

Offshore Wind Farm

MARINE CONSERVATION ZONE **ASSESSMENT**

Appendix 1: Screening Report

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Glossary of Acronyms

AfL	Agreement for Lease	
CIA	Cumulative Impact Assessment	
DCO	Development Consent Order	
DML	Deemed Marine Licence	
EIA	Environmental Impact Assessment	
EPP	Evidence Plan Process	
ETG	Expert Topic Groups	
GGOW	Greater Gabbard Offshore Wind Farm	
HRA	Habitats Regulations Assessment	
JNCC	Joint Nature Conservation Committee	
MCAA	Marine and Coastal Access Act	
MCZ	Marine Conservation Zone	
MCZA	Marine Conservation Zone Assessment	
MMO	Marine Management Organisation	
NFOW	North Falls Offshore Wind Farm Ltd	
O&M	Operation and maintenance	
RWE	RWE Renewables UK Ltd	
SACO	Supplementary Advice on Conservation Objectives	
SNCB	Statutory Nature Conservation Body	
SSC	Suspended sediment concentrations	
SSER	Scottish and Southern Energy Renewables	
WTG	Wind turbine generator	

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 North Falls offshore wind farm (hereafter 'North Falls' or 'the project').
- 2. The MCZA comprises up to three stages (see section 3). The aim of this stage is to determine whether or not an activity is capable of affecting (other than insignificantly) the protected features or physical processes of a marine conservation zone (MCZ), either directly or indirectly. This enables the competent authority to ensure compliance with the Marine and Coastal Access Act 2009 (MCAA).
- 3. Where it is considered that there is no potential for a significant effect as a result of the project, 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 is to be used to inform stakeholder consultation. Agreement on whether sites and features should or should not be screened out will be sought through the Evidence Plan Process (EPP) through the Seabed Expert Topic Group (ETG).

1.2 Project background

5. North Falls is an extension to the Greater Gabbard Offshore Wind Farm (GGOW), located off the coast of Suffolk, England. GGOW was commissioned in 2012 and in February 2017, The Crown Estate launched an opportunity for existing wind farms to apply for project extensions. North Falls Offshore Wind Ltd (NFOW)), a consortium between Scottish and Southern Energy Renewables (SSER) Ltd and RWE Renewables UK Ltd (RWE), applied for an Agreement for Lease (AfL) to develop an extension to GGOW, which was granted in 2020.

1.3 Offshore project description

- 6. At this early stage in the development of North Falls, the project description is indicative, based on NFOW's experience of consenting, constructing and operating offshore wind farms.
- 7. The key components of the offshore project are described in Table 1.1. In accordance with the Rochdale Envelope approach, the parameters in Table 1.1 represent the limits of the envelope and should not be combined (i.e., the maximum tip height would not occur with the minimum clearance above sea level).

Table 1.1 Indicative project characteristics

Table 1.1 illulcative project characteristics	
Feature	Indicative Parameters
Number of wind turbine generators (WTGs)	Up to 71
Array areas	150km²
Distance to shore (closest distance)	22.5km
Provisional offshore cable route length	55km
Maximum number of offshore export circuits	Up to 4
Target minimum cable burial depth where buried	0.5-3m
Maximum WTG rotor diameter	337m
Maximum rotor tip height	397m above Mean High Water Springs (MHWS)
Minimum clearance above sea level	22m above MHWS
Indicative minimum separation between WTGs	1150m downwind; 820m cross wind
Water depth in the North Falls array areas	5-59m LAT
Maximum no. of offshore substation platforms (OSP)	2
Maximum estimated array cable length	228m

- 8. The offshore project area lies within the Outer Thames Estuary. Like GGOW, the North Falls array area is split into two boundaries to facilitate a shipping route. Within these boundaries, WTGs, array cables and offshore platforms (substations) will be installed.
- 9. The northern and southern array boundaries cover areas of approximately 20.9km² and 128.6km², respectively. The northern array boundary lies approximately 22.5km from shore, and the southern boundary approximately 37.6km from shore.
- 10. The electricity will be connected to the shore by export cables which will be located within an offshore export cable corridor which is proposed to run from the southern array area and make landfall between Clacton-on-Sea and Frinton-on-Sea. The precise landfall location between these two settlements is subject to ongoing site selection. The offshore export cable corridor will also include an interconnector cable between the northern and southern array areas.
- 11. The North Falls array areas, interconnector cable corridor and offshore cable corridor are collectively referred to as the 'offshore project area'. This offshore project area is shown in Figure 1.1.

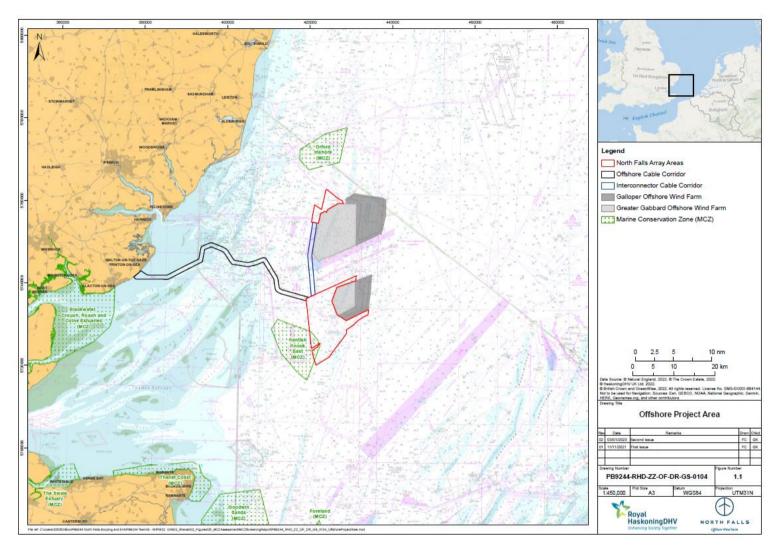


Figure 1.1 Offshore project area

1.3.1.1 Wind turbine generators

12. Based on industry developments to date, wind turbine generators (WTGs) are likely to increase in size from those currently available and therefore the MCZA will be undertaken on a range of number of WTGs installed and size (dimensions) of WTG and associated foundations, in order to future proof the assessment and DCO. The project has the potential to consist of up to 72 WTGs.

1.3.1.2 Foundations

- 13. The design of foundations for the WTGs and platforms will be informed by site investigation and procurement, post consent. The following foundation design options are currently being considered:
 - Monopiles;
 - Jackets on pin piles (on 3 or 4 legs);
 - Jackets on suction caissons (on 3 or 4 legs); and
 - Gravity Base Structures (GBS).

1.3.1.3 Offshore electrical infrastructure

- 14. Offshore electrical infrastructure will include the following components:
 - Array cabling;
 - Offshore substation platform (OSP); and
 - Export cabling to bring the electricity from the array areas to landfall.

1.4 Legislation, Policy and Guidance

1.4.1 Marine & Coastal Access Act (2009)

- 15. The UK Marine & Coastal Access Act 2009 (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.
- 16. Section 126 of the MCAA describes the duties of public authorities in relation to certain decisions and applies where;
 - a public authority has the function of determining an application (whenever made) for authorisation of the doing of an act, and
 - the act is capable of affecting (other than insignificantly) -
 - the protected features of an MCZ;

- any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent.
- 17. 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

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

2 Consultation

20. This section will provide a summary of the consultation undertaken in relation to MCZA screening.

Table 2.1 Consultation feedback

CONSULTEE	DATE	SECTION	COMMENT	NFOW RESPONSE
Natural England	16 December 2021	Point 30, Section 3.4: Cumulative Effects	With regard to projects or plans that existed at the time of MCZ designation or the latest status reports, we would advise that these may not form part of the baseline environment if modifications, remediation, and/or maintenance work is ongoing or permitted.	Natural England has since advised that the cumulative tiers as presented in Natural England and Defra
Natural England	16 December 2021	Point 31, Section 3.4: Cumulative Effects	The TEIR approach is currently being updated to consider projects beyond Round 3, availability of data at PEIR stage, and potential ongoing impacts from the operational phase (e.g. operational cable reburial and repair licenses). We will provide any updated version of this	(2022) should be used. These are included in Table 3.1
Natural England	16 December 2021	Point 66, Section 5.2.2: Conservation Objectives [Kentish Knock East MCZ]	Natural England advises that any impacts which persist for the lifetime of the project are not temporary, and that the conservation objectives for the site would be hindered.	The Stage 1 MCZ assessment considers the risks to hindering the conservation objectives of the Kentish Knock East MCZ.
Natural England	16 December 2021	Point 70, Section 5.2.3.1: Construction [Kentish Knock East MCZ]	Please can you confirm if seabed preparation will include UXO clearance? We note that UXO clearance is usually considered as part of site preparation works.	Yes, paragraph 73 refers to UXO and this included in the Stage 1 assessment.
Natural England	16 December 2021	Point 75, Section 5.2.3.2: Operation [Kentish Knock East MCZ]	We would disagree with the assumption that the magnitude of temporary impacts due to maintenance activities will be significantly lower than those seen during construction. There is no guarantee that these impacts would be lower in relation to cable reburial, repair, and replacement, and these impacts would further hinder the recovery of the site.	Repair and reburial works during maintenance will be targeted at the specific section of the cable requiring repair/reburial (if required). The spatial area will therefore be less than during installation of the entire cable route. Assumptions for the lengths/areas which may be affected by cable maintenance are included in the Stage 1 MCZ assessment.

CONSULTEE	DATE	SECTION	COMMENT	NFOW RESPONSE
Natural England	16 December 2021	Point 85, Section 5.3.2: Conservation Objectives [Orford Inshore MCZ]	Natural England advises that any impacts which persist for the lifetime of the project are not temporary, and that the conservation objectives for the site would be hindered.	The Stage 1 MCZ assessment considers the risks to hindering the conservation objectives of the Orford Inshore MCZ.
Natural England	16 December 2021	Point 99, Section 9: Cumulative Effects	Please see our earlier comments on the TIER table. We do not necessarily agree that plans and projects that existed at the time of MCZ designation or the latest status reports may be considered part of the baseline environment. A project that has been completed or constructed may still undergo modifications post-completion or construction and, thus, cannot necessarily be considered part of the baseline environment.	Natural England has since advised that the cumulative tiers as presented in Natural England and Defra (2022) should be used. These are included in Table 3.1.
Natural England	16 December 2021	Section 7.1: Cumulative Impacts – Plans and Project Screening	This should also consider operation and maintenance activities.	Added to Table 6.1
Marine Management Organisation (MMO)	15 December 2021	N/A	The MMO does not have any comments on the MCZ screening report and defer to the Statutory Nature Conservation Bodies. However, we would like to be consulted on the next stage of the MCZ as any potential mitigation measures could be conditions within the Deemed Marine License (DML).	
The Wildlife Trusts	14 December 2021	Table 5.3	We believe Table 5.3 incorrectly lists the general management approaches for the subtidal sand and subtidal coarse sediment protected features. These should be listed as Subtidal coarse sediment – recover to favourable condition Subtidal sand – maintain in favourable condition	
The Wildlife Trusts	14 December 2021	74	The potential for direct/indirect impacts from the movement of rock protection in the MCZ, both within the array area and potentially outside of the array boundary should also be considered further at this stage. The southern North Sea is a dynamic sediment environment and the movement of rock protection within this region has been known to occur.	Rock protection will be designed not to move in order for it to provide the required function of protecting cables and for scour protection.
The Wildlife Trusts	14 December 2021	Table 7.1	We agree that North Falls Offshore Wind Farm has the potential to hinder the conservation objectives of the Kentish Knock East MCZ.	Table 7.1 screens in sites which require further consideration of the potential for North Falls to

CONSULTEE	DATE	SECTION	COMMENT	NFOW RESPONSE
			The North Falls OWF array area of search overlaps with Kentish Knock East MCZ, where two of the three designated features are already in unfavourable condition (subtidal coarse sediment and subtidal mixed sediments). We look forward to discussing with the RWE how this site will be avoided, especially considering two of the three designated features are already in unfavourable condition (subtidal coarse sediment and subtidal mixed sediments; see Comment 1). Avoidance is an essential part of the mitigation hierarchy and proposals must demonstrate that the hierarchy has been followed e.g. Section 126 of the Marine and Coastal Access Act 2009, Policy SE-MPA-1 Marine protected areas of the South East Marine Plan. It is important that adequate time is allowed for these discussions to take place before the application is entered to the Planning Inspectorate.	
The Wildlife Trusts	14 December 2021	101	We are disappointed that fishing has been considered as part of the baseline and has not been included in the cumulative assessment. Fishing is a licensable activity that has the potential to have an adverse impact on the marine environment. This is supported in the leading case C-127/02 Waddenzee [2004] ECR I-7405, the CJEU held at para. 6. "The act that the activity has been carried on periodically for several years on the site concerned and that a licence has to be obtained for it every year, each new issuance of which requires an assessment both of the possibility of carrying on that activity and the site where it may be carried on, does not itself constitute an obstacle to considering it, at the time of each application, as a distinct plan or project within the meaning of the Habitats Directive". This case law demonstrates that fishing is considered a plan or a project and therefore, not part of the baseline.	This approach is consistent with the approach taken by numerous offshore wind farms which have been consented since Waddenzee 2004.
The Wildlife Trusts	14 December 2021	N/A	For future stages of the MCZ assessment, TWT highlight that it is now standard practice for assessments to be to the same standard as an HRA assessment. This further supported by Defra draft guidance on marine compensation which states "equal consideration of the effect of proposals should be given to all MPAs, regardless of the legislation they were designated under". We request that to avoid habitat loss within the MCZ, the array area of search should be refined to avoid the site. If the array area of search is not	The MCZ Stage 1 assessment provides an assessment to the same standard as an HRA. A review of MEEB options has been consulted upon (including with TWT) since receipt of this comment.

CONSULTEE	DATE	SECTION	COMMENT	NFOW RESPONSE
			re-routed, we expect that Measures of Equivalent Environmental Benefit (MEEB) will be required. As outlined in the draft Defra guidance, MEEB and compensation area to be treated to the same standard. Therefore, it is essential to develop MEEB which would ensure the coherence of the UK MPA network. TWT highlight that MEEB is extremely difficult to deliver for benthic habitats. We would be happy to engage in a further conversation in this area.	

3 MCZ screening methodology

- 21. 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.
- 22. The first stage, is the screening process which is required to determine whether Section 126 of the MCAA (2009) should apply to the application. All relevant applications go through an initial screening stage to determine whether:
 - the plan, project or activity is within or near to an MCZ;
 - the plan, project or activity is capable of significantly affecting (without mitigation) (i) the protected features of an MCZ, or (ii) any ecological or geomorphological processes on which the conservation of the features depends.
- 23. The MCZA screening stage is summarised in Figure 3.1.

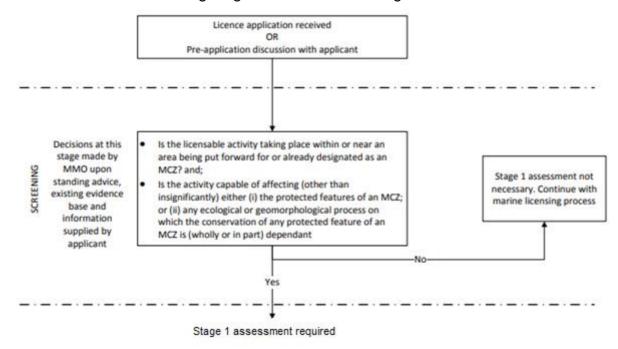


Figure 3.1 MCZ Screening Process (source MMO, 2013)

3.1 Cumulative effects

24. 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.
- 25. The Planning Inspectorate (PINS) Advice Note Seventeen (PINS, 2019) provides guidance on plans and projects that should be considered in the Cumulative Impact Assessment (CIA) including:
 - Projects that are under construction;
 - Permitted applications, not yet implemented;
 - Submitted applications not yet determined;
 - Projects on the PINS's Program of Projects;
 - Development identified in relevant Development Plans, with weight being given as they move closer to adoption and recognising that much information on any relevant proposals will be limited; and
 - Sites identified in other policy documents as development reasonably likely to come forward.
- 26. Only projects 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.
- 27. 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.
- 28. Plans and projects 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.
- 29. The assessment will present relevant cumulative effects of projects based on their stage of development using the tiered approach as devised by Natural England (Natural England and Defra, 2022) and presented in Table 3.1.

Table 3.1 Cumulative tiers

TIER	CONSENTING OR CONSTRUCTION PHASE	DATA AVAILABILITY
Tier 1	Built and operational projects 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 project(s) and environmental characterisation survey data from proposed project. (including data analysis and interpretation within the ES for the project).
Tier 2	Tier 1 + projects under construction	As Tier 1 but not including post construction survey data.
Tier 3	Tier 2 + projects 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 project) and possibly preconstruction.
Tier 4	Tier 3 + projects that have an application submitted to the appropriate regulatory body that have not yet been determined.	Environmental characterisation survey data from proposed project (including data analysis and interpretation within the ES for the project).
Tier 5	Tier 4 + projects that have produced a PEIR and have characterisation data within the public domain.	Environmental characterisation survey data from proposed project (including data analysis and interpretation within the ES for the project) as well as information provided within the PEIR.
Tier 6	Tier 5 + projects 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 + projects that have been identified in relevant strategic plans or programmes (e.g. projects identified in Round 3 wind farm ZAP documents).	Historic survey data collected for other purposes/by other projects or industries or at a strategic level.

- 30. Projects classified under Tiers 1-4 are included in the MCZA screening. Tier 5 and 6 projects will be considered where sufficient information is available.
- 31. For this screening assessment, North Falls activities and associated pressures are reviewed to determine whether they are capable of significantly affecting MCZs when combined with equivalent activities and associated pressures from other plans and projects. The potential for projects to act cumulatively on MCZs is considered in the context of the likely spatial and temporal extent of pressures.

4 Is the activity within or near to an MCZ?

- 32. The first stage of the screening assessment is to determine whether the project and associated activities take place within or near an MCZ.
- 33. A potential zone of influence (ZoI) from North Falls has been analysed based on an understanding of the tidal regime. The potential ZoI is based on the

knowledge that effects arising from WTG and substation platform foundations on the tidal regime are relatively small in magnitude, and localised. It is expected that changes to the tidal regime would have returned to background levels immediately outside the excursion of one spring tidal ellipse (approximately 15km from the North Falls offshore project area), shown in Figure 4.1.

- 34. Table 4.1 shows the MCZs within this ZoI, along with the distances measured to the nearest point of the North Falls offshore project area (array areas and export cable corridor).
- 35. All other MCZs are over 30km from the North Falls offshore project area and therefore there is no potential pathway for impact from North Falls, alone or cumulatively with other projects.
- 36. The MCZs listed in Table 4.1 are considered further in Section 5.

Table 4.1 Distances from North Falls to MCZs in the screening search area

MCZ	DISTANCE TO NORTH FALLS (KM)
Blackwater, Crouch, Roach and Colne Estuaries	5
Kentish Knock East	0
Orford Inshore	5.5

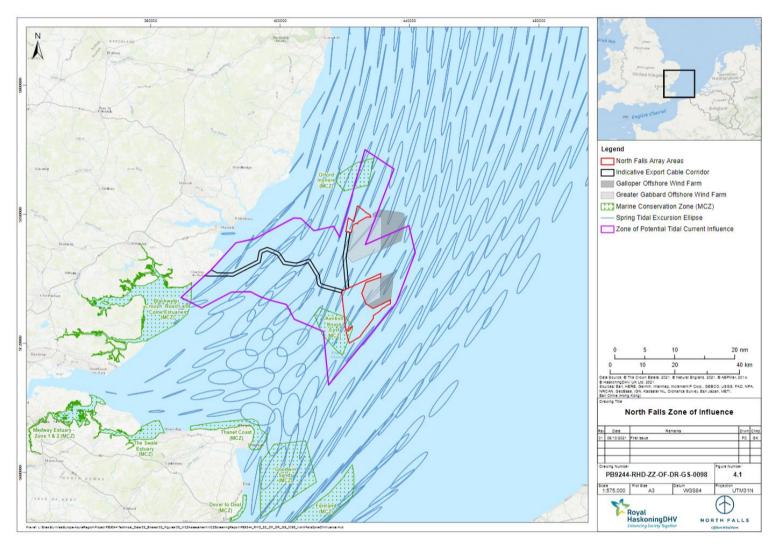


Figure 4.1 North Falls Zone of Influence

5 Screening of impacts on protected features

37. Of the MCZs identified above, this section considers the potential for any impacts as a result of North Falls, alone or cumulatively with other plans and projects, on the protected features of the MCZ or any physical processes on which the features are dependent.

5.1 Blackwater, Crouch, Roach and Colne Estuaries

5.1.1 Protected Features

38. Table 5.1 shows the features designated by the Blackwater, Crouch, Roach and Colne Estuaries MCZ.

Table 5.1 Protected features of the Blackwater, Crouch, Roach and Colne Estuaries MCZ (source: Defra. 2013)

(654:56: 56:14, 20:6)		
PROTECTED FEATURE	TYPE OF FEATURE	MANAGEMENT APPROACH
Intertidal mixed sediments	Broadscale marine habitat ¹	Maintain in favourable condition
Native oyster Ostrea edulis beds	Feature of Conservation Interest	Recover to favourable condition
Native oyster Ostrea edulis	Feature of Conservation Interest	Recover to favourable condition
Clacton Cliffs and Foreshore	Feature of Geological Interest	Maintain in favourable condition

39. The MCZ comprises the most important area for both wild and cultivated native oyster (*Ostrea edulis*) in the south-east region. The Clacton Cliffs and Foreshore is a geological feature of international importance which extends from the land into the subtidal area of the MCZ. It has been identified as one of the best Ice Age sites in Britain and contains an abundance of molluscan and mammalian fossil remains which were deposited during the interglacial periods. (Natural England, 2013).

5.1.2 Conservation Objectives

- 40. The overarching conservation objectives for the site is for its designated features either to be maintained in, or brought into, favorable condition (see Table 5.1) (Natural England, 2017).
- 41. For each protected feature, favourable condition means that, within a zone:
 - 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.

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¹ Broadscale marine habitats represent a range of similar habitats and associated species grouped together.

- 42. Any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery.
- 43. For each species of marine fauna, favourable condition means that the population within a zone is supported in numbers which enable it to thrive, by maintaining:
 - the quality and quantity of its habitat; and
 - the number, age and sex ratio of its population.
- 44. Any temporary reduction of numbers of a species is to be disregarded if the population is sufficiently thriving and resilient to enable its recovery.
- 45. For the feature of geological interest, favourable condition means that, within a zone:
 - 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.
- 46. Any alteration to a feature brought about entirely by natural processes is to be disregarded when determining whether a protected feature is in favourable condition.

5.1.3 Potential impacts

- 47. The potential impacts from the project have been identified within the Scoping Report (NFOW, 2021) and Scoping Opinion (Planning Inspectorate, 2021). This section summarises the sources of pressures with the potential to have significant effects on the protected features of the Blackwater, Crouch, Roach and Colne Estuaries MCZ.
- 48. As shown in Table 4.1 and Figure 4.1, the MCZ is c. 5km from the landfall search zone. The North Falls array areas are over 45km from the MCZ and therefore potential impacts are limited to those associated with the export cables in the nearshore and at landfall.
- 49. The impacts screened in (discussed below) will be assessed for North Falls alone and cumulatively with other plans and projects.

5.1.3.1 Construction

- 50. During construction of the project, the installation of export cables has potential to cause indirect effects of increased suspended sediment concentrations (SSC) and sediment deposition.
- 51. Intertidal mixed sediments have low sensitivity to changes in suspended sediment and deposition and at a distance of 5km, there is no potential for North Falls (alone or cumulatively) to hinder the conservation objectives of the MCZ for this feature. There is also no pathway for the project to hinder the conservation objectives of the Clacton Cliffs and Foreshore geological feature.

- 52. Native oyster has high sensitivity to suspended sediments and deposition. Noting the objective to recover this feature to favourable condition, further assessment is required, which will be informed by the Environmental Impact Assessment (EIA) for marine physical processes associated with installation of the export cables for North Falls. Native oyster and native oyster beds are therefore screened into the Stage 1 MCZA.
- 53. The potential for impacts associated with invasive non-native species will also be considered in the Stage 1 MCZA.

5.1.3.2 Operation and maintenance (O&M)

- 54. As with construction, any potential impacts associated with suspended sediment and deposition from maintenance activities will be assessed in the Stage 1 MCZA. The potential for impacts associated with invasive non-native species will also be considered.
- 55. There is no pathway for operational impacts such as Electromagnetic Fields to affect the features of the Blackwater, Crouch, Roach and Colne Estuaries MCZ and therefore this is screened out.

5.1.3.3 Decommissioning

56. The potential impacts arising during the decommissioning phase are envisaged to be similar to those described for the construction phase, as a worst case scenario.

5.1.3.4 Summary of pressures screened into MCZA

57. Screening of pressures associated with construction, operation and decommissioning is shown in Table 5.2 for each feature of the MCZ.

Table 5.2 Summary of potential pressures, and those screened in (✓) and scoped out (x)

POTENTIAL PRESSURE	CONSTRUCTION	O&M	DECOMMISSIONING
Intertidal mixed sediments			
Direct impacts	*	×	×
Increased suspended sediment concentrations	×	×	×
Re-mobilisation of contaminated sediments	×	×	×
Sediment deposition (smothering)	×	×	×
Invasive species	*	×	×
Electromagnetic fields	*	×	×
Clacton Cliffs and Foreshore			
Direct impacts	×	×	×
Increased suspended sediment concentrations	N/A	N/A	N/A
Re-mobilisation of contaminated sediments	N/A	N/A	N/A
Sediment deposition (smothering)	N/A	N/A	N/A

POTENTIAL PRESSURE	CONSTRUCTION	O&M	DECOMMISSIONING
Invasive species	N/A	N/A	N/A
Electromagnetic fields	N/A	N/A	N/A
Native oyster and oyster beds			
Direct impacts	×	×	×
Increased suspended sediment concentrations	✓	✓	✓
Re-mobilisation of contaminated sediments	✓	✓	✓
Sediment deposition (smothering)	✓	✓	1
Invasive species	✓	✓	✓
Electromagnetic fields	×	×	×

5.2 Kentish Knock East MCZ

5.2.1 Protected Features

58. The Kentish Knock East MCZ is designated for three broadscale marine habitat features (Table 5.3).

Table 5.3 Protected features of the Kentish Knock East MCZ (source: Defra, 2019)

PROTECTED FEATURE	TYPE OF FEATURE	MANAGEMENT APPROACH
Subtidal coarse sediment	Broadscale marine habitat	Recover to favourable condition
Subtidal sand	Broadscale marine habitat	Maintain in favourable condition
Subtidal mixed sediments	Broadscale marine habitat	Recover to favourable condition

- 59. Kentish Knock East contains a range of sediment types, from fine sand through to coarse gravel and pebble. This range of sediment habitats support a variety of fauna including worms, sponges, bivalve molluscs and echinoderms such as brittlestars and sea urchins. This diversity of species found on the surface and within the sediment also supports fish species including the small spotted cat shark and commercially important flatfish species such as sole and plaice. (Defra, 2019).
- 60. Mapping of the protected features provided by Defra (2019b) is shown in Figure 5.1, along with the North Falls southern array boundary.

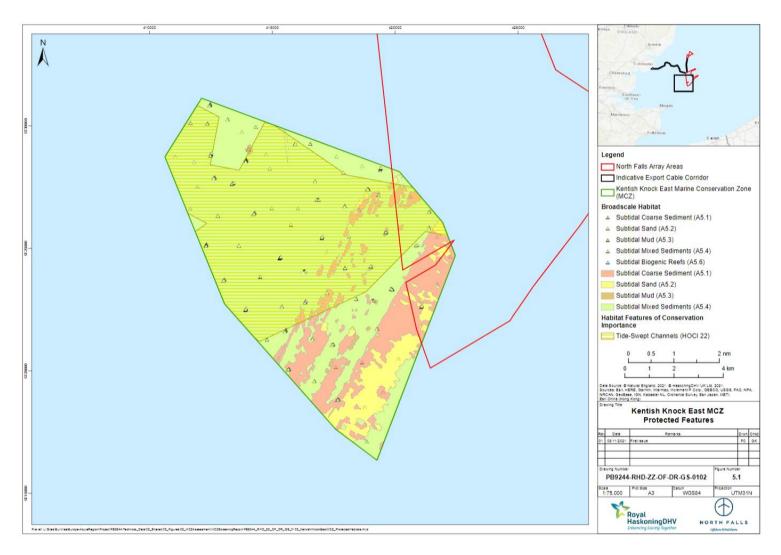


Figure 5.1 Kentish Knock East MCZ Protected Features (source Defra 2019b)

5.2.2 Conservation Objectives

- 61. The overarching conservation objectives for the site are for its designated features either to be maintained in, or brought into, favorable condition (see Table 5.3).
- 62. For each protected feature, favourable condition means that, within a zone:
 - 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.
- 63. The reference to the composition of the characteristic biological communities of a habitat includes a reference to the diversity and abundance of species forming part of, or inhabiting, that habitat.
- 64. For the purposes of this MCZ, any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery, and for the purpose of determining whether a protected feature is in favourable condition within the meaning of this designation, any alteration to that feature brought about entirely by natural processes is to be disregarded.

5.2.3 Potential impacts

- 65. This section summarises the sources of pressures with the potential to have significant effects on the protected features of the Kentish Knock East MCZ.
- 66. The North Falls southern array area overlaps the subtidal coarse sediment, mixed sediment and subtidal sand feature of the MCZ (Figure 5.1). All features of this MCZ are therefore screened into the Stage 1 MCZA and the assessment will be informed by the targeted North Falls benthic survey completed in 2021.
- 67. The impacts screened in (discussed below) will be assessed for North Falls alone and cumulatively with other plans and projects.

5.2.3.1 Construction

- 68. During construction of the project, the seabed preparation, foundation installation, vessel jack-up and anchoring, and inter-array cables will have a direct effect on the seabed habitats and associated communities.
- 69. Indirect effects of seabed disturbance are increased SSC and sediment deposition, and where sediments are remobilised there is potential to release sediment-bound contaminants into the water, if present.
- 70. Vessel traffic and the availability of new surfaces for colonisation increases the risk of introducing marine non-native species.
- 71. Similarly, there is a potential pathway for underwater noise and vibration effects on the communities supported by the protected habitats, from construction activities, including from foundation piling and UXO clearance.

5.2.3.2 Operation and maintenance

- 72. Potential impacts during operation will mostly result from the physical presence of infrastructure (i.e. foundations and any cable protection above the seabed) where there is direct overlap with the MCZ.
- 73. Maintenance activities also have the potential to result in temporary impacts, similar to those seen during construction, but significantly lower in magnitude.
- 74. Turbine operation is a source of underwater noise and vibration, conducted through the tower and foundations into the water. The magnitude of underwater noise and vibration from wind farm operation is much lower than for activities like piling and UXO clearance during construction.
- 75. Electromagnetic fields (EMFs) resulting from the presence of cables may be detected by some benthic species.

5.2.3.3 Decommissioning

76. The potential impacts arising during the decommissioning phase are envisaged to be similar to those described for the construction phase. The extent of removal of infrastructure during decommissioning will determine how much habitat loss will be lasting / long term and how much may be permanent, which will be assessed in the Stage 1 MCZA.

5.2.3.4 Summary of pressures screened into MCZA

77. Screening of pressures associated with construction, operation and decommissioning is shown in Table 5.4 for each feature of the MCZ.

Table 5.4 Summary of potential pressures, and those scoped in (✓) and scoped out (✗)

POTENTIAL PRESSURE	CONSTRUCTION	O&M	DECOMMISSIONING
Temporary physical disturbance	✓	✓	✓
Permanent/long term lasting habitat loss	(assessed under operation)	✓	(assessed under operation)
Increased suspended sediment concentrations	✓	✓	✓
Re-mobilisation of contaminated sediments	✓	✓	✓
Effects on bedload sediment transport	✓	✓	✓
Underwater noise and vibration	✓	✓	✓
Colonisation of foundations and cable protection	(assessed under operation)	✓	(assessed under operation)
Invasive species	✓	✓	✓
Electromagnetic fields	×	✓	×

5.3 Orford Inshore MCZ

5.3.1 Protected Features

78. The Orford Inshore MCZ is designated for the broad-scale habitat, subtidal mixed sediment (Table 5.5).

Table 5.5 Protected feature of the Orford Inshore MCZ (source: Defra, 2019c)

PROTECTED FEATURE	TYPE OF FEATURE	MANAGEMENT APPROACH
Subtidal mixed sediments	Broadscale marine habitat	Recover to favorable condition

79. Subtidal mixed sediments provide important nursery and spawning grounds for many fish species including Dover sole, lemon sole and sandeels. Several nationally important shark species are also found within the site, including the small-spotted catshark. In addition, the area is important for foraging seabirds and harbour porpoise (JNCC, 2020).

5.3.2 Conservation Objectives

- 80. The overarching conservation objectives for the site is for its designated feature either to be maintained in, or brought into, favorable condition (see Table 5.5).
- 81. Favourable condition means that:
 - its extent is stable or increasing, and
 - its structure and functions, its quality, and the composition of its characteristic biological communities are such to ensure that it remains in a condition which is healthy and not deteriorating.
- 82. The reference to the composition of the characteristic biological communities of the protected feature includes a reference to the diversity and abundance of species forming part of, or inhabiting, the protected feature.
- 83. Any temporary deterioration in condition is to be disregarded if the protected feature is sufficiently healthy and resilient to enable its recovery.
- 84. For the purpose of determining whether the protected feature is in a favourable condition, any alteration to that feature brought about entirely by natural processes is to be disregarded.

5.3.3 Potential impacts

- 85. This section summarises the sources of pressures with the potential to have significant effects on the protected features of the Orford Inshore MCZ.
- 86. The MCZ is c. 5.5km from the North Falls northern array area. The MCZ is over 20km from the export cable corridor and southern array area and therefore potential impacts are limited to those associated with indirect effects from the northern array area.

87. The impacts screened in (discussed below) will be assessed for North Falls alone and cumulatively with other plans and projects.

5.3.3.1 Construction

- 88. During construction of the project, the seabed preparation, foundation installation, jack-up activities, and inter-array cables will have potential indirect effects of seabed disturbance, causing increased SSC and sediment deposition, and where sediments are remobilised there is potential to release sediment-bound contaminants into the water.
- 89. Vessel traffic increases the introduction of marine non-native species.
- 90. There is a potential pathway for underwater noise and vibration effects from construction activities, including foundation piling and UXO clearance on species supported by the subtidal mixed sediment.

5.3.3.2 Operation and maintenance

- 91. Potential impacts associated with suspended sediment and deposition from maintenance activities will be assessed in the Stage 1 MCZA.
- 92. The potential for impacts associated with invasive non-native species will also be considered.
- 93. At a distance of 5.5km, there is no potential for operational impacts such as EMFs to affect the species supported by the mixed sediment feature of the Orford Inshore MCZ, such that North Falls could hinder the conservation objectives of the MCZ and therefore this is screened out.

5.3.3.3 Decommissioning

94. The potential impacts arising during the decommissioning phase are envisaged to be similar to those described for the construction phase. The extent of removal of artificial substrates during decommissioning will determine how much habitat loss will be lasting / long term and how much may be permanent.

5.3.3.4 Summary of pressures screened into MCZA

95. Screening of pressures associated with construction, operation and decommissioning is shown in Table 5.1 for each feature of the MCZ.

Table 5.6 Summary of potential pressures, and those scoped in (\checkmark) and scoped out (*)

POTENTIAL PRESSURE	CONSTRUCTION	OPERATION	DECOMMISSIONING
Direct impacts	×	×	×
Increased suspended sediment concentrations	✓	✓	✓
Re-mobilisation of contaminated sediments	✓	✓	✓
Sediment deposition (smothering)	✓	✓	✓
Underwater noise and vibration	✓	✓	✓
Invasive species	✓	✓	✓
Electromagnetic fields	×	×	×

6 Cumulative effects

- 96. The ZoI from North Falls shown in Figure 4.1 has a range of c.15km. In order to provide a conservative search area for screening of plans and projects which have potential to interact with the impacts of North Falls, a range of 30km from the North Falls offshore project area has been used (Figure 6.1).
- 97. Plans and projects that existed at the time of MCZ designation or the latest status reports, undertaken every 6 years (whichever is most recent) are considered to be part of the baseline environment. Blackwater, Crouch, Roach and Colne Estuaries MCZ was included in the Defra (2018) Marine Protected Areas Network Report. Kentish Knock East MCZ and Orford Inshore MCZ were designated in 2019. Plans and projects prior to 2018 are therefore considered part of the baseline and are screened out of the cumulative assessment. Table 6.1 provides the screening of plans and projects to be considered in the Stage 1 MCZA cumulative assessment.

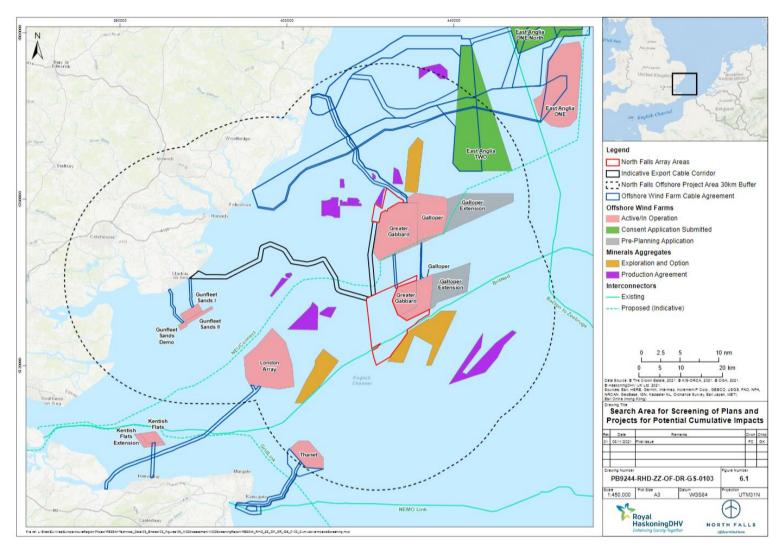


Figure 6.1 Search area for screening of plans and projects for potential cumulative impacts

Table 6.1 Plans and projects screened into the MCZA cumulative impacts assessment

PLAN/PROJECT HAS POTENTIAL TO IMPACT MCZ:						
PLAN OR PROJECT	KENTISH KNOCK EAST MCZ	ORFORD INSHORE MCZ	BLACKWATER, CROUCH, ROACH AND COLNE ESTUARIES MCZ	COMPONENT OF BASELINE?	PROGRAMME	SCREENED IN?
NeuConnect Interconnector	Yes	Yes	Yes	No	Unknown	Yes, subject to available information
BritNed Interconnector	Yes	No	Yes	Yes, operational since 2009	N/A	No, included in the baseline environment
Tarchon Energy Ltd – EA Green Interconnector	Cable route current	tly unknown		No	Unknown	Yes (subject to available information)
Nautilus	Cable route currently unknown			No	Unknown	Yes (subject to available information)
South & East Anglia (SEA) Link	Cable route current	Cable route currently unknown			Unknown	Yes (subject to available information)
Commercial fisheries	Yes	Yes	Yes	Yes, ongoing	N/A	No, included in the baseline environment
Greater Gabbard offshore wind farm	Yes	Yes	No	Yes, operational since 2012	N/A	Yes, subject to availability of information regarding maintenance impacts which have occurred since the baseline survey for North Falls
Galloper offshore wind farm	Yes	Yes	No	Yes, operational since 2018	N/A	Yes, subject to availability of information regarding maintenance impacts which have occurred since the baseline survey for North Falls
Five Estuaries offshore wind farm	Yes	Yes	Yes	No	Unknown	Yes

PLAN/PROJECT HAS POTENTIAL TO IMPACT MCZ:						
PLAN OR PROJECT	KENTISH KNOCK EAST MCZ	ORFORD INSHORE MCZ	BLACKWATER, CROUCH, ROACH AND COLNE ESTUARIES MCZ	COMPONENT OF BASELINE?	PROGRAMME	SCREENED IN?
East Anglia TWO offshore wind farm	No	Yes	No	No	Construction planned mid 2020s	Yes
Thanet offshore wind farm	Yes	No	No	Yes, operational since 2010	N/A	Yes, subject to availability of information regarding maintenance impacts which have occurred since the baseline survey for North Falls
London Array offshore wind farm	Yes	No	No	Yes, operational since 2013	N/A	Yes, subject to availability of information regarding maintenance impacts which have occurred since the baseline survey for North Falls
Gunfleet Sands offshore wind farm	No	No	Yes	Yes, operational since 2010	N/A	Yes, subject to availability of information regarding maintenance impacts which have occurred since the baseline survey for North Falls
Thames D aggregate exploration and option area 1802	Yes	No	No	No	Unknown	Yes, subject to available information
North Falls aggregate exploration and option area 524	Yes	No	No	No	Unknown	Yes, subject to available information
South Falls aggregate exploration and option area 1801	Yes	No	No	No	Unknown	Yes, subject to available information

PLAN/PROJECT HAS POTENTIAL TO IMPACT MCZ:						
PLAN OR PROJECT	KENTISH KNOCK EAST MCZ	ORFORD INSHORE MCZ	BLACKWATER, CROUCH, ROACH AND COLNE ESTUARIES MCZ	COMPONENT OF BASELINE?	PROGRAMME	SCREENED IN?
Outer OTE aggregate exploration and option area 528/2	Yes	No	No	No	Unknown	Yes, subject to available information
East Orford Ness aggregate exploration and option area 1809	No	Yes	No	No	Unknown	Yes, subject to available information
Thames D aggregates production agreement area 524				No, production agreement secured 2022		
Southwold East aggregates production agreement area 430	No	Yes	No	Yes, Operational since 2012	N/A	No, included in the baseline environment
North Inner Gabbard aggregate production area 498	No	Yes	No	Yes, Operational since 2015	N/A	No, included in the baseline environment
Shipwash aggregate production agreement area 507	No	Yes	No	Yes, Operational since 2016	N/A	No, included in the baseline environment
Longsand aggregate production agreement area 508	Yes	No	No	Yes, Operational since 2014	N/A	No, included in the baseline environment
Longsand aggregate production agreement area 509	Yes	No	No	Yes, Operational since 2015	N/A	No, included in the baseline environment
Longsand aggregate production agreement area 510	Yes	No	No	Yes, Operational since 2015	N/A	No, included in the baseline environment

	PLAN/PROJEC	T HAS POTENT				
PLAN OR PROJECT	KENTISH KNOCK EAST MCZ	ORFORD INSHORE MCZ	BLACKWATER, CROUCH, ROACH AND COLNE ESTUARIES MCZ	COMPONENT OF BASELINE?	PROGRAMME	SCREENED IN?
North Falls East aggregate production agreement 501	Yes	No	No	Yes, Operational since 2017	N/A	No, included in the baseline environment

7 Screening summary

98. Table 7.1 provides a summary of the MCZs screened in for further consideration of the potential for North Falls to hinder the conservation objectives of the features of each site, alone or cumulatively with other plans and projects.

Table 7.1 Sites, features and impacts screened into Stage 1 MCZA

SITE	FEATURES SCREENED IN	RELEVANT NORTH FALLS COMPONENTS	IMPACTS SCREENED IN (ALONE AND CUMULATIVELY)
Blackwater, Crouch, Roach and Colne Estuaries MCZ	Native oyster and oyster beds	In-direct effects from North Falls offshore export cables (landfall and nearshore)	Increased suspended sediment concentrations
			Re-mobilisation of contaminated sediments
			Sediment deposition (smothering)
			Invasive species
Kentish Knock East MCZ	Subtidal coarse sediment Subtidal sand Subtidal mixed sediments	Direct and In-direct effects of North Falls southern array area (foundations and array cables, including associated works)	Temporary physical disturbance
			Permanent/long term lasting habitat loss
			Increased suspended sediment concentrations
			Re-mobilisation of contaminated sediments
			Effects on bedload sediment transport
			Underwater noise and vibration
			Colonisation of foundations and cable protection
			Invasive species
			Electromagnetic fields
Orford Inshore MCZ	Subtidal mixed sediments	In-direct effects of North Falls northern array area (foundations and array cables, including associated works)	Increased suspended sediment concentrations
			Re-mobilisation of contaminated sediments
			Sediment deposition (smothering)
			Underwater noise and vibration
			Invasive species

7.1 Cumulative impacts - Plans and projects screening

- 99. The following plans and projects are screened into the cumulative impact assessment:
 - NeuConnect Interconnector
 - Tarchon Energy Ltd EA Green Interconnector
 - Nautilus
 - South & East Anglia (SEA) Link
 - Greater Gabbard offshore wind farm
 - Galloper offshore wind farm
 - Five Estuaries offshore wind farm
 - East Anglia TWO offshore wind farm
 - Thanet offshore wind farm
 - London Array offshore wind farm
 - Gunfleet Sands offshore wind farm
 - Thames D aggregate exploration and option area 1802
 - North Falls aggregate exploration and option area 524
 - South Falls aggregate exploration and option area 1801
 - Outer OTE aggregate exploration and option area 528/2
 - East Orford Ness aggregate exploration and option area 1809

8 References

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