MachairWind Offshore Windfarm

Appendix H – Nature Conservation Marine Protected Area Screening

ScottishPower Renewables | MachairWind Offshore Windfarm

SEPTEMBER 2024

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GLOSSARY OF ACRONYMS

Term	Description
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
kJ	Kilojoules
km	Kilometres
MPA	Marine Protected Area
MU	Management Unit
NCMPA	Nature Conservation Marine Protected Area
nm	Nautical mile
OfTDA	Offshore Transmission Development Area
O&M	Operation and Maintenance
OSPAR	The Convention for the Protection of the Marine Environment of the North-East Atlantic
SCANS	Small Cetaceans in European Atlantic waters and the North Sea
SNH	Scottish National Heritage
SSC	Suspended Sediment Concentration
WDA	Windfarm Development Area
ZoI	Zone of Influence

GLOSSARY OF TERMS

Term	Description
The Applicant	The legal entity submitting consent applications for the MachairWind Offshore Windfarm, namely MachairWind Limited.
Inter-array cables (IAC)	Armoured cable containing electrical and fibre optic cores which link the wind turbine generators to each other and to the offshore substation platform(s).
MachairWind Offshore Windfarm	An offshore windfarm capable of exporting around 2 GW of renewable energy to the National Electricity Transmission System. MachairWind Offshore Windfarm comprises three Development Areas. The Windfarm Development Area is located on the west coast of Scotland to the northwest of Islay and west of Colonsay and the working assumption is that the MachairWind Offshore Windfarm will connect to a location within South Ayrshire. Work is ongoing to define the Offshore Transmission Development Area and Onshore Transmission Development Area. Separate consent and licence applications will be submitted for each Development Area.
Mean High Water Springs (MHWS)	The average, over a year, of the heights of two successive high waters during those periods of 24 hours (once every fortnight) when the range of the tide is greatest.
Offshore Substation Platform (OSP)	An offshore platform with a fixed foundation located within the Offshore Transmission Development Area which houses electrical equipment such as transformers, switchgear, protection and control systems, and enables the windfarm's renewable electricity to be collected via inter-array cables and exported to the National Electricity Transmission System via offshore export cables.
OSPAR	OSPAR started in 1972 with the Oslo Convention against dumping and was broadened to cover land-based sources of marine pollution and the offshore industry by the Paris Convention of 1974. These two conventions were unified, updated and extended by the 1992 OSPAR Convention. OSPAR is so named because of the original Oslo and Paris Conventions ("OS" for Oslo and "PAR" for Paris).
Offshore Transmission Development Area (OfTDA)	The application boundary which extends seaward of Mean High Water Springs and within which the following will be consented (infrastructure includes but is not limited to): offshore export cable(s), OSP(s), OSP link cables (if required) and external cable protection. The OfTDA is subject to a Marine Licence(s) application under the Marine (Scotland) Act 2010.
Scour protection	Protective measures to avoid sediment being eroded away from the base of the wind turbine generator foundations as a result of the flow of water.
Windfarm Development Area (WDA)	The application boundary within which consent will be sought for the WDA Infrastructure. The WDA is subject to a Section 36 consent and Marine Licence(s) application which is being applied for separately from the OfTDA and Onshore Transmission Development Area.
Wind Turbine Generator (WTG)	A wind turbine generator which converts wind energy into electrical energy. Each wind turbine generator is a complex system composed of a high number of components. Typically, the main components include the rotor assembly (composed of three blades and a hub); the nacelle (containing a generator, shaft and gearbox, power electronic converter and transformer); and the tower (containing lifting equipment and the switchgear).
WDA infrastructure	The offshore generation infrastructure located within the WDA including but not limited to: WTGs, fixed foundations, IACs, and external cable and scour protection.

1. INTRODUCTION

1. MachairWind Limited (the Applicant) is developing the MachairWind Offshore Windfarm ('the Project'). This document provides the Nature Conservation Marine Protected Area (NCMPA) screening for the Project's Windfarm Development Area (WDA). The Applicant will submit a separate NCMPA screening document for the Offshore Transmission Development Area (OfTDA) once there is greater certainty on the High Voltage Direct Curren switching station and grid connection location (see **Chapter 1 Introduction** of this Scoping Report for more details on the consenting strategy for the Project).

2. As set out in **Chapter 2 Policy and Legislative Context** of this Scoping Report, NCMPAs in Scotland are designated under the Marine (Scotland) Act 2010 within 12 nautical miles (nm), and under the Marine and Coastal Access Act 2009 in offshore waters between 12 nm and 200 nm. NCMPAs are designated to protect biodiversity and heritage, with specific focus on protected features (species, habitats, large scale features or geomorphological features).

3. Under the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009, provisions are made for the relevant public authority. In this instance the Scottish Ministers, whose decision is administered through the Marine Directorate – Licensing Operations Team, consider whether a licensable activity can affect (other than insignificantly) a protected feature in a NCMPA or any ecological or geomorphological process on which the conservation of any protected feature in a NCMPA is dependent. Subject to the exceptions described below, the Scottish Ministers must not grant authorisation for the licensable activity where there is a significant risk of hindering the achievement of the conservation objectives of the NCMPA. The exceptions are as follows:

   - There are no other means of proceeding that would create a substantially lower risk;
   - The benefit to the public clearly outweighs the risk of damage to the environment; and
   - Measures will be undertaken of equivalent environmental benefit to the damage which will or is likely to occur.

4. In order to assess whether there is any significant risk of the Project hindering the achievement of the conservation objectives of a given NCMPA, an NCMPA Assessment should be completed.

5. **Chapter 3 Project Description** of this Scoping Report provides outline details of the WDA design. It should be noted that the Project will be formed of fixed foundation structures only i.e. no floating foundations are included within the Project design envelope.

6. This NCMPA Screening Report should be read in conjunction with the following chapters of this Scoping Report as they share some of the same receptors considered in this NCMPA Screening:

   - **Chapter 8 Benthic Ecology**;
   - **Chapter 9 Fish (Including Basking Shark) and Shellfish Ecology**;
   - **Chapter 10 Marine Mammals**; and
   - **Chapter 11 Offshore Ornithology**.

7. This NCMPA Screening has been prepared by Royal HaskoningDHV.

2. APPROACH

8. This NCMPA assessment consists of two stages, which are outlined in this Section:

- Stage 1: Initial Screening (further details provided in **Section 2.1**); and.
- Stage 2: Main Assessment (further details provided in **Section 2.2**).

2.1. STAGE 1 – INITIAL SCREENING

9. Stage 1 has been prepared and submitted for consideration alongside the Scoping Report in line with the guidance provided in the Nature Conservation Marine Protected Areas: Draft Management Handbook (Marine Scotland, 2013). As per the Draft Management Handbook, the screening will use information that is currently available and consider aspects such as the scale, timing and duration of WDA activities.

10. The initial screening will focus on what can reasonably be predicted as a consequence of the construction, Operation and Maintenance (O&M) and decommissioning of the WDA and whether it is 'capable of affecting (other than insignificantly)', a protected feature of a NCMPA.

11. The consideration of 'capable of affecting' results in removing from further consideration all proposals/functions which are not in any way connected to the protected feature(s). A capability that is both remote (in terms of likelihood of occurrence) and hypothetical should not be the basis of a conclusion that further assessment is required. This can be determined by considering whether the activity will exert pressures which the protected feature(s) are sensitive to (Marine Scotland, 2013).

12. Where the conclusion of the screening is that there is 'capability of affecting', the focus will then be on considering whether the proposed development or activity will affect the protected features of a NCMPA, other than insignificantly. Consideration of the degree of pressure that could be exerted by the activity on a spatial basis should help to establish what level of effect might occur (Marine Scotland, 2013).

13. Where the conclusion is that activities associated with the WDA are capable of affecting, other than insignificantly, the protected features of a NCMPA, then Stage 2: Main Assessment must be carried out, in consideration of the conservation objectives of the NCMPA.

2.2. STAGE 2 – MAIN ASSESSMENT

14. The NCMPA Main Assessment stage focuses on determining whether the WDA or associated activities pose a significant risk of hindering the achievement of conservation objectives of a NCMPA, which is carried out on a case-by-case basis. The Main Assessment will focus on the potential impact on the achievement of the conservation objectives of the protected features, in contrast to the screening which focuses on the protected features.

15. Potential interactions between the WDA and OfTDA impacts will be considered in the Stage 2 Main Assessment for the WDA taking a similar approach to that described for the Environmental Impact Assessment Report (EIAR) in **Chapter 4 Approach to Scoping and EIA** of this Scoping Report. A WDA alone assessment will first be undertaken followed by a WDA and OfTDA combined appraisal (if required) which will consider any potential interactions between impacts and/or potential for additive effects. The level of detail of appraisal of the OfTDA will be commensurate with the level of detail that is available at the time and will be informed by any OfTDA NCMPA screening exercise that may have been undertaken at the time. When it is time to bring forward the OfTDA strategy, the respective NCMPA screening will include the NCMPA screening / Stage 2 assessment outcomes for the WDA.

16. The Main Assessment will build on the initial screening, considering in greater detail aspects such as scale, timing and duration of WDA activities in the context of the NCMPAs screened into the Main Assessment.

17. The Main Assessment will also include consideration of cumulative effects with other activities in line with Environmental Impact Assessment (EIA) requirements (see **Chapter 4 Approach to Scoping and EIA** of this Scoping Report).

18. Conservation objectives for NCMPA features describe the desired conditions of the NCMPA feature. Therefore, the objective for each given feature considers whether it is:

- Already in favourable condition, and is to remain in this condition; and
- Not already in favourable condition, and is to be brought into this condition, and subsequently remain in this condition.

19. If required, the Main Assessment will be presented as a standalone report alongside the EIAR. The Main Assessment will consider whether the Project could potentially affect these objectives for each NCMPA screened into the assessment, and whether the associated works could impact the condition of the features within the NCMPA.

3. MACHAIRWIND PRELIMINARY SCREENING

20. At the Project Scoping Workshop on 01 May 2024, NatureScot confirmed that NCMPA connectivity is determined if WDA activities have the potential to impact the qualifying feature of a NCMPA within the site boundary only.

21. In order to determine the Zones of Influence (ZoI) associated with WDA activities during the construction, O&M, and decommissioning phases, the Applicant proposes to apply the screening criteria as detailed in **Sections 3.1** to **3.4** below.

22. **Table 3.1** provides a summary of all NCMPAs considered and their features. These sites have been considered because one or more of their protected features has a potential overlap with the ZoI specific to that feature type. The ZoI's used for each feature are set out in **Sections 3.1** to **3.4**.

Table 3.1 Summary of all Nature Conservation Marine Protected Areas considered in this Screening Report and their features

Nature Conservation Marine Protected Area	Closest Distance from Windfarm Development Area (km)	Protected Feature(s)
Sea of the Hebrides	3	Minke whale (*Balaenoptera acutorostrata)*
		Basking shark (*Cetorhinus maximus)*
		Marine Geomorphology of the Scottish Shelf Seabed
		Fronts
Loch Sunart to the Sound of Jura NCMPA	41.5	Flapper skate (*Dipturus intermedius)*
		Quaternary of Scotland
Clyde Sea Sill[1]	83.6	Black guillemot (*Cepphus grille)*
		Circalittoral and offshore sand and coarse sediment communities
		Marine Geomorphology of the Scottish Shelf Seabed
		Fronts
South Arran	135.7	Maerl beds
		Burrowed mud
		Kelp and seaweed communities on sublittoral sediment
		Maerl or coarse shell gravel with burrowing sea cucumbers
Shiant East Bank	223	Circalittoral and offshore sand and coarse sediment communities
		Quaternary of Scotland
		Northern sea fan and sponge communities
		Shelf banks and mounds

[1] It should be noted that the Clyde Sea Sill is of recognised importance to local fish stocks with existing fisheries management measures in place here for spawning cod *Gadus morhua* however cod is not a protected feature of the MPA.

Nature Conservation Marine Protected Area	Closest Distance from Windfarm Development Area (km)	Protected Feature(s)
North-east Lewis	240	Risso's dolphin (*Grampus griseus)*
		Sandeels (*Ammodytes spp.)*
		Quaternary of Scotland
		Marine Geomorphology of the Scottish Shelf Seabed

3.1. BENTHIC HABITATS/SPECIES AND GEODIVERSITY FEATURES

23. The closest NCMPA to the WDA designated for benthic habitats/species and geodiversity features is the Clyde Sea Sill NCMPA which is 83.6 km southeast (**Table 3.1**).

24. The ZoI for benthic habitats/species and geodiversity features is defined by the distance over which impacts from the WDA infrastructure may occur, and the location of the receptors that may be affected by these impacts. Such impacts could include increased suspended sediment concentrations or changes to the hydrodynamic regime. The ZoI is defined as the extent of one mean tidal excursion, which applies a reasonable and suitable level of precaution. This equates to a maximum extent of 23 km in a southerly direction as shown on **Figure 1** (see **Chapter 6 Marine Physical Environment** for further details on tidal excursion). The tidal excursion extent is considered to be sufficiently precautionary to capture all sites within the ZoI from direct and indirect effects associated with increased suspended sediment concentrations arising from construction activities associated with the WDA infrastructure.

25. No NCMPAs that are designated for benthic habitats/species and geodiversity features are located within the 23 km tidal excursion distance (**Table 3.1** and **Figure 1**), and there is no pathway for effect.

26. Therefore, benthic habitats/species and geodiversity features of all NCMPAS considered have been **screened out**.

3.2. FISH

27. The closest NCMPA to the WDA designated for fish features is the Sea of the Hebrides NCMPA (**Table 3.1**), where basking shark is a protected feature. Additionally, Loch Sunart to the Sound of Jura NCMPA which is designated for flapper skate is 41.5 km northeast of the WDA.

28. The greatest ZoI for fish and shellfish receptors arises from underwater noise associated with pile driving. Sensitivity to noise varies between fish species (Popper et al., 2014), and noise levels vary according to the dimensions of the piles and the environment within which the underwater noise propagates (e.g. sediment type, water depth) (Dahl et al., 2014; 2015). The underwater noise modelling for the WDA has not been completed at this stage and therefore the ZoI specific to the WDA is not yet known.

29. Given these uncertainties, the screening distance for fish and shellfish is based on a conservative appraisal of the worst-case monopile impact ranges for recent offshore windfarm projects (**Table** 3.2). Impact ranges are based on Temporary Threshold Shifts in hearing, or behavioural disturbance effects, for the most sensitive hearing groups of fish (i.e. fish that have a swim bladder that is involved in hearing), considered as stationary receptors.

Table 3.2 Worst-case monopile pile driving noise impact ranges for recent offshore windfarm projects

Project and Parameters	Worst-Case Modelled Maximum Impact Range (km)	Reference
West of Orkney Offshore Wind Farm	69	West of Orkney Offshore Wind Farm EIA Report- Volume 2; Supporting Study 11: Underwater Noise Modelling Report (Barham and Mason, 2023)
Norfolk Vanguard • 15 m diameter monopile • Maximum blow energy 5,000 kJ	58	Norfolk Vanguard (2018) Environmental Statement Appendix 5.3 - Underwater Noise Modelling
Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects • 16 m diameter monopile • Maximum blow energy 5,500 kJ	39	Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects (2023) ES Appendix 10.2 – Underwater Noise Modelling Report (Revision C) (Clean)
East Anglia ONE North • 15 m diameter monopile • Maximum blow energy 4,000 kJ	39	East Anglia ONE North Limited (2019) Environmental Statement - Appendix 11.4 - Underwater Noise Assessment
Hornsea Project Four • 15 m diameter monopile • Maximum blow energy 5,000 kJ	38	Hornsea Project Four (2021) Environmental Statement: Volume A4, Annex 4.5: Subsea Noise Technical Report Part 1
MachairWind	70	Conservative worst-case based on recent offshore windfarm projects.

30. Given impact ranges reported for other projects in **Table 3.2**, an appropriately conservative NCMPA screening range for the WDA has been set at 70 km.

31. The Sea of the Hebrides NCMPA (basking shark) and Loch Sunart to the Sound of Jura NCMPA (flapper skate) are the only NCMPAs within 70 km that are designated for fish and shellfish features (**Table 3.1** and **Figure 1**). Therefore, there is a possible pathway for effect from underwater noise. It should also be noted that because the construction and O&M ports for the Project are currently unknown, there is a potential for Project vessels to transit through the Sea of the Hebrides NCMPA which could result in potential vessel collision impacts on basking shark.

32. The basking shark feature of the Sea of the Hebrides NCMPA is therefore **screened in**. In addition, the flapper skate feature of the Loch Sunart to the Sound of Jura NCMPA is **screened in**.

3.3. MARINE MAMMALS

33. The closest NCMPA to the WDA designated for marine mammal features is the Sea of the Hebrides NCMPA (**Table 3.1**), where minke whale is a protected feature. The ZoI for marine mammals is defined with reference to their Management Unit (MU), as defined by the Inter-Agency Marine Mammal Working Group for cetaceans.

34. The following NCMPAs fall within the wider cetacean MU's:

- Sea of the Hebrides NCMPA (minke whale); and
- North East Lewis NCMPA (Risso's dolphin).

35. Where MUs for a given species extend over a very large area (e.g. minke whale and Risso's dolphin over the Celtic and Greater North Sea MU), it is proposed that the assessment will focus on the

appropriate SCANS-IV (Small Cetaceans in European Atlantic waters and the North Sea) Block CS-H which provides a more accurate estimate of the population.

36. Following the marine mammal Expert Topic Group Meeting 1, NatureScot advised on 09 February 2024 that the North-East Lewis NCMPA should be screened out due to the distance from WDA.

37. Therefore, the Sea of the Hebrides NCMPA is **screened in** for minke whale and the North East Lewis NCMPA is **screened out**.

3.4. OFFSHORE ORNITHOLOGY

38. The closest NCMPA to the WDA designated for ornithology features is the Clyde Sea Sill NCMPA (**Table 3.1**), where black guillemot is a protected feature under the criterion 'Aggregations of breeding birds'. The ZoI for offshore ornithology receptors is defined as the WDA plus a 4 km buffer within which operational phase displacement effects could potentially occur.

39. The NCMPA is 83.6 km southeast at its closest point. Black guillemot have strong inshore foraging ecology during the breeding season with a mean-maximum foraging range (+ 1 standard deviation) of less than 10 km (4.8±4.3 km, Woodward et al., 2019). As such, there is no potential connectivity between the black guillemot protected feature of the NCMPA and the WDA during the breeding season.

40. Similarly, there is no potential connectivity between the black guillemot protected feature of the NCMPA and the WDA during the non-breeding season. Furness (2015) defines the Biologically Defined Minimum Population Scale of black guillemot during the non-breeding season as "birds found within 20 km of a specific [breeding] site," and considers 10-15 km to represent "exceptionally large" dispersal distances for the species.

41. Therefore, there is no connectivity between the WDA and the black guillemot feature of the Clyde Sea Sill NCMPA and this feature and the Clyde Sea Sill NCMPA is **screened out** of further assessment.

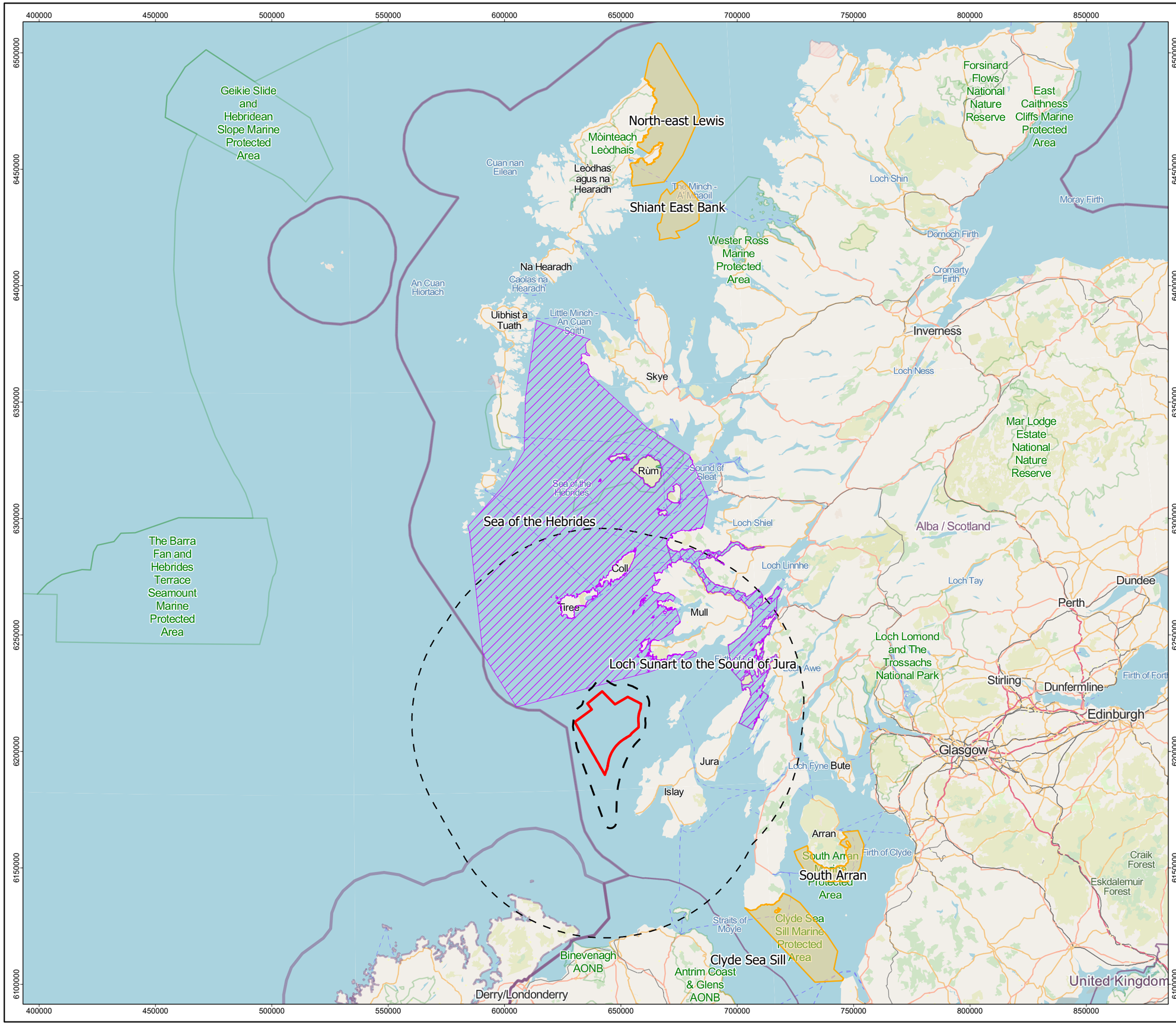
3.5. SUMMARY OF NCMPA'S SCREENED IN AND OUT

42. **Table 3.3** provides a summary of the NCMPAs and features screened in/out of further assessment and these are shown on **Figure 1**. Only the Sea of the Hebrides NCMPA for minke whale and basking shark and the Loch Sunart to the Sound of Jura NCMPA for flapper skate are screened in. All other sites and features are screened out.

Table 3.3 Summary of Nature Conservation Marine Protected Areas screened in or out

Nature Conservation Marine Protected Area	Protected Feature(s)	Screened In (✓) or Out (x)
Sea of the Hebrides	Minke Whale	✓
	Basking Shark	✓
	Marine Geomorphology of the Scottish Shelf Seabed	x
	Fronts	x
Loch Sunart to the Sound of Jura NCMPA	Flapper skate	✓
	Quaternary of Scotland	x
Clyde Sea Sill	Black guillemot	x
	Sediment biodiversity	x
	Geodiversity	x
South Arran	Maerl beds	x
	Other sediment biodiversity	x
Shiant East Bank	Sediment biodiversity	x
	Geodiversity	x
North-east Lewis	Risso's dolphin	x
	Sandeels	x
	Quaternary of Scotland	x
	Marine Geomorphology of the Scottish Shelf Seabed	x

43. It should be noted that for NCMPAs (Clyde Sea Sill, South Arran, Shiant East Bank and North-east Lewis) which have been screened out due to there being no connectivity between the WDA activities and their protected features, it is considered that there is no potential for the WDA to contribute to any cumulative effects upon these NCMPAs.



Windfarm Development Area

NCMPA Screened in

NCMPA Screened out

70 km Underwater Noise Impact Range Screening Boundary

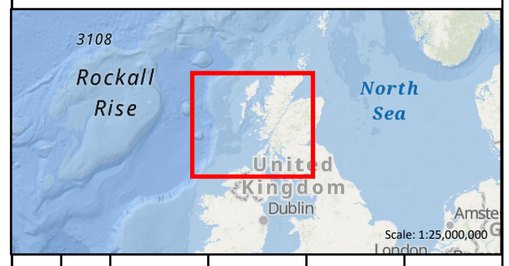
Tidal excursion distance

Ferry routes

N

0 10 20 40 60

Kilometres



REV	REV DATE	GIS CREATOR	GIS REVIEWER	TECHNICAL CHECKER	TECHNICAL APPROVER
1	22/05/2024	MT	AB	CB	PB

DRAWING NUMBER	MCW-GEN-GIS-MAP-RHS-000030		
DATUM	ETRS89	PROJECTION	UTM Zone 29N
SCALE	1:1,562,500	PAGE SIZE	A3
PROJECT TITLE	MachairWind		

Figure 1: NCMPAs Screened in and Screened Out

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4. SEA OF THE HEBRIDES NATURE CONSERVATION MARINE PROTECTED AREA SCREENING

4.1. OVERVIEW

44. In line with the screening methodology outlined in **Section 2.1**, the Sea of the Hebrides NCMPA is screened in for assessment based on the WDA being capable of affecting the basking shark and minke whale features of the NCMPA.

45. The Sea of the Hebrides NCMPA is situated between the Isle of Mull, Isle of Harris and the northwest coast of Scotland and is approximately 3 km (**Figure 1**) from the closest point of the WDA. It was first designated in 2020 and comprises an area of 10,039 km^2.

46. The NCMPA is host to a wide range of marine life and features a front. The front feature appears during spring and summer to the south-west of Tiree and provides an important functional link to both basking sharks and minke whales by facilitating favourable feeding conditions. Minke whales are considered to be declining in Scottish waters and basking shark is listed as 'Endangered' on the International Union for Conservation of Nature Red List and is a Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) threatened or declining species.

47. The protected marine geomorphology of the Scottish Shelf Seabed is represented by the Inner Hebrides Carbonate Production Area (NatureScot, 2020a).

48. All of the biodiversity and geodiversity features are in favourable condition at the Sea of the Hebrides NCMPA and therefore the Conservation Objectives seek to 'conserve' this condition. A number of activities are considered capable of affecting the protected features and there is therefore a need to consider whether additional management is required (NatureScot, 2020b).

49. In line with the methodology in **Section 2.1**, all features have been screened out, except minke whale and basking shark (**Table 3.3**). Based on the ZoIs identified, it is considered that the WDA and associated works are capable of affecting these features of the NCMPA.

4.2. CONSERVATION OBJECTIVES

50. **Table 4.1** sets out the Conservation Objectives for the basking shark and minke whale features of the NCMPA.

Table 4.1 Conservation objectives for minke whale and basking shark features of the Sea of the Hebrides Nature Conservation Marine Protected Area

Protected Feature(s)	Type	Conservation Objective	Condition
Minke whale and basking shark	Mobile species	• Maintain in favourable condition. • Minke whale and basking shark in the Sea of the Hebrides Nature Conservation Marine Protected Area (NCMPA) are not at significant risk from injury or killing. • Conserve the access to resources (e.g. for feeding and courtship) provided by the NCMPA for various stages of the minke whale and basking shark life cycle. • Conserve the distribution of minke whale and basking shark within the site by avoiding significant disturbance. • Conserve the extent and distribution of any supporting feature upon which minke whale is dependent. • Conserve the structure and function of supporting features, including processes to ensure minke whale and basking shark are healthy and not deteriorating.	Favourable (NatureScot, 2020b)

51. "Favourable condition," with respect to a mobile species of marine fauna, means that:

- The species is conserved or, where relevant, recovered to include the continued access by the species to resources provided by the NCMPA for, but not restricted to, feeding, courtship, spawning or use as nursery grounds;
- The extent and distribution of any supporting features upon which the species is dependent is conserved or, where relevant, recovered; and
- The structure and function of any supporting feature, including any associated processes supporting the species within the NCMPA, is such as to ensure that the protected feature is in a condition which is healthy and not deteriorating.

52. For the purpose of determining whether a protected feature is in favourable condition, any alteration to that feature brought about entirely by natural processes is to be disregarded.

4.3. BASKING SHARK

53. Basking sharks show a marked seasonality in occurrence in UK waters and the Sea of the Hebrides NCMPA. In the west coast of Scotland, areas to the west of Coll, north of Tiree, and Hyskeir (i.e. within the NCMPA) are known to be seasonal hotspots for basking shark with peak occurrence from July to the end of September (Witt et al., 2016).

54. There are currently no agreed population estimates for basking sharks in Scotland, the North-East Atlantic or globally, with little information on trends. Tentative estimates of approximately 1,000-2,000 basking shark for smaller areas within the Marine Protected Area (MPA) have been made during survey work to support a proposed development application and photo ID work using boat-based surveys (Booth et al., 2013, Gore et al., 2016). These are likely to be conservative for a variety of reasons (e.g. short survey duration and no availability correction, or low levels of re-sightings respectively) (NatureScot, 2020a). Additionally, annual boat-based surveys by Hebridean Whale Dolphin Trust (HWDT) recorded a consistent seasonal presence of basking sharks within the Inner Hebrides. Surveys, undertaken as part of ScottishPower Renewables' investigation into the previously proposed Argyll Array Offshore Wind Farm, recorded a total of 918 individual shark observations in a single day to the south-west of Tiree, which is the maximum number ever recorded in a single day (Booth et al., 2013).

55. The main potential threats to basking sharks are incidental catch and boat collisions/disturbance (OSPAR Commission, 2008; Speedie et al., 2009), particularly during summer months. Potential risk to basking sharks are collision with vessels, entanglement / incidental catch from fishing gear and ropes / nets, and disturbance from boat-based construction activities. Indirect effects on basking sharks through any changes in prey availability are currently considered low risk (NatureScot, 2020b).

56. **Table 4.2** sets out the proposed impacts to be considered for basking shark within the NCMPA Main Assessment for the construction, O&M and decommissioning phases. In line with NatureScot advice at the Project's WDA Scoping Workshop on 01 May 2024, only potential impacts which could occur within the boundary of the NCMPA have been considered. The potential impacts presented in **Table** 4.2 align with the relevant impacts in **Chapter 9 Fish (Including Basking Shark) and Shellfish Ecology** of this Scoping Report which could occur on basking shark within the boundary of the NCMPA. See **Chapter 9 Fish (Including Basking Shark) and Shellfish Ecology** for further information.

57. Basking shark are not considered to be at risk of injury from underwater noise as with other elasmobranchs, they are only sensitive to the particle motion component of underwater noise rather than sound pressure, therefore all activities generating underwater noise will be assessed under the impact of underwater noise and vibration (Popper et al., 2014).

Table 4.2 Potential impacts screening for basking shark feature of the Sea of the Hebrides Nature Conservation Marine Protected Area assessment

Potential Impact	Project Phase* Scoped in (✓) / out (x)			Justification
	C	O&M	D	
Remobilisation of contaminated sediments	✗	✗	✗	Contaminants survey data shows that the seabed sediments within the Windfarm Development Area (WDA) do not contain contaminants in concentrations that would pose a risk to water quality should the seabed sediments be suspended during construction, Operation and Maintenance (O&M) and decommissioning activities. Therefore, this potential impact is **screened out**, for all phases.
Accidental release of pollutants	✗	✗	✗	Through implementation of the embedded mitigation practices detailed in **Chapter 6 Marine Physical Environment** of this Scoping Report, it is considered that the risk of a spill occurring is low and with the appropriate management measures in place, should a spill occur, the risk to the marine environment is effectively mitigated. Therefore, this potential impact is **screened out**, for all phases.
Increased Suspended Sediment Concentrations (SSC) resulting in potential reduction of prey species	✓	✓	✓	The northern extent of the tidal excursion distance overlaps very slightly with the Nature Conservation Marine Protected Area (NCMPA) (**Figure 1**). An increase in SSCs could potentially affect zooplankton abundance which is an important prey resource for basking sharks. Therefore, this potential impact is **screened in**, for all phases.
Vessel collision and disturbance	✓	✓	✓	Potential impact could occur within the boundary of the NCMPA. Therefore, this potential impact is **screened in**, for all phases.
Underwater noise and vibration	✓	✓	✓	Potential impact could occur within the boundary of the NCMPA. Therefore, this potential impact is **screened in**, for the construction and O&M phases.
*C, O&M, D = Construction, Operation and Maintenance and Decommissioning, respectively.				

4.4. MINKE WHALE

58. There is no estimate of population size of minke whale in the Sea of the Hebrides NCMPA, however it is predicted that the NCMPA supports high numbers of minke whales with a peak in the summer months (Paxton et al., 2014), (**Figure 2**). The summer is a vital season for minke whale, whilst at their feeding grounds, it is essential minke whales build up sufficient energy from prey intake in order to make the migrations to their breeding grounds in lower latitudes (Scottish National Heritage (SNH), 2012).

59. The NCMPA sits in both CS-F and CS-H SCANS survey blocks. The SCANS-IV survey recorded an abundance of just under 500 (493) individuals with a density estimate of 0.0353 minke whale per km^2 (Gilles et al., 2023) in the survey block CS-H and 209 individuals with a density estimate of 0.0137 minke whale per km^2 in survey block CS-F. It is proposed to use the CS-H density estimate of 0.0355/km^2 with an abundance of 493 as most precautionary.

60. Based on a regional risk assessment, minke whale is considered to be at a medium risk of injury from underwater noise and collision risk with vessels (NatureScot, 2020b).

61. **Table 4.3** sets out the proposed impacts to be considered for minke whale in the NCMPA Main Assessment, for the construction O&M and decommissioning phases. In line with NatureScot advice at the WDA Scoping Workshop on 01 May 2024, only potential impacts which could occur within the boundary of the NCMPA have been considered. The impacts presented in **Table 4.3** align with the impacts identified for minke whale in **Chapter 10 Marine Mammals** of this Scoping Report, with the exception of changes to prey availability as this is proposed to be scoped out due to the distance of the NCMPA from the WDA. As with said chapter, underwater noise sources have been separated because different noise sources such as impulsive and non-impulsive can cause different impacts to minke whale. See **Chapter 10 Marine Mammals** for further information on each impact.

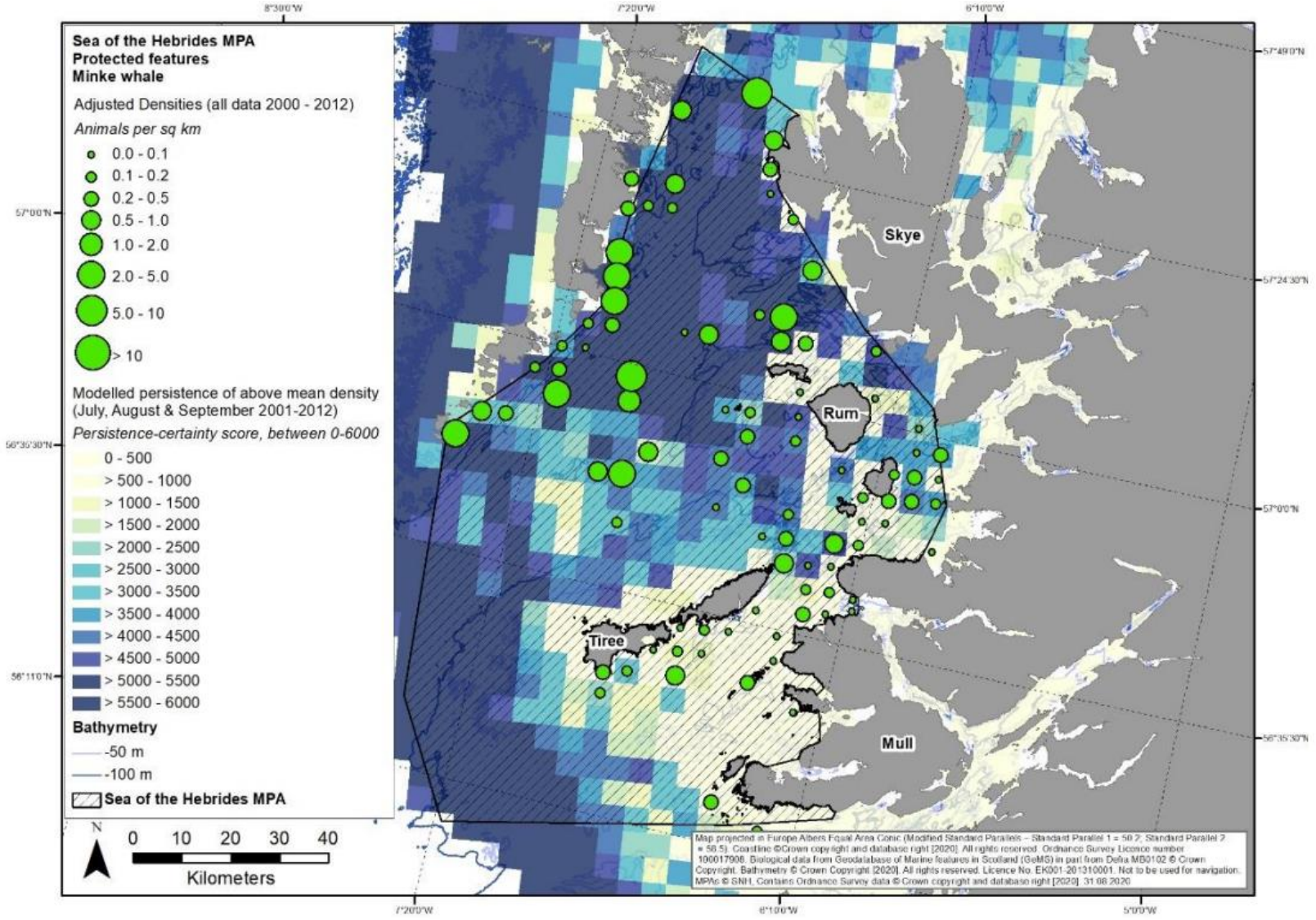

Figure 2 Map of the Sea of the Hebrides MPA showing the modelled/recorded distribution of minke whale

Table 4.3 Potential impacts screening for minke whale feature of the Sea of the Hebrides Nature Conservation Marine Protected Area

Potential Impact	Project Phase* Scoped in (✓) / out (x)			Justification
	C	O&M	D	
Changes to prey availability	✘	✘	✘	There is no overlap of the Zone of Influence (ZoI) for Suspended Sediment Concentrations (SSCs) with the Nature Conservation Marine Protected Area (NCMPA). Therefore, these potential impacts are **screened out**, for all phases.
Changes in water quality	✘	✘	✘	**Screened out** based on implementation of the embedded mitigation practices detailed in **Chapter 6 Marine Physical Environment** of this Scoping Report. Therefore, these potential impacts are **screened out**, for all phases.
Underwater noise from operational wind turbines	n/a	✘	n/a	There is no overlap of the ZoI with the NCMPA. Therefore, these potential impacts are **screened out**, for all phases.
Underwater noise from other activities (for example rock placement and cable laying)	✓	✓	✓	**U**nderwater noise associated with other construction and maintenance activities can cause disturbance to marine mammals.
Underwater noise and presence of vessels	✓	✓	✓	**U**nderwater noise and the presence of vessels can cause disturbance to marine mammals.
Barrier effects due to underwater noise	✓	✓	✓	Underwater noise can create a barrier effect preventing movement or migration of minke whale between important feeding and/or breeding areas.
Collision risk with vessels	✓	✓	✓	Potential impact could occur within the boundary of the NCMPA.
Underwater noise during unexploded ordnance clearance	✓	n/a	n/a	Underwater noise from unexploded ordnance clearance can cause physical injury to marine mammals.
Underwater noise during piling	✓	✘	✘	**U**nderwater noise from piling can result in physical injury to marine mammals.
Cumulative impacts from underwater noise	✓	✓	✓	**U**nderwater noise can cause disturbance to marine mammals.

Potential Impact	Project Phase* Scoped in (✓) / out (x)			Justification
	C	O&M	D	
Cumulative impacts from collision risk and presence of vessels	✓	✓	✓	**U**nderwater noise and the presence of vessels can cause disturbance to marine mammals.
Cumulative impacts from barrier effects	✓	✓	✓	**U**nderwater noise can cause disturbance to marine mammals.
*C, O&M, D = Construction, Operation and Maintenance and Decommissioning, respectively.				

5. LOCH SUNART TO THE SOUND OF JURA NATURE CONSERVATION MARINE PROTECTED AREA SCREENING

5.1. OVERVIEW

62. Loch Sunart to the Sound of Jura NCMPA was identified for one MPA search feature (flapper skate) and one geodiversity feature (Quaternary of Scotland). The NCMPA was established in 2014, with restrictions on fisheries implemented in 2016 (NatureScot, 2024).

63. Tagging surveys were conducted by the Marine Directorate, Scottish Association for Marine Science and NatureScot to aim to understand how the NCMPA supports flapper skates (Thorburn, et al., 2018). It was this study that informed the restriction of specific fishing activities to conserve marine resources and ecosystems, supporting climate change adaption and maintaining biodiversity.

5.2. CONSERVATION OBJECTIVES

64. The conservation objective for the flapper skate feature of the Loch Sunart to the Sound of Jura NCMPA is to 'conserve (feature condition uncertain).' Due to fishing activity, the estimated rate of mortality of flapper skate is considered to be higher than the level required to sustain the population (Neat et al., 2014). Therefore, statutory mechanisms exist such as Fisheries Orders or Marine Conservation Orders to conserve the features in the NCMPA (SNH, 2014a).

5.3. FLAPPER SKATE

65. The common skate was the original qualifying feature of the NCMPA however it was revealed that the common skate is actually two species (common skate complex), the flapper skate and the blue skate (*Dipturus floassada)* (Iglesias et al., 2009). Flapper skate is widely distributed across the NCMPA (**Figure 3,** (SNH, 2014b)). Flapper skate populations have declined over the last century due to overfishing and the species is listed on the International Union for Conservation of Nature red list as Critically Endangered.

66. The study conducted by the Marine Directorate, Scottish Association for Marine Science and NatureScot showed that there was an increase, as follows, in flapper skates within two areas of the NCMPA after a restriction on fisheries (Thorburn, et al., 2018):

- The resident population size increased from 403 to 848 individuals in the Firth of Lorn between 2016 and 2019; and
- The resident population size increased from 355 to 524 in the Sound of Jura between 2018 and 2019.

67. Evidence also showed that individuals were very limited in their movement between the Firth of Lorn and the Sound of Jura and that there was little overspill between the NCMPA and wider area, both observations serving to highlight the importance of the NCMPA (Thorburn, et al., 2018).

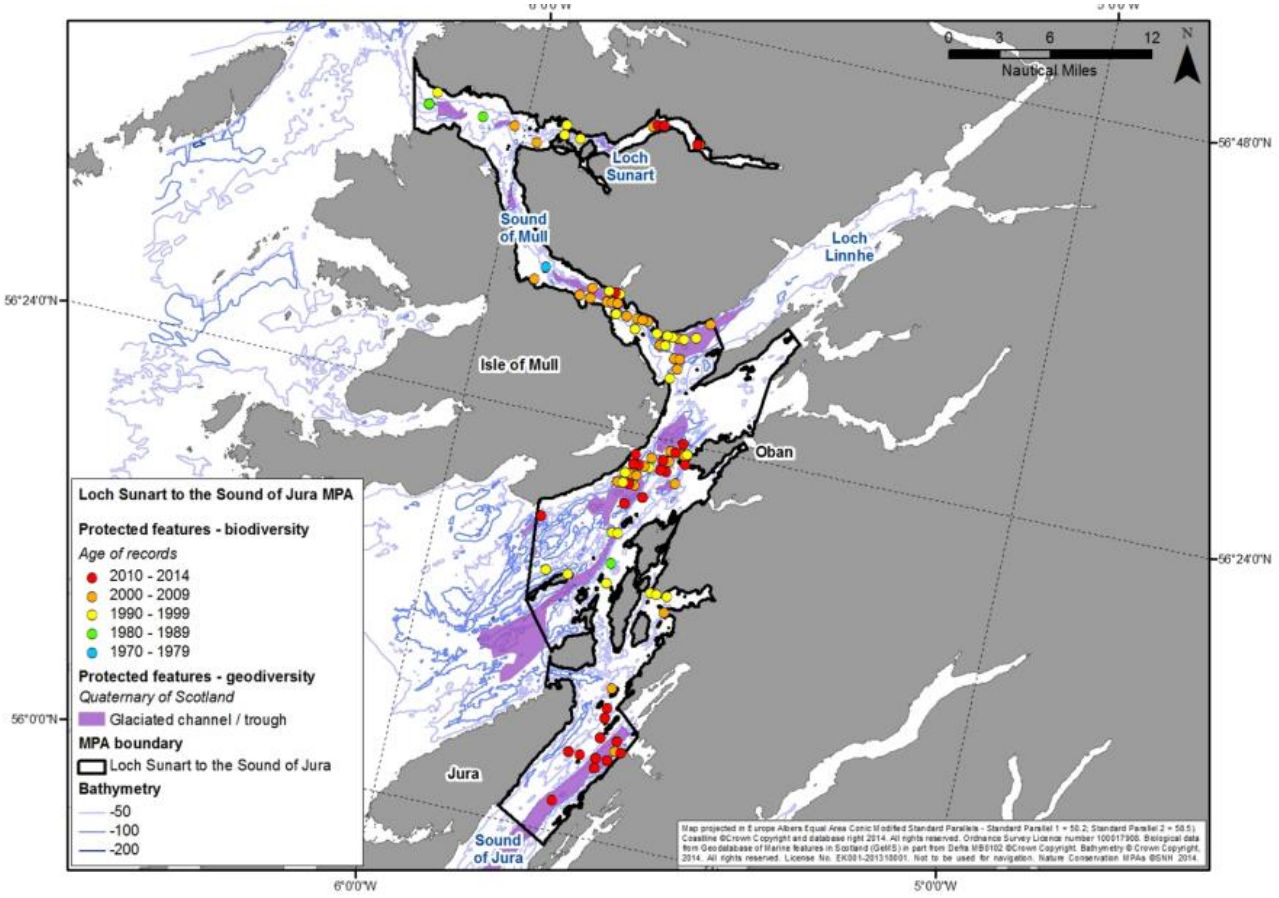

Figure 3 The known distribution of protected features within Loch Sunart to the Sound of Jura NCMPA (SNH, 2014a)

68. **Table 5.1** sets out the proposed impacts to be considered for flapper skate in the NCMPA Main Assessment for the construction, O&M and decommissioning phases.

Table 5.1 Potential impacts screening for the flapper skate feature of the Loch Sunart to the Sound Jura Nature Conservation Marine Protected Area

Potential Impact	Project Phase* Scoped in (✓) / out (x)			Justification
	C	O&M	D	
Increased Suspended Sediment Concentrations (SSC) and sediment re-deposition	✗	✗	✗	Based on tidal excursion distance of 23 km in a southerly direction there would be no overlap of the (ZoI) for SSCs with the Nature Conservation Marine Protected Area (NCMPA). Therefore, these potential impacts are **screened out**, for all phases.
Remobilisation of contaminated sediments	✗	✗	✗	
Accidental release of pollutants	✗	✗	✗	Screened out based on implementation of the embedded mitigation practices detailed in **Chapter 6 Marine Physical Environment** of this Scoping Report. Therefore, this potential impact is **screened out**, for all phases.
Underwater noise and vibration	✓	✗	✓	Potential impact could occur during construction and decommissioning within the boundary of the NCMPA however this may be later ruled out on the basis of underwater noise modelling to be undertaken for the Environmental Impact Assessment Report (EIAR). Therefore, this potential impact is **screened in**, for the construction and decommissioning phases.
*C, O&M, D = Construction, Operation and Maintenance and Decommissioning, respectively.				

6. SUMMARY

69. The minke whale and basking shark features of the Sea of the Hebrides NCMPA, and the flapper skate feature of the Loch Sunart to the Sound of Jura NCMPA have been screened into the NCMPA Main Assessment to be submitted alongside the WDA EIAR. This is because the ZoI identified for minke whale and basking shark overlaps with the Sea of the Hebrides NCMPA and for flapper skate with the Loch Sunart to Sound of Jura NCMPA.

70. No benthic habitats/species and geodiversity features, or offshore ornithology features associated with any of the NCMPAs included in this NCMPA Screening have been screened in. This is because there is no overlap of the identified ZoI for these features with any of the relevant NCMPAs.

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