓
Underwater noise and vibration	✓	X	✓

Pressure	Construction phase	Operation and maintenance phase	Decommissioning phase
Introduction and colonisation of non-native species	✓	✓	✓
Risk of deterioration of water quality due to spillages/leakage	X	X	X
Electromagnetic Fields (EMF)	X	X	X
Impact interactions (multiple impacts to the same receptor)	✓	✓	✓
Cumulative effects (from other plans and projects)	✓	✓	✓

## 6.2 West of Walney MCZ

101. West of Walney MCZ is a site in the Irish Sea, off the coast of Cumbria and to the west of Walney Island. The site covers around 388km<sup>2</sup>, most of which is in inshore waters, but with a small section crossing the 12 nautical mile (nm) boundary into offshore waters.

### 6.2.1 Protected features

102. The West of Walney MCZ is designated for two broadscale marine habitat features and one Feature of Conservation Importance (**Table 6.3**).

*Table 6.3 Protected features of the West of Walney MCZ (source: Defra, 2016b)*

Protected feature	Type of feature	Management approach
Subtidal sand	Broadscale marine habitat	Recover to favourable condition
Subtidal mud	Broadscale marine habitat	Recover to favourable condition
Sea-pen and burrowing megafauna communities	Feature of Conservation Importance	Recover to favourable condition

### 6.2.2 Conservation Objectives

103. The overarching conservation objective for the site is for its designated features to be brought into favourable condition (see **Table 6.3**).

104. For each protected feature, favourable condition means that:

- Its extent is stable or increasing

- Its structure and functions, its quality, and the composition of its characteristic biological communities (including diversity and abundance of species forming part or inhabiting the habitat) are sufficient to ensure that its condition remains healthy and does not deteriorate

105. The reference to the composition of the characteristic biological communities of a habitat includes a reference to the diversity and abundance of species forming part of, or inhabiting, that habitat.
106. For the purposes of this MCZ, any temporary deterioration in condition was disregarded if the habitat is sufficiently healthy and resilient to enable its recovery, and for the purpose of determining whether a protected feature is in favourable condition within the meaning of this designation, any alteration to that feature brought about entirely by natural processes was disregarded.

### 6.2.3 Potential impacts

107. This section summarises the sources of pressures with the potential to have significant effects on the protected features of the West of Walney MCZ.
108. As shown in **Table 5.1** and **Figure 5.1**, the Project windfarm site is located 12.8km away from the MCZ, and therefore, there were no potential direct impacts (which were screened out) including electromagnetic effects, physical disturbance and habitat loss and the physical presence of infrastructure. There was, however, the potential for indirect impacts to the MCZ, which were screened in for construction, operation and maintenance, and decommissioning, as described below.
109. As per the rationale provided for the Fylde MCZ in **Section 6.1.3.2**, it was determined that accidental spills and leaks were to be screened out of the assessment.
110. The impacts screened in (discussed below) have been assessed for the Project-alone and cumulatively with other plans and projects, as well as considering the interaction of multiple impacts on the same receptor.

#### 6.2.3.1 Construction phase

111. During construction of the Project, the seabed preparation, foundation installation, vessel jack-up, and inter-array and platform link cable installation within the windfarm site would have an indirect effect on the surrounding seabed habitats and associated communities.
112. Indirect effects of seabed disturbance would be increased SSCs and sediment deposition, and where sediments are remobilised, there is potential to release sediment-bound contaminants into the water, if present. Effects to hydrodynamics and bedload sediment transport also have the potential for



indirect effects on the surrounding seabed, through changes to the physical processes supplying and maintaining sediment at designated sites.

- 113. Construction activities may also displace fishing activity within the windfarm site and cause disturbance elsewhere to the seabed. Additionally, construction vessel operations increase the potential for introduction of marine non-native species.
- 114. Similarly, there is a potential pathway for underwater noise and vibration effects from construction activities on the communities supported by the protected habitats.

### 6.2.3.2 Operation and maintenance phase

- 115. Maintenance activities also have the potential to result in temporary indirect impacts, similar to those seen during construction, but significantly lower in magnitude.
- 116. As per the rationale provided for the Fylde MCZ in **Section 6.1.3.2**, operational noise and vibration from the WTGs were screened out of the assessment.

### 6.2.3.3 Decommissioning phase

- 117. The potential impacts arising during the decommissioning phase were envisaged to be similar to those described for the construction phase.

### 6.2.4 Summary of pressures screened into MCZA

- 118. Screening of pressures associated with construction, operation and maintenance, and decommissioning, phases of the Project is shown in **Table 6.4** for each feature of the MCZ.

*Table 6.4 Summary of potential pressures, and those screened in (✓) and screened out (X) in relation to subtidal sand, subtidal mud, and sea-pen and burrowing megafauna communities*

Pressure	Construction phase	Operation and maintenance phase	Decommissioning phase
Physical disturbance and habitat loss	X	X	X
Physical presence of infrastructure (long term change in habitat type)	X	X	X
Changes to the physical processes supplying and maintaining sediment	✓	✓	✓
Increased SSC	✓	✓	✓

Pressure	Construction phase	Operation and maintenance phase	Decommissioning phase
Re-mobilisation of contaminated sediments	✓	✓	✓
Sediment deposition (smothering)	✓	✓	✓
Underwater noise and vibration	✓	X	✓
Introduction and colonisation of non-native species	✓	✓	✓
Risk of deterioration of water quality due to spillages / leakage	X	X	X
EMF	X	X	X
Impact interactions (multiple impacts to the same receptor)	✓	✓	✓
Cumulative effects (from other plans and projects)	✓	✓	✓

## 6.3 Wyre Lune MCZ

119. Wyre Lune MCZ is an inshore site in the southern part of Morecambe Bay, Lancashire. The site covers around 92km<sup>2</sup>.

### 6.3.1 Protected features

120. The Wyre Lune MCZ is designated for Smelt (*Osmerus eperlanus*) (**Table 6.5**).

*Table 6.5 Protected features of the Wyre Lune MCZ (source: Defra, 2019a)*

Protected feature	Type of feature	Management approach
Smelt ( <i>Osmerus eperlanus</i> )	Specific species	Recover to favourable condition

### 6.3.2 Conservation Objectives

121. The overarching conservation objective for the site is for its designated features to be brought into favourable condition (see **Table 6.5**).

122. The conservation objective is that, in relation to smelt:

- The habitat used by members of that species for the purposes of spawning (“spawning habitat”) (i) so far as already in favourable condition, remains in such condition, and (ii) so far as not already in

favourable condition, be brought into such condition, and remain in such a condition

- The population of that species (i) so far as already in favourable condition, remains in such condition; (ii) so far as not already in favourable condition, be brought into such condition, and remain in such condition

123. Favourable condition means that:

- With respect to a spawning habitat within the Zone, means that the habitat is of sufficient quality and quantity to enable members of the species using the habitat to survive, aggregate, nest, lay or fertilise eggs during breeding
- With respect to the population of that species within the Zone, means that the composition of that population in terms of number, age and sex ratio are such as to ensure that the population is maintained in numbers which enable it to thrive

124. For the purposes of this MCZA screening, any temporary reduction of numbers was disregarded if the population was sufficiently healthy and resilient to enable its recovery. For the purpose of determining whether a protected feature is in a favourable condition, any alteration to that feature brought about entirely by natural processes was disregarded.

### 6.3.3 Potential impacts

125. This section summarises the sources of pressures with the potential to have significant effects on the protected features of the Wyre Lune MCZ.

126. As shown in **Table 5.1** and **Figure 5.1**, the Project windfarm site is located 31.1km away from the MCZ, and as such, the only indirect effect is underwater noise.

127. As per the rationale provided for the Fylde MCZ in **Section 6.2.3.2**, accidental spills and leaks were screened out of the assessment.

128. The impacts screened in (discussed below) have been assessed for the Project-alone and cumulatively with other plans and projects.

#### 6.3.3.1 Construction phase

129. During construction, there is a potential pathway for underwater noise (with the worst case considered for impact piling of foundations and OSPs) and vibration effects.

### 6.3.3.2 Operation and maintenance phase

130. Maintenance activities also have the potential to result in temporary indirect impacts, but significantly lower in magnitude, given noise sources would be limited to activities such as vessel movement and the operational WTGs.
131. As per the rationale provided for the Fylde MCZ in **Section 6.2.3.2**, operational noise and vibration from the WTGs has been screened out of the assessment.

### 6.3.3.3 Decommissioning phase

132. The potential impacts arising during the decommissioning phase were envisaged to be similar to those described for the construction phase.

### 6.3.4 Summary of pressures screened into MCZA

133. Screening of pressures associated with construction, operation and maintenance, and decommissioning, phases of the Project is shown in **Table 6.6** for each feature of the MCZ.

*Table 6.6 Summary of potential pressures, and those screened in (✓) and screened out (X) in relation smelt*

Pressure	Construction phase	Operation and maintenance phase	Decommissioning phase
Physical disturbance and habitat loss	X	X	X
Physical presence of infrastructure (long term change in habitat type)	X	X	X
Increased SSC	X	X	X
Re-mobilisation of contaminated sediments	X	X	X
Sediment deposition (smothering)	X	X	X
Underwater noise and vibration	✓	X	✓
Introduction and colonisation of non-native species	X	X	X
Risk of deterioration of water quality due to spillages / leakage	X	X	X
EMF	X	X	X
Impact interactions (multiple impacts to the same receptor)	X	X	X

Pressure	Construction phase	Operation and maintenance phase	Decommissioning phase
Cumulative effects (from other plans and projects)	✓	✓	✓

## 6.4 Ribble Estuary MCZ

134. Ribble Estuary MCZ is an inshore site, on the northwest coast of England, near Preston. The site covers around 15km<sup>2</sup>.

### 6.4.1 Protected features

135. The Ribble Estuary MCZ is designated for Smelt (*Osmerus eperlanus*) (**Table 6.7**).

*Table 6.7 Protected features of the Ribble Estuary MCZ (source: Defra, 2019b)*

Protected feature	Type of feature	Management approach
Smelt ( <i>Osmerus eperlanus</i> )	Specific species	Recover to favourable condition

### 6.4.2 Conservation Objectives

136. The overarching conservation objective for the site is for its designated features to be brought into favourable condition (see **Table 6.7**).

137. The conservation objectives are that, in relation to smelt:

- The habitat used by members of that species for the purposes of spawning (“spawning habitat”) (i) so far as already in favourable condition, remains in such condition, and (ii) so far as not already in favourable condition, be brought into such condition, and remain in such a condition
- The population of that species (i) so far as already in favourable condition, remains in such condition; (ii) so far as not already in favourable condition, be brought into such condition, and remain in such condition

138. Favourable condition means that:

- With respect to a spawning habitat within the Zone, means that the habitat is of sufficient quality and quantity to enable members of the species using the habitat to survive, aggregate, nest, lay or fertilise eggs during breeding

- With respect to the population of that species within the Zone, means that the composition of that population in terms of number, age and sex ratio are such as to ensure that the population is maintained in numbers which enable it to thrive

139. For the purposes of this MCZ, any temporary reduction of numbers was disregarded if the population is sufficiently healthy and resilient to enable its recovery. For the purpose of determining whether a protected feature is in a favourable condition, any alteration to that feature brought about entirely by natural processes was disregarded.

### 6.4.3 Potential impacts

140. This section summarises the sources of pressures with the potential to have significant effects on the protected features of the Ribble Estuary MCZ.

141. As shown in **Table 5.1** and **Figure 5.1**, the Project windfarm site is located 34.4km away from the MCZ, and as such, the only indirect effect was underwater noise.

142. As per the rationale provided for the Fylde MCZ in **Section 6.1.3** accidental spills and leaks were screened out of the assessment for the Ribble Estuary MCZ.

143. The impacts screened in (discussed below) have been assessed for the Project-alone and cumulatively with other plans and projects.

#### 6.4.3.1 Construction

144. During construction, there is a potential pathway for underwater noise (with the worst-case considered for impact piling of foundations and OSP(s) and vibration effects.

#### 6.4.3.2 Operation and maintenance

145. Maintenance activities also have the potential to result in temporary indirect impacts, but significantly lower in magnitude, given noise sources would be limited to activities such as vessel movement and the operational WTGs.

146. As per the rationale provided for the Fylde MCZ, in **Section 6.1.3.2**, operational noise and vibration from the WTGs was screened out of the assessment.

#### 6.4.3.3 Decommissioning

147. The potential impacts arising during the decommissioning phase are envisaged to be similar to those described for the construction phase.

#### 6.4.4 Summary of pressures screened into MCZA

148. Screening of pressures associated with construction, operation and maintenance, and decommissioning, of the Project is shown in **Table 6.8** for each feature of the MCZ.

*Table 6.8 Summary of potential pressures, and those screened in (✓) and screened out (X) in relation to smelt*

Pressure	Construction phase	Operation and maintenance phase	Decommissioning phase
Physical disturbance and habitat loss	X	X	X
Physical presence of infrastructure (long term change in habitat type)	X	X	X
Increased SSC	X	X	X
Re-mobilisation of contaminated sediments	X	X	X
Sediment deposition (smothering)	X	X	X
Underwater noise and vibration	✓	X	✓
Introduction and colonisation of non-native specie	X	X	X
Risk of deterioration of water quality due to spillages / leakage	X	X	X
EMF	X	X	X
Impact interactions (multiple impacts to the same receptor)	X	X	X
Cumulative effects (from other plans and projects)	✓	✓	✓

## 7 Cumulative effects

149. The Zol from the Project windfarm site has a conservative range of c.15km to 50km (for underwater noise). As such, in order to provide a conservative search area for screening of plans and projects which have potential to interact with the impacts of the Project, a range of 50km from the Project windfarm site has been used (**Figure 7.1**). Where projects or plans' Zol overlaps the MCZs screened in for the Project, they are screened into the cumulative assessment.

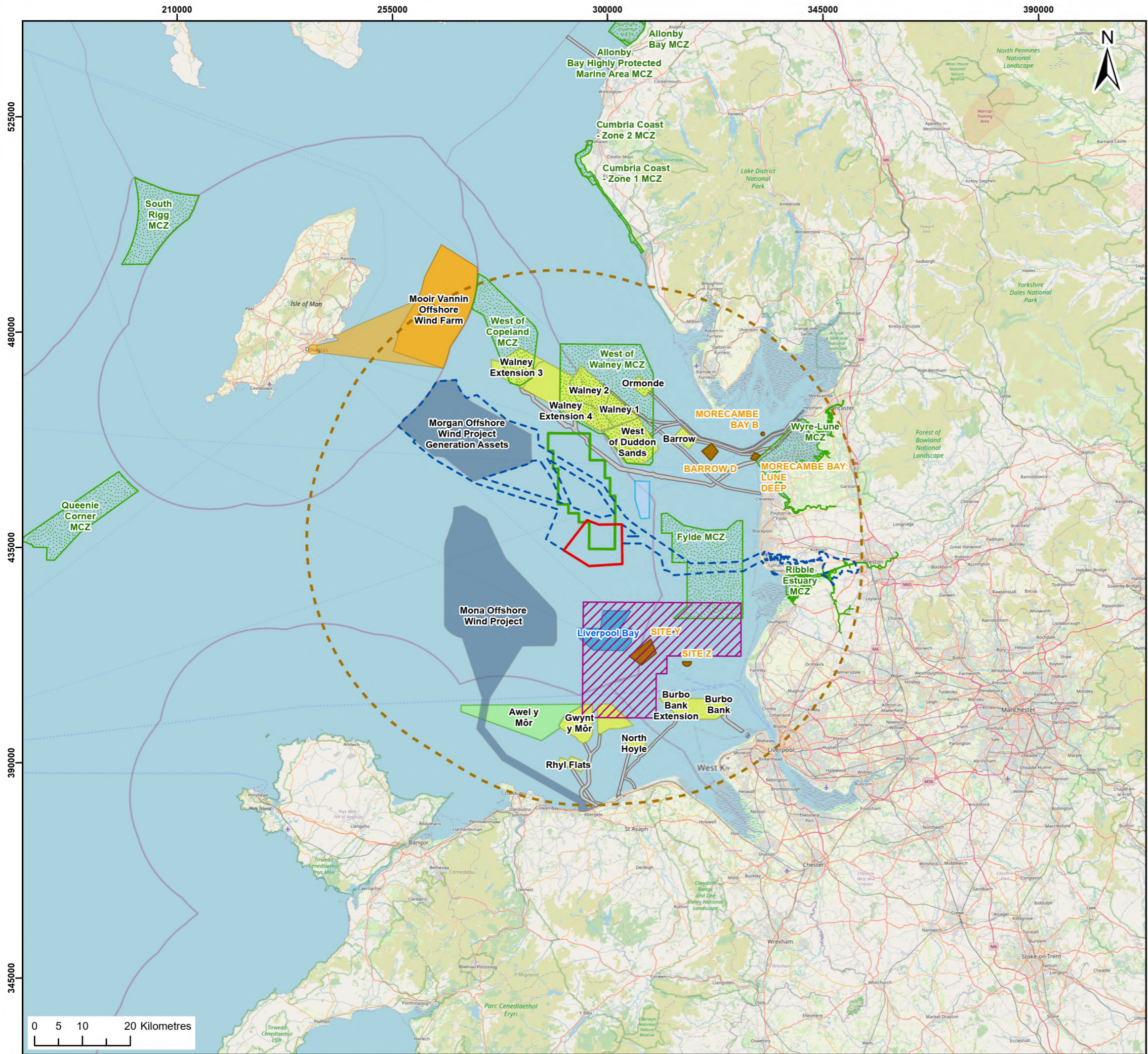
150. Plans and projects that existed at the time of MCZ designation, or the latest status reports which are undertaken every six years (whichever is most recent), were considered to be part of the baseline environment. Fylde MCZ

and West of Walney MCZ were included in the Defra (2018) Marine Protected Areas Network Report. Plans and projects prior to 2018 were therefore considered part of the baseline and were screened out of the cumulative assessment, unless maintenance activities are identified with the potential for cumulative effects. Plans and projects considered in the Stage 1 MCZA cumulative assessment are listed below and screening results are presented in **Table 7.1**:

- Mona Offshore Wind Project
- Morgan Offshore Wind Project Generation Assets
- Awel y Môr Offshore Wind Farm
- Barrow Offshore Windfarm
- West of Duddon Sands Offshore Windfarm
- Walney 1,2 and extension Offshore Windfarms
- Ormonde Offshore Windfarm
- North Hoyle Offshore Windfarm
- Gwynt y Môr Offshore Wind Farm
- Burbo Bank Extension Offshore Windfarm
- Mooir Vannin (Isle of Man) Offshore Windfarm
- Isle of Man Interconnector
- Transmission Assets associated with Morgan and Morecambe Offshore windfarms (co-located assets)
- Liverpool Bay Aggregate Exploration Area
- Hilbre Swash Aggregate Production Area
- Liverpool Bay Aggregate Production Area
- Liverpool outer Disposal site Z and Y
- Barrow D Disposal site
- Morecambe Bay B Disposal Site
- Morecambe Bay Lune Deep Disposal Site
- Gateway Gas Storage Project
- Carbon Capture Storage Licence (CS004)
- Carbon Capture Storage Area (EIS Area 1)

151. Existing oil and gas and infrastructure was not considered within the cumulative assessment. This is on the basis that operation and maintenance activity would be minimal and not expected to give rise to cumulative effects, given the distance from any MCZ. Decommissioning activities for oil and gas are either planned to be completed before construction of the Project or there are no publicly available details of decommissioning timelines.





- Legend:**
- Morecambe Offshore Windfarm Site
  - Morgan and Morecambe Offshore Wind Farms: Transmission Assets (In planning)
  - 50km buffer
  - Carbon Capture Storage Area (EIS Area 1)
  - Carbon Capture Storage License (CS004)
  - Gateway Gas Storage Project
  - Active Disposal Sites
  - Marine Conservation Zones (MCZ)
  - Offshore Wind Cable Agreements
- Minerals & Aggregates Site Agreements**
- Production Agreement Area
- Windfarm status**
- Fully commissioned
  - Consented
  - In Planning
  - Concept / Early planning

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**Report:**  
Morecambe Offshore Windfarm: Generation Assets MCZ Screening

**Title:**  
Search area for screening of plans and projects for potential cumulative impacts

Figure: 7.1 Drawing No: PC1165-RHD-ZZ-OF-DR-Z-0104

Revision:	Date:	Drawn:	Checked:	Size:	Scale:
P03	01/03/2024	JH	SB	A3	1:800,000
P04	22/04/2024	JH	SB	A3	1:800,000

Co-ordinate system: WGS 1984 UTM Zone 30N



Table 7.1 Plans and projects screened into the MCZA cumulative impact assessment

Plan or project	Plan/project has potential to impact MCZ			Screening assessment	Screened In or Out
	Fylde MCZ	West of Walney MCZ	Wyre Lune/ Ribble Estuary MCZ		
Mona Offshore Wind Project	No	No	Yes	Fylde and West of Walney MCZs are beyond 15km and therefore there is no pathway for benthic impacts, however, impacts from underwater noise are considered as they have the potential for overlapping construction activities and overlapping impact ranges.	In
Morgan Offshore Wind Project	No	Yes	Yes	West of Walney MCZ is within 15km and therefore there is a pathway for suspended sediments (benthic) impacts, also impacts from underwater noise are considered as they have the potential for overlapping construction activities and overlapping impact ranges.	In
Awel y Môr Offshore Wind Farm	No	No	Yes	Fylde and West of Walney MCZs are beyond 15km and therefore there is no pathway for suspended sediments (benthic) impacts, however, impacts from underwater noise are considered as they have the potential for overlapping construction activities and overlapping impact ranges.	In
North Hoyle Offshore Windfarm	No	No	No	Beyond 15km and therefore there is no pathway for benthic impacts.	Out
Gwynt y Môr Offshore Windfarm	No	No	No	Beyond 15km and therefore there is no pathway for benthic impacts.	Out
Burbo Bank Extension Offshore Windfarm	No	No	No	Beyond 15km and therefore there is no pathway for benthic impacts.	Out
Barrow Offshore Windfarm	No	No	No	Within 15km, however any maintenance activities associated with the Barrow site would be minimal and,	Out

Plan or project	Plan/project has potential to impact MCZ			Screening assessment	Screened In or Out
	Fylde MCZ	West of Walney MCZ	Wyre Lune/ Ribble Estuary MCZ		
				given the distance, only consist of low magnitude indirect impacts.	
Ormonde Offshore Windfarm	No	No	No	Within 15km, however any maintenance activities associated with the Barrow site would be minimal and, given the distance, only consist of low magnitude indirect impacts.	Out
West of Duddon Sands Offshore Windfarm	No	Yes	No	Within 15km, while any maintenance activities associated with the Wind Farm Site would be minimal given the direct overlap with the West of Walney MCZ, the project is screened in for suspended sediments (benthic) impacts.	In
Walney 1,2 and extension Offshore Windfarm	No	Yes	No	Beyond 15km, while any maintenance activities associated with the Walney Wind Farm Sites would be minimal given the direct overlap with the West of Walney, MCZ the project is screened in for suspended sediments (benthic) impacts.	In
Isle of Man (Mooir Vannin) Windfarm	No	No	No	Beyond Zol for all effects, including underwater noise at a distance of over 70km from the coast and 30km from the Project windfarm site.	Out
Isle of Man Interconnector	Yes	Yes	No	Within 15km, while any maintenance activities associated with the Isle of Man Interconnector would be minimal given the direct overlap with the Fylde MCZ, the project is screened in for suspended sediments (benthic) impacts.	In
Transmission Assets associated with Morgan and Morecambe Offshore windfarms (co-located)	Yes	No	Yes	Within 15km, and therefore there is a pathway for suspended sediments (benthic) impacts. Also considered for noise impacts to fish.	In

Plan or project	Plan/project has potential to impact MCZ			Screening assessment	Screened In or Out
	Fylde MCZ	West of Walney MCZ	Wyre Lune/Ribble Estuary MCZ		
Liverpool Bay aggregate exploration area	No	No	No	Beyond 15km and therefore there is no pathway for impacts.	Out
Hilbre Swash Aggregate Production Area	No	No	No	Beyond 15km and therefore there is no pathway for impacts.	Out
Liverpool Bay Aggregate Production Area	Yes	No	No	Within 15km and therefore there is a pathway for impacts (suspended sediments (benthic)).	In
Liverpool outer Disposal site Z and Y	Yes	No	No	Within 15km and therefore there is a pathway for impacts (suspended sediments (benthic)).	In
Barrow D Disposal site	No	Yes	Yes	Within 15km and therefore there is a pathway for impacts (suspended sediments (benthic)).	In
Morecambe Bay B Disposal Site	No	No	Yes	Within 15km and therefore there is a pathway for impacts (suspended sediments (benthic)).	In
Morecambe Bay Lune Deep Disposal Site	No	No	Yes	Within 15km and therefore there is a pathway for impacts (suspended sediments (benthic)).	In
Gateway Gas Storage Project	No	No	No	Project noted, but on hold since 2010.	Out
Carbon Capture Storage Licence (CS004)	No	No	No	Project noted and linked to wider HyNet North West project, however no details of associated offshore works and reuse of oil and gas infrastructure are noted.	Out
Carbon Capture Storage Area (EIS Area 1)	No	No	No	Noted, however no details of projects (Morecambe Net Zero Cluster, currently undergoing exploration).	Out

## 8 MCZA screening summary

152. **Table 8.1** provides a summary of the MCZs screened in for further consideration of the potential for the Project to hinder the conservation objectives of the features of each site, alone or cumulatively with other plans and projects.

*Table 8.1 Summary of the MCZs screened in for further consideration*

MCZ	Features screened in	Impacts screened in (alone and cumulatively)
Fylde MCZ	<ul style="list-style-type: none"> <li>▪ Subtidal mud</li> <li>▪ Subtidal sand</li> </ul>	Increased SSCs
		Sediment deposition (smothering)
		Remobilisation of contaminated sediment
		Underwater noise and vibration
		Introduction and colonisation of non-native species
		Changes to the physical processes supplying and maintaining sediment
		Changes in fishing activity
West of Walney MCZ	<ul style="list-style-type: none"> <li>▪ Subtidal sand</li> <li>▪ Subtidal mud</li> <li>▪ Sea-pen and burrowing megafauna communities</li> </ul>	Increased SSCs
		Sediment deposition (smothering)
		Remobilisation of contaminated sediment
		Underwater noise and vibration
		Introduction and colonisation of non-native species
		Changes to the physical processes supplying and maintaining sediment
		Changes in fishing activity
Wyre Lune MCZ	Smelt	Underwater noise and vibration
Ribble Estuary MCZ	Smelt	Underwater noise and vibration

## 8.1 Cumulative impacts – plans and projects screening

153. The following plans and projects have been screened into the cumulative impact assessment, as detailed in **Table 7.1**, and have been considered in the MCZA:

- Morgan Offshore Wind Project Generation Assets
- Mona Offshore Wind Project
- Walney 1,2 and extension and West of Duddon Sands Offshore Windfarms (maintenance activities)
- Awel y Môr Offshore Wind Farm
- Isle of Man Interconnector
- Morgan and Morecambe Offshore Wind Farms: Transmission Assets
- Liverpool Bay Aggregate Production Area
- Liverpool outer Disposal site Z and Y
- Barrow D Disposal site
- Morecambe Bay B Disposal Site
- Morecambe Bay Lune Deep Disposal Site

## 9 References

Department for Environment, Food and Rural Affairs (Defra) (2016a). Fylde Marine Conservation Zone Fact Sheet. Available at: <http://publications.naturalengland.org.uk/publication/4933233460379648?category=1721481> (Accessed March 2024)

Defra (2016b). West of Walney Marine Conservation Zone Fact Sheet. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/492471/mcz-west-walney-factsheet.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/492471/mcz-west-walney-factsheet.pdf) (Accessed February 2024)

Defra (2018). Marine Protected Areas Network Report. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/916310/mcaa-mpa-report-2012-2018a.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/916310/mcaa-mpa-report-2012-2018a.pdf) (Accessed January 2024)

Defra (2019a). Wyre Lune Marine Conservation Zone Fact Sheet. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/915506/mcz-wyre-lune-2019.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/915506/mcz-wyre-lune-2019.pdf) (Accessed January 2024)

Defra (2019b). Ribble Estuary Marine Conservation Zone Fact Sheet. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/915673/mcz-ribble-estuary-2019.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/915673/mcz-ribble-estuary-2019.pdf) (Accessed February 2024)

MMO (2013). Marine Conservation Zones and Marine Licensing guidance. Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/410273/Marine\\_conservation\\_zones\\_and\\_marine\\_licensing.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/410273/Marine_conservation_zones_and_marine_licensing.pdf) (Accessed January 2024)

Morgan Offshore Wind Limited and Morecambe Offshore Windfarm Ltd (2023). Morgan and Morecambe Offshore Wind Farms: Transmission Assets. Preliminary Environmental Information Report Preliminary Environmental Information Report (PEIR). Available at: Information Hub - Morecambe Offshore Windfarm Ltd and Morgan Offshore Wind Limited ([morecambeandmorgan.com](http://morecambeandmorgan.com))

NIRAS (2021). Screening Report - Offshore Wind Leasing Round 4 Plan Level HRA. Report on behalf of The Crown Estate.

PINS (2019). Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects. Version 2 August 2019. <https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-17/> (Accessed December 2023)

Popper, A. N., Hawkins, A. D., Fay, R. R., Mann, D. A., Bartol, S., Carlson, T. J., Coombs, S., Ellison, W. T., Gentry, R. L., Halvorsen, M. B., Løkkeborg, S., Rogers, P. H., Southall, B. L., Zeddis, D. G., & Tavolga, W. N. (2014). ASA S3/SC1.4 TR-2014 Sound Exposure Guidelines for Fishes and Sea Turtles: A Technical Report prepared by ANSI-Accredited Standards Committee S3/SC1 and registered with ANSI. Springer International Publishing.  
<https://doi.org/10.1007/978-3-319-06659-2>

Stöber, U., & Thomsen, F. (2021). How could operational underwater sound from future offshore wind turbines impact marine life?. *The Journal of the Acoustical Society of America*, 149(3), 1791-1795.



## 10 Appendix 1 – Consultation comments and responses relevant to the MCZA screening

Organisation	Comment	How this has been addressed
MMO	The approach to MCZ Assessment screening is presented in the document in paragraph 6 and highlights that the Array area does not coincide with any MCZs directly. The document also provides an indication of which MCZ's are within 100km (set to exceed the regional study area for coastal processes where a potential pathway to receptors may exist) and within 15km (which covers more than a typical tidal excursion, which they describe as being relevant for fish and benthic habitats). However, no data (e.g., tidal direction, tidal excursion for this area) have been provided to substantiate these figures. The MMO advise inclusion of this information to provide evidence for the inclusion/exclusion zones selected.	Further justification has been provided on the tidal ellipse data and the assessment that has been undertaken on coastal processes to define the Zol. More detail is also provided in <b>Chapter 7 Marine Geology, Oceanography and Physical Processes</b> (Document Reference 5.1.7) of the ES.
	Cumulative effects have been considered, however in-combination effects (different effects from the Morecambe Bay Array on a single receptor) have not been included. This information should be included.	Effects with other projects and plans are considered in cumulative effects and interactions between each impact are also highlighted (and screened in) assessed within the MCZA.
	It is not clear whether the pressures that have been screened in are to be equally applicable to all subjects. The MMO would have expected a separate section for each of the subjects as per the HRA. Please can this be clarified.	The tables of pressures have been presented to encompass all impacts that are considered to be screened in. In the HRA, there are a number of additional topics to consider such as marine mammals and birds (where impacts can be quite different). In the MCZ screening given the inter-relationship between many of the topics, it is not considered necessary to separate impacts into topics as a result.

Organisation	Comment	How this has been addressed
	<p>The MMO note that ‘risks to spills and leakage’ has been screened out of the MCZ Assessment (MCZA) as a Project Environmental Management and Monitoring Plan (PEMMP) would be developed to ensure all works are undertaken in line with best practice working in the marine environment. This document will set out all procedures and measures (in the form of a Marine Pollution Contingency Plan (MPCP) to manage a pollution event, should one occur) to be taken during construction and operation to minimize the risk of and subsequently manage in the event of an accidental spill. This is acceptable as the principles as per the HRA do not apply to MCZA, e.g., where any relevant pressures need to be included despite the potential for embedded mitigation.</p>	<p>Agreement noted</p>
	<p>Given the distance from the proposed windfarm, together with these physical tolerances, the MMO is satisfied that mussels within Allonby Bay MCZ are unlikely to be impacted by the proposed development.</p>	<p>Agreement noted</p>
	<p>Both Fylde and West of Walney MZCs are listed for sedimentary protected features but the screening has made no reference to the sediment budgets of these MCZs (i.e., transport directions, peak and net rates, local sources and sinks).</p>	<p>Impacts to the sedimentary transport system have now been included in the screened in impacts and as such within the MCZA considerations are given to changes to these processes.</p>
	<p>The sediment transport system maintaining these features (as far as presently understood, including the MCZs to 100km i.e., the screening stage does not require specific modelling or field study, only such information as is already available) should be set out as a minimum and compared with the projected Zone of Influence, to illustrate whether and where any influence will occur within the sedimentary system supporting the features. This is particularly important for a cumulative impact assessment, since multiple developments (including those already in place) may affect different parts of the overall system (i.e., not necessarily overlapping) and affect the balance of transport in and out of the MCZs.</p>	<p>Impacts to the sedimentary transport system have now been included in the screened in impacts.</p>
	<p>The pressures screened in and out in Table 6.3 are broadly appropriate. However, as noted above, the overall risk to a sedimentary MCZ feature</p>	<p>All impacts to changes in physical processes are now included in the screened in impacts</p>

Organisation	Comment	How this has been addressed
	<p>would come from any impacts to the processes supplying and maintain the sediment to the features. The table identifies suspension, re-mobilisation (albeit in specific reference to contaminated sediment) and sediment deposition. The table itself does not fully identify how these pressures arise, so does not guarantee capture of all the impacts of the development.</p>	
	<p>The MMO note that the justification of ‘no evidence’ is not appropriate to scope out the impact of noise and vibration during the operational phase. On the contrary, evidence should be presented to justify the scoping out of an impact.</p>	<p>Fixed foundation turbine operational noise is known to fall below the threshold for negative impacts on fish following an underwater noise assessment for the Project (<b>Appendix 11.1 Underwater Noise Assessment</b> (Document Reference 5.2.11.1)).</p>
	<p>The MMO note from Table 5.1 that the Wyre-Lune MCZ and Ribble Estuary MCZ have been scoped out of the MCZA due to these sites being considered “beyond the Zol for direct and indirect impacts”. The MMO disagree that these sites should be screened out as both the Wyre-Lune MCZ and Ribble Estuary MCZ sites are designated for the protection of Smelt, <i>Osmerus eperlanus</i>, a migratory fish which possesses a swim bladder and is considered to have a medium-sensitivity to UWN according to Popper et al., (2014). For the reasons outlined above, an MCZA should be carried out for both the Wyre-Lune MCZ and Ribble Estuary MCZ.</p>	<p>These are now screened in and the Zol updated using project specific assessment.</p>
<p>Natural England</p>	<p>Natural England understands that the transmission assets related to this project will now be taken forward as a separate DCO, alongside the transmission assets for the Morgan Offshore Wind Farm. Whilst we welcome the proposed coordinated grid connection between Morgan and Morecambe OWF, this does raise some potential concerns regarding the consenting process. Natural England has encountered such issues with previous offshore wind farm projects, for details we refer you to our response to the EIA scoping report consultation, included with the PINS scoping opinion and available on the PINS website for the Morecambe project (our ref:18251/399738 PINS ref: EN010121). The advice within this letter is provided with respect to the generation assets MCZ</p>	<p>Transmission Assets are considered within a combined assessment in the MCZA.</p>

Organisation	Comment	How this has been addressed
	<p>Assessment screening provided, but we consider that the transmission assets are an integral part of the project and therefore the MCZ Assessment should, at the point of submission, consider the project as a whole. This may be achieved using the method outlined for consideration of cumulative impacts. Therefore the final MCZ Assessment, when considering the project as a whole, will include additional impacts and designated sites than those mentioned within this MCZ Assessment Screening Report. Correspondingly, the MCZ Assessment for the transmission assets must consider the generation assets for both the Morecambe and Morgan projects.</p>	
	<p>Natural England is largely in agreement with the screening conclusions presented in the report. We advise that in section 6.1 Table 6.2, fishing displacement into the Fylde MCZ should be considered. Fylde had extremely low fishing pressure at the time it was designated, so small increases could have a significant effect. This assessment should be informed by a review of fishing activity that currently occurs in the development area and whether this has the potential to be displaced into part of the MCZ, noting some trawlers may not want to or be allowed to fish closer inshore. Natural England welcomes further consultation on fisheries displacement impacts to protected sites and modelling approaches for this part of the assessment. As the transmission asset is anticipated to pass through Fylde MCZ, fisheries displacement may be an important cumulative impact.</p>	<p>Displacement of fisheries has been screened in, informed by a detailed commercial fisheries assessment as part of the ES.</p>