

Outer Dowsing Offshore Wind Preliminary Environmental Information Report

Volume 2, Appendix 9.4: Marine Conservation Zone Assessment

Date: June 2023

Outer Dowsing Document No: 6.2.9.4

Internal Reference: PP1-ODOW-DEV-CS-REP-0049

Rev: V1.0

Company:	Outer Dowsing Offshore Wind	Asset:	Whole Asset			
Project:	Whole Wind Farm	Sub Project/Package:	Whole Asset			
Document Title or Description:	Marine Conservation Zone Assessment					
Document Number:	6.2.9.4	3 rd Party Doc No (If applicable):	N/A			
<i>Outer Dowsing Offshore Wind accepts no liability for the accuracy or completeness of the information in this document nor for any loss or damage arising from the use of such information.</i>						
Rev No.	Date	Status /Reason for Issue	Author	Checked by	Reviewed by	Approved by
v1.0	June 2023	Final	GoBe	GoBe	Shepherd and Wedderburn	Outer Dowsing Offshore Wind

Table of Contents

9	Marine Conservation Zone Assessment	7
9.1	Introduction.....	7
	Project Background	7
	Aims and Objectives	7
	Project Overview	8
	Document Structure	8
9.2	Consultation	9
9.3	Embedded Mitigation Measures.....	10
9.4	MCZ Assessment Methodology.....	11
	Guidance and Relevant Information	11
	Screening Methodology	13
	Stage 1 Assessment Methodology	14
	Stage 2 Assessment Methodology	15
9.5	MCZ Screening.....	15
	MCZs Relevant to the Project	16
	Impacts Considered	19
9.6	Conclusion	24
	References	25

List of tables

Table 9.1:	Summary of consultation relating to MCZ designations	9
Table 9.2:	Mitigation measures relevant to this MCZ assessment.....	10
Table 9.3:	The MCZs qualifying features and distance from the Project	18

List of figures

Figure 9.1:	Summary of the MCZ assessment process used by the MMO (MMO, 2013)	12
Figure 9.2:	MCZs surrounding the Project	17

Abbreviations

Acronym	Expanded name
cHPMA	Candidate Highly Protected Marine Area
DCO	Development Consent Order
DECC	Department of Energy & Climate Change, now the Department for Energy Security and Net Zero (DESNZ)
DESNZ	Department for Energy Security and Net Zero, formerly Department of Business, Energy and Industrial Strategy (BEIS), which was previously Department of Energy & Climate Change (DECC).
dML	Deemed Marine License
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
EMF	Electro Magnetic Field
EPP	Evidence Plan Process
ES	Environmental Statement
ETG	Expert Topic Group
FOCI	Features of Conservation Interest
GT R4 Ltd	The Applicant. The special project vehicle created in partnership between Corio Generation (a wholly owned Green Investment Group portfolio company), Gulf Energy Development and TotalEnergies
INNS	Invasive Non-Native Species
JNCC	Joint Nature Conservation Committee
MCAA	Marine and Coastal Access Act
MCZ	Marine Conservation Zones
MDS	Maximum Design Scenario
MEEB	Measurement of Equivalent Environmental Benefit
MMO	Marine Management Organisation
MPA	Marine Protected Area
MPCP	Marine Pollution Contingency Plan
NSIP	Nationally Significant Infrastructure Project
ORCP	Offshore Reactive Compensation Platform
OWF	Offshore Windfarm
PEIR	Preliminary Environmental Information Report
PEMP	Project Environmental Management
SEL	Sound Exposure Level
SNCB	Statutory Nature Conservation Bodies
SoS	Secretary of State
SPMP	Scour Protection Management Plan
SSC	Suspended Sediment Concentration
UK	United Kingdom
WTG	Wind Turbine Generator
ZoI	Zone of Influence

Terminology

Term	Definition
Array area	The area offshore within the PEIR Boundary within which the generating stations (including wind turbine generators (WTG) and inter array cables), offshore accommodation platforms, offshore transformer substations and associated cabling are positioned.
Cumulative effects	The combined effect of the Project acting cumulatively with the effects of a number of different projects, on the same single receptor/resource.
deemed Marine Licence (dML)	A licence administered under the Marine and Coastal Access Act 2009. The licence set out within a Schedule within the Development Consent Order (DCO).
Development Consent Order	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP) from the Secretary of State (SoS) for Department for Energy Security and Net Zero (DESNZ).
Environmental Statement	The suite of documents that detail the processes and results of the Environmental Impact Assessment (EIA).
Impact	An impact to the receiving environment is defined as any change to its baseline condition, either adverse or beneficial.
Inter-array cables	Cables which connect the wind turbines to each other and to the offshore substation(s).
Marine and Coastal Access Act	The Marine Coastal Access Act 2009 is an act of the Parliament of the United Kingdom. The act introduced a revised system of marine management and licensing, including marine nature conservation.
Marine Conservation Zone	A Marine Conservation Zone (MCZ) is a type of marine nature reserve in UK waters. They were established under the Marine and Coastal Access Act (2009) and are areas designated with the aim to protect nationally important, rare, or threatened habitats and species.
Mitigation	Mitigation measures, or commitments, are commitments made by the project to reduce and/or eliminate the potential for significant effects to arise as a result of the project. Mitigation measures can be embedded (part of the project design) or secondarily added to reduce impacts in the case of potentially significant effects.
Outer Dowsing Offshore Wind (ODOW)	The Project.
Offshore Export Cable Corridor (ECC)	The Offshore Export Cable Corridor (Offshore ECC) is the area within the Preliminary Environmental Information Report (PEIR) Boundary within which the export cable running from the array to landfall will be situated.
PEIR Boundary	The PEIR Boundary is outlined in Figure 3.1 of Volume 1, Chapter 3: Project Descriptions and comprises the extent of the land and/or seabed for which the PEIR assessments are based upon.

Term	Definition
Preliminary Environmental Information Report (PEIR)	The PEIR is written in the style of a draft Environmental Statement (ES) and provides information to support and inform the statutory consultation process in the pre-application phase. Following that consultation, the PEIR documentation will be updated to produce the Project's ES that will accompany the application for the DCO.
Project Design envelope	A description of the range of possible elements that make up the Project's design options under consideration, as set out in detail in the project description. This envelope is used to define the Project for Environmental Impact Assessment (EIA) purposes when the exact engineering parameters are not yet known. This is also often referred to as the "Rochdale Envelope" approach.
The Applicant	GT R4 Ltd. The Applicant making the application for a DCO. The Applicant is GT R4 Limited (a joint venture between Corio Generation, TotalEnergies and Gulf Energy Development (GULF)), trading as Outer Dowsing Offshore Wind. The project is being developed by Corio Generation (a wholly owned Green Investment Group portfolio company), TotalEnergies and GULF.
The Project	Outer Dowsing Offshore Wind (ODOW) including proposed onshore and offshore infrastructure
Wind turbine generator (WTG)	All the components of a wind turbine, including the tower, nacelle, and rotor.

9 Marine Conservation Zone Assessment

9.1 Introduction

Project Background

- 9.1.1 This report has been prepared for the purpose of providing evidence on whether the potential impacts of Outer Dowsing Offshore Windfarm (hereafter “the Project”) could give rise to a significant risk of hindering the conservation objectives of any Marine Conservation Zones (MCZs) identified. The report has been prepared as part of the suite of documents forming the Preliminary Environmental Information Report (PEIR) process that has been produced by the Project.
- 9.1.2 GT R4 Limited (trading as Outer Dowsing Offshore Wind) hereafter referred to as the “Applicant”, is proposing to develop the Project. The Project will be located approximately 54km from the Lincolnshire coastline in the southern North Sea. The Project will include both offshore and onshore infrastructure including an offshore generating station (windfarm), export cables to landfall, onshore cables, and connection to the electricity transmission network, and ancillary and associated development (see Volume 1, Chapter 3: Project Description for full details).

Aims and Objectives

- 9.1.3 Specific consideration of MCZs is required for any Marine Licence or Development Consent Order (DCO) application containing deemed Marine Licences (dMLs). When considering such applications, decision makers have specific duties in respect of MCZs under section 126 of the Marine and Coastal Access Act (MCAA) 2009. Section 126 applies where:
- A public authority has the function of determining an application (whenever made) for authorisation of the doing an act; and
 - The act is capable of affecting (other than significantly);
 - The protected features of an MCZ; and/or;
 - Any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependant.
- 9.1.4 This document has been produced as part of the Project’s PEIR to provide evidence on whether the potential impacts of the Project give rise to a significant risk of hindering the achievement of the conservation objectives of MCZs. The following MCZs have been screened in for consideration based on the zones of influence identified for relevant features of those sites within the PEIR chapters (see Volume 1, Chapter 7: Marine Processes; Volume 1, Chapter 9: Benthic and Intertidal Ecology; and Volume 1, Chapter 10: Fish and Shellfish Ecology):
- Holderness Inshore MCZ;
 - Holderness Offshore MCZ; and
 - Cromer Shoal Chalk Bed MCZ.

9.1.5 This document follows guidance published by the Marine Management Organisation (MMO) (2013) on how these assessments should be undertaken. The MCZ assessment has been undertaken based on the Project information provided in Volume 1, Chapter 3: Project Description.

Project Overview

9.1.6 This section provides a brief overview of the key components of the Project. A full description of the Project is described in Volume 1, Chapter 3: Project Description.

9.1.7 All offshore elements will be installed within the offshore PEIR Boundary, including;

- Up to 93 Wind Turbine Generators (WTGs);
- Up to four offshore small Offshore Substations (OSSs) or up to two large OSSs;
- Up to one accommodation platform;
- Up to two Offshore Reactive Compensation Platforms (ORCPs) within the ORCP search area (within the offshore export cable corridor (hereafter; Offshore ECC)); and
- Up to 351km of array cables, 123.75km of interlink cables (between platforms) and 514.8km of export cables).

9.1.8 The description of the Project will be refined as it moves through subsequent stages of design, consultation and the Environmental Impact Assessment (EIA) process culminating in the ES that will accompany the DCO application.

9.1.9 The final Project design will depend on factors including ground and environmental conditions that will be subject to the detailed pre-construction surveys, the Project economics and the approach to procurement of resources. This report considers a series of options that are encompassed within the Maximum Design Scenarios (MDS) for each impact, defined by the project design envelope. (Volume 1, Chapter 3: Project Description). The MDS has been defined within Volume 1, Chapter 7: Marine Processes and Volume 1, Chapter 9: Benthic and Intertidal Ecology as identified within this assessment.

Document Structure

9.1.10 This MCZ assessment is structured as follows;

- Section 1: Introduction;
- Section 2: Consultation;
- Section 3: Embedded mitigation measures;
- Section 4: MCZ assessment methodology;
- Section 5: MCZ Screening;
- Section 6: Conclusion.

9.1.11 This MCZ assessment should be read alongside the following chapters of the PEIR, which are referred to and drawn upon throughout this document;

- Volume 1, Chapter 3: Project Description;

- Volume 1, Chapter 7: Marine Processes;
- Volume 1, Chapter 8: Marine Water and Sediment Quality;
- Volume 1, Chapter 9: Benthic and Intertidal Ecology;
- Volume 1, Chapter 10: Fish and Shellfish Ecology; and
- Volume 1, Appendix 7.2: Physical Processes Modelling Report.

9.2 Consultation

- 9.2.1 Consultation is a key part of the DCO application process. Consultation regarding MCZs has been conducted through the Evidence Plan Process (EPP), Expert Topic Group (ETG) meetings and the EIA Scoping process (Outer Dowsing Offshore Wind, 2022). An overview of the Project consultation process is presented within Volume 1, Chapter 6: Consultation. Further consultation is planned following receipt of consultation responses on the PEIR.
- 9.2.2 A summary of the key issues raised during consultation to date, specific to the MCZ designations, is presented in Table 9.1 below, together with how these issues have been considered in the production of the PEIR.
- 9.2.3 As part of the EIA process for the Project, consultation has been undertaken with various statutory and non-statutory authorities, through the agreed EPP (being used for the EIA process as well as for the Habitats Regulations Assessment). A formal Scoping Opinion was sought from the Secretary of State (SoS) following submission of the Scoping Report (Outer Dowsing Offshore Wind, 2022). The Scoping Opinion (The Inspectorate, 2022) was issued in September 2022 by The Inspectorate.

Table 9.1: Summary of consultation relating to MCZ designations

Date and consultation phase/type	Consultation and key issues raised	Section where comment addressed
Scoping Opinion		
Scoping Opinion (The Inspectorate, September 2022) Comment ID: 3.1.5	The ES should assess the potential significant effects of the Project on the Inner Silver Pit South candidate Highly Protected Marine Area (cHMPA). Further details can be found at: https://consult.defra.gov.uk/hpma/consultation-on-highlyprotected-marine-areas/	After consultation, the Inner Silver Pit South cHMPA will not be carried forward to designation and therefore has not been considered further within this MCZ Assessment.
Scoping Opinion (The Inspectorate, September 2022) Natural England	The marine element of the export cable area of search may overlap with part of the Inner Silver Pit South cHPMA. Further information on the location of the cHPMA can be found at https://consult.defra.gov.uk/hpma/consultation-on-highlyprotected-marine-areas/ . The ES should include a full assessment of the direct and indirect	As outlined above, the Inner Silver Pit South cHMPA has not been taken forward to designation, therefore it has not been considered further within this MCZ Assessment.

Date and consultation phase/type	Consultation and key issues raised	Section where comment addressed
	<p>effects of the development on the features of any cHMPA and should identify such mitigation measures as may be required in order to avoid, minimise, or reduce any adverse significant effects.</p>	
	<p>The Offshore Transmission assets of the development are adjacent to the following Marine Conservation Zones:</p> <ul style="list-style-type: none"> ▪ Holderness Offshore MCZ <p>The ES should consider including information on the impacts of this development on MCZ interest features, to inform the assessment of impacts on habitats and species of principle importance for this location. Further information on MCZs is available via the following link: http://publications.naturalengland.org.uk/category/1723382</p> <p>Further information on the special interest features, the conservation objectives, and relevant conservation advice packages for designated sites is available on our website: https://designatedsites.naturalengland.org.uk/</p>	<p>In accordance with the MCZ assessment methodology (as detailed in Section 9.4), there was no potential for the Project to adversely affect the features of the Holderness Offshore MCZ. The Holderness Offshore MCZ was therefore screened out of the Stage 1 assessment (as detailed in full in Section 9.5).</p>

9.3 Embedded Mitigation Measures

9.3.1 Mitigation measures that were identified and adopted as part of the evolution of the project design (embedded into the project design) and that are relevant to the MCZ assessment are listed in section 10. General mitigation measures, which would apply to all parts of the project, are set out first. Thereafter mitigation measures that would apply specifically to the MCZ assessment issues associated with the array and Offshore ECC are described separately.

Table 9.2: Mitigation measures relevant to this MCZ assessment

Project phase	Mitigation measures embedded into the project design
General	
Definition of development boundaries	The development boundary selection was made following a series of constraints analyses, with the array area and offshore ECC route selected to ensure the impacts on sensitive environmental receptors are minimised.
Construction & Decommissioning	

Project phase		Mitigation measures embedded into the project design
Pollution prevention		A Project Environmental Management Plan (PEMP) (for the construction and operation phases) and Decommissioning Plan (for the decommissioning phase) will be produced and followed. This will include a Marine Pollution Contingency Plan (MPCP) which will safeguard the marine environment in the event of accidental pollution occurring as a result of the Project operations. Plans will also highlight key organisations and contact details in the event of a spill (e.g. Environment Agency, Marine Management Organisation, Natural England and the Maritime and Coastguard Agency (MCA)).
Marine Invasive Non-Native Species (INNS) control		Relevant best practice guidelines, policy and legislation will be followed to minimise marine INNS introduction/spread. Any vessels used for the delivery of materials to site will adhere to industry legislation, codes of conduct and/or best practice to reduce the risk of introduction or spread of invasive non-native species.
Decommissioning Programme		Development of, and adherence to, a Decommissioning Programme.
Operation and Maintenance		
Project Design		Development of a Scour Protection Management Plan (SPMP) and Cable Specification and Installation Plan (CSIP) which will consider the need for scour protection.
Electromagnetic Fields (EMF) and cable protection		Where possible, cables will be buried to reduce the impacts of EMF on sensitive receptors and minimise the requirement for additional cable protection.

9.4 MCZ Assessment Methodology

Guidance and Relevant Information

- 9.4.1 Guidance published by the MMO (2013) describes how MCZ assessments could be undertaken in the context of marine licensing decisions (note: there is no published guidance from the Inspectorate or advice on MCZ assessments for DCO applications). These MMO guidelines recommend a staged approach to the assessment, with three sequential stages:
- Screening;
 - Stage 1 assessment; and
 - Stage 2 assessment
- 9.4.2 Full details of each of these stages of the approach are detailed within the MMO (2013) guidance.

9.4.3 Where specific activities, impacts or MCZs and their features are screened into the MCZ assessment process, these are then considered within the Stage 1 assessment. Should a significant risk of the activity hindering the conservation objectives be identified within Stage 1, then specific impact receptor pathways need to be considered in Stage 2 assessment (Figure 9.1). Full details of each of these stages of the approach have been provided in the following sections.

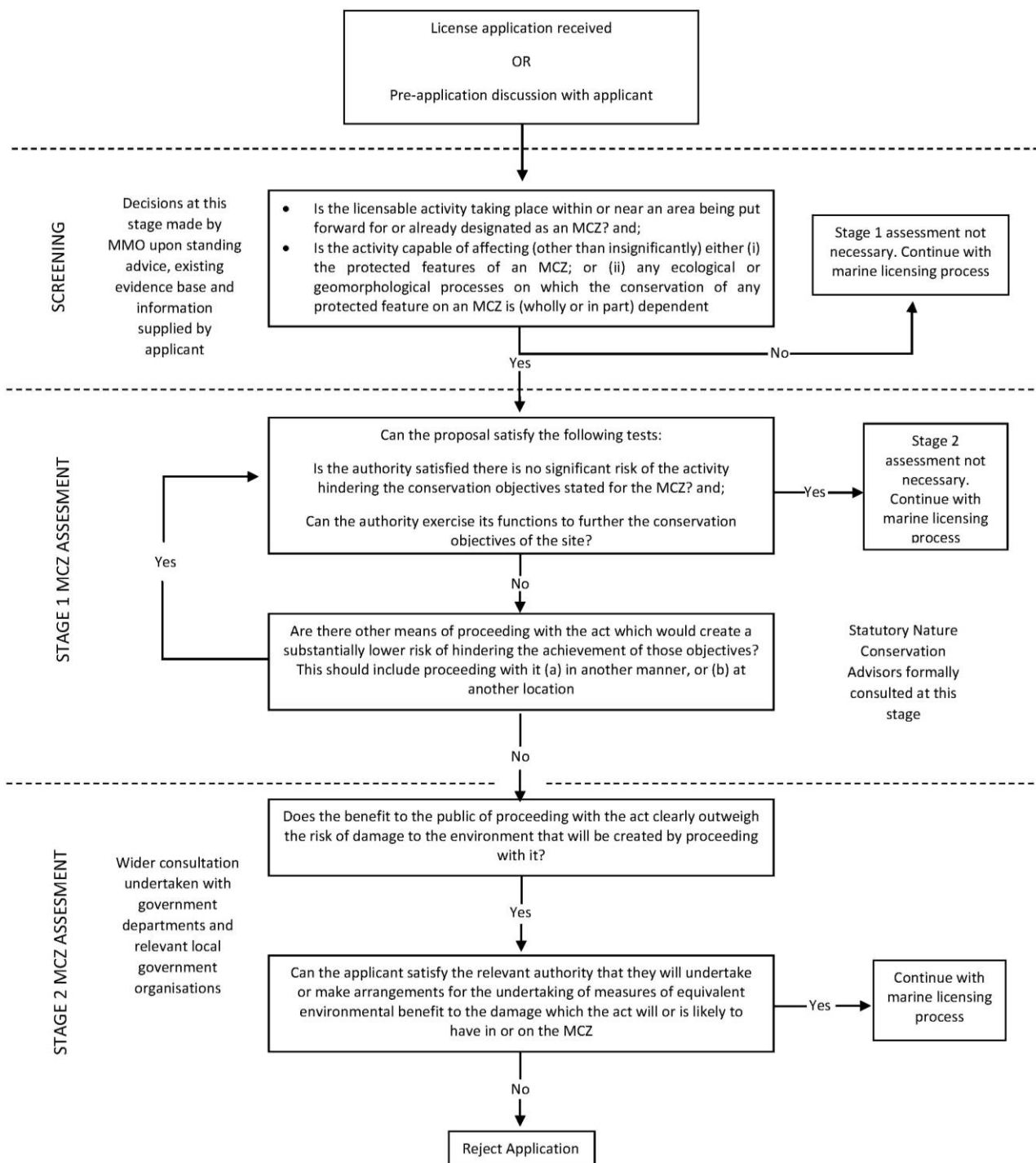


Figure 9.1: Summary of the MCZ assessment process used by the MMO (MMO, 2013)

Screening Methodology

- 9.4.4 The MMO (2013) guidelines specify, that all marine licence applications need to be screened to determine if Section 126 should apply. It will apply if, through the course of screening, it is determined that:
- The licensable activity is taking place within or near an area being put forward or already designated as an MCZ; and
 - The activity is capable of affecting (other than insignificantly) either:
 - The protected features of an MCZ; or
 - Any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependant.
- 9.4.5 To determine the “nearness” of an activity to individual MCZ and its features, the MMO propose a risk-based approach. This includes applying an appropriate buffer zone to the MCZ features under consideration as well as a consideration of risks which lie in activities further removed from features.
- 9.4.6 In considering “insignificance”, the likelihood of an activity causing an effect, the magnitude of the effect should it occur, and the potential risk any such effect may cause on either the protected features of an MCZ or any ecological or geomorphological process on which the conservation of any protected MCZ feature, wholly or in part, is dependant will be taken into account.
- 9.4.7 For the purposes of the Project MCZ Screening, MCZs considered within the assessment were identified based on proximity to the Project as follows:
- Sites with spatial overlap with the Project;
 - Sites within the study area defined as the PEIR Boundary together with the secondary zone of influence (ZoI) for individual technical disciplines:
- 9.4.8 The Project secondary ZoI has been defined based on the expected maximum distance that sediment from within the Project array area and Offshore ECC might be transported on a single mean spring tide, in the flood and/or ebb direction. The area conservatively indicates the likely spatial extent over which measurable plume effects arising at anytime from anywhere within the PEIR Boundary might be experienced. The approximate distance of the secondary ZoI from the PEIR Boundary is 12km and the distance from the offshore ECC is 15km (Table 9.3). This area defines the maximum distance suspended sediments disturbed by development activities might have an impact on benthic habitats, although the majority of suspended sediment is expected to be deposited much closer to the specific activity.

9.4.9 The project underwater noise Zol has been defined by the extents over which noise effect thresholds will be reached. This is determined through detailed underwater noise modelling (see Volume 1, Appendix 3.2), based on the maximum design scenario as relates to the greatest spatial, and greatest temporal effects. Whilst the maximum modelled impact range from underwater noise (using the cumulative 186 dB re1 μ Pa²s Sound Exposure Level (SEL) from piling activities for the Project) will be up to 23km from the array area, to ensure a precautionary approach, a 50km Zol for underwater noise impacts has been used to include potential behavioural impacts which are expected to occur over a larger distance (and for which there are no agreed thresholds).

Stage 1 Assessment Methodology

9.4.10 The Stage 1 assessment (if required) assesses the extent of the potential impact of the Project on the MCZs screened into the assessment. The MMO guidance (2013) sets out that Stage 1 assessment needs to consider whether the conditions in Section 126(6) of the MCAA can be met. Using information supplied by the Applicant, advice from the Statutory Nature Conservation Bodies (SNCBs) and any other relevant information, the relevant authority would determine whether:

- There is no significant risk of the activity hindering the achievement of the conservation objectives stated for the MCZ; and
- The relevant authority can exercise its functions to further the conservation objectives stated for the MCZ (in accordance with s.125(2)(a)).

9.4.11 If the condition in Section 126(6) cannot be met, the Stage 1 assessment also considers whether the condition in Section 127(7)(a) of the MCAA can be met, which requires the relevant authority to determine whether that:

- There are no other means of proceeding with the act which would create a substantially lower risk of hindering the achievement of the conservation objectives stated for the MCZ. This should include proceeding with it (a) in another manner, or (b) at another location.

9.4.12 In Stage 1 the conservation objectives for the MCZ features need to be considered. The conservation objectives for MCZ features are high level criteria describing the desired condition of the MCZ features. While conservation objectives for individual MCZs or certain features are often site-specific, the two overarching conservation objectives defined for MCZs are:

- To maintain a feature in favourable condition if it is already in favourable condition; or
- To bring a feature into favourable condition if it is not already in favourable condition.

9.4.13 When considering whether an activity can “further” (for instance, increase the likelihood that the current status of a feature would be maintained or improve) or “hinder” the conservation objectives of a site, the relevant authority considers the direct impact of an activity upon a feature as well as any applicable indirect impacts. An indirect impact may include, for example, changing the effectiveness of a site-specific management measure put in place to further its conservation objectives.

- 9.4.14 With respect to “other means”, the Applicant should be able to demonstrate that the proposed approach to development reduces the risk such that the activity no longer has a significant risk of hindering the conservation objectives of the site. Where sufficient mitigation to reduce the predicted impacts to an acceptable level cannot be implemented and there are no other means that substantially lower the risk of hindering the achievement of conservation objectives, then a Stage 2 assessment would be required.
- 9.4.15 Volume 1, Chapter 9: Benthic and Intertidal Ecology and Volume 1, Chapter 10: Fish and Shellfish Ecology present assessments of the impacts of the Project on the ecological marine environment with regards to benthic, fish and shellfish receptors. The definitions of the magnitude of impacts, sensitivity of receptors and the significance of effects on those receptors are defined within these chapters, respectively. These definitions have also been adopted for the purposes of this MCZ assessment, with the term ‘effect’ used to express the consequence of an impact. This is expressed as the ‘significance of effect’ and is determined by considering the magnitude of the impact alongside the sensitivity of the receptor or resource, in accordance with defined significance criteria as defined in the respective chapters and bringing forward the conclusions of the assessments from the relevant ES chapters.

Stage 2 Assessment Methodology

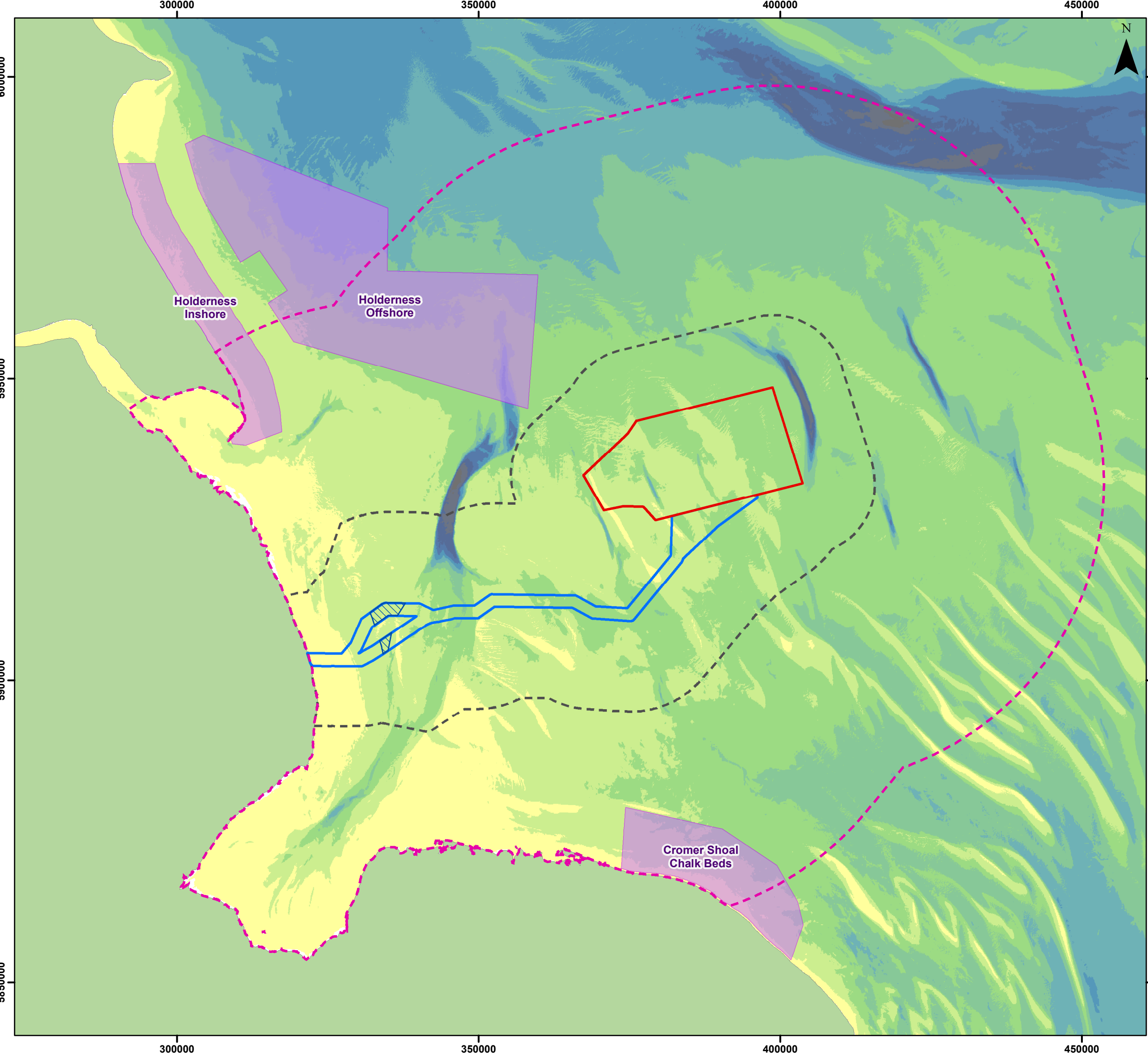
- 9.4.16 Stage 2 of the MCZ assessment considers whether the conditions in Sections 126(7)(b) and (c) of the MCAA can be met. From the approach suggested by the MMO (2013), the relevant authority will use information supplied by the Applicant with the licence application, advice from the SNCBs and any other relevant information to determine whether:
- the benefit to the public of proceeding with the proposed activity clearly outweigh the risk of damage to the environment that will be created by said activity; and, if so, then whether;
 - the Applicant can satisfy the relevant authority that they will make arrangements for the undertaking of measures of equivalent environmental benefit (MEEB) to the damage which the activity is likely to have on the MCZ. The above determinations will be addressed in sequence, that is, if the public benefit test is not passed then a consideration of MEEB would not be made as the application would be rejected.
- 9.4.17 In determining public benefit, benefits at a national, regional, or local level will be considered by the relevant authority. Applications for activities that are of solely private benefit do not qualify as delivering a benefit to the public.
- 9.4.18 Guidance from the MMO on what constitutes MEEB suggests that *"types of compensatory measures that might be considered under the Habitats Directive will also be appropriate, although consideration will not be confined to those measures alone"* (MMO, 2013).

9.5 MCZ Screening

- 9.5.1 This section follows the MMO (2013) guidelines and uses a risk-based approach to determine the MCZs that could potentially be affected by the Project. A precautionary approach has been taken within this report by considering all the potential designated features of the relevant MCZs, and the processes upon which they rely, prior to any screening out of MCZ sites or their protected features.

MCZs Relevant to the Project

- 9.5.2 In addressing the following point of the MCZ screening process *“the licensable activity is taking place within or near an area being put forward or already designated as an MCZ”*, MCZs in the vicinity of the Project were identified.
- 9.5.3 Potential MCZs in the North Sea have been reviewed considering their proximity to the Project criteria, as detailed within Section 9.4, and a total of 3 MCZs are considered to have the potential to be affected by the Project:
- Holderness Offshore MCZ;
 - Holderness Inshore MCZ; and
 - Cromer Shoal Chalk Bed MCZ;
- 9.5.4 The locations of the MCZs are shown in Figure 9.2 in relation to the secondary ZOI and underwater noise ZOI. The distance of the sites to the Project are presented in Figure 9.2, as well as the Features of Conservation Interest (FOCI) and conservation objectives for each MCZ.

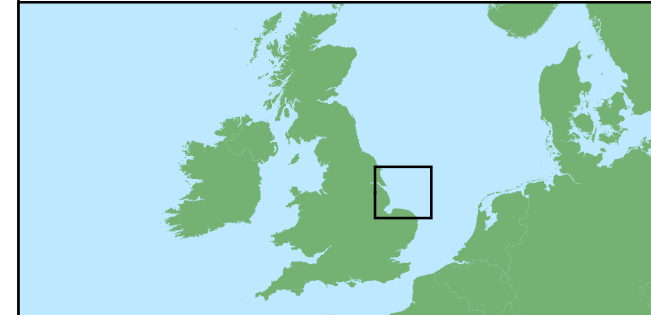


Legend

- Array Area
- Offshore Export Cable Corridor
- ORCP Search Area
- Secondary Zone of Influence
- Underwater Noise Impacts 50km Buffer
- Marine Conservation Zones

Depth (m)

- 0 - 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 - 60
- 60 - 70
- 70 - 80
- 80 - 90
- 90 - 100



Coordinate System: WGS 1984 UTM Zone 31N

0 10 20 km

Scale: 1:600,000

Preliminary Environmental Information Report

MCZs Surrounding the Project

Figure 9.1

OUTER DOWSING
OFFSHORE WIND

GoBe

Date: 18/04/2023
 Produced By: BPHB
 Revision: 0.1

Contains ESRI Basemapping;
EMDOnet 2020 bathymetry

Table 9.3: The MCZs qualifying features and distance from the Project

Site	Qualifying Features	Conservation objectives	Distance from the Project and secondary Zol
Holderness Inshore MCZ (Defra, 2016a)	<ul style="list-style-type: none"> ▪ Intertidal sand and muddy sand ▪ Moderate energy circalittoral rock ▪ High energy circalittoral rock ▪ Subtidal coarse sediment ▪ Subtidal mixed sediment ▪ Subtidal sand ▪ Subtidal mud ▪ Spurn head (subtidal) 	Maintain in favourable condition	<ul style="list-style-type: none"> ▪ 50.4km distance from the array area and 33km distance from the Offshore ECC ▪ Lies outside the suspended sediment and deposition Zol ▪ No noise sensitive features
Holderness Offshore MCZ (JNCC, 2020)	<ul style="list-style-type: none"> ▪ Ocean quahog (<i>Artica islandica</i>) ▪ Subtidal coarse sediment ▪ Subtidal mixed sediment ▪ Subtidal sand 	Recover to favourable condition	<ul style="list-style-type: none"> ▪ 14.4km distance from the array area and 29.9km distance from the Offshore ECC ▪ Lies outside the suspended sediment and deposition Zol ▪ Lies within the underwater noise Zol (Ocean Quahog are given due consideration regarding the potential for disturbance from particle motion element of underwater noise).
Cromer Shoal Chalk Bed MCZ (Defra, 2016b)	<ul style="list-style-type: none"> ▪ Moderate energy infralittoral rock ▪ High energy infralittoral rock ▪ Moderate energy circalittoral rock ▪ High energy circalittoral rock ▪ Subtidal chalk ▪ Subtidal coarse sediment ▪ Subtidal mixed sediment ▪ Subtidal sand ▪ Peat and clay exposures ▪ North Norfolk Coast (subtidal) 	Maintain in favourable condition	<ul style="list-style-type: none"> ▪ 47.8km distance from the array area and 30.9km distance from the Offshore ECC ▪ Lies outside the suspended sediment and deposition Zol ▪ No noise sensitive features

Impacts Considered

9.5.5 To assess, whether *"the activity is capable of affecting (other than insignificantly) either (i) the protected features of an MCZ; or (ii) any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent"*, the conclusions of relevant PEIR sections were reviewed. Impacts that have the potential to affect designated MCZ features were identified as part of the EIA Screening (Volume 1, Chapter 9: Benthic and Intertidal Ecology and Volume 1, Chapter 10: Fish and Shellfish Ecology).

Direct Impacts

9.5.6 The offshore ECC and proposed array area do not directly overlap with any of the MCZs as mentioned above in section 9.1 and 9.4, and as a result no direct impacts on any of the sites will occur. All direct impacts (for example temporary habitat loss or disturbance from seabed preparation activities, or permanent habitat loss from the placement of foundations, or scour protection) will occur within the offshore ECC and array area. Therefore, direct impacts have been **screened out** of any further assessment in this MCZ assessment.

Indirect Impacts

9.5.7 Indirect effects from the Project are considered further given the potential wider reaching nature of the potential indirect impacts.

9.5.8 The MMO guidance states the MCZ assessment process requires impacts to be assessed, unless the impact is deemed insignificant (MMO, 2013). Impacts which can be concluded as having a negligible impact magnitude (in EIA terms) on features of an MCZ are considered to present a sufficiently low risk, to its protected features or the ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent, to allow these impacts to be screened out at this stage.

9.5.9 Indirect impacts that were assigned a 'negligible' magnitude in the PEIR assessment (Section 3.7 to 3.8 of Volume 1, Chapter 9: Benthic and Intertidal Ecology and Volume 1, Chapter 10: Fish and Shellfish Ecology) have therefore been screened out based on "insignificance" and are therefore not taken through to the Stage 1 assessment. These include;

- Construction and decommissioning
 - Direct and indirect seabed disturbances leading to the release of sediment contaminants
- Operation and Maintenance
 - Increased risk of introduction or spread of marine INNS due to presence of infrastructure and vessel movements may affect benthic subtidal and intertidal ecology and biodiversity;
 - Changes in physical processes resulting from the presence of the OWF subsea infrastructure e.g., scour effects, changes in wave/tidal current regimes and resulting effects on sediment transport;
 - Electromagnetic field (EMF) effects generated by cables; and

- Underwater noise as a result of operational WTGs resulting in potential effects on fish and shellfish receptors.

9.5.10 Impacts that are considered further in MCZ screening and assessment process include;

- Construction and decommissioning
 - Temporary increase in suspended sediment and sediment deposition;
 - Mortality, injury and behavioural changes resulting from underwater noise arising from construction activity; and
 - Geomorphological processes.

Screening Assessment

Temporary Increase in Suspended Sediment Concentration (SSC) and Sediment Deposition

- 9.5.11 Indirect impacts from the Project, such as the effects of suspended sediments and subsequent deposition, are considered further for all MCZs, as described in Section 9.5 and shown in Figure 9.2. The secondary Zol conservatively indicates the likely maximum spatial extent over which measurable suspended sediment plume impacts arising at anytime from anywhere within the PEIR Boundary might be experienced.
- 9.5.12 Temporary localised increases in SSC and associated sediment deposition and smothering are expected from foundation and cable installation works (including trenchless technique installation) and seabed preparation works (including sandwave clearance). This assessment should be read in conjunction with Volume 2, Chapter 1, Volume 5, Appendix 1.1: Physical Processes Technical Baseline and Appendix 1.2 which provides the detailed offshore physical environment assessment (including project specific spreadsheet modelling of sediment plumes).
- 9.5.13 Sediment plumes caused by seabed preparation and construction activities are expected to be restricted to within a single tidal excursion from the point of release, which is captured by the Secondary Zol (Figure 9.2). Sediment plumes are expected to quickly dissipate after cessation of the construction activities, due to settling and wider dispersion with the concentrations reducing quickly over time to background levels (*i.e.*, within a couple of tidal cycles). Sediment deposition will consist primarily of coarser sediments deposited close to the source (a few hundred meters), with a small proportion of silt deposition (reducing exponentially from source).
- 9.5.14 The adjacent MCZ's do not overlap with the secondary Zol and therefore no pathway for effects associated with temporary Increase in SSC and sediment deposition exist. Details on distances and the supporting evidence at each site is presented below.

Holderness Inshore MCZ

9.5.15 The Holderness Inshore MCZ is located 33km away at its nearest point (the offshore ECC) to the Project and so is beyond the secondary Zol. As a result, there is no expected impact or change to SSC nor a measurable sediment deposition within the MCZ. As such, there is no identified receptor-impact-pathway to this MCZ associated with construction, operation, or maintenance and decommissioning activities within the array area and offshore ECC. Therefore, an assessment of SSC and sediment deposition is **screened out** for the Holderness Inshore MCZ.

Holderness Offshore MCZ

9.5.16 The Holderness Offshore MCZ is located 14.4km away from its nearest point to the Project (array area) and 29.9km distance from the offshore ECC, therefore falls outside of the secondary Zol (which extends 12km from the array and 15km for the offshore ECC). As such, there is no identified receptor-impact-pathway to this MCZ associated with construction, operation, or maintenance and decommissioning activities within the array area and offshore ECC. Therefore, an assessment of SSC and sediment deposition is **screened out** for Holderness Inshore MCZ.

Cromer Shoal Chalk Bed MCZ

9.5.17 The Cromer Shoal Chalk Bed MCZ is located 30.9km away from its nearest point to the Project, and as such lies outside of the secondary Zol. Therefore, an assessment of SSC and sediment deposition is **screened out** for the Cromer Shoal Chalk Bed MCZ.

Mortality, Injury and Behavioural Changes Resulting from Underwater Noise Arising from Construction Activity

9.5.18 Indirect impacts from the Project, such as the effects of underwater noise, are considered with regards to ocean quahog feature of the Holderness Offshore MCZ, as described in Section 9.5. This assessment should be read in conjunction with Volume 2, Chapter 4 Fish and Shellfish Ecology, which provides the detailed underwater noise assessment with regard to fish and shellfish receptors. None of the features of the Holderness Inshore MCZ or Cromer Shoal Chalk Bed MCZ are sensitive to underwater noise and therefore these sites are not screened in for this impact.

9.5.19 The underwater noise Zol as shown in Figure 9.2, conservatively indicates the maximum potential range of impact from underwater noise from construction activities (such as pile driving for the installation of foundations) in the array area.

Holderness Offshore MCZ

9.5.20 The Holderness Offshore MCZ is designated for the ocean quahog, a bivalve mollusc found in sandy substrates throughout the North Sea. The site is located 14.4km from the Project array area, and within the underwater noise Zol. Ocean quahog do not possess a swim bladder, and on this basis are considered primarily sensitive to particle motion rather than sound pressure (Popper and Hawkins, 2018). Pile driving is recognised as a source of particle motion, which could potentially result in disturbance of ocean quahog as a feature of the Holderness Offshore MCZ.

- 9.5.21 Impacts from particle motion are likely to occur locally to the source (Hazelwood and Macey, 2016), with studies having demonstrated the rapid attenuation of particle motion with distance (Mueller-Blenkle *et al.*, 2010), it is therefore considered unlikely that there will be any more than a highly localised effect. Taking into consideration the distance of the Holderness Offshore MCZ from the array area, there are not anticipated to be any significant effects from underwater noise on ocean quahog as a feature of the Holderness Offshore MCZ, and therefore an assessment of impacts from underwater noise impacts is **screened out** for the Holderness Offshore MCZ.

Geomorphological Process

Holderness Inshore MCZ

- 9.5.22 It is noted the Spurn Head (subtidal) geological feature is identified as a designated feature of the Holderness Inshore MCZ.
- 9.5.23 The Holderness Inshore MCZ and Spurn Head feature are located outside of the secondary Zol, and therefore will not be sensitive to the impacts associated with all phases of the project. This is primarily because there will be no direct impacts upon the site and therefore there is no pathway for any activities to physically interact with this feature and alter any of the geomorphological processes. Similarly, for indirect impacts as described above, such as SSC and deposition, due to the distance from the offshore ECC (32km) it is unlikely that such indirect effects would have a significant effect upon the geological features.
- 9.5.24 It is therefore concluded that the geological feature (Spurn Head, subtidal) of the Holderness Inshore MCZ is **screened out** for the potential impacts from changes in geomorphological processes during all phases of the Project.

Holderness Offshore MCZ

- 9.5.25 North Sea glacial tunnel valleys are designated as a geological feature of the Holderness Offshore MCZ. The Holderness Offshore MCZ, and the geological feature are located outside of the secondary Zol, and therefore will not be sensitive to the impacts associated with all phases of the project. This is primarily because there will be no direct impacts upon the site and therefore there is no pathway for any activities to physically interact with this feature and alter any of the geomorphological processes. Similarly, for indirect impacts as described above, such as SSC and deposition, due to the distance from the offshore ECC (30km) and the array area (14km) it is unlikely that such indirect effects would have a significant effect upon the geological features.
- 9.5.26 It is therefore concluded that the geological feature (North Sea glacial tunnel valleys) of the Holderness Offshore MCZ is **screened out** for the potential impacts from changes in geomorphological processes during all phases of the Project.

Cromer Shoal Chalk Beds MCZ

- 9.5.27 The Cromer Shoal Chalk Beds MCZ contains the designated features “North Norfolk Coast (subtidal)”. The site and this geological feature are located outside of the secondary ZOI, and therefore will not be sensitive to the impacts associated with all phases of the Project. This is primarily because there will be no direct impacts upon the site and therefore there is no pathway for any activities to physically interact with this feature and alter any of the geomorphological processes. Similarly, for indirect impacts as described above, such as SSC and deposition, due to the distance from the offshore ECC (30.9km) it is highly unlikely that such indirect effects would have a significant effect upon the geological features.
- 9.5.28 It is therefore concluded that the geological feature (North Norfolk Coast (subtidal)) of the Cromer Shoal Chalk Beds MCZ is **screened out** for the potential impacts from changes in geomorphological processes during all phases of the Project.

Screening Conclusions

- 9.5.29 In accordance with the MMO guidelines (2013), any impacts which can be concluded as having a negligible impact magnitude (in EIA terms) on benthic ecology receptors (including features of an MCZ) within Volume 2, Chapter 3: Benthic and Intertidal Ecology and Volume 2, Chapter 4: Fish and Shellfish Ecology have been screened out. These impacts are considered to present a sufficiently low risk to its protected features or the ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent. From the PEIR chapter (Volume 1, Chapter 9: Benthic and Intertidal Ecology) these include:
- Direct and indirect seabed disturbances leading to the release of sediment contaminants;
 - Increased risk of introduction or spread of marine INNS due to presence of infrastructure and vessel movements may affect benthic subtidal and intertidal ecology and biodiversity;
 - Changes in physical processes resulting from the presence of the OWF subsea infrastructure e.g., scour effects, changes in wave/tidal current regimes and resulting effects on sediment transport;
 - EMF effects generated by cables; and
 - Underwater noise as a result of operational WTGs resulting in potential effects on fish and shellfish receptors.
- 9.5.30 To reiterate, and as stated above, all impacts that are considered “direct impacts,” have also been screened out due to the lack of impact pathway and these include:
- Temporary habitat disturbance;
 - Permanent habitat loss/alteration; and
 - Colonisation of hard substrates.

- 9.5.31 Indirect sedimentary impacts upon the Holderness Inshore MCZ, Holderness Offshore MCZ and Cromer Shoal Chalk Beds MCZ have been screened out, as the sites lie outside the secondary Zol and there are no receptor-impact-pathway to these sites associated with construction, operation, or maintenance activities within the array area and the Offshore ECC. Similarly, due to the distance from the Project, it is unlikely that such indirect effects would have a significant effect upon the geological features.
- 9.5.32 The Holderness Offshore MCZ, of which ocean quahog are a feature lies within the underwater noise Zol, however, impacts from underwater noise on ocean quahog have been screened out due to the localised nature of the impact (from particle motion), and the distance of the MCZ from the array area.
- 9.5.33 Given the above findings it is concluded that progressing to a Stage 1 assessment for the identified MCZs will not be required for the Project.

9.6 Conclusion

- 9.6.1 This MCZ assessment has been produced to provide the necessary information to allow the relevant regulator to meet their specific duty for MCZs as outlined in section 126 of the MCAA (2009). It is intended (with reference to the detailed information set out in the relevant parts of the PEIR) to provide the necessary information on the impacts of the Project to inform the MCZ assessment process.
- 9.6.2 The first stage in the assessment process was Screening to identify those MCZs that had the potential to be affected by the Project. The Screening concluded that none of the potential impacts considered would affect any of the identified MCZs, and all impacts were therefore screened out and therefore, a further assessment was not required for this MCZ Assessment.
- 9.6.3 In summary, this MCZ Assessment provides sufficient evidence that the Project will not adversely impact the conservation objectives of any of the identified MCZs.

References

- Centre for Environment, Fisheries and Aquaculture Science (Cefas), (2016), 'Suspended Sediment Climatologies around the UK'. Report for the UK Department for Business, Energy & Industrial Strategy offshore energy Strategic Environmental Assessment programme.
- Defra (2009), 'Marine and Coastal Access Act 2009', Marine and Coastal Access Act 2009 (legislation.gov.uk) [Accessed February 2023].
- Defra (2016a) Marine conservation zones: Holderness Inshore, GOV.UK. Department for environment, food & rural affairs. Available at: <https://www.gov.uk/government/publications/marine-conservation-zones-holderness-inshore> [Accessed: February 2023].
- Defra (2016b) Cromer Shoal Chalk Beds Marine Conservation Zone, GOV.UK. Department for environment, food & rural affairs. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/492323/mcz-cromer-shoal-chalk-beds-factsheet.pdf [Accessed February 2023].
- Equinor (2022). Sheringham and Dudgeon Extension Projects Environmental Statement.
- Hazelwood, R. and Macey, P. (2016). Modelling Water Motion near Seismic Waves Propagating across a Graded Seabed, as Generated by ManMade Impacts. Journal of Marine Science and Engineering. 4. 47. 10.3390/jmse4030047.
- Jackson, A. & Hiscock, K. 2008. *Sabellaria spinulosa* Ross worm. In Tyler-Walters H. and Hiscock K. Marine Life Information Network: Biology and Sensitivity Key Information Reviews, [on-line]. Plymouth: Marine Biological Association of the United Kingdom. [cited 17-02-2023]. Available from: <https://www.marlin.ac.uk/species/detail/1133>
- JNCC (2020) Holderness Offshore MPA, JNCC. JNCC. Available at: <https://jncc.gov.uk/our-work/holderness-offshore-mpa/#relevant-documentation> [Accessed: February 10, 2023].
- Last, K.S., Hendrick, V.J., Beveridge, C.M. & Davies, A.J. 2011. Measuring the effects of suspended particulate matter and smothering on the behaviour, growth and survival of key species found in areas associated with aggregate dredging. MEPF Ref No: MEPF 08/P76.
- Marine Management Organisation (2013), 'Marine conservation zones and marine licensing', Marine_conservation_zones_and_marine_licensing.pdf (publishing.service.gov.uk) [Accessed February 2022].
- Mueller-Blenkle, C., McGregor, P.K., Gill, A.B., Andersson, M.H., Metcalfe, J., Bendall, V., Sigray, P., Wood, D.T. & Thomsen, F. (2010). Effects of Piledriving Noise on the Behaviour of Marine Fish. COWRIE Ref: Fish 06-08, Technical Report 31st March 2010.
- Pearce, B., Hill, J.M., Grubb, L. & Harper, G. 2011. Impacts of marine aggregate extraction on adjacent *Sabellaria spinulosa* aggregations and other benthic fauna. MEPF08/P39.
- Pearce, B., Taylor, J. and Seiderer, L.J. 2007. Recoverability of *Sabellaria spinulosa* Following Aggregate Extraction. Marine Ecological Surveys Limited.
- Popper A.N., and Hawkins A.D. (2018). The importance of particle motion to fishes and invertebrates. The Journal of the Acoustical Society of America 143, 470 (2018); doi: 10.1121/1.5021594.

Tappin, D R, Pearce, B, Fitch, S, Dove, D, Gearey, B, Hill, J M, Chambers, C, Bates, R, Pinnion, J, Diaz Doce, D, Green, M, Gallyot, J, Georgiou, L, Brutto, D, Marzialetti, S, Hopla, E, Ramsay, E, and Fielding, H. (2011), 'The Humber Regional Environmental Characterisation'. British Geological Survey Open Report OR/10/54: 357.

The Inspectorate, (2022). Scoping Opinion: Proposed Outer Dowsing Offshore Wind

Tillin, H.M., (2010). Marine Ecology: Annex 4 Ecological (logistic regression and HABMAP) modelling-based predictions., Parsons Brinkerhoff Ltd, Bristol.