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**RWE Renewables UK Dogger Bank
South (West) Limited**

**RWE Renewables UK Dogger Bank
South (East) Limited**

Dogger Bank South Offshore Wind Farms

Stage 1 Marine Conservation Zone Assessment

Volume 8

Appendix A - Marine Conservation Zone Assessment

Screening Report

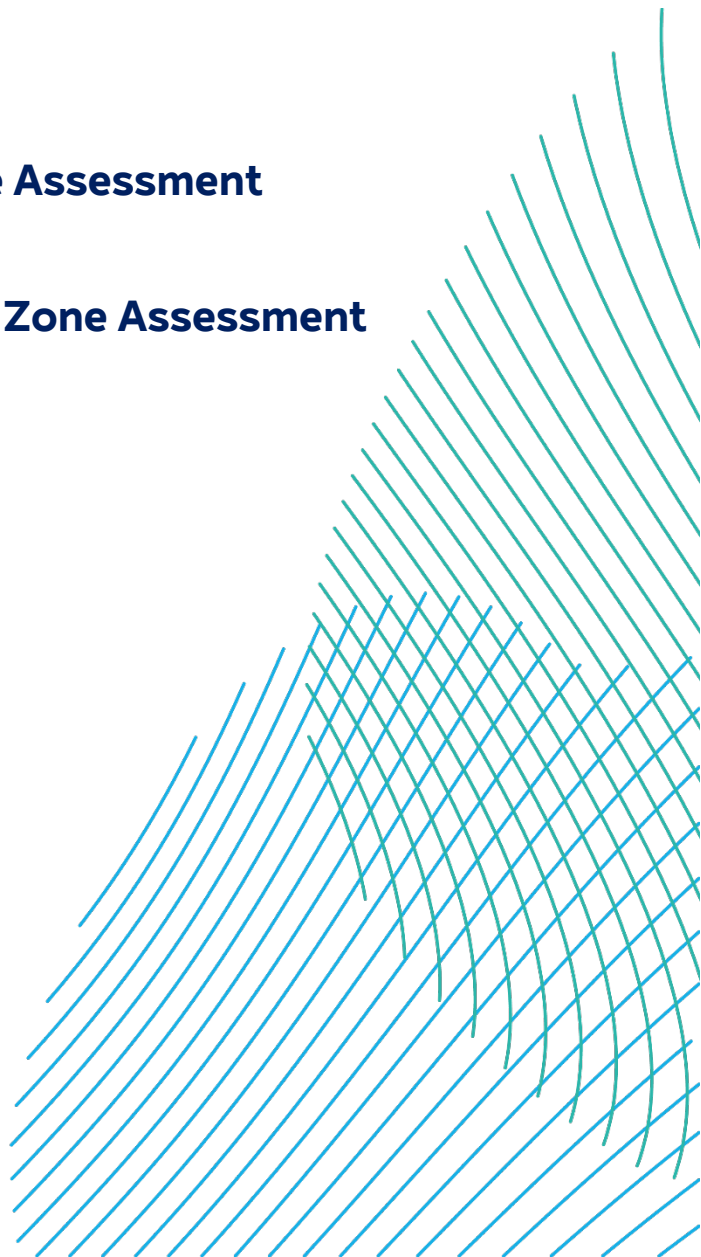
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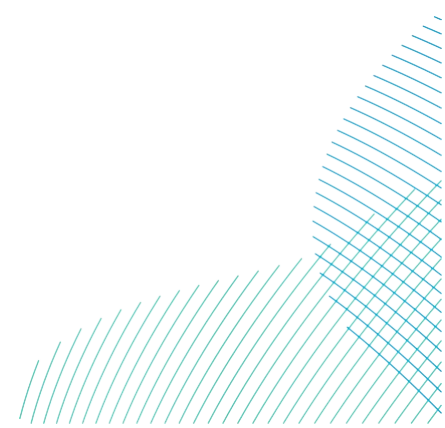
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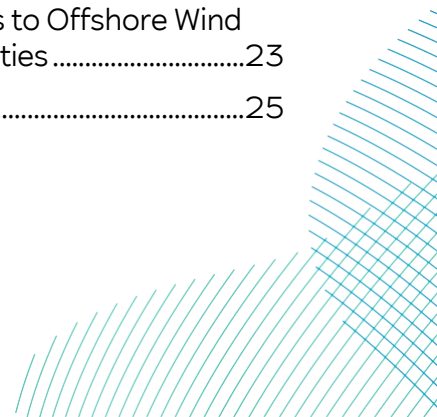


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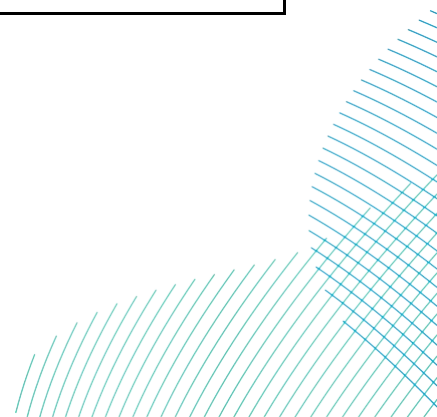
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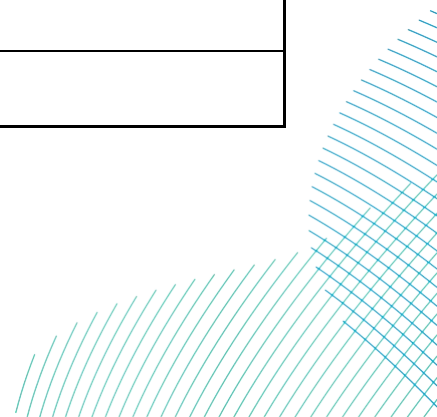
Term	Definition
Accommodation Platform	An offshore platform (situated within either the DBS East or DBS West Array Area) that would provide accommodation and mess facilities for staff when carrying out activities for the Projects.
Array Areas	The DBS East and DBS West offshore Array Areas, where the wind turbines, offshore platforms and array cables would be located. The Array Areas do not include the Offshore Export Cable Corridor or the Inter-Platform Cable Corridor within which no wind turbines are proposed. Each area is referred to separately as an Array Area.
Array cables	Offshore cables which link the wind turbines to the Offshore Converter Platform(s).
Dogger Bank South (DBS) Offshore Wind Farms	The collective name for the two Projects, DBS East and DBS West.
Electrical Switching Platform (ESP)	The Electrical Switching Platform (ESP), if required would be located either within one of the Array Areas (alongside an Offshore Converter Platform (OCP)) or the Export Cable Platform Search Area.
Inter-Platform Cables	Buried offshore cables which link offshore platforms.
High Voltage Alternating Current (HVAC)	High voltage alternating current is the bulk transmission of electricity by alternating current (AC), whereby the flow of electric charge periodically reverses direction.
High Voltage Direct Current (HVDC)	High voltage direct current is the bulk transmission of electricity by direct current (DC), whereby the flow of electric charge is in one direction.
Horizontal Directional Drill (HDD)	HDD is a trenchless technique to bring the offshore cables ashore at the landfall and can be used for crossing other obstacles such as roads, railways and watercourses onshore.

Term	Definition
Offshore Converter Platforms (OCPs)	The OCPs are fixed structures located within the Array Areas that collect the AC power generated by the wind turbines and convert the power to DC, before transmission through the Offshore Export Cables to the Project's Onshore Grid Connection Points.
Offshore Development Area	The Offshore Development Area for ES encompasses both the DBS East and West Array Areas, the Inter-Platform Cable Corridor, the Offshore Export Cable Corridor, plus the associated Construction Buffer Zones.
Offshore Export Cable Corridor	This is the area which will contain the offshore export cables (and potentially the ESP) between the Offshore Converter Platforms and Transition Joint Bays at the landfall.
Safety zones	Legislated under the Energy Act 2004, safety zones are rolling buffer areas which protect construction activities by preventing unauthorised vessels from entering their boundary.
Scoping opinion	The report adopted by the Planning Inspectorate on behalf of the Secretary of State.
Scoping report	The report that was produced in order to request a Scoping Opinion from the Secretary of State.
The Applicants	The Applicants for the Projects are RWE Renewables UK Dogger Bank South (East) Limited and RWE Renewables UK Dogger Bank South (West) Limited. The Applicants are themselves jointly owned by the RWE Group of companies (51% stake) and Masdar (49% stake).
The Projects	DBS East and DBS West (collectively referred to as the Dogger Bank South Offshore Wind Farms).
Transition Joint Bay (TJB)	The Transition Joint Bay (TJB) is an underground structure at the landfall that houses the joints between the Offshore Export Cables and the Onshore Export Cables.

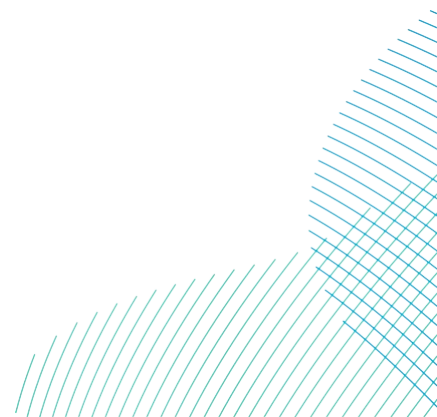


Acronyms

Term	Definition
AC	Alternating Current
DBS	Dogger Bank South
DC	Direct Current
DCO	Development Consent Order
EPP	Evidence Plan Process
ESP	Electrical Switching Platform
ETG	Expert Topic Group
HDD	Horizontal Directional Drill
HRA	Habitats Regulations Assessment
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
INIS	Invasive Non-Indigenous Species
JNCC	Joint Nature Conservation Committee
MCAA	Marine Coastal Access Act
MCZ	Marine Conservation Zone
MCZA	Marine Conservation Zone Assessment
MMO	Marine Management Organisation
MSL	Mean Sea Level
NPS	National Policy Statement
OCP	Offshore Converter Platform



Term	Definition
PINS	Planning Inspectorate
SACO	Supplementary Advice on Conservation Objectives
SNCB	Statutory Nature Conservation Body
TJB	Transition Joint Bay
UK	United Kingdom
ZOI	Zone of Influence



1 Introduction

1.1 Purpose of this Document

1. This document provides the screening stage of the Marine Conservation Zone Assessment (MCZA) process for the Dogger Bank South (DBS) East and DBS West offshore wind farms (collectively referred to hereafter as 'the Projects').
2. The MCZA comprises up to three stages (see section 2). The aim of this stage is to determine whether or not an activity could affect (other than insignificantly) the protected features 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).
3. Where it is considered that there is no potential for a significant effect as a result of the Projects, it is proposed that the MCZ (or relevant feature of the MCZ) is 'screened out' from further consideration. Where the potential for a significant effect on the conservation objectives cannot be discounted, it remains 'screened in' and further assessment will be undertaken.
4. This document has been submitted as part of the PEIR consultation and further discussion will take place through the Evidence Plan Process (EPP) through the Seabed Expert Topic Group (ETG), if required.

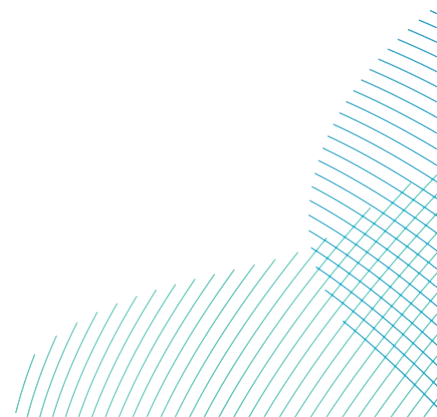
1.2 Project Background

5. In November 2017, The Crown Estate announced a new round of offshore wind leasing. In September 2019, the final bidding areas were announced, and the Offshore Wind Leasing Round 4 was launched. As part of the Round 4 process, developers were able to identify preferred sites within bidding areas defined by The Crown Estate. Applications were then submitted by developers under a competitive bidding process, culminating in an auction held in February 2021. RWE Renewables UK Dogger Bank South (West) Limited and RWE Renewables UK Dogger Bank South (East) Limited (hereafter 'the Applicants') was successful in this auction process, securing preferred bidder status on two adjacent projects, DBS East and DBS West, collectively known as the DBS Offshore Wind Farms.

6. The Crown Estate carried out a plan-level Habitats regulation Assessment (HRA) for the Offshore Wind Leasing Round 4, which assessed the potential cumulative impacts of the six offshore wind projects identified through the Round 4 tender process. The Crown Estate gave notice to the UK and Welsh Government of its intent to proceed with the Round 4 Plan on the basis of a derogation in April 2022. The Secretary of State for Business, Energy and Industrial Strategy has agreed that the Crown Estate can proceed with the Plan. The Applicant has signed an Agreement for Lease with The Crown Estate and will now progress to applying for a Development Consent Order (DCO).
7. The Array Areas are located more than 100km offshore on the Dogger Bank in the southern North Sea and each covers approximately 500km².
8. When operational, DBS East and DBS West combined would have the potential to generate renewable power for 3.4 million United Kingdom (UK) homes from up to 200 wind turbines combined between the Projects.

1.3 Project Description

9. See section 5 of **Volume 8, Stage 1 Marine Conservation Zone Assessment (application ref: 8.17)** for details regarding the Projects parameters relevant to the Holderness Offshore MCZ and Holderness Inshore MCZ.



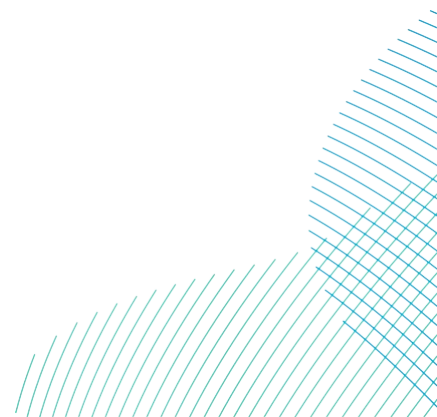
1.4 Legislation, Policy and Guidance

1.4.1 Marine and Coastal Access Act (2009)

10. The MCAA establishes 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) and the process is now complete.
11. 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; and
 - Any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent.
12. The statutory nature conservation body (SNCB) (in this case Natural England) has 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

1.4.2 Guidance

13. The MCZ Screening gives consideration to the Marine Management Organisation (MMO) (2013) Marine Conservation Zones and Marine Licensing guidance.
14. The Stage 1 MCZA will also be informed by Supplementary Advice on Conservation Objectives (SACO) for each relevant site, where available.



2 MCZ Screening Methodology

15. Section 126 of the MCAA, places specific duties on all public bodies in undertaking their licensing activities where they are capable of affecting (other than insignificantly) the conservation objectives of an MCZ. 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.
16. The first stage is the screening process which 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 plan, project or activity (hereafter referred to as ‘scheme’) is within or near to an MCZ; and
 - The scheme 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.
17. Where it has been determined through screening that Section 126 applies, the application is assessed further to determine which subsections of Section 126 should apply through Stage 1 assessment and Stage 2 assessment. The MCZA screening stage is summarised in **Plate 2-1** below.

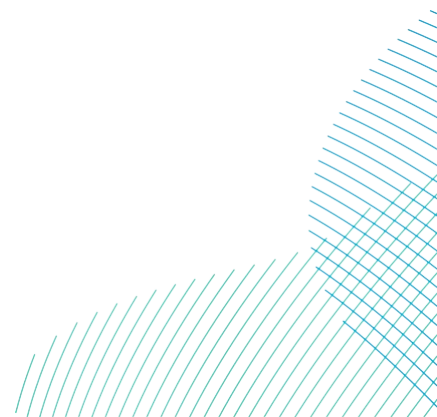
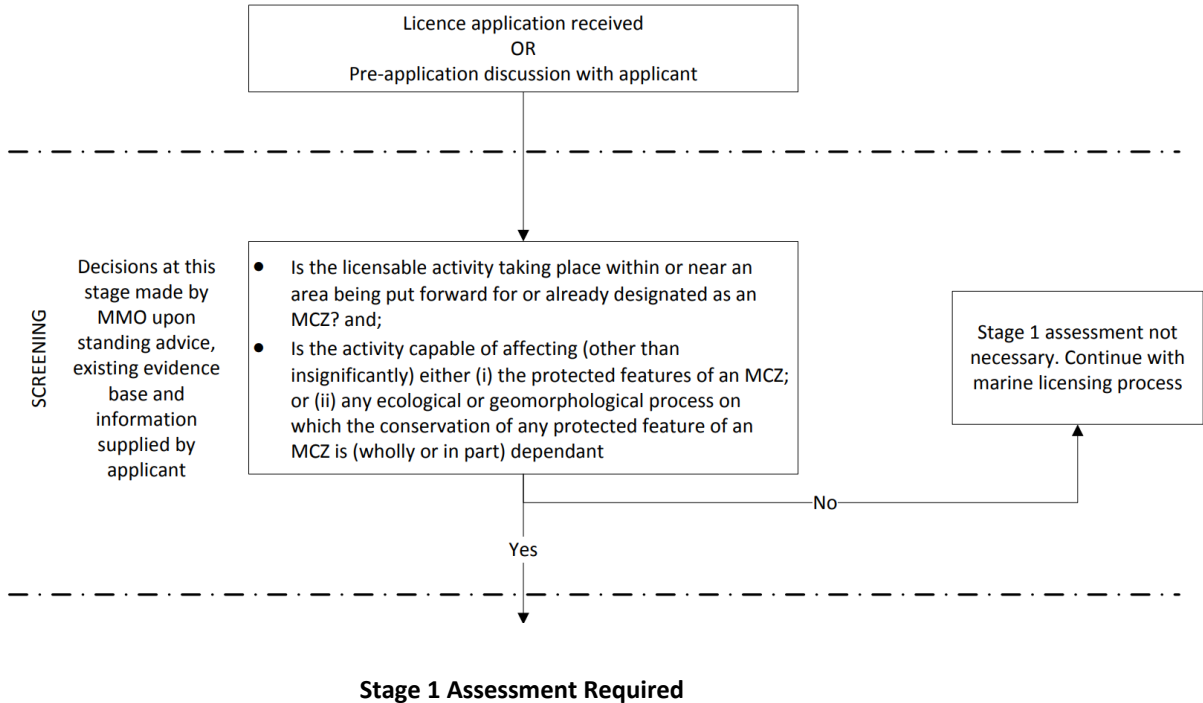


Plate 2-1 MCZA Screening Process (MMO, 2013)



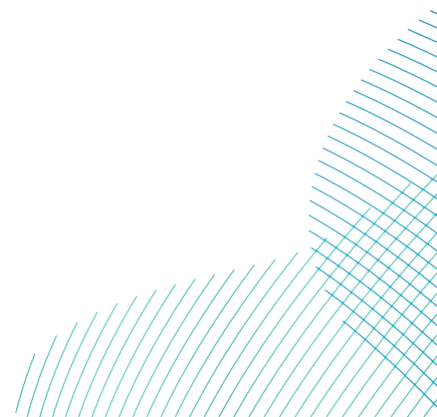
2.1 Cumulative Effects

18. 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.
19. The Planning Inspectorate (PINS) Advice Note Seventeen (PINS, 2019) provides guidance on schemes that should be considered in the Cumulative Effects Assessment (CEA) including:
 - Schemes that are under construction;
 - Permitted applications, not yet implemented;
 - Submitted applications not yet determined;
 - Schemes 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; and
 - Sites identified in other policy documents as development reasonably likely to come forward.
20. Only schemes which are reasonably well described and sufficiently advanced to provide information on which to base a meaningful and robust assessment will be included in the cumulative assessment. Offshore cumulative impacts may come from interactions with the following activities and industries:
 - Other wind farms;
 - Aggregate extraction and dredging;
 - Licensed disposal sites;
 - Navigation and shipping;
 - Commercial fisheries;
 - Sub-sea cables and pipelines
 - Port/harbour development;
 - Oil and gas activities; and
 - Fisheries management areas.
21. Schemes that existed at the time of the relevant MCZ designation or the latest status reports, undertaken every 6 years (whichever is most recent) are considered to be part of the baseline environment.

22. The assessment will present relevant cumulative effects of schemes based on their stage of development using the tiered approach as devised by Natural England (Natural England, 2022) and presented in **Table 2-1**.

Table 2-1 In-Combination Effects Tiered Approach (Natural England, 2022)

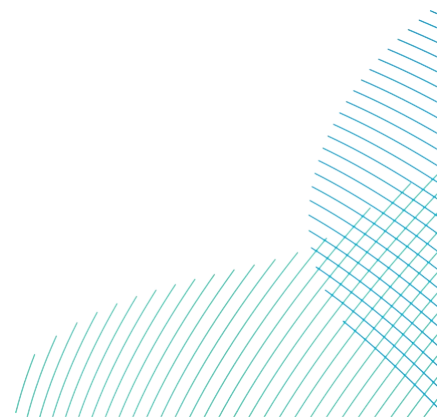
Tier	Consenting or Construction Phase	Data Availability
Tier 1	Built and operational schemes should be included within the cumulative assessment where they have not been included within the environmental characterisation survey, i.e. they were not operational when baseline surveys were undertaken, and/or any residual impact may not have yet fed through to and been captured in estimates of “baseline” conditions e.g. background distribution or mortality rate for birds*.	Pre-construction (and possibly post-construction) survey data from the built scheme(s) and environmental characterisation survey data from proposed scheme (including data analysis and interpretation within the ES for the scheme).
Tier 2	Tier 1 + schemes under construction.	As Tier 1 but not including post construction survey data.
Tier 3	Tier 2 + schemes that have been consented (but construction has not yet commenced).	Environmental characterisation survey data from proposed project (including data analysis and interpretation within the ES for the scheme) and possibly pre-construction.
Tier 4	Tier 3 + schemes that have an application submitted to the appropriate regulatory body that have not yet been determined.	Environmental characterisation survey data from proposed scheme (including data analysis and interpretation within the ES for the scheme).
Tier 5	Tier 4 + schemes that have produced a PEIR and have characterisation data within the public domain.	Environmental characterisation survey data from proposed scheme (including data analysis and interpretation within the ES for the scheme) as well as information provided within the PEIR.



Tier	Consenting or Construction Phase	Data Availability
Tier 6	Tier 5 + schemes that the regulatory body are expecting an application to be submitted for determination (e.g. projects listed under the PINS programme of projects), including projects where a Preliminary Environmental Information Report (PEIR) has been undertaken and submitted.	Possibly environmental characterisation survey data (but strong likelihood that this data will not be publicly available at this stage.
Tier 7	Tier 6 + schemes that have been identified in relevant strategic plans or programmes (e.g. schemes identified in Round 3 wind farm ZAP documents).	Historic survey data collected for other purposes / by other schemes or industries or at a strategic level.

**Or if there are ongoing impacts that are greater than predicted where there is no evidence that the impacts will dissipate over the lifetime of the scheme, e.g. displacement of red-throated diver*

23. The final assessment of cumulative effects will be undertaken during the later stages of the MCZA, once further information is available on a number of schemes such as the Outer Dowsing Offshore Wind Farm, Hornsea Project Four, the Sheringham Shoal Extension and the Dudgeon Extension. However, for the purposes of this screening report, it is possible to identify a number of schemes which are likely to feature in that assessment and consider the extent to which cumulative effects might arise. Section 5 presents the following preliminary information regarding cumulative effects:
- A preliminary short list of schemes considered for CEA, including a brief description as to how schemes have been screened in and the initial tier level they have been assigned.

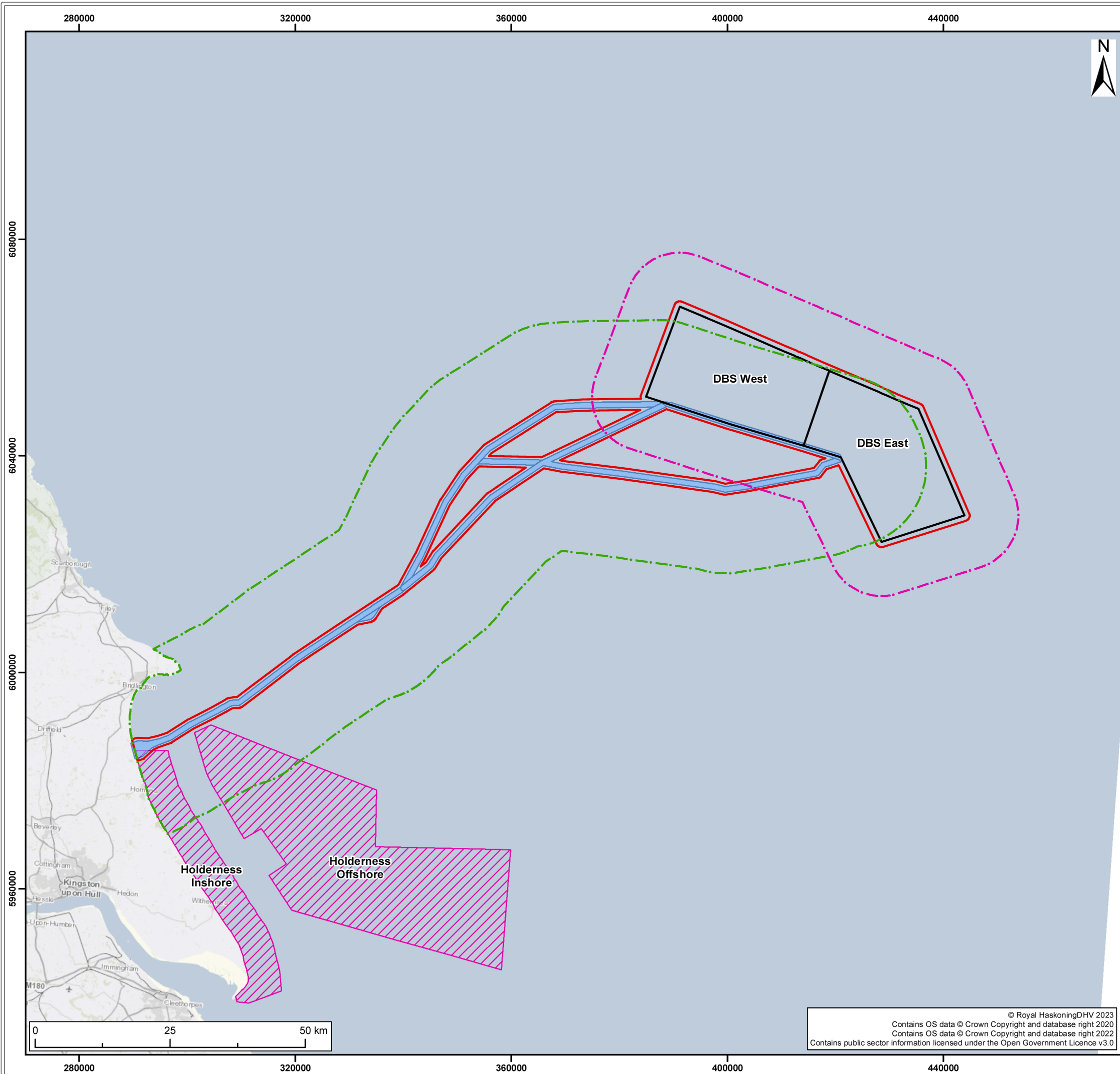


3 Screening Step 1 – Is The Activity Within Or Near A MCZ

24. The first stage of the screening assessment is to determine whether the scheme and associated activities take place within or near an MCZ.
25. Construction, operation & maintenance and decommissioning activities for the Projects may result in the disturbance of sediment. This can impact receptors at distances far from the source of the disturbance and would be considered the effect with the worst-case zone of influence (Zol) for the Projects. Based on evidence from other offshore wind EIAs conducted in the UK, such as that of the nearby Dogger Bank C and Sofia (formerly Teesside A & B), sediment disturbance from array area installation activities will be highly localised, with sediment plumes settling rapidly within the water column within 10km of the disturbance origin (Forewind, 2014).
26. In relation to the Offshore Export Cable Corridor, other schemes in the nearby area (such as Hornsea Project Four) have utilised the tidal ellipse distance to determine the Zol of sediment dispersion resulting from installation activities in the Offshore Export Cable Corridor. As site specific data for the Projects is not yet available, in line with other projects in the region a Zol of 15km has been set for the Offshore Export Cable Corridor.
27. **Table 3-1** details the MCZs within this Zol, along with the distances measured to the nearest point of the Projects Offshore Development Area (Array Areas and Offshore Export Cable Corridor). All MCZs within the Zol are presented in **Figure 3-1**.
28. All other MCZs are over 15km from the Projects Offshore Development Area. As such, there is no potential pathway for impact from the Projects, alone or cumulatively with other projects. Any MCZs detailed in **Table 3-1** are considered further in section 4.

Table 3-1 Distances from the Projects to MCZs within the 15km Zol

Marine Conservation Zone	Distance to the Projects (km)
Holderness Inshore MCZ	0km (Offshore Export Cable Corridor overlaps MCZ)
Holderness Offshore MCZ	Approximately 0.7km south-east of the Offshore Export Cable Corridor



- Legend:
- Offshore Development Area
 - Dogger Bank South Offshore Wind Farms
 - 1km Burial Corridor
 - Array Area 10km Buffer
 - Export Cable Corridor 15km Buffer
 - Marine Conservation Zone

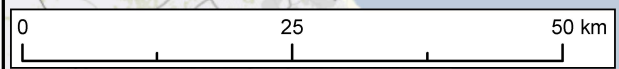
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SUI	REV	DATE	DESCRIPTION	DRW	CHK	APR

Title:
MCZs within the Zol of the Projects

Figure: 3-1 Drawing No: PC2340-RHD-OF-ZZ-DR-Z-0511

Co-ordinate system: WGS 1984 UTM Zone 31N Page Size: A3 Scale: 1:700,000

Project: **Dogger Bank South Offshore Wind Farms** Report: **Preliminary Environmental Information Report**



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4 Screening Step 2 – Screening of Impacts on Protected Features

29. Of the MCZs identified above, this section considers the potential for any impacts as a result of Projects, alone or cumulatively with other schemes, on the protected features of the MCZ or any physical processes on which the features are dependent.

4.1 Holderness Offshore MCZ

4.1.1 Protected Features

30. **Table 4-1** details the designated features of the Holderness Inshore MCZ.

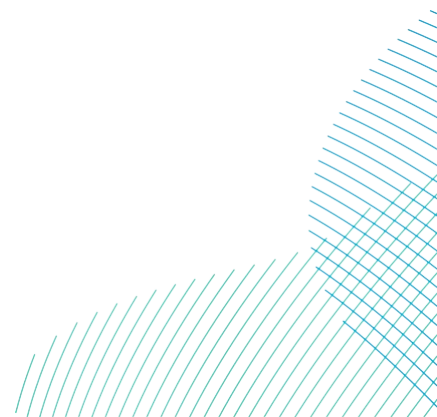
Table 4-1 Designated Features of the Holderness Offshore MCZ

Protected Feature	Type of Feature	Management Approach
Subtidal coarse sediment	Broadscale marine habitat	Recover to favourable condition
Subtidal sand	Broadscale marine habitat	Recover to favourable condition
Subtidal mixed sediments	Broadscale marine habitat	Recover to favourable condition
Ocean quahog <i>Arctica islandica</i>	Species feature of conservation importance	Recover to favourable condition
North Sea glacial tunnel valleys	Feature of geological interest	Maintain in favourable condition

31. The Holderness Offshore MCZ is located approximately 11km offshore from the Holderness coast (JNCC, 2021). The seabed is dominated by subtidal coarse sediment and hosts subtidal sand, subtidal mixed sediments and part of a glacial tunnel valley. The diverse seabed allows for a wide variety of species which live both in and on the sediment such as, crustaceans (crabs and shrimp), starfish and sponges. This site is also a spawning and nursing ground for a range of fish species for example lemon sole *Microstomus kitt*, plaice *Pleuronectes platessa* and European sprat *Sprattus*. Therefore, the species living both in and on the sediment may benefit from the protection afforded to the habitat features within this site.

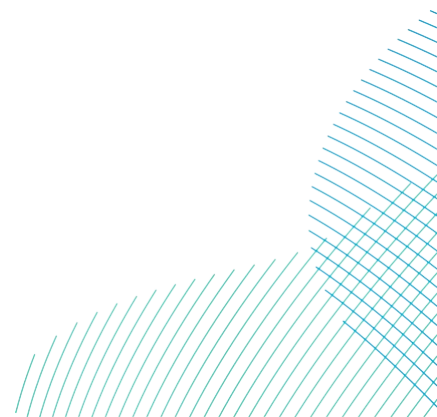
4.1.2 Conservation Objectives

32. The conservation objectives for the Holderness Offshore MCZ is that the protected features:
- So far as already in favourable condition, remain in such condition; and
 - So far as not already in favourable condition, be brought into such condition, and remain in such condition.
33. With respect to Subtidal coarse sediment, Subtidal sand and Subtidal mixed sediments within the MCZ, this means that:
- Its extent is stable or increasing; and
 - Its structures and functions, its quality, and the composition of its characteristic biological communities (which includes a reference to the diversity and abundance of species forming part of or inhabiting that habitat) are such as to ensure that it remains in a condition which is healthy and not deteriorating.
34. With respect to Ocean quahog within the MCZ, this means that the quality and quantity of its habitat and the composition of its 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.
35. Any temporary reduction of numbers is to be disregarded if the population is sufficiently thriving and resilient to enable its recovery. Any alteration to that feature brought about by entirely by natural processes is to be disregarded.
36. With respect to the North Sea glacial tunnel valleys within the MCZ, this means that:
- Its extent, component elements and integrity are maintained;
 - Its structure and functioning are unimpaired; and
 - Its surface remains sufficiently unobscured for the purposes of determining whether the conditions detailed in the above bullets are satisfied.
37. Any obscurement or alteration of that feature brought about entirely by natural processes is to be disregarded.



4.1.3 Potential Pressures

38. The Holderness Offshore MCZ Advice on Operations (JNCC and Natural England, 2020) details the sensitivity of the designated features of the Holderness Offshore MCZ to potential pressures associated with all stages of offshore wind development and power cable installation (construction, operation and decommissioning). Both of these types of development were used as both may be relevant, in cases where the sensitivity differed the highest sensitivity is used.
39. **Table 4-2** below details the pressures detailed in the Advice on Operations which have been screened in for further assessment. **Table A-1 of Annex A - Pressure Screening Tables**, details each pressure and provides justification for why each pressure has been screened in / out of further assessment.
40. It should be noted that where a feature is noted as being sensitive to a pressure, this may be at a high, medium or low sensitivity. The definitions of sensitivity are based on The Marine Life Information Network's (MarLIN) Marine Evidence based Sensitivity Assessment (MarESA), (MarLIN, 2021) which determines sensitivity based on resistance (tolerance) and resilience (recoverability) which are defined as:
- **Resistance:** the likelihood of damage (termed intolerance or resistance) due to a pressure; and
 - **Resilience:** the rate of (or time taken for) recovery (termed recoverability, or resilience) once the pressure has abated or been removed.



41. The sensitivity of each feature to the pressures screened in will be examined further in the next stage of the MCZA. Definitions of the sensitivity categories used in **Table 4-2** are detailed below:
- Sensitive - The evidence base suggests that a feature or at least one of the component biotopes of the feature has a sensitivity to the pressure at the benchmark.
 - Not Sensitive – The evidence base suggests the feature is not sensitive to the pressure at the benchmark.
 - Not Relevant – Recorded where the evidence base suggests that there is no direct interaction between the pressure and the biotope group or species.
 - Unknown – There is no sensitivity assessment for this feature. Recorded where one of the following applies:
 - The evidence base is not considered to be adequate for an assessment of sensitivity to be made;
 - There is not enough evidence to assess the sensitivity of the specific feature/pressure combination and there is no suitable proxy information regarding the habitat (biotope) on which to base decisions.
 - Marine evidence based sensitivity assessments have not yet taken place for the feature/biotopes.
42. At the time of writing, the North Sea glacial tunnel valleys feature of geological interest is not included in the Advice on Operations list for the Holderness Offshore MCZ. However, as the Projects are not located within the MCZ, no direct disturbance / damage to the feature will occur. As such, the North Sea glacial tunnel valleys feature of geological interest has been screened out of further assessment in the MCZA process.

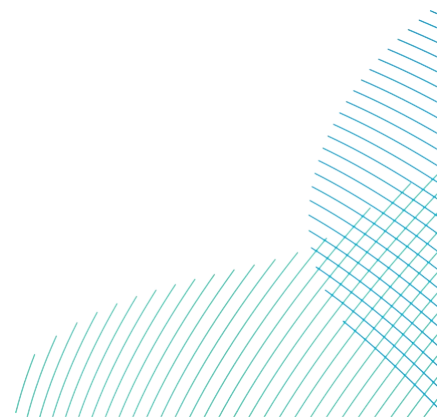
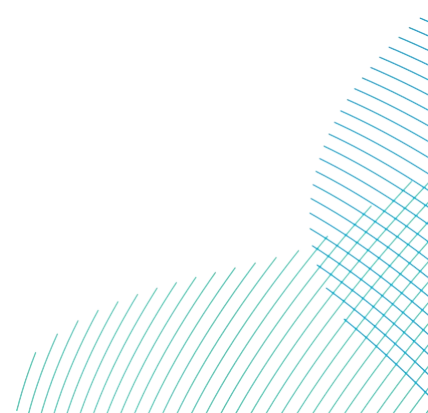
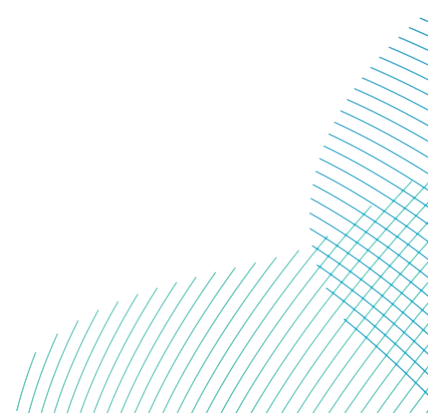


Table 4-2 Sensitivity of Holderness Offshore MCZ Designated Features to Offshore Wind and Power Cable Construction, Operation and Decommissioning Activities

Activity	Pressure	Stage of Development	Ocean quahog	Subtidal coarse sediment	Subtidal mixed sediment	Subtidal sand	Pressure Relevant to Projects?	Screened In / Out
Offshore Wind & Power Cables	Changes in suspended solids (water clarity)	All stages	Not Sensitive	Sensitive	Sensitive	Sensitive	Yes	In
Offshore Wind & Power Cables	Introduction or spread of invasive non-indigenous species (INIS)	All stages	Unknown	Sensitive	Sensitive	Sensitive	Yes	In
Offshore Wind & Power Cables	Smothering and siltation rate changes (heavy)	Offshore wind - Construction and operation Power cables - Construction	Not sensitive	Sensitive	Sensitive	Sensitive	Yes	In



Activity	Pressure	Stage of Development	Ocean quahog	Subtidal coarse sediment	Subtidal mixed sediment	Subtidal sand	Pressure Relevant to Projects?	Screened In / Out
Offshore Wind & Power Cables	Smothering and siltation rate changes (light)	All stages	Not sensitive	Sensitive	Sensitive	Sensitive	Yes	In



4.2 Holderness Inshore MCZ

4.2.1 Protected Features

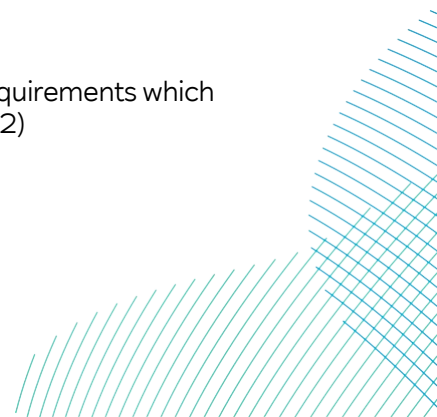
43. **Table 4-3** details the designated features of the Holderness Inshore MCZ.

Table 4-3 Designated Features of the Holderness Inshore MCZ

Protected Feature	Type of Feature	Management Approach
Intertidal sand and muddy sand	Broadscale marine habitat ¹	Maintain in favourable condition
Moderate energy circalittoral rock	Broadscale marine habitat	Maintain in favourable condition
High energy circalittoral rock	Broadscale marine habitat	Maintain in favourable condition
Subtidal coarse sediment	Broadscale marine habitat	Maintain in favourable condition
Subtidal mixed sediments	Broadscale marine habitat	Maintain in favourable condition
Subtidal sand	Broadscale marine habitat	Maintain in favourable condition
Subtidal mud	Broadscale marine habitat	Maintain in favourable condition
Spurn Head (subtidal)	Geological feature	Maintain in favourable condition

44. The Holderness Inshore MCZ is located north of the mouth of the Humber Estuary (DEFRA, 2016). The seabed in this site is made up of rock, sand, mud and sediment. The mosaic of habitats within the site supports a diverse range of organisms including red algae, sponges and other encrusting fauna. The site also supports fish species such as European eel, dab and wrasse, as well as commercially significant crustaceans such as edible and velvet swimming crabs and lobster. Partly above the water, the sandy beaches of intertidal sand and muddy sand are uncovered at low tide. These beaches are home to many species, buried in the damp sand.

¹ Broadscale marine habitats are groups of habitats with shared ecological requirements which capture the coarse biological and physical diversity of the seabed (JNCC, 2022)

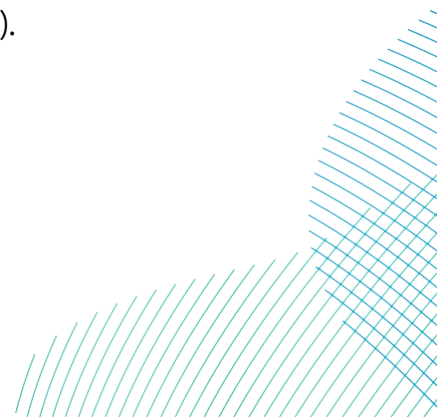


4.2.2 Conservation Objectives

45. The overarching conservation objectives for the site is for its designated features either to be maintained in favorable condition. For each broadscale marine habitat, favourable condition means that, within an MCZ:
- Its extent is stable or increasing; and
 - 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.
46. Any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery.
47. For features of geological interest, favourable condition means that, within an MCZ:
- Its extent, component elements and integrity are maintained;
 - Its structure and functioning are unimpaired; and
 - Its surface remains sufficiently unobscured to determine the above points are satisfied.
48. Any alteration to a feature brought about entirely by natural processes is to be disregarded when determining whether a designated feature is in favourable condition.

4.2.3 Potential Pressures

49. At the time of writing, no Advice on Operations is available for the Holderness Inshore MCZ. As such, there exists no information detailing the sensitivities of the designated features of the Holderness Inshore MCZ specifically. Therefore, proxies have been used to determine the sensitivity of the site's features to pressures associated with offshore wind and power cable development. Where possible, proxies close to the Holderness Inshore MCZ have been used. The proxy Advice on Operations documents used for each designated feature are:
- Holderness Offshore MCZ (Subtidal coarse sediment, Subtidal mixed sediments and Subtidal sand);
 - South Rigg MCZ (Subtidal Mud, Moderate energy circalittoral rock); and
 - Offshore Brighton MCZ (High energy circalittoral rock).



50. There is no current advice available regarding the sensitivity of the Intertidal sand and muddy sand to the pressures of offshore wind and power cable development. As such, professional judgement has been used when determining the sensitivity of this feature to potential pressures.
51. The Spurn Head geological feature of interest is located approximately 44km south of the Offshore Export Cable Corridor. As such no direct disturbance / damage to the feature will occur, and it has been screened out of further assessment in the MCZA process.
52. **Table 4-4** below details each pressure detailed in the proxy Advice on Operations screened in for further assessment. **Table A-2** of **Annex A - Pressure Screening Tables**, details each pressure and provides justification for why each pressure has been screened in / out of further assessment. Definitions of the sensitivity categories used in **Table 4-4** are detailed in section 4.1.3 above. In addition to these definitions, a further definition from the Offshore Brighton MCZ Advice on Operations is detailed below:
 - Insufficient evidence to assess – The evidence base is not considered to be developed enough for assessments to be made of sensitivity at the pressure benchmark.

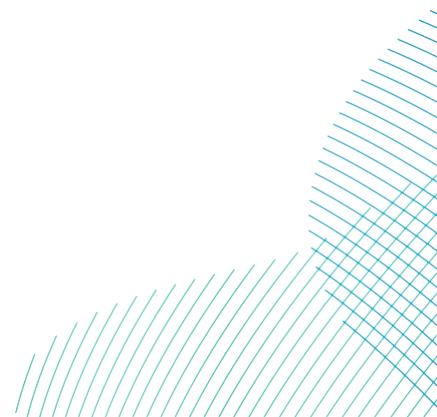
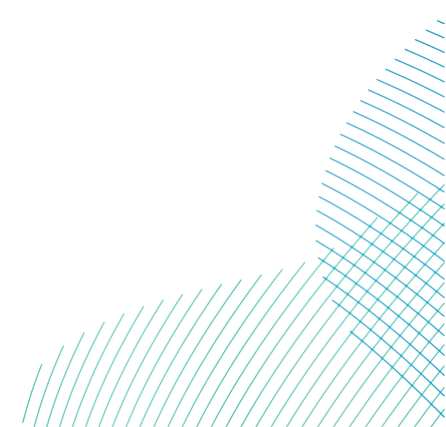


Table 4-4 Sensitivity of Holderness Inshore MCZ Designated Features to Offshore Wind and Power Cable Construction, Operation and Decommissioning Activities²

Pressure	Development Stage (Wind &/or Cables)	Intertidal sand and muddy sand	Moderate energy circalittoral rock	High energy circalittoral rock	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal sand	Subtidal mud	Relevant to Projects?	Screened in/Out
Abrasion/disturbance of the substrate on the surface of the seabed	Wind & cables - All stages	S	S	S	S	S	S	S	Yes	In
Changes in suspended solids (water clarity)	Wind & cables - All stages	S	U	IE	S	S	S	S	Yes	In
Electromagnetic changes	Cables - Operation	U	U	U	U	U	U	U	Yes	In
Habitat structure changes - removal of substratum (extraction)	Wind - All stages Cables - Construction and decommissioning	S	S	S	S	S	S	S	Yes	In
Introduction or spread of invasive non-indigenous species (INIS)	Wind & cables - All stages	S	S	S	S	S	S	S	Yes	In
Penetration and/or physical disturbance of the substrate below the surface of the seabed, including abrasion	Wind & cables - All stages	S	U	S	S	S	S	S	Yes	In
Physical change (to another seabed type)	Wind & cables - All stages	S	S	S	S	S	S	S	Yes	In
Physical change (to another sediment type)	Wind & cables - All stages	S	NR	NR	S	S	S	S	Yes	In

² Key: **S** - Sensitive, **IE** - Insufficient Evidence to Assess, **NS** - Not Sensitive, **NR** - Not Relevant, **U** - Unknown

Pressure	Development Stage (Wind &/or Cables)	Intertidal sand and muddy sand	Moderate energy circalittoral rock	High energy circalittoral rock	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal sand	Subtidal mud	Relevant to Projects?	Screened in/Out
Smothering and siltation rate changes (heavy)	Wind – Construction and operation Cables – Construction	S	S	S	S	S	S	S	Yes	In
Smothering and siltation rate changes (light)	Wind & cables - All stages	S	S	S	S	S	S	S	Yes	In
Water flow (tidal current) changes, including sediment transport considerations	Wind & cables - All stages	S	S	IE	S	S	S	S	Yes	In



5 Cumulative Effects

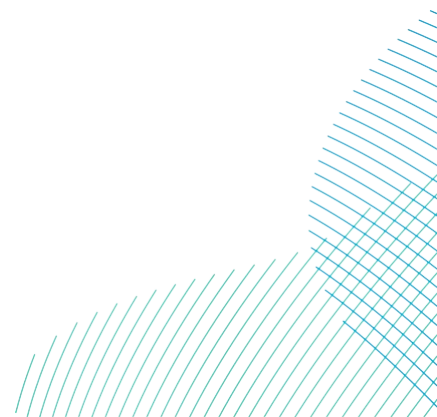
54. Cumulative effects will consider indirect effects in conjunction with potential impacts to the designated features of the relevant MCZs, based on the results of the assessments of other schemes. **Table 5-1** details all schemes within 15km of the Holderness Inshore MCZ and Holderness Offshore MCZ, that could have a cumulative effect on the sites with the Projects activities.
55. Schemes have been assigned a tier level between 1 and 7, based on the most recent Natural England guidance. For the full CEA at the next stage of the MCZA, this list will be reviewed and screened to ensure all relevant schemes are considered in the final assessment. All listed schemes will be re-examined at the next stage to ensure each assigned tier remains accurate at the time of writing.
56. Classes of schemes that are considered to be part of the baseline conditions for the surrounding area, and therefore these have not been the subject of further assessment, include:
- Marine aggregate extraction;
 - Oil and gas exploration and extraction;
 - Sub-sea cables and pipelines; and
 - Commercial shipping.

Table 5-1 High-Level List of Schemes Screened For Further Assessment in the Next Stage of the MCZA

Tier	Scheme	Distance to Holderness Offshore MCZ (km)	Distance to Holderness Inshore MCZ (km)
Strategic Plans			
7	East Inshore and East Offshore Marine Plans	Within East Offshore Marine Plan area only	Within both East Inshore and East Offshore Marine Plan areas
Offshore Wind Farms			
1	Westermost Rough	2	2
1	Humber Gateway	4	2
2	Triton Knoll	11	>15km

Tier	Scheme	Distance to Holderness Offshore MCZ (km)	Distance to Holderness Inshore MCZ (km)
Offshore Wind Farm Cable Corridors			
2	Dogger Bank A	2	2
2	Dogger Bank B	2	2
6	Dogger Bank D*	TBC	TBC
1	Hornsea 1	1	4
1	Hornsea Project Two	1	4
4	Hornsea Project Four	2	9
Carbon Capture and Storage			
3	Northern Endurance CCS (export pipeline)	0 (Within)	0 (Within)
Subsea Cables			
6	Eastern Link 2 (EGL2)	5	7
2	VikingLink Interconnector	0 (Within)	>15km
7	Third Eastern Link HVDC cable (TGDC)*	5	7
7	Fourth Eastern Link HVDC cable (E4L5)*	5	7
7	National Grid HND Bootstrap*	0 (Within)	0 (Within)

*Cable route unknown/not yet finalised

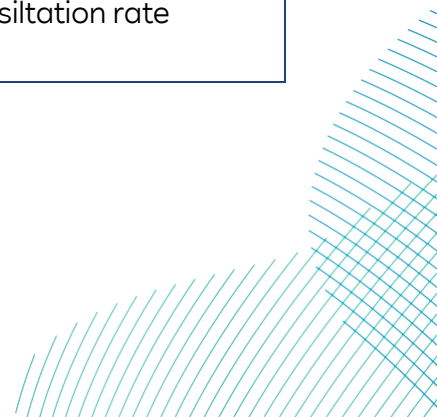


6 Summary

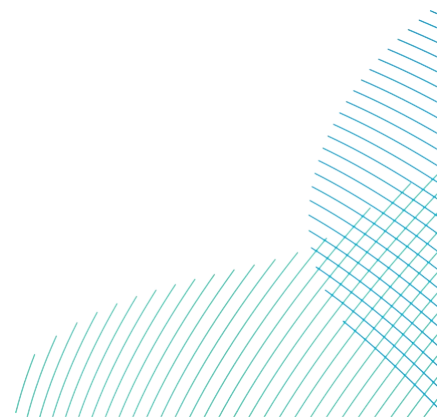
57. **Table 6-1** provides a summary of the MCZs screened in for further assessment, the relevant Project components for each site, and the pressures screened in (alone or cumulatively with other schemes).

Table 6-1 Sites, features and pressures screened into Stage 2 MCZA

Site	Features Screened In	Relevant Project Components	Pressures Screened In (Alone and Cumulatively)
Holderness Offshore MCZ	Subtidal coarse sediment Subtidal sand Subtidal mixed sediments Ocean quahog	In-direct effects from Offshore Export Cable Corridor (nearshore)	Changes in suspended solids (water clarity) Introduction or spread of invasive non-indigenous species (INIS) Smothering and siltation rate changes (heavy) Smothering and siltation rate changes (light)
Holderness Inshore MCZ	Intertidal sand and muddy sand Moderate energy circalittoral rock High energy circalittoral rock Subtidal coarse sediment Subtidal mixed sediments Subtidal sand Subtidal mud Spurn Head (subtidal)	Direct and in-direct effects from Offshore Export Cable Corridor (landfall and nearshore)	Abrasion/disturbance of the substrate on the surface of the seabed Changes in suspended solids (water clarity) Electromagnetic changes Habitat structure changes – removal of substratum (extraction) Introduction or spread of invasive non-indigenous species (INIS) Penetration and/or physical disturbance of the substrate below the surface of the seabed, including abrasion Physical change (to another seabed type) Physical change (to another sediment type) Smothering and siltation rate changes (heavy)



Site	Features Screened In	Relevant Project Components	Pressures Screened In (Alone and Cumulatively)
			Smothering and siltation rate changes (light) Water flow (tidal current) changes, including sediment transport considerations



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Annex A - Pressure Screening Tables

Table A-1 Sensitivity of Holderness Offshore MCZ Designated Features to Offshore Wind and Power Cable Construction, Operation and Decommissioning Activities

Table A-2 Sensitivity of Holderness Inshore MCZ Designated Features to Offshore Wind and Power Cable Construction, Operation and Decommissioning Activities

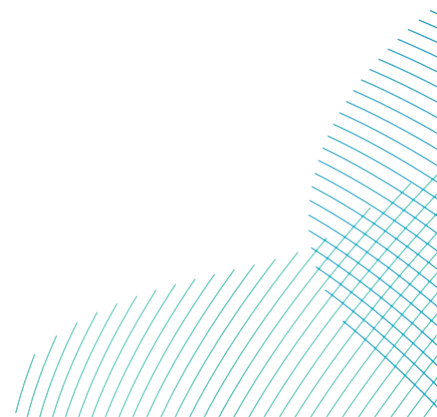


Table A-1 Sensitivity of Holderness Offshore MCZ Designated Features to Offshore Wind and Power Cable Construction, Operation and Decommissioning Activities ³

Pressure	Stage of Development	Ocean quahog	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal sand	Screened In / Out	Justification
Abrasion/disturbance of the substrate on the surface of the seabed	Wind and cables - All stages	S	S	S	S	Out	Projects not within the MCZ, therefore no potential pathway for pressure to affect designated features.
Barrier to species movement	Wind - All stages Cables - Operation	NR	U	NR	NS	Out	Features not sensitive to pressure or pressure not relevant to features.
Changes in suspended solids (water clarity)	Wind and cables - All stages	NS	S	S	S	In	Potential for sediment disturbed by cable burial/maintenance/decommissioning activities to result in changes in suspended solids within the MCZ.
Collision below water with static or moving objects not naturally found in the marine environment (e.g. boats, machinery and structures)	Wind and cables - All stages	NR	U	NR	NS	Out	Features not sensitive to pressure or pressure not relevant to features.
Deoxygenation	Cables - All stages	NS	S	S	S	Out	Sediment re-deposition within the MCZ will be negligible, sediment disturbance will occur over a negligible spatial/temporal scale.
Electromagnetic changes	Cables - Operation	U	U	U	U	Out	Projects not within the MCZ, therefore no potential pathway for pressure to affect designated features.
Habitat structure changes - removal of substratum (extraction)	Wind - All stages Cables - Construction and decommissioning	S	S	S	S	Out	Projects not within the MCZ, therefore no potential pathway for pressure to affect designated features.
Hydrocarbon & PAH contamination. Includes those priority substances listed in	Wind and cables - All stages	U	U	U	U	Out	Best-practice mitigation measures for pollution control embedded into Projects design, therefore this pressure has been screened out.

³ Key: **S** - Sensitive, **NS** - Not Sensitive, **NR** - Not Relevant, **U** - Unknown

Pressure	Stage of Development	Ocean quahog	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal sand	Screened In / Out	Justification
Annex II of Directive 2008/105/EC							
Introduction of light	Wind and cables - All stages	NR	S	U	S	Out	Projects not within the MCZ, therefore no potential pathway for pressure to affect designated features.
Introduction of other substances (solid, liquid or gas)	Wind - All stages	U	U	U	U	Out	Best-practice mitigation measures for pollution control embedded into Projects design, therefore this pressure has been screened out.
Introduction or spread of invasive non-indigenous species (INIS)	Wind and cables - All stages	U	S	S	S	In	Potential for Project vessels to transport INIS to MCZ.
Litter	Wind and cables - All stages	U	U	U	U	Out	Best-practice mitigation measures for pollution control embedded into Projects design, therefore this pressure has been screened out.
Nutrient enrichment	Cables - All stages	NS	U	NS	NS	Out	Features not sensitive to pressure or pressure not relevant to features.
Penetration and/or physical disturbance of the substrate below the surface of the seabed, including abrasion	Wind and cables - All stages	S	S	S	S	Out	Projects not within the MCZ, therefore no potential pathway for pressure to affect designated features.
Physical change (to another seabed type)	Wind and cables - All stages	S	S	S	S	Out	Projects not within the MCZ, therefore no potential pathway for pressure to affect designated features.
Physical change (to another sediment type)	Wind and cables - All stages	S	S	S	S	Out	Projects not within the MCZ, therefore no potential pathway for pressure to affect designated features.
Physical loss (to land or freshwater habitat)	Wind and cables - All stages	U	S	S	S	Out	Projects not within the MCZ, therefore no potential pathway for pressure to affect designated features.
Smothering and siltation rate changes (heavy)	Wind - Construction and operation Cables - Construction	NS	S	S	S	In	Potential for sediment disturbed by cable burial/maintenance/decommissioning activities to result in smothering and siltation rate changes within the MCZ.

Pressure	Stage of Development	Ocean quahog	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal sand	Screened In / Out	Justification
Smothering and siltation rate changes (light)	Wind and cables - All stages	NS	S	S	S	In	Potential for sediment disturbed by cable burial/maintenance/decommissioning activities to result in smothering and siltation rate changes within the MCZ.
Synthetic compound contamination (incl. pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC	Wind and cables - All stages	U	U	U	U	Out	Best-practice mitigation measures for pollution control embedded into Projects design, therefore this pressure has been screened out.
Temperature decrease	Cables - Operation	NS	S	S	S	Out	Projects not within the MCZ, therefore no potential pathway for pressure to affect designated features.
Temperature increase	Cables - Operation	S	S	S	S	Out	Projects not within the MCZ, therefore no potential pathway for pressure to affect designated features.
Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC	Wind and cables - All stages	U	U	U	U	Out	Best-practice mitigation measures for pollution control embedded into Projects design, therefore this pressure has been screened out.
Underwater noise changes	Wind and cables - All stages	NR	U	NS	NS	Out	Features not sensitive to pressure or pressure not relevant to features.
Visual disturbance	Wind and cables - All stages	NR	U	NR	NR	Out	Features not sensitive to pressure or pressure not relevant to features.
Water flow (tidal current) changes, including sediment transport considerations	Wind and cables - All stages	NS	U	NS	S	Out	Presence of export cable(s) in the vicinity of the MCZ will not result in changes to water flow within the site.
Wave exposure changes	Wind - Operation	NS	U	NS	NS	Out	Features not sensitive to pressure or pressure not relevant to features.

Table A-2 Sensitivity of Holderness Inshore MCZ Designated Features to Offshore Wind and Power Cable Construction, Operation and Decommissioning Activities⁴

Pressure	Development Stage (Wind &/or Cables)	Intertidal sand and muddy sand	Moderate energy circalittoral rock	High energy circalittoral rock	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal sand	Subtidal mud	Screened In/Out	Justification
Abrasion/disturbance of the substrate on the surface of the seabed	Wind & cables - All stages	S	S	S	S	S	S	S	In	Projects Offshore Export Cable Corridor within MCZ, potential for direct impacts to occur.
Barrier to species movement	Wind - All stages Cables - Operation	NS	S	NR	U	NR	NS	NS	Out	No prolonged obstruction to species movement or exposure to noise, light, visual disturbance or changes in water quality will result from the Offshore Export Cable Corridor during all phases of the Projects lifespan.
Changes in suspended solids (water clarity)	Wind & cables - All stages	S	U	IE	S	S	S	S	In	Potential for sediment disturbed by cable burial/maintenance/decommissioning activities to result in changes in suspended solids within the MCZ.
Collision below water with static or moving objects not naturally found in the marine environment (e.g. boats, machinery and structures)	Wind & cables - All stages	NR	NR	NR	U	NR	NR	NR	Out	Pressure not relevant to features.
Deoxygenation	Cables - All stages	S	S	NS	S	S	S	S	Out	Sediment re-deposition within the MCZ will be negligible, sediment disturbance will occur over a negligible spatial/temporal scale.
Electromagnetic changes	Cables - Operation	U	U	U	U	U	U	U	In	Offshore Export Cable Corridor routes through MCZ, potential for pressure to result in effects on features.

⁴ Key: **S** - Sensitive, **IE** - Insufficient Evidence to Assess, **NS** - Not Sensitive, **NR** - Not Relevant, **U** - Unknown

Pressure	Development Stage (Wind &/or Cables)	Intertidal sand and muddy sand	Moderate energy circalittoral rock	High energy circalittoral rock	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal sand	Subtidal mud	Screened In/Out	Justification
Habitat structure changes – removal of substratum (extraction)	Wind – All stages Cables – Construction and decomm.	S	S	S	S	S	S	S	In	Projects within MCZ, potential for removal of substratum to occur as a result of cable burial activities.
Hydrocarbon & PAH contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC	Wind & cables - All stages	U	U	NS	U	U	U	U	Out	Best-practice mitigation measures for pollution control embedded into Projects design, therefore this pressure has been screened out.
Introduction of light	Wind & cables - All stages	S	NR	NR	S	NR	S	NS	Out	Artificial light produced by the Projects construction and decommissioning activities will be limited temporally and spatially.
Introduction of other substances (solid, liquid or gas)	Wind - All stages	U	U	U	U	U	U	U	Out	Best-practice mitigation measures for pollution control embedded into Projects design, therefore this pressure has been screened out.
Introduction or spread of invasive non-indigenous species (INIS)	Wind & cables - All stages	S	S	S	S	S	S	S	In	Potential for infrastructure introduced within the MCZ to be colonised by INIS.
Litter	Wind & cables - All stages	U	U	U	U	U	U	U	Out	Best-practice mitigation measures for pollution control embedded into Projects design, therefore this pressure has been screened out.
Nutrient enrichment	Cables - All stages	NS	NS	NS	U	NS	NS	NS	Out	Best-practice mitigation measures for pollution control embedded into Projects design, therefore this pressure has been screened out.
Penetration and/or physical disturbance of the substrate below the surface of	Wind & cables - All stages	S	U	S	S	S	S	S	In	Projects Offshore Export Cable Corridor within MCZ, potential for direct impacts to occur.

Pressure	Development Stage (Wind &/or Cables)	Intertidal sand and muddy sand	Moderate energy circalittoral rock	High energy circalittoral rock	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal sand	Subtidal mud	Screened In/Out	Justification
the seabed, including abrasion										
Physical change (to another seabed type)	Wind & cables - All stages	S	S	S	S	S	S	S	In	Projects Offshore Export Cable Corridor within MCZ, potential for direct impacts to occur.
Physical change (to another sediment type)	Wind & cables - All stages	S	NR	NR	S	S	S	S	In	Projects Offshore Export Cable Corridor within MCZ, potential for direct impacts to occur.
Physical loss (to land or freshwater habitat)	Wind & cables - All stages	S	S	S	S	S	S	S	Out	No impacts on land or freshwater habitat within the MCZs will occur as a result of the Projects activities.
Smothering and siltation rate changes (heavy)	Wind - Construction and operation Cables - Construction	S	S	S	S	S	S	S	In	Potential for sediment disturbed by cable burial/maintenance/decommissioning activities to result in smothering and siltation rate changes within the MCZ.
Smothering and siltation rate changes (light)	Wind & cables - All stages	S	S	S	S	S	S	S	In	Potential for sediment disturbed by cable burial/maintenance/decommissioning activities to result in smothering and siltation rate changes within the MCZ.
Synthetic compound contamination (incl, pesticides, antifoulants, pharmaceuticals). Includes those priority substances listed in Annex II of Directive 2008/105/EC	Wind & cables - All stages	U	U	NS	U	U	U	U	Out	Best-practice mitigation measures for pollution control embedded into Projects design, therefore the pressures has been screened out.
Temperature decrease	Cables - Operation	S	S	S	S	S	S	S	Out	Recent evidence indicates that the surface temperature difference of operational power cables in comparison to inert sections of the same cable was negligible at a

Pressure	Development Stage (Wind &/or Cables)	Intertidal sand and muddy sand	Moderate energy circalittoral rock	High energy circalittoral rock	Subtidal coarse sediment	Subtidal mixed sediments	Subtidal sand	Subtidal mud	Screened In/Out	Justification
										sensitivity level of 0.06°C (Taormina <i>et al.</i> , 2018). As such the pressure has been screened out.
Temperature increase	Cables - Operation	S	S	S	S	S	S	S	Out	Recent evidence indicates that the surface temperature difference of operational power cables in comparison to inert sections of the same cable was negligible at a sensitivity level of 0.06°C (Taormina <i>et al.</i> , 2018). As such the pressure has been screened out.
Transition elements & organo-metal (e.g. TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC	Wind & cables - All stages	U	U	NS	U	U	U	U	Out	Best-practice mitigation measures for pollution control embedded into Projects design, therefore the pressures has been screened out.
Underwater noise changes	Wind & cables - All stages	NS	NR	NR	NS	NS	NS	NS	Out	Pressure not relevant to features.
Visual disturbance	Wind & cables - All stages	NR	NR	NR	NR	NR	NR	NR	Out	Pressure not relevant to features.
Water flow (tidal current) changes, including sediment transport considerations	Wind & cables - All stages	S	S	IE	S	S	S	S	In	Potential for structures to be placed in the intertidal zone (e.g. HDD exit pit), may result in changes to coastal process and water flow.
Wave exposure changes	Wind - Operation	NS	S	IE	U	NS	NS	NS	Out	Pressure only relevant to the physical presence of turbines. Only interaction between the Projects and the MCZ is the Projects Offshore Export Cable Corridor.

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