# MachairWind Offshore Windfarm

## Windfarm Development Area Habitats Regulations Appraisal Screening Report

ScottishPower Renewables | MachairWind Offshore Windfarm

SEPTEMBER 2024

DOCUMENT ID: MCW-GEN-PMG-REP-IBR-000069
Revision 1

This page is intentionally blank

## Table of Contents



## List of Tables

## List of Figures

# GLOSSARY OF ACRONYMS

| Term | Definition |
|---|---|
| AA | Appropriate Assessment |
| BDMPS | Biologically Defined Minimum Population Scales |
| CIS | Celtic and Irish Sea |
| DAERA | Department of Agriculture, Environment and Rural Affairs |
| DAS | Digital Aerial Surveys |
| EC | European Commission |
| EIA | Environmental Impact Assessment |
| EIAR | Environmental Impact Assessment Report |
| EMF | Electro-Magnetic Field |
| EPS | European Protected Species |
| ETG | Expert Topic Group |
| EU | European Union |
| FCS | Favourable Conservation Status |
| FeAST | Feature Activity Sensitivity Tool |
| GW | Gigawatts |
| HRA | Habitats Regulations Appraisal |
| IAC | Inter-Array Cable |
| IAMMWG | Inter-Agency Marine Mammal Working Group |
| IROPI | Imperative Reasons of Overriding Public Interest |
| JNCC | Joint Nature Conservation Committee |
| kJ | Kilojoules |
| km | Kilometre |
| LAT | Lowest Astronomical Tide |
| LSE | Likely Significant Effects |
| M | Metres |
| MD-LOT | Marine Directorate – Licensing Operations Team |
| MD-SEDD | Marine Directorate – Science, Evidence, Digital and Data |
| MU | Management Unit |
| MW | Megawatt |
| O&M | Operation and Maintenance |
| OAA | Option Agreement Area |
| OfTDA | Offshore Transmission Development Area |

| Term | Definition |
|---|---|
| OnTDA | Onshore Transmission Development Area |
| OSP | Offshore Substation Platform |
| OWF | Offshore Windfarm |
| PTS | Permanent Threshold Shift |
| RHDHV | Royal HaskoningDHV |
| RIAA | Report to Inform Appropriate Assessment |
| SAC | Special Areas of Conservation |
| SCANS | Small Cetaceans in the European Atlantic and the North Sea |
| SMP | Sectoral Marine Plan |
| SMRU | Sea Mammal Research Unit |
| SNH | Scottish Natural Heritage |
| SPA | Special Protection Areas |
| SPR | Scottish Power Renewables |
| TTS | Temporary Threshold Shift |
| UK | United Kingdom |
| UXO | Unexploded ordnance |
| WDA | Windfarm Development Area |
| WI | Western Isles |
| WS | West Scotland |
| WTG | Wind Turbine Generators |
| ZoI | Zone of Influence |

# GLOSSARY OF TERMS

| Term | Definition |
|---|---|
| The Applicant | The legal entity submitting consent applications for the MachairWind Offshore Windfarm, namely MachairWind Limited. |
| Breeding season | Furness (2015) defines breeding season as the period from modal return to the colony through to modal departure from the colony at the end of breeding, for birds at UK colonies. |
| Cable protection | Protective measure to minimise the effects of scour and hazards along the inter-array cables and/or offshore substation platform link cables (e.g. cable exposure or snagging), as well as for protecting inter-array cables and/or offshore substation platform link cables at infrastructure crossing points. |
| Development Area | Application boundary for consenting purposes which, for the Project, consists of a Windfarm Development Area, Offshore Transmission Development Area and Onshore Transmission Development Area. |
| Embedded mitigation measure | Mitigation measures, including industry good practice measures, to avoid or reduce environmental effects that are directly incorporated into the design for the MachairWind Windfarm Development Area. |
| Environmental Impact Assessment (EIA) | The process of evaluating the likely significant environmental effects of a proposed development over and above the existing circumstances (or 'baseline'). |
| European site | Sites designated for nature conservation under the Habitats Directive and Birds Directive. These include candidate Special Areas of Conservation, Sites of Community Importance, Special Areas of Conservation and Special Protection Areas, and are defined in the Habitats Regulations. |
| Habitats Regulations | A collective term used to describe the Conservation of Habitats and Species Regulations 2017 and The Conservation (Natural Habitats, &c.) Regulations 1994. |
| 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). |
| Landfall | The area from Mean Low Water Springs to a transition bay(s), where the offshore export cable(s) come ashore. |
| Lowest Astronomical Tide (LAT) | The lowest level that can be expected to occur under average meteorological conditions and under any combination of astronomical conditions. |
| 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. |
| Management Units (MUs) | The MUs provide an indication of the spatial scales at which impacts of plans and projects alone, cumulatively and in-combination, need to be assessed for the marine mammal species in UK waters, with consistency across the UK. |
| National Electricity Transmission System | The high-voltage electricity power transmission network serving Great Britain which receives electricity from generators (such as offshore windfarms) and transmits that electricity to anywhere on the National Electricity Transmission System to satisfy demand. |

| Term | Definition |
|---|---|
| Non-breeding season | Furness (2015) defines non-breeding season as the remaining part of the year that is not a part of breeding season. |
| Offshore export cable | Armoured cable containing electrical and fibre optic cores between the offshore substation platform(s) and landfall. |
| Offshore export cable corridor | The boundary within which the offshore export cable route will be located. Separate consent and licence applications will be submitted for the Offshore Transmission Development Area. |
| 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. |
| 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. |
| Onshore Transmission Development Area (OnTDA) | The planning application boundary extending landward of Mean Low Water Springs and within which the following will be consented (infrastructure includes but is not limited to): landfall(s), onshore export cables, temporary construction compounds, and environmental mitigation areas. The OnTDA will be subject to a planning application under the Town and Country Planning (Scotland) Act 1997. |
| Operational life | The operational life is the expected length of time from final commissioning of the windfarm development area until the cessation of commercial operations. |
| Option Agreement Area (OAA) | The seabed area awarded to ScottishPower Renewables in January 2022 through the Scotwind leasing round. Project-specific surveys have been based on either the OAA or Windfarm Development Area (WDA) boundary, with an appropriate buffer implemented in each case. |
| Offshore Substation Platform (OSP) link cables | Electrical cables which link OSPs (if more than one OSP is required). These cables will include fibre optic cables. |
| Permanent Threshold Shift (PTS) | A permanent total or partial loss of hearing sensitivity caused by acoustic trauma. PTS results in irreversible damage to the sensory hair cells of the ear, and thus a permanent reduction of hearing acuity. |
| Scottish Marine Area | The area of Scotland's territorial sea limit (up to 12 nautical miles (nm) from baseline) as defined in the Marine (Scotland) Act 2010. |
| ScotWind | A Crown Estate Scotland seabed leasing round for offshore wind projects in which the process enabled developers to apply for seabed rights to plan and build windfarms in Scottish waters. |
| 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. |
| The Project | MachairWind Offshore Windfarm. |
| 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. |

| Term | Definition |
|---|---|
| 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). |
| 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 OnTDA. |

# 1 INTRODUCTION

1. This document provides the Habitats Regulations Appraisal (HRA) Screening for the MachairWind Offshore Windfarm ('the Project') Windfarm Development Area (WDA). It has been submitted alongside the WDA Environmental Impact Assessment (EIA) Scoping Report (Royal HaskoningDHV, 2024) to enable parallel consultation. In addition, **Appendix H Nature Conservation Marine Protected Area (NCMPA) Screening** of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024) provides the screening of NCMPAs.

## 1.1 PROJECT BACKGROUND

2. Crown Estate Scotland awarded MachairWind Limited ('the Applicant') an Option Agreement to develop the W1 Plan Option Area in January 2022 as part of the ScotWind leasing round. The Plan Option Area is one of the sites that the Scottish Government identified in its Sectoral Marine Plan (SMP) for Offshore Wind Energy (Scottish Government, 2020a) following comprehensive review and consultation.

3. Following constraints analysis, a WDA within the awarded Option Agreement Area (OAA) has been defined. Further details of the constraints analysis are provided in **Chapter 3 Site Selection and Alternatives** of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024). The OAA and WDA are shown on **Figure 1.1**.

4. The WDA is located on the west coast of Scotland approximately 15 kilometres (km) to the northwest of Islay and approximately 12 km west of Colonsay. It is anticipated that the Project will have a capacity of around 2 gigawatts (GW) which will be generated by up to 130 Wind Turbine Generators (WTG). Once operational, it will have the potential to generate renewable energy for around two million homes.

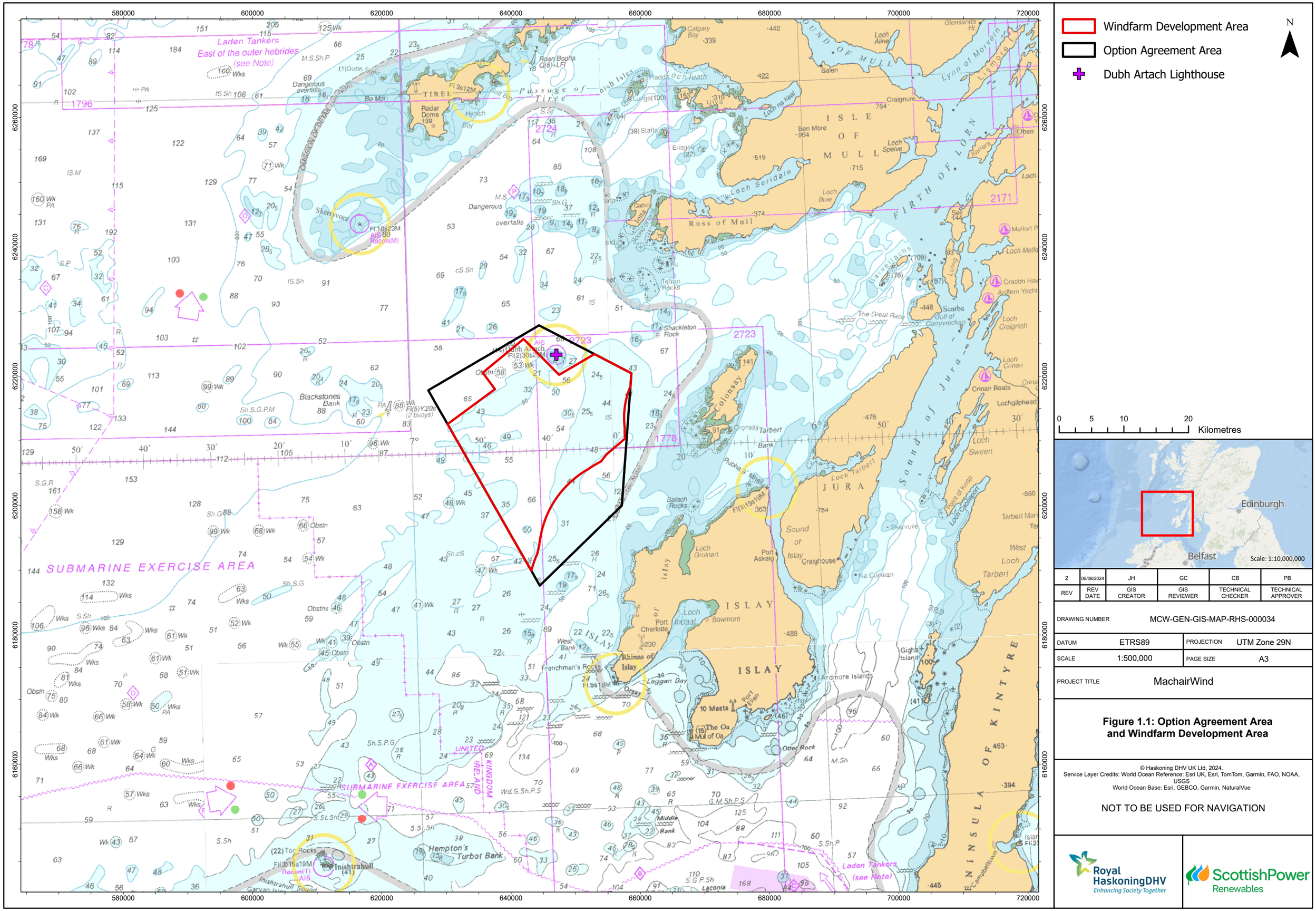
5. Electricity will be transmitted from the WTGs via Inter-Array Cables (IACs) to Offshore Substation Platforms (OSP). In the event that more than one OSP is required, OSP link cables between OSPs may be installed. Electricity will be exported through offshore export cable(s) to a landfall in South Ayrshire. The exact grid connection location for the Project has yet to be confirmed, with the current expectation being that the Project will connect to a new High Voltage Direct Current (HVDC) switching station to be built by the Transmission System Operator in South Ayrshire. Due to the novel HVDC technology that will be used transmit power generated from the Project to the grid network, the configuration and design of this infrastructure is in the early stages of development and will require refinement informed by discussions with the relevant Transmission System Operators.

6. Separate consent/planning and licence applications will be submitted for the Offshore Transmission Development Area (OfTDA) and Onshore Transmission Development Area (OnTDA) at a later date once the grid connection arrangements for the Project are more clearly defined (see Section 1.3 of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024) for further details on the Development Areas and consenting strategy for the Project.

7. The entirety of the WDA is located within the Scottish Marine Area / territorial waters which extends to 12 nm from shore. All consents and licences associated with the WDA will therefore be submitted to the Scottish Ministers through Marine Directorate – Licensing Operations Team (MD-LOT), which is responsible for processing applications on the Scottish Ministers' behalf.

8. The following consents and licences will be required in order to authorise the proposed works and licensable activities within the WDA:

- Section 36 consent under the Electricity Act 1989; and
- A Marine Licence(s) under the Marine (Scotland) Act 2010.




Windfarm Development Area

Option Agreement Area

Dubh Artach Lighthouse

N

0 5 10 20 Kilometres

| REV | REV DATE | GIS CREATOR | GIS REVIEWER | TECHNICAL CHECKER | TECHNICAL APPROVER |
|---|---|---|---|---|---|
| 2 | 06/08/2024 | JH | GC | CB | PB |

| | | | |
|---|---|---|---|
| DRAWING NUMBER | MCW-GEN-GIS-MAP-RHS-000034 | | |
| DATUM | ETRS89 | PROJECTION | UTM Zone 29N |
| SCALE | 1:500,000 | PAGE SIZE | A3 |
| PROJECT TITLE | MachairWind | | |

**Figure 1.1: Option Agreement Area and Windfarm Development Area**



Royal HaskoningDHV
Enhancing Society Together

ScottishPower Renewables

Project: C:\Users\304634\OneDrive - Royal HaskoningDHV\WIP\PC3479 Team\PC3479 - WIP\E02 GIS & Drawings\F02_Figures\02_Scoping\WindFarmSite\HRA\HRA.aprx
Name: MCW-GEN-GIS-MAP-RHS-000034_WindfarmSite

This page is intentionally blank

## 1.2 THE APPLICANT

9. The Applicant is a wholly owned subsidiary of ScottishPower Renewables (SPR), a leading renewables developer and operator of both offshore and onshore wind assets throughout the United Kingdom (UK). SPR is part of the Iberdrola group, one of the world's largest utilities and leading wind energy producers.

10. SPR's offshore wind portfolio includes the 714 Megawatt (MW) East Anglia ONE project which supported approximately 3,500 jobs at the peak of construction and now supports 100 long term skilled jobs in the operational phase. SPR has created a pathway of development in the East Anglia region with a pipeline of three further projects, consisting of East Anglia ONE North, East Anglia TWO and East Anglia THREE, known collectively as the East Anglia Hub.

11. SPR has a large onshore wind portfolio in the UK comprising of 39 projects in operation, five under construction, three consented, and a further 26 under development. Five of these operational projects are located within Argyll and Bute, namely Clachan Flats, Cruach Mhor and Beinn an Tuirc 1, 2 and 3.

12. The Project builds on SPR's long-standing presence and positive track record as a responsible onshore wind developer and good neighbour across Argyll and Bute where it has been working with, and investing in, people, communities, and businesses for more than 20 years to realise the benefits of renewable energy.

## 1.3 CONSULTANT TEAM

13. Royal HaskoningDHV (RHDHV) has been appointed by SPR as the Lead EIA and HRA consultant for the Project and will be providing consenting support. The RHDHV team are supported by specialist ornithology consultants MacArthur Green, in the preparation of this HRA Screening Report.

14. RHDHV is registered with the Institute of Environmental Management and Assessment EIA Quality Mark scheme. The scheme requires companies that lead the co-ordination of EIAs and HRAs to make a commitment to excellence in their impact assessment activities and have this commitment independently reviewed to ensure quality.

## 1.4 PURPOSE OF THIS DOCUMENT

15. An applicant is obliged in terms of the Habitat Regulations to provide the competent authority with information required to carry out an appropriate assessment. This HRA Screening Report presents information to support screening for Likely Significant Effects (LSE) from the WDA infrastructure (**Figure 1.1**). This document addresses the screening stage by providing information to enable screening of potential LSE on European or Ramsar sites. This HRA Screening Report has been developed alongside the WDA EIA Scoping Report (Royal HaskoningDHV, 2024) to enable parallel consultation.

16. The Project will comprise both onshore and offshore infrastructure including: WTGs, IACs, OSP(s), OSP link cables (if required), offshore export cable(s), and onshore transmission infrastructure connecting to the National Grid.

17. This HRA Screening Report only considers the activities and infrastructure associated with the WDA. As noted in **Section 1.1**, separate consent/planning and licence applications will be submitted for the OfTDA and OnTDA at a later date, once there is greater certainty on the Project's grid connection arrangements.

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

19. The screening information in this report is presented in the context of the baseline environment and proposed activities associated with the WDA. Additional site-specific information has also contributed towards the screening assessment. Any changes which may follow due to additional site investigation works, desk-based assessment work, stakeholder feedback and refinements to the WDA design will be reflected in the RIAA (see **Section 2.2**). It is not anticipated that any changes would alter the results of this screening exercise due to the precautionary approach being implemented, as described later in this document.

## 1.5 REPORT STRUCTURE

20. This HRA Screening Report is structured as follows:

- HRA Process and Approach to Screening (**Section 2**);
- Project Description Summary (**Section 3**);
- Annex I Habitats (**Section 4**);
- Annex II Diadromous Fish (**Section 5**);
- Marine Mammals (**Section 6**);
- Offshore Ornithology (**Section 7**); and
- Summary of Stage 1: LSE Screening (**Section 8**).

21. **Sections 2** to **6** and **8** have been authored by Royal HaskoningDHV and **Section 7** has been authored by MacArthur Green.

# 2 HABITATS REGULATIONS APPRAISAL PROCESS AND APPROACH TO SCREENING

## 2.1 LEGISLATIVE CONTEXT

### 2.1.1 The Habitats Regulations

22. The 'Habitats Directive' (Directive 92/43/EEC), adopted in 1992, enabled European Union (EU) member states to meet the obligations of the Bern Convention (1979). The purpose of the Habitats Directive is to maintain or restore natural habitats and wild species, listed in Annex I and II of the Habitats Directive, at Favourable Conservation Status (FCS). FCS is given by implementing the designation of European Sites, such as Special Areas of Conservation (SAC) which are designated under the Habitats Directive for their habitats and/or species (except birds) of European importance. In addition, the 'Birds Directive' (Directive 2009/147/EC), was implemented to provide a framework for conservation and management of wild birds in Europe. A list of rare, vulnerable, and migratory bird species is provided in Annex I of the Birds Directive. These bird species are protected through the designation of Special Protection Areas (SPAs) which are designated under the Birds Directive.

23. Both the Habitats and Birds Directives are transposed into the relevant Scottish and UK law by:

- The Conservation (Natural Habitats & c.) Regulations 1994 (as amended); and
- The Conservation of Habitats and Species Regulations 2017 (2017 No. 1012) (as amended) which apply to Section 36 applications within the Scottish Marine Area (0 to 12 nm).

24. The "Habitats Regulations" require an Appropriate Assessment (AA) to be undertaken where a project is likely to have significant effects on a designated site, either individually or in-combination with other plans or projects, with respect to the site's conservation objectives.

25. Unless the UK or Scottish governments implement additional legislative changes, which may affect the HRA process, the Habitats Regulations in their existing form will, for the purposes of this HRA Screening Report, be followed.

#### *2.1.1.1 European Sites (Post EU Exit)*

26. The Europe-wide network of nature conservation sites that are the subject of the HRA process was established under the Habitats Directive. European sites (SACs and SPAs) located within an EU Member State are combined to create a Europe-wide network of designated sites (the Natura 2000 network) and may be referred to as Natura 2000 Sites.

27. European sites located within the UK no longer belong to the Natura 2000 network but instead combine to form the UK's "National Site Network". The National Site Network comprises of European sites in the UK that were designated as of 31 December 2020 (or that were proposed to the European Commission (EC) before that date), and any new sites designated under the Habitats Regulations under an amended designation process. Post EU exit, the EC is no longer involved in the final stages of the derogation procedure for those sites which are part of the UK National Site Network. In this report, and in accordance with EU Exit guidance issued by the Scottish Government (Scottish Government, 2020a), the term "European site" has been retained to refer to SPAs and SACs protected in European Member States, Scotland and the rest of the UK.

28. Ramsar sites are not included within the National Site Network but are still included within this HRA Screening Report as they remain protected in the same way as SACs and SPAs – see **Section 2.1.2** for further details.

29. National Site Network management objectives are established in the EU Exit Regulations and are referred to as the network objectives. The objectives in relation to the National Site Network are to:

- Maintain or, where appropriate, restore habitats and species listed in Annexes I and II of the Habitats Directive to an FCS; and
- Contribute to ensuring, in their area of distribution, the survival and reproduction of wild birds and securing compliance with the overarching aims of the Wild Birds directive.

### 2.1.2 The Convention on Wetlands of International Importance (Ramsar Convention)

30. The Ramsar Convention (United Nations, 1971), adopted in 1971 and ratified by the UK in 1976, is an international mechanism designed to protect sites of global importance. This convention specifically covers all aspects of wetland conservation. Three key uses are outlined in the convention:

- The designation of wetlands of international importance as Ramsar Sites;
- The promotion of the wise use of all wetlands in the territory of each country; and
- International co-operation with other countries to further the wise use of wetlands and their resources.

31. The criteria for assessing and designating a Ramsar site includes whether the wetland supports 20,000 water birds and/or supports 1% of the populations of individuals of one species or subspecies of water bird.

32. UK Government policy provides the same protection to Ramsar sites as European designations such as SPAs and SACs. As for SPAs and SACs, Ramsar Sites are referred to as National Site Network sites in the UK. The UK has primarily chosen to designate Ramsar sites through implementing these areas as Sites of Special Scientific Interest. In Scotland, under the National Marine Plan and National Planning Framework, Ramsar sites are treated as European sites.

### 2.1.3 Sectoral Marine Plan for Offshore Wind Energy

33. Scotland is committed to ensuring secure, reliable and affordable energy supplies, within the context of long-term decarbonised energy generation. The first SMP for Offshore Wind Energy (Blue Seas Green Energy) was adopted in 2011 which was followed by the draft wind, wave and tidal plans in 2013. Since then, the SMP for Offshore Wind Energy has built on the work undertaken in the development of the 2011 and 2013 plans and incorporates recent technological, policy, regulatory and market developments to form a new strategic planning process (Scottish Government, 2020a). The SMP seeks to contribute to the achievement of Scottish and UK energy targets through the provision of a spatial strategy to inform the seabed leasing process for commercial offshore wind energy in Scottish waters.

34. The SMP identifies 15 plan options across four regions which are capable of generating c. 28 GW of renewable energy. There is the potential for up to 10 GW to be deployed to reflect the anticipated future demand and market appetite, exceeding the Scottish Offshore Wind Energy Council's goal to deliver at least 8 GW of offshore wind in Scottish waters by 2030 (Scottish Government, 2020b). The final SMP for Offshore Wind Energy will guide relevant consenting bodies with decision making on licence and consent applications but will not predetermine decision-making processes.

35. The SMP was developed together with a strategic plan-level HRA to assess the potential effects of the SMP on internationally protected nature conservation sites. The strategic plan level HRA was undertaken through stages in accordance with established guidance for conducting plan-level HRA that was produced by Scottish Natural Heritage (SNH), now NatureScot, in 2015 (SNH, 2015). The phases of the strategic plan-level HRA were:

- Phase 1 – Pre-Screening Report;
- Phase 2 – Review of Proposed Assessment Methodology; and
- Phase 3 – Screening and Report to Inform Appropriate Assessment (RIAA).

36. The Pre-Screening report prepared by Marine Scotland in 2018, before changing to the Marine Directorate, presented the evidence base and the proposed methods to be applied for the subsequent screening/scoping and assessment stages of the strategic plan-level HRA. An initial list of 652 European/Ramsar sites, and their qualifying features, for which there could be an LSE (or where the possibility of an LSE could not be excluded – see **Section 2.2.2**) was identified. A 100 km buffer around the plan options was used to identify these European sites to include a maximum foraging distance for bird species. Following the main screening process, a total of 468 European sites were identified which consisted of:

- 267 SACs (including candidate SACs, possible/proposed SACs and Sites of Community Importance);
- 150 SPAs (including potential/proposed SPAs); and
- 51 Ramsar sites (Scottish Government, 2019).

37. Of these 468 sites, 107 were non-UK sites screened in due to the presence of mobile features (e.g. cetaceans and/or birds) with ranges that regularly exceeded 100 km.

38. The strategic plan-level HRA concluded that the SMP would not lead to adverse effects on the integrity of the European site features, either alone or in-combination with other plans and projects. This conclusion was provided on the condition that the project-level HRAs are conducted and an iterative plan review is undertaken. It should be noted that the strategic plan-level HRA only assessed up to 10 GW of capacity. However, up to 27.6 GW was awarded through ScotWind following the conclusion of the ScotWind clearing process in August 2022. The Scottish Government is revising the SMP and plan level HRA in 2023/2024 and will publish the consultations and amendments in due course. The updated SMP is expected to be published in 2025.

39. SPR was awarded an option agreement for the W1 Plan Option area under the ScotWind leasing round in 2022.

40. This HRA Screening Report builds on the conclusions of the plan-level HRA in light of developments on the nature, scale, and location of the WDA.

## 2.2 THE HABITATS REGULATIONS APPRAISAL PROCESS

### 2.2.1 Overview

41. HRA is a precautionary, rigorous, and legally binding procedure to protect European sites. HRA considers the potential for LSE to arise as a result of a plan or project, which may affect the integrity of the National Site Network and its associated qualifying features. The following approach and guidance has informed this screening report:

- Habitat Regulations Appraisal of Plans: Guidance for Plan-making Bodies in Scotland (SNH, 2015);
- Introduction to Habitats Regulations Appraisal (HRA) (NatureScot, 2024a); and
- European Site Casework Guidance: How to consider plans and projects affecting Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) (NatureScot, 2024b).

42. The HRA process typically comprises four stages, with the requirement for each subsequent stage being informed by the previous. The four stages are illustrated in **Figure 2.1** and are set out below:

- Stage 1 Screening (this document);
- Stage 2 Appropriate Assessment (AA);
- Stage 3 Assessment of Alternative Solutions; and
- Stage 4 Imperative Reasons of Overriding Public Interest.

43. Stage 1 is described in **Section 2.2.2**. A summary of Stages 2 to 4 is provided in **Section 2.2.3**.

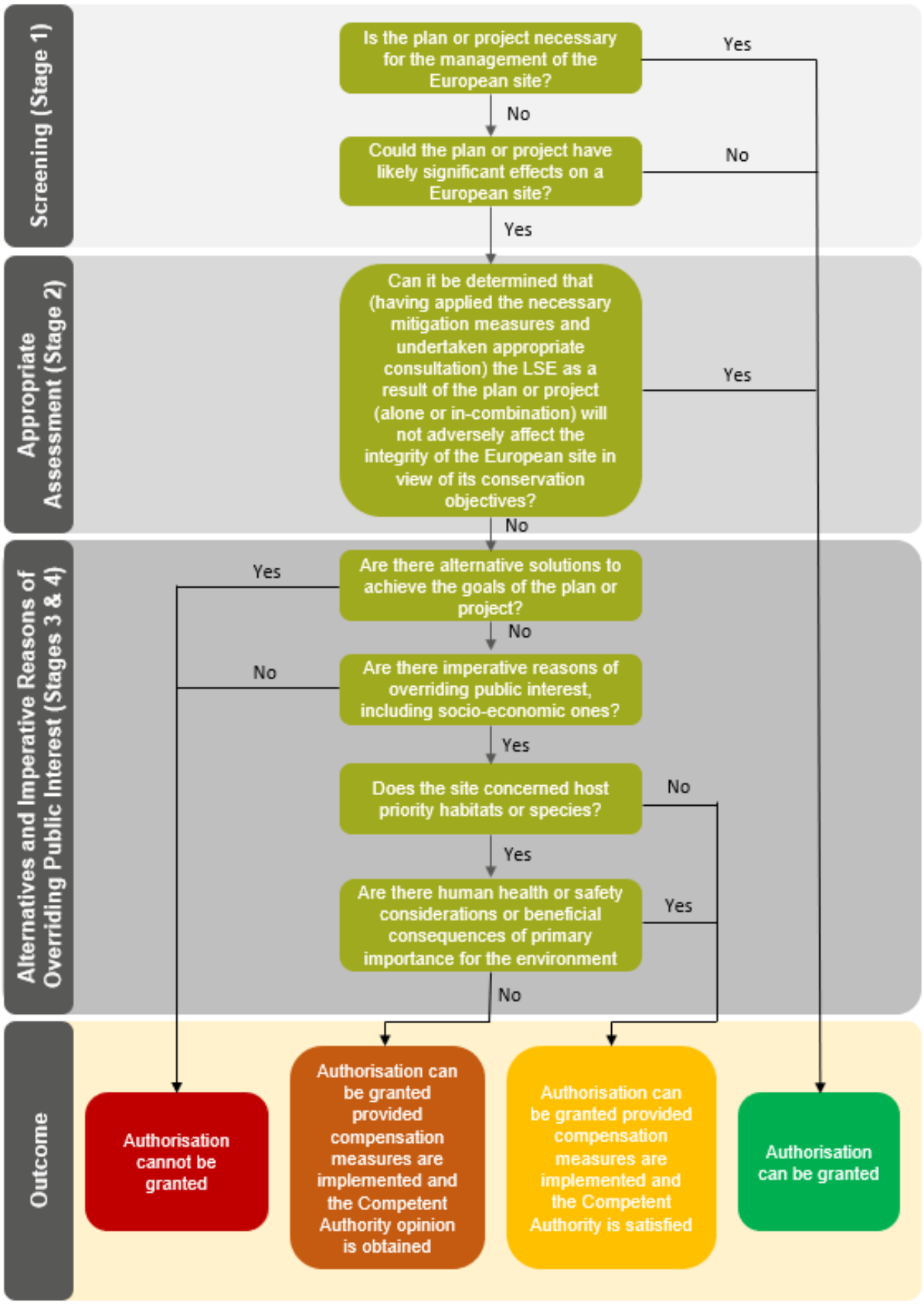



*Figure 2.1 Stages in the Habitats Regulations Appraisal Process*

** Although the United Kingdom is no longer part of the European Union, the approach presented here is still undertaken and is therefore applicable to this Likely Significant Effects Screening Report*

### 2.2.2 Stage 1 – Screening (This Document)

44. In Stage 1, European sites are screened for LSE. A 'likely' effect is one that cannot be ruled out on the basis of objective information. The test of significance is where a plan or project could undermine the site's conservation objectives (NatureScot, 2023). This will be undertaken for the WDA either alone or in-combination with other plans or projects. If it is determined that there is no potential for LSE to occur to the site's qualifying features, the site will be proposed to be 'screened out'. Evidence will be provided to demonstrate that there will be no LSE on the identified site. If the effect may cause LSE, or this is uncertain, Stage 2: AA will be implemented.

45. As outlined in the Habitats Regulations, an AA must be carried out on all plans and projects that are likely to have significant effects on European sites. The designations considered within this HRA Screening Report are:

- SPAs (some of which are also Ramsar sites);
- Potential/proposed SPAs - SPAs that are approved by the UK Government but are still in the process of being classified;
- SACs;
- Possible/proposed SACs - A site which has been identified and approved to go out to formal consultation;
- Candidate SACs – Sites that were submitted to the EC before the end of the Transition Period following the UK's exit from the EU, but not yet formally adopted by the UK government;
- Sites of Community Importance – Sites that were adopted by the EC before the end of the Transition Period following the UK's exit from the EU, but not yet formally designated by the government of each country; and
- Ramsar sites (protecting wetland areas and extend only to 'areas of marine water the depth of which at low tide does not exceed six metres').

46. In terms of the consideration of mitigation measures at the HRA Screening stage, the European Court of Justice issued a judgement in the People Over Wind and Sweetman case (Case C323/17) in April 2018, clarifying the stage in a HRA process when mitigation measures can be taken into account when assessing impacts on a European site. The ruling stated that "*it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site*". However, this does not mean that essential or intrinsic elements of the project design which could reduce or eliminate potential impacts on European sites when screening for LSE are to be ignored (see NatureScot, 2019). Examples of the intrinsic elements of a proposal which would not be considered a 'measure' and could be taken into account in screening would usually be related to design, location, layout or standard conditions. These 'embedded mitigation measures' are not specifically designed to avoid or reduce effects on a European site but do so incidentally.

47. As such, embedded mitigation measures are taken into account in this HRA Screening Report but mitigation measures which are specifically implemented to reduce or avoid effects on a European site are not. The embedded mitigation measures taken into account include standard industry practice and post-consent management plans for accidental release of hazardous substances, such as the Project's Environmental Management Plan, that would be in place regardless of the possible effects on European sites.

48. If there is an element of doubt about potential effects on qualifying features then the conclusion of "LSE" will be made, with progression to AA.

49. Stage 1 Screening is undertaken in this WDA HRA Screening Report, and the Applicant is seeking comment and feedback from relevant consultees on whether they agree with the proposed approach.

### 2.2.3 Stages 2 to 4 – Summary of Habitats Regulations Appraisal

50. Stages 2 to 4 of the HRA process comprise:

- **Stage 2 Appropriate Assessment** – for Stage 1 sites where LSE cannot be excluded, further information to inform a Stage 2 AA is prepared. This is commonly presented in a RIAA. The RIAA assesses the potential for the Project, alone or in-combination, to adversely affect the integrity of the screened in European site in view of its individual conservation objectives;
- **Stage 3 Assessment of Alternative Solutions** – Stage 3 will be implemented should avoidance or mitigation measures be unable to prevent adverse effects. It examines alternative ways of achieving the Project's objectives that avoid adverse effects on the integrity of European sites; and
- **Stage 4 Imperative Reasons of Overriding Public Interest** – where it cannot be ascertained that a plan or project will not adversely affect the integrity of a European site, and there are no alternative solutions, a plan or project can only proceed if there are Imperative Reasons of Overriding Public Interest (IROPI) for doing so. Where a plan or project is to proceed for IROPI, the Scottish Ministers have a duty to secure any compensatory measures necessary to ensure the overall coherence of the UK National Site Network is protected.

## 2.3 SCREENING METHODOLOGY

### 2.3.1 Approach to Identifying Sites and Features

51. To facilitate the identification of the European sites and features to be considered in this HRA screening report, an initial pre-screening of European sites and effects has been undertaken. This is considered an appropriate approach due to the scale of the Project and the extensive ranges of European site features which may be affected (marine mammals and birds).

52. The criteria adopted for the initial pre-screening of European sites are outlined in **Table 2.1**. This approach takes account of the location of the European sites (including Ramsar sites) in relation to the WDA, the anticipated Zone of Influence (ZoI) of potential effects associated with the WDA, and the ecology and distribution of qualifying features. The ZoI differs depending on the receptor and is described for Annex I Habitats, Annex II Diadromous Fish, Annex II Marine Mammals and Offshore Ornithology features in **Sections 4, 5, 6** and **7** respectively.

53. For pre-screening Criterion 1, initial consideration is given to whether there is a physical boundary overlap between the WDA and any European sites; with all overlapping sites screened in to be taken forward for determination of LSE.

54. Pre-screening Criterion 2 identifies any European sites, not already screened in using criterion 1, where there is an overlap between the WDA and the range of any qualifying mobile species of the European site. All sites where the WDA overlaps with the range of one (or more) features of a European site are taken forward for determination of LSE.

55. Pre-screening Criterion 3 identifies any European sites, not already screened in by criteria 1 or 2, where the predicted ZoI of the WDA overlaps with a European site and/or qualifying features of the site. For receptors associated with ornithology, consideration is also given to factors that inform the probable extent to which the different qualifying features will occur in the WDA.

*Table 2.1 Criteria for initial identification of European sites*

| Criterion | Definition for Identification of Relevant European Sites |
|---|---|
| 1 | The Windfarm Development Area (WDA) overlaps with one or more European or Ramsar site. |
| 2 | European or Ramsar sites with qualifying mobile features/species (e.g. Annex I birds, Annex II marine mammals, migratory fish) whose range (e.g. foraging, migratory, overwintering, breeding or natural habitat range) overlaps with the WDA. |
| 3 | European or Ramsar sites and/or qualifying interest features located within the potential Zone of Influence (ZoI) of effects associated with the WDA (e.g. habitat loss or disturbance, noise and collision risk). |

56. The types of effects associated with the WDA will vary in their magnitude and significance, depending on a range of factors including the technology type deployed, process involved and the location and timing of the activity. In respect of designated habitats and species populations, these effects may be direct (e.g. habitat loss associated with infrastructure installation) or indirect (e.g. via changes in water quality).

57. Screening is based on a conceptual 'source-pathway-receptor' approach:

- Source: the origin of a potential effect (noting that one source may have several pathways and receptors), e.g. piling;
- Pathway: the means by which the effect of the activity could impact a receptor, e.g. noise from piling; and
- Receptor: the element of the receiving environment that is impacted, e.g. marine mammals within direct range of the noise disturbance.

58. This approach identifies potential effects resulting from the proposed construction, Operation and Maintenance (O&M), and decommissioning of the WDA infrastructure. Where there is no pathway, or the pathway has sufficient distance such that the effect from the source has dissipated to a negligible level before reaching the receptor, there may be justification for the screening out of that particular receptor (i.e. qualifying feature) for the site in question.

59. Sites are screened in if, for any one of their qualifying features (i.e. a species or habitat), a source-pathway-receptor relationship and potential for LSE cannot be ruled out (including in-combination effects). Each qualifying feature of that site will be considered separately and it may be that the screening process rules out LSE for some features at this stage.

60. As described in **Section 2.2.2**, additional mitigation is not considered at this stage but will be considered where relevant in Stage 2 AA.

61. The approach to screening for each receptor is outlined in **Sections 4** to **7** and is based on the known distribution, ecology and sensitivities of each receptor group and therefore, the potential for them to be affected by the WDA. Where there is insufficient information available at this stage to screen out a site, the site is screened in for further consideration.

### 2.3.2 In-Combination Screening Methodology

62. The Habitats Regulations require that the potential effects of a project on designated sites are considered both alone and in-combination with other plans or projects.

63. Offshore plans or projects that may be considered include, but are not limited to:

- Other Offshore Windfarms (OWFs);
- Other renewables developments;
- Mariculture;
- Aggregate extraction and dredging;
- Licenced disposal sites;
- Shipping and navigation;
- Planned construction sub-sea cables and pipelines;
- Potential port/harbour development;
- Carbon capture storage;
- Oil and gas development and operation, including seismic surveys; and
- Unexploded Ordnance (UXO) clearance.

64. Discussions will be held with MD-LOT and other statutory and non-statutory consultees, including NatureScot, to identify any other relevant plans and projects that should be included. For each project, a review of all available information will take place and the current position with the plan or project will be identified.

65. Relevant in-combination effects from other plans or projects will be assessed using the following approach. This approach provides a list of criteria for types of other plans and projects that may be used to indicate the certainty that can be applied to each 'other existing development and/or approved development':

a) the incomplete parts of projects that have been started, but which are not yet completed;
b) projects given consent but not yet started;
c) projects that are subject to applications for consent;
d) projects that are subject to outstanding appeal procedures;
e) any known unregulated projects that are not subject to any consent;
f) ongoing projects subject to regulatory reviews, such as discharge consents or waste management licences;
g) development that has recently been completed, but where any residual effects may not form part of the environmental baseline;
h) policies and proposals that are not yet fully implemented in plans that are still in force; and
i) draft plans that are being brought forward by other public bodies and agencies.

66. All other relevant plans or projects that are publicly available six months prior to submission of the WDA application will be considered in the in-combination assessment.

# 3 PROJECT DESCRIPTION SUMMARY

67. This section provides a summary description of the project design as defined at HRA Screening stage. A detailed project description is provided in **Chapter 3 Project Description** of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024) and is not repeated here.

68. The WDA is shown **Figure 1.1** and its key characteristics summarised in **Table 3.1**.

*Table 3.1 Windfarm Development Area parameters summary*

| Parameters | Values |
|---|---|
| Windfarm Development Area (WDA) area (km) | 510 |
| WDA closest distance to shore (km) | 12 |
| Water depth (Lowest Astronomical Tide (LAT) Metres (m)) | 28.6-89.6 |
| Indicative operational life (years) | 35 |

69. The WDA is expected to comprise the following infrastructure components:

- Up to 147 Wind Turbine Generators (WTGs) on fixed foundations;
- If required, scour protection for foundation structures supporting the WTGs; and
- If required, external cable protection for IAC cables.

70. WTG foundations will comprise of fixed foundation options. The project design envelope does not include options for floating WTGs. It is possible that more than one type of foundation could be used across the WDA. The following foundation design options are currently being considered for WTGs:

- Monopiles;
- Jackets on pin piles;
- Jackets on suction buckets; and
- Gravity base structure.

71. Based on the likely WTGs available at the time the Project enters construction, a project design envelope has been established at this stage which includes both (i) 147 of the smallest WTGs under consideration as well as (ii) 88 of the largest WTGs under consideration. This ensures that the impact assessment is undertaken on a range of WTGs which could reasonably be expected to be deployed. The final selection of WTGs will be made once further surveys, technical development and engagement with the supply chain have been undertaken with the final decision being made post-consent. **Table 3.2** provides indicative design parameters for the WTGs. Further design details of the WTGs will be provided in the RIAA.

*Table 3.2 General design envelope parameters: Wind Turbine Generators*

| Parameters | Wind Turbine Generator (WTG) Parameters | |
|---|---|---|
| | Smallest | Largest |
| Maximum number of WTGs | 147 | 88 |
| Maximum rotor diameter (m) | 236 | 316 |
| Maximum rotor swept area per WTG ($m^2$) | 43,774 | 78,427 |
| Maximum blade tip height (m Lowest Astronomical Tide (LAT)) | 260 | 340 |
| Maximum blade tip height (m Mean Sea Level (MSL) | 258 | 338 |
| Minimum blade clearance (Air Gap) (m HAT) | 22.45 | 22.45 |

72. The maximum hammer energy for WTG monopile foundations is assumed to be 6,600 Kilojoules (kJ) and for pin piles is 4,400 kJ.

# 4 SITES DESIGNATED FOR ANNEX I HABITATS

73. This section details the results of the process to identify European/Ramsar sites with qualifying Annex I habitat features to be taken forward for determination of LSE.

74. The approach used to identify European sites with relevant Annex I habitat qualifying features to be carried forward for further assessment is detailed below. This is based on the methodology outlined in **Section 2.3**.

75. Criterion 1 relates to the potential for overlaps of the WDA with one or more European/Ramsar site. There is no potential for impacts from the WDA to directly affect any SAC designated for Annex I habitat features, with the closest site situated approximately 34.3 km east of the WDA (i.e. Firth of Lorn SAC designated for reefs, see **Table 8.6** and **Figure 8.4** in **Chapter 8 Benthic Ecology** of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024)). Therefore, no sites or Annex I habitats are screened in based on criterion 1.

76. Criterion 2 relates to the potential for overlaps of the WDA with the ranges of qualifying mobile species of one or more European/Ramsar site. There are no European sites which meet Criterion 2 for relevant qualifying Annex I habitats, as Annex I habitats do not contain mobile features. Therefore, no sites are screened in based on Criterion 2.

77. Criterion 3 relates to the potential for one or more European/Ramsar site and/or their qualifying features to be located within the potential ZoI of impacts associated with the WDA. The ZoI for indirect effects is typically defined from the outputs of the physical processes modelling to determine, for example, the fate of suspended sediments during the construction process. At this stage of the Project, physical processes modelling has not yet been undertaken and therefore, the ZoI has been 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 (**Figure 8.4** in **Chapter 8 Benthic Ecology** of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024)). As noted above, the nearest SAC is the Firth of Lorn SAC located 34.3 km east of the WDA. Therefore, there are no European sites which meet criterion 3 for Annex I habitats and no sites have been screened in.

# 5 SITES DESIGNATED FOR ANNEX II DIADROMOUS FISH

78. This section details the results of the process to identify European sites with qualifying Annex II fish and shellfish features to be taken forward for determination of LSE.

79. The approach used to identify European sites with relevant Annex II diadromous fish qualifying features to be carried forward for further assessment is detailed below. This is based on the methodology outlined in **Section 2.3.**

80. Based on experience from recent OWF projects, the greatest impact ranges from OWF projects on fish and shellfish result from underwater noise, specifically noise produced by pile driving, but also seabed preparation, dredging, rock berm installation, UXO clearance, cable installation, vessel presence and operational WTG sound. Worst-case impact ranges resulting from underwater noise modelling for large diameter monopiles (behavioural disturbance or Temporary Threshold Shifts (TTS)) on recent UK projects has never resulted in impact ranges of more than 70 km (see **Appendix H NCMPA Screening** of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024) for further details on ZoI). On this basis, there is no potential for impacts from the WDA to directly affect any SAC designated for fish or shellfish species. The closest site is situated 79.7 km from the WDA (i.e. Loch Creran SAC designated for Horse mussel *(Modiolus modiolus)* beds, see **Table 9.7** in **Chapter 9 Fish (Including Basking Shark) and Shellfish Ecology** of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024)). Therefore, no sites or fish/shellfish species are screened in based on criterion 1. This leaves a remaining potential for the WDA to impact on migratory diadromous fish species (Atlantic salmon *(Salmo salar)*, Sea trout *(Salmo trutta)*, Sea lamprey *(Petromyzon marinus)*, River lamprey *(Lampetra fluviatilis)*, European eel *(Anguilla Anguilla)*) as they move into the ZoI of the WDA during migrations to, or from, a SAC that they form part of a designated population (criterion 2 and 3) (the nearest SAC designated for diadromous fish is Endrick Water SAC 119.5 km east of the WDA).

82. However, based on feedback provided on other projects (e.g. Broadshore Hub (MD-LOT, 2024)), it is the current position of NatureScot and MD-LOT, that the at-sea migrations of Annex II diadromous fish species are not well enough understood to enable apportioning of at-sea individuals to any SAC, thereby a HRA for these species is not possible. Potential impacts on diadromous fish will instead be considered as part of EIA (see **Chapter 9 Fish (including Basking Shark) and Shellfish** of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024). This position was confirmed during the WDA Scoping Workshop held on 01 May 2024 (see **Chapter 9** of the Scoping Report for further details). The Applicant agrees with this position, and also agrees with NatureScot and MD-LOT that impacts from the WDA on diadromous fish can be screened out of the HRA, based on current best evidence.

83. Therefore, no sites or Annex II fish and shellfish species are screened in based on Criterion 2 and 3.

# 6 SITES DESIGNATED FOR ANNEX II MARINE MAMMALS

## 6.1 APPROACH TO SCREENING

84. Direct or indirect effects on Annex II marine mammal species may arise from activities relating to the construction, O&M, or decommissioning phases of the WDA and associated infrastructure.

85. This HRA screening exercise considers sites which meet the following criteria as described in **Section 2.3**:

- Criterion 1: The WDA overlaps with one or more European or Ramsar site;
- Criterion 2: European or Ramsar sites with qualifying mobile features/species (e.g. Annex II marine mammals) whose range (e.g. foraging or natural habitat range) overlaps with the WDA; and
- Criterion 3: European or Ramsar sites and/or qualifying interest features located within the potential area of effects associated with the WDA (e.g. underwater noise disturbance).

86. The ZoI for marine mammals HRA Screening is defined as follows:

- 100 km for Special Areas of Conservation (SACs) designated for harbour porpoise (*Phocoena phocoena*);
- 20 km for SACs designated for breeding grey seal (*Halichoerus grypus)* or 100 km if the SAC is designated for grey seal foraging activity; and
- 50 km for SACs designated for breeding harbour seal *(Phoca vitulina)* or 100 km if the SAC is designated for harbour seal foraging activity.

## 6.2 CONSULTATION

87. To date, consultation with respect to marine mammals has been undertaken as part of a marine mammals Expert Topic Group (ETG) with ETG Meeting 1 held on 04 December 2023. ETG members include NatureScot, MD-LOT, Marine Directorate – Science, Evidence, Digital and Data (MD-SEDD), Department of Agriculture, Environment and Rural Affairs (DAERA) and Islay Natural History Trust. MD-LOT and MD-SEDD were unable to attend the first meeting, however relevant documents produced for the ETG and meeting minutes were provided to these organisations. The ETG aimed to agree the relevance, appropriateness and sufficiency of baseline data, key issues for marine mammals to be considered, and the approach to assessment. Further consultation was undertaken with NatureScot following this ETG through written correspondence.

88. In addition, a Scoping Workshop was held on 01 May 2024 which provided the opportunity for the Applicant to present its proposed approach to HRA Screening and to seek feedback from stakeholders. Feedback received has been incorporated into this HRA Screening and, where appropriate, will inform development of the RIAA.

89. **Table 6.1** sets out consultation matters relevant to HRA screening alongside the Applicant's response.

*Table 6.1 Consultation relevant to Habitats Regulations Appraisal screening for marine mammals*

| Consultee | Key Comment/Discussion Topic | Applicant Response |
|---|---|---|
| **Expert Topic Group (ETG) Meeting 1 - 04 December 2023** | | |
| Department of Agriculture, Environment and Rural Affairs (DAERA) | DAERA highlighted that the North Channel Special Area of Conservation (SAC) and the Maidens SAC can be screened out of the Habitats Regulations Appraisal (HRA) as they are greater than 100 km from the Windfarm Development Area (WDA) and the qualifying features of these would already be assessed as part of the HRA. | Noted. All Northern Ireland designated sites have been screened out if they are further than 100 km from the WDA. |
| NatureScot | NatureScot enquired how the designated sites were identified for screening and whether these would be all the sites shown. NatureScot indicated that the distance data for the designated sites need to be reviewed as there appeared to be errors in the distances presented. | Noted, all distances have been checked and recalculated where required (**Table 6.2**). |
| NatureScot | NatureScot enquired whether the Project had considered SAC's designated for otters. | As noted below, later consultation with NatureScot determined that otter would be considered as part of the terrestrial ecology screening. |
| **NatureScot advice following MachairWind Marine Mammals ETG Meeting 1 on 04 December 2023 in addition to NatureScot advice on the Approach to Assessment document that was circulated in advance of the ETG meeting** | | |
| NatureScot | Regarding designated sites screening for grey seals, we advise screening in sites for assessment if the project site/impact radius is within 20 km of the SAC. For harbour seals, we advise screening sites in for assessment if the project site/impact radius is within 50 km of the SAC. However, for both species, we appreciate the use of telemetry data and while this could provide evidence of seals travelling through the proposed development site, we are content for seal SACs to be screened out unless there is evidence of hotspots or regular foraging areas within the project boundary. We advise the use of Sea Mammal Research Unit (SMRU) telemetry data, particularly from the Islay Skerries. | Within this HRA screening report, the final screened in sites are based on advice received from DAERA and NatureScot; sites within 100 km are included to account for harbour porpoise and for foraging ranges of seals (**Table 6.2**). Also see the Applicant's response on this point under *'Scoping Workshop comments'* in this table. |
| NatureScot | For cetaceans, we are generally content with the screening approach. We are content that designated sites within the Management Unit (MU) of each species of marine mammal are considered and agree that everything within 100 km is included for screening purposes. Once impact pathways, coverage and connectivity are better understood, we would be content for additional sites to be screened out, following appropriate justification and communication between the Applicant and NatureScot. | The initial screening for designated sites for cetacean species (harbour porpoise and bottlenose dolphin *(Tursiops truncates)*) will be based on both their relevant MUs, and a distance of 100 km. All sites within that range will be further screened based on known movements and potential areas of effect. |
| NatureScot | For impacts during Operation and Maintenance (O&M), NatureScot confirmed that direct Electro-Magnetic Field (EMF) effects on marine mammals could be scoped out of the assessment with only indirect effects of EMF on prey species being required to be assessed in the HRA. | Direct EMF effects on marine mammals has been scoped out, however EMF effects on prey species is Screened in (see **Table 6.3**). |

| Consultee | Key Comment/Discussion Topic | Applicant Response |
|---|---|---|
| NatureScot | Whilst there is a small resident population of bottlenose dolphins in the Sound of Barra, they are not a designated feature for this SAC. | Noted. Only harbour seal is a feature of the Sound of Barra SAC which has been screened out of the HRA (**Section 6.3**). |
| NatureScot | For Northern Ireland sites, these should be discussed with DAERA. | The Applicant notes that DAERA are a member of the ETG for marine mammals and will continue to be consulted throughout the Environmental Impact Assessment (EIA).<br><br>During ETG Meeting 1 (04 December 2023), DAERA noted that some harbour porpoise SACs could be screened out as they are further than 100 km from the WDA. A 100 km screening distance has been used for Northern Ireland SACs with marine mammals as qualifying features. |
| NatureScot | Furthermore, we briefly discussed sites designated for otter during the meeting and took an action to feedback on screening distances. We have considered this action further and advise that otters *(Lutra lutra)* should be covered by the onshore sections of the Scoping Report and subsequent Environmental Impact Assessment Report (EIAR). As such, advice should be sought from onshore colleagues / stakeholders. | Noted. Otters will be considered within the onshore Scoping Report and EIAR. |
| **Scoping Workshop 01 May 2024** | | |
| NatureScot | NatureScot's advice on the screening of designated sites for seals was 20 km for grey seal and 50 km for harbour seal, as 20 km is appropriate for grey seal because sites designated for grey seal are in respect of breeding colonies when they do not forage over greater distances. For harbour seal these are not exclusively breeding colonies (i.e., also foraging) hence the larger distance. SMRU telemetry data should be available for Machair. | Acknowledged. Given the advice that these distances be used to screen in any sites that are within that distance of the impact radius of the Project (i.e. for grey seals, this would be 20km plus the maximum predicted effect range), an initial screening distance of 100km has been used within this HRA Screening report. Once the potential effect ranges of the Project are known (i.e. once the underwater noise modelling has been completed), this screening will be refined based on the 20km and 50km screening distances advised. |
| NatureScot | For in-combination effects, geophysical surveys should be added in. | Geophysical surveys will be included in the in-combination assessment of the Report to Inform Appropriate Assessment. |
| **23 May 2024: Scoping Workshop written feedback** | | |
| NatureScot | NatureScot agree with the SAC's proposed to be screened into the assessment. | Acknowledged. |

## 6.3 IDENTIFICATION OF SITES AND FEATURES

90. Two cetacean species (harbour porpoise and bottlenose dolphin) and two seal species (grey seal and harbour seal) are present in UK waters and are listed in Annex II of the Habitats Directive. These species are therefore afforded protection through the designation of SACs.

91. In addition, all species of cetacean occurring in UK waters are listed in Annex IV of the Habitats Directive as European Protected Species (EPS), which prohibits the deliberate killing, disturbance or the destruction of these species or their habitat. EPS are considered further in the WDA EIA Scoping Report (**Chapter 10 Marine Mammals** of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024).

92. The following Annex II marine mammal species are considered likely to be present in the vicinity of the WDA, and are considered in this HRA Screening Report:

- Harbour porpoise;
- Grey seal; and
- Harbour seal.

93. Although bottlenose dolphin is an Annex II listed species, there is no SAC designated for bottlenose dolphin within the Inner and Outer Hebrides, therefore this species is not considered further.

94. The following sections describe the process used to define the list of SACs for which there is possible connectivity and therefore potential for a source – pathway – receptor relationship for marine mammal qualifying SAC features, i.e. harbour porpoise (**Section 6.3.1**), grey seal (**Section 6.3.2**) and harbour seal (**Section 6.3.3**) in line with the criteria set out in **Section 6.1**. No designated sites for marine mammals overlap with the WDA, and therefore, no sites have been screened in on the basis of Criterion 1.

### 6.3.1 Harbour Porpoise

95. Harbour porpoise are the most common cetacean in UK waters, are resident in Scottish waters all year round, and are found mainly in coastal areas, shallow bays, estuaries, sea lochs, tidal channels and occasionally up rivers. Harbour porpoises appear to favour the continental shelf but may make seasonal movements to the coast often connected with the feeding of calves in shallower waters in early summer.

96. The Inter-Agency Marine Mammal Working Group (IAMMWG) defined three MUs for harbour porpoise: North Sea; West Scotland (WS); and the Celtic and Irish Sea (CIS). The WDA is located in the WS MU (**Figure 6.1**), which has an estimated abundance of 24,305 individuals within the UK portion (Coefficient of Variation = 0.18; 95% Confidence Interval = 17,121-34,505) (IAMMWG, 2023). The boundary with the CIS MU is arbitrary (**Figure 6.1**), therefore there will be an interchange of animals in between the WS and CIS MU (IAMMWG, 2023). For that reason, it is important to include in the HRA, SACs in both MU's (WS and CIS MU) where harbour porpoise is a qualifying species as connectivity is possible between WDA and the designated sites in both MU's.

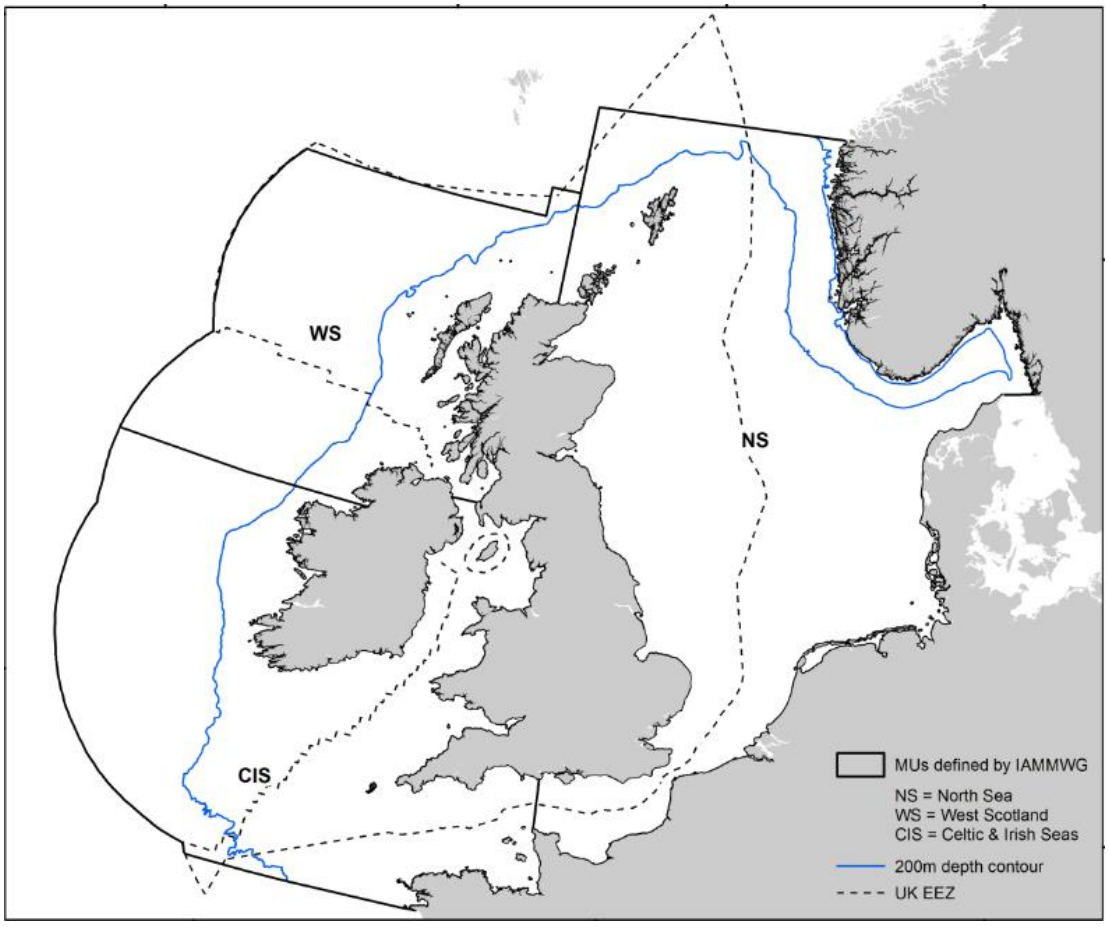



*Figure 6.1 Management Units of harbour porpoise*

97. Small Cetaceans in the European Atlantic and the North Sea (SCANS)-IV reported an estimated abundance of 24,699 individuals (95% Confidence Limit = 14,626 - 38,996), although only partial coverage of this MU was achieved in the SCANS-IV survey.

98. Harbour porpoise were frequently detected in the Project's site-specific Digital Aerial Surveys (DAS) (30 months from April 2021 to September 2023), and were the second most common species after common dolphin. The results from the Project's DAS provide a peak total number of 165 individuals and an average density of 0.031 harbour porpoise per $km^2$. The highest density estimate was recorded in spring with 0.253 harbour porpoise per $km^2$. During the site-specific geophysical surveys, no harbour porpoises were detected.

99. This HRA screening considers any designated sites within the harbour porpoise WS and CIS MUs, where the species is considered as a Grade A, B or C feature (Joint Nature Conservation Committee; JNCC, 2009), and further screened based on the distance to the WDA. These represent populations equivalent to the following:

- Grade A: excellent representativity;
- Grade B: good representativity; and
- Grade C: significant representativity.

100. Grade D indicates a non-significant population and has therefore not been considered further.

101. Within the WS MU, the following SACs are present (**Figure 6.2**):

- Inner Hebrides and the Minches SAC; and
- Skerries and Causeway SAC.

102. Within the CIS MU, the following SACs are present:

- North Channel SAC;
- North Anglesey Marine SAC;
- West Wales Marine SAC; and
- Bristol Channel Approaches SAC.

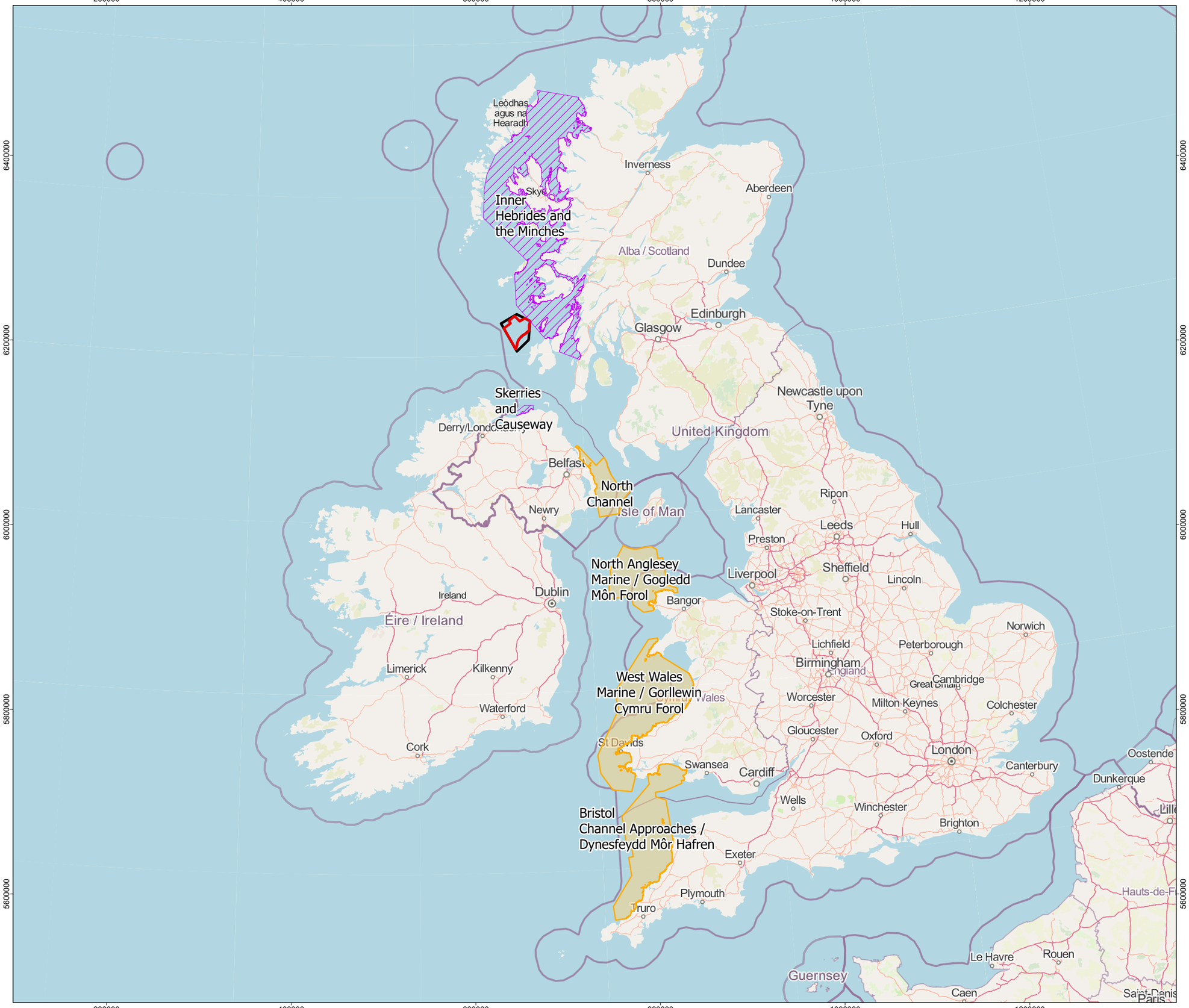
103. As noted in **Table 6.1**, a distance of 100 km is used to determine the initial list of screened in SACs for harbour porpoise. Applying this screening distance (to the WDA) results in the following list of SACs for initial screening:

- Inner Hebrides and the Minches SAC; and
- Skerries and Causeway SAC.

104. Harbour porpoise is a qualifying feature of the Inner Hebrides and Minches SAC; which comprises an area of 13,807.99 $km^2$. It is the only designated site for harbour porpoise in Scottish waters and is categorised as Grade A due to the population size. The Inner Hebrides and the Minches SAC was identified as being within the top 10% of persistent high density areas for harbour porpoise in UK waters during the summer season (Heinänen & Skov, 2015) and it incorporates virtually all of the top 20% of harbour porpoise density derived using data presented in Booth et al. (2013) and some areas that were in the top 50% (SNH, 2016). The site has a regular presence of harbour porpoise, with calves being recorded regularly by the Hebridean Whale and Dolphin Trust (Hebridean Whale and Dolphin Trust unpublished). It is estimated (based on the SCANS-II survey which took place in July 2005 only) that the site supports approximately 5,438 individuals (95% Confidence Interval: 2,426-12,191) for at least part of the year, as seasonal differences are likely to occur, and represents approximately 32% of the population within the UK part of the WS MU (in water depths of 200 Metres (m) or less). As these numbers have come from a one-month survey in a single year it cannot be considered as a specific population number for the site (Hall et al., 2016). The Inner Hebrides and Minches SAC is approximately 0.8 km from the WDA and therefore has been **screened into** the HRA (**Table 6.2**).

105. Harbour porpoise is a qualifying species for the Skerries and Causeway SAC which is located on the north coast of Northern Ireland covering 0.1 $km^2$. It is the eastern part of a 30 km wide embayment that has the Inishowen peninsula to the west and Benbane Head towards the east. The warming gulf stream along with strong tidal current makes this area rich in rare and priority species (Pothanikat and Breen, 2017). Harbour porpoise are resident in the SAC all year round, with a continuous presence and is graded A for harbour porpoise population (excellent representivity). The Skerries and Causeway SAC is approximately 62 km from the WDA, therefore the site has been **screened into** the HRA (**Table 6.2**).

This page is intentionally blank




Windfarm Development Area

Option Agreement Area

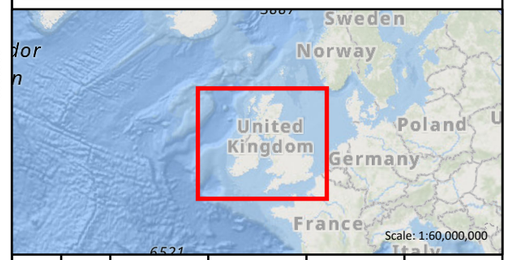
Screened in SACs for harbour porpoise

Screened out SACs for harbour porpoise

N

0 25 50 100 150

Kilometres




| REV | REV DATE | GIS CREATOR | GIS REVIEWER | TECHNICAL CHECKER | TECHNICAL APPROVER |
|---|---|---|---|---|---|
| 1 | 15/05/2024 | MT | AB | CB | PB |

| | | | |
|---|---|---|---|
| DRAWING NUMBER | MCW-GEN-GIS-MAP-RHS-000056 | | |
| DATUM | ETRS89 | PROJECTION | UTM Zone 29N |
| SCALE | 1:4,000,000 | PAGE SIZE | A3 |
| PROJECT TITLE | MachairWind | | |

**Figure 6.2: Screening of Harbour porpoise Special Areas of Conservation**



Royal HaskoningDHV
Enhancing Society Together

ScottishPower Renewables

This page is intentionally blank

### 6.3.2 Grey Seal

106. Approximately 36% of the world's grey seals breed in the UK, and 81% of these breed at colonies in Scotland with main concentrations in the Outer Hebrides. Grey seals are wide ranging and can breed and forage in different areas (Russell and McConnell, 2014).

107. Grey seals will typically forage in the open sea and return regularly to land to haul-out. Foraging trips generally occur within 100 km of their haul-out sites, although grey seal can travel up to 448 km to forage (SCOS, 2022; Carter et al., 2022).

108. In the UK, there are 14 seal MU's (IAMMWG, 2013; SCOS, 2022) (**Figure 6.3**), as well as five regions in the Republic of Ireland. The WDA is within the WS MU as described in **Chapter 10 Marine Mammals** of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024).

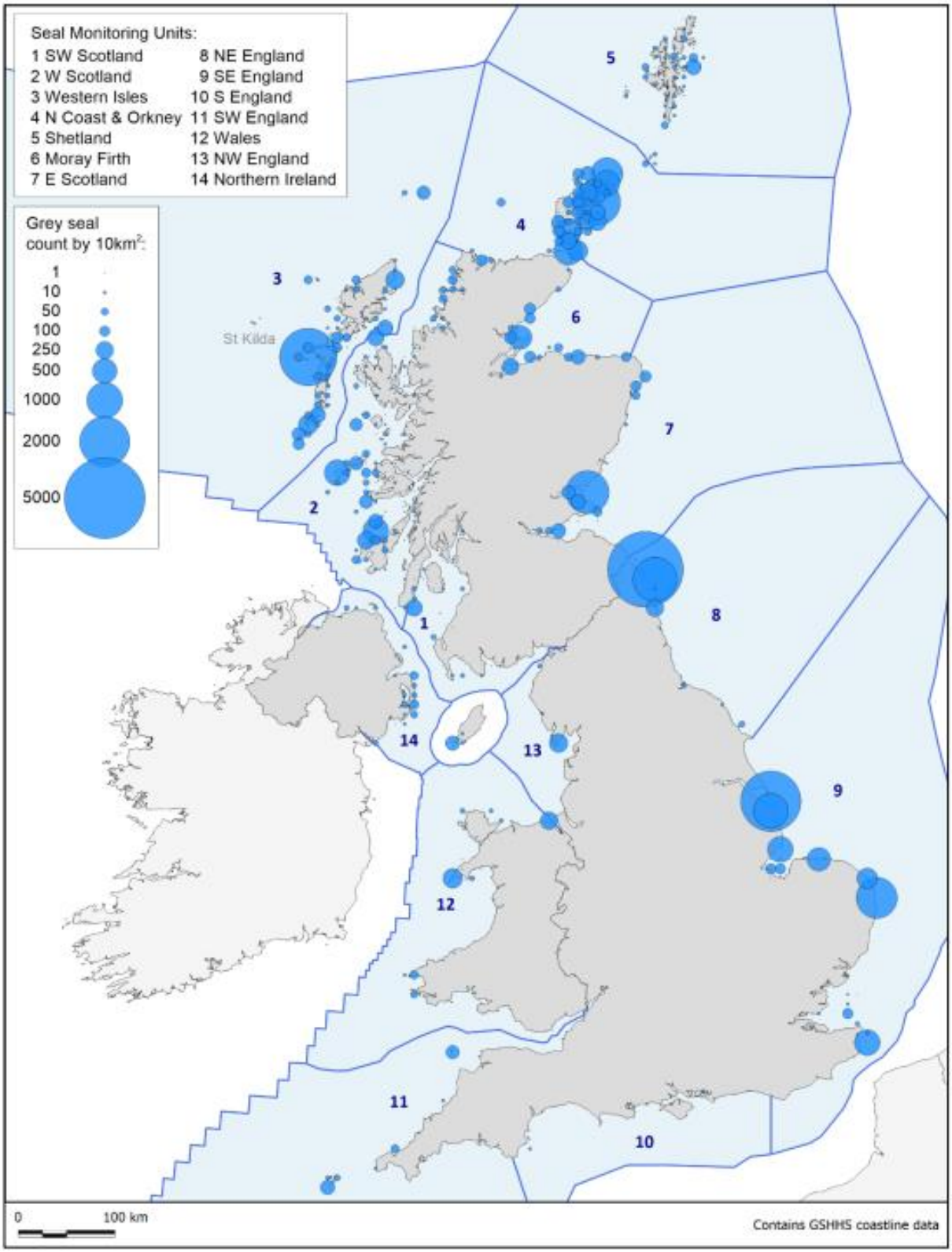



*Figure 6.3 Seal Management Units for the United Kingdom coast and grey seal counts*

109. For designated sites where grey seal is a qualifying feature, this is most likely due to it being an important breeding site for grey seal. Therefore, for any SACs screened in, consideration will be given to the differences in grey seal distributions during their breeding and non-breeding seasons. Consideration will be given to the potential for effects on grey seals that may be foraging at-sea and effects to grey seals that may be hauled-out, and the increased sensitivities at certain times of the year (e.g. increased sensitivity to disturbance at haul-out sites during the breeding season).

110. To take into account the wide range and movements of grey seal, all designated sites where grey seal is a qualifying feature in the WS MU, Southwest Scotland MU, Western Isles (WI) MU, and the Northern Ireland MUs, alongside the Republic of Ireland North and West regions were initially considered. All designated sites outside this region were screened out from further consideration due to distance and a lack of evidence of connectivity. For grey seal, the screening process includes any designated site where the species is a Grade A, B or C feature.

111. Within the WS MU, the following SACs are present: (**Figure 6.4**)

- Treshnish Isles SAC.

112. Within the WI MU, the following SACs are present:

- Monach Islands SAC.

113. Within the Northern Ireland MU, the following SACs are present:

- The Maidens SAC.

114. Within the Republic of Ireland North and West regions, the following SACs are present:

- Horn Head and Rinclevan SAC;
- Slieve Tooey/Tormore Island/Loughros Beg Bay SAC;
- Inishkea Islands SAC;
- Duvillaun Islands SAC;
- Inishbofin and Inishshark SAC; and
- Slyne Head Islands SAC.

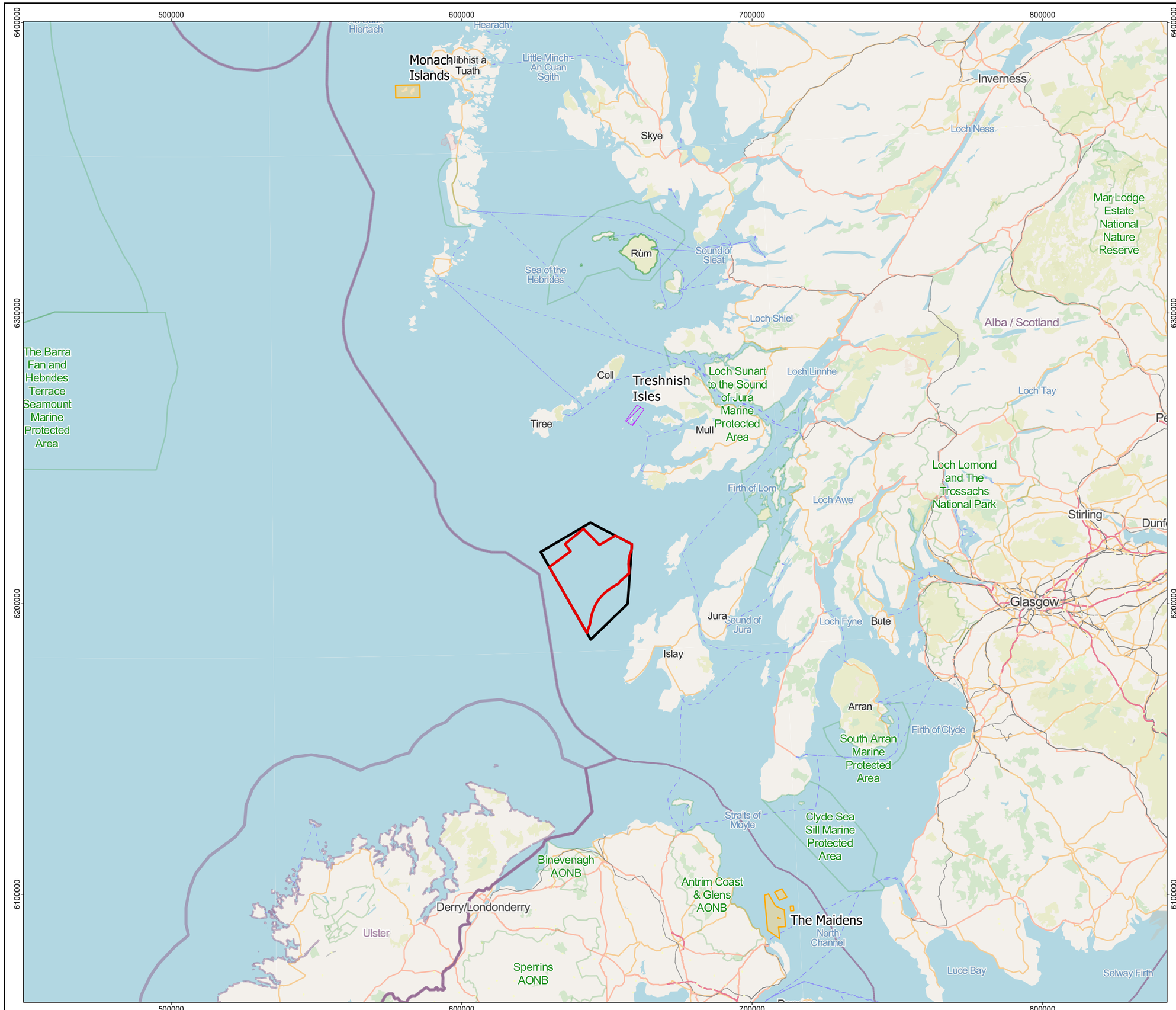
115. North Rona is also located within the WI MU, however, due to its distance from the WDA (of 341km), this site is not considered within the initial screening.

116. As noted in **Table 6.1**, a distance of 100 km is used to determine the initial list of screened in SACs for seal species. Applying this screening distance (to the WDA) results in the Treshnish Isles SAC being **screened into** the HRA for grey seal, and the Monach Islands SAC and The Maidens SAC both being **screened out**. Given the distance to North Rona, this SAC is not considered further.

117. Of the listed Republic of Ireland SACs designated for grey seal, Horn Head and Rinclaven SAC is the closest at 103 km from the WDA; therefore, no Republic of Ireland SAC are considered further within this initial screening, and all are **screened out**. This initial screening will be updated to take account of NatureScot advice following determination of the WDA's potential effect ranges.

The Treshnish Isles SAC is approximately 35 km north of the WDA at its closest point and is 2.42 $km^2$. The Treshnish Isles are a remote chain of uninhabited volcanic islands and skerries situated in WS. The islands, abundant skerries, islets and reefs support a breeding colony of grey seals, which supports up to 3% of annual UK pup production, equating to 1,100 pups per year (JNCC, 2024b). As an important area for grey seal and within vicinity of WDA, the Treshnish Isles SAC has been **screened into** the HRA (**Table 6.2**). Given the distance to this SAC, it is likely that the Treshnish Isles SAC will remain **screened into** the HRA following the update in line with NatureScot advice (see response in **Table 6.1**).

This page is intentionally blank




| REV | REV DATE | GIS CREATOR | GIS REVIEWER | TECHNICAL CHECKER | TECHNICAL APPROVER |
|---|---|---|---|---|---|
| 1 | 15/05/2024 | MT | AB | CB | PB |

| | |
|---|---|
| DRAWING NUMBER | MCW-GEN-GIS-MAP-RHS-000057 |
| DATUM | ETRS89 |
| PROJECTION | UTM Zone 29N |
| SCALE | 1:1,250,000 |
| PAGE SIZE | A3 |
| PROJECT TITLE | MachairWind |

**Figure 6.4 Screening of Grey seal Special Areas of Conservation**



NOT TO BE USED FOR NAVIGATION

Royal HaskoningDHV
Enhancing Society Together

ScottishPower Renewables

Project: C:\Users\304634\OneDrive - Royal HaskoningDHV\WIP\PC3479 Team\PC3479 - WIP\E02 GIS & Drawings\F02_Figures\02_Scoping\WindFarmSite\HRA\HRA.aprx
Name: MCW-GEN-GIS-MAP-RHS-000057 Screening of Grey seal SACs

This page is intentionally blank

### 6.3.3 Harbour Seal

118. Harbour seals are wide-ranging around the west coast of Scotland and throughout the Hebrides and Northern Isles. The SMRU, in collaboration with others, deployed telemetry tags on harbour seals around the UK. The spatial distributions indicate harbour seals persist in discrete regional populations, display heterogeneous usage, and generally stay within 50 km of the coast (Russell and McConnell, 2014). Tagged harbour seals were observed to have a more coastal distribution compared to grey seals and do not travel as far from haul-outs (Russell and McConnell, 2014).

119. Harbour seals generally make smaller foraging trips than grey seal. The typical and average foraging range for harbour seal is 50-80 km (SCOS, 2022). Tracking studies have shown that harbour seals travel 50-100 km offshore and can travel up to 273 km on foraging trips (Carter et al., 2022). The range of these trips varies depending on the location and surrounding marine habitat.

120. As described in **Section 6.3.2**, there are 14 Seal MUs (**Figure 6.5**). Genetic analysis of harbour seals around the UK and continental Europe (Carroll et al*.,* 2020) found there to be two metapopulations within Europe; one being the southern population (incorporating the South-East England MU and continental Europe) and one being the northern population (including all other UK MUs). Within the northern population itself, there was also genetic differences between most of the MUs, except for between the WS and WI MU, and between the North Coast Scotland & Orkney and Moray Firth MUs. This genetic analysis also revealed movement of harbour seal from the WS MU to the Southwest Scotland MU and the WI MU (Carroll et al*.,* 2020). Pup-tracking data indicated a higher degree of connectivity between the seal MUs and local populations compared with non-pups; in total 26% moved between seal MUs, of which 19% changed local population (Carroll et al*.,* 2020).

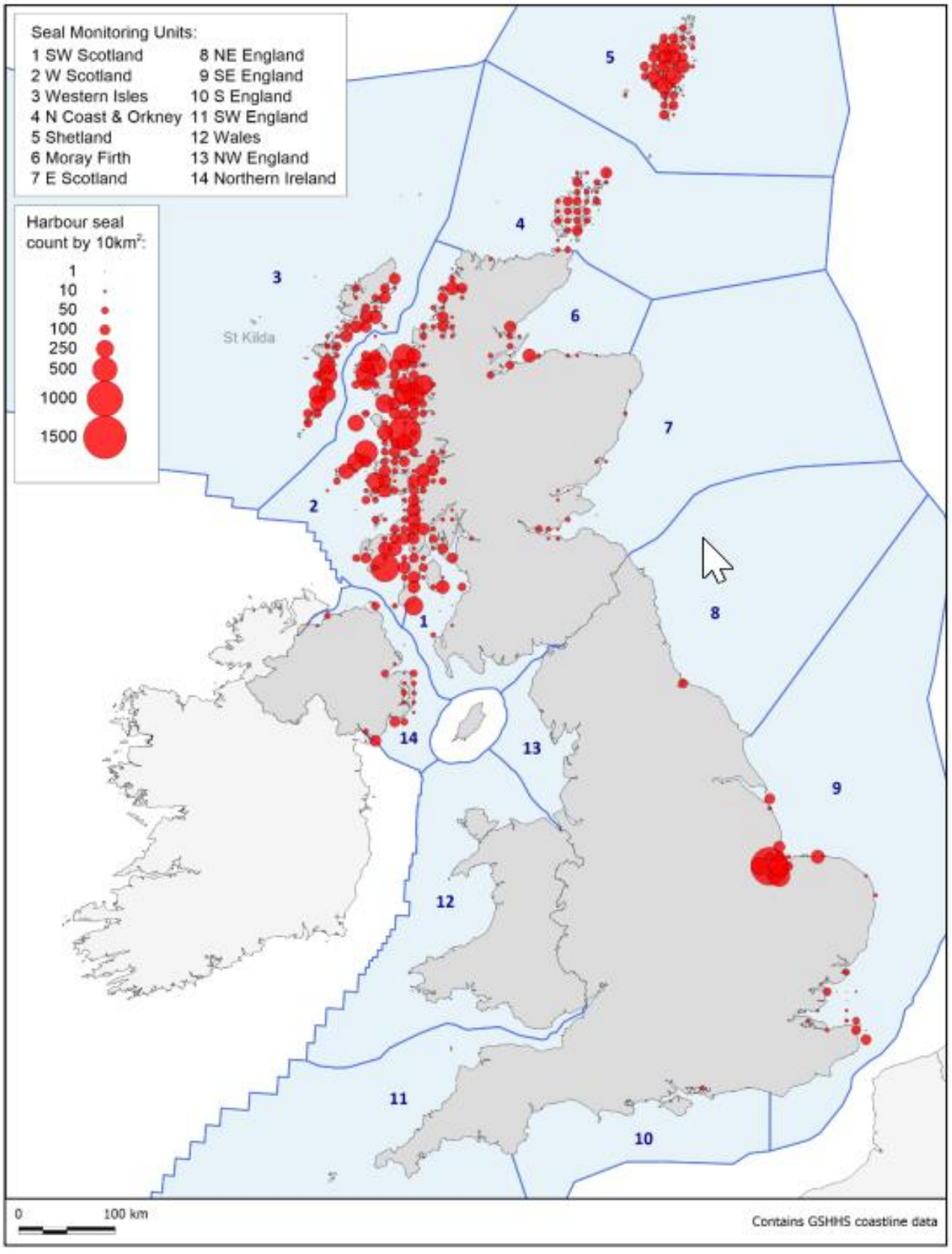



*Figure 6.5 Seal Management Units for the United Kingdom coast and harbour seal counts*

121. To take account of the wide range and movements of harbour seal, all designated sites where harbour seal are a qualifying feature in the Inner and Outer Hebrides were initially considered. All designated sites outwith this region were screened out from further consideration as there was no recorded connectivity between the harbour seals at these sites and the WDA. For harbour seal, the screening process includes any designated site where the species is a Grade A, B or C feature.

122. Harbour seals could come from any of the designated sites considered to have potential connectivity. As a result, any potential effects to harbour seal will be assessed based on them being from a designated site with potential connectivity, and that they have travelled away from the site(s) in order to forage.

123. Within the WS MU, the following SACs are present:

- South-East Islay Skerries SAC;
- Eileanan agus Sgeiran Lios mor SAC; and
- Ascrib, Isay and Dunvegan SAC.

124. Within the WI MU, the following SACs are present:

- The Sound Barra SAC.

125. **Figure 6.6** shows all of the SACs **screened in** for harbour seals.

126. As noted in **Table 6.1** a distance of 100 km is used to determine the initial list of screened in SACs for seals. Applying this screening distance (to the WDA) results in the following list of SACs for initial screening:

- South-East Islay Skerries SAC; and
- Eileanan agus Sgeiran Lios mor SAC.

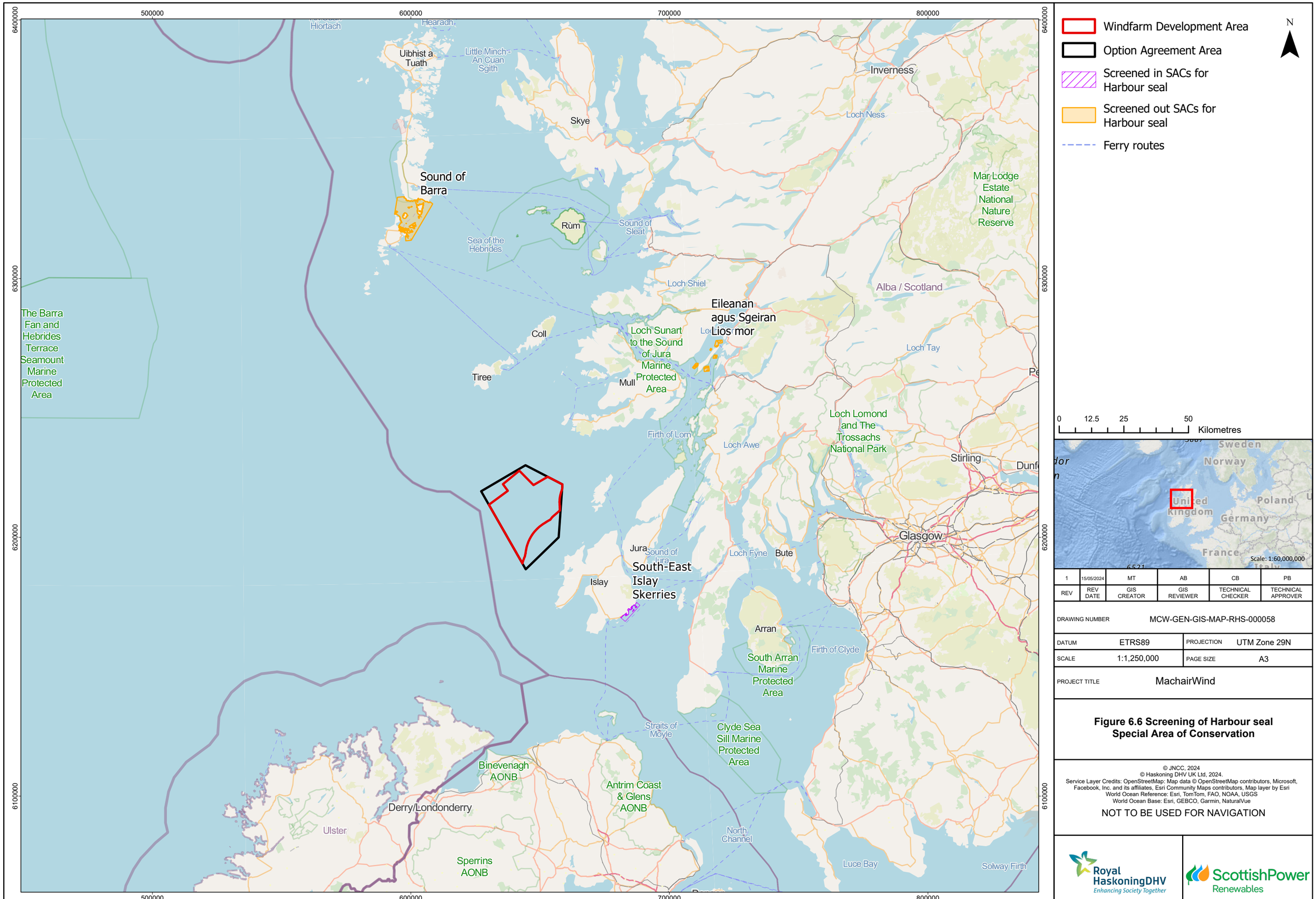
127. Harbour seal is a qualifying feature of the South-East Islay Skerries SAC, where harbour seal utilises the islands and skerries for pupping in June to August and moulting as well as resting haul-out sites. The SAC supports up to 600 harbour seal, representing up to 2% of the UK population (JNCC, 2024c). The last count of harbour seal in the South-East Islay Skerries SAC was 706 in 2018 (SCOS, 2019) which was 35% lower than previous counts in 2015, and the overall contribution to the WS MU has also remained stable between 10-14% throughout, suggesting that the SAC is a good indicator of overall harbour seal numbers (NatureScot, 2020).

128. South-East Islay Skerries SAC is approximately 58.5 km from the WDA at its closest point and therefore has been **initially screened into** the HRA (**Table 6.2**). Given the distance to this SAC, it is likely that the South-East Islay Skerries SAC will remain **screened into** the HRA following the update in line with NatureScot advice (see response in **Table 6.1**).

129. The Eileanan agus Sgeiran Lios mor SAC provides a sheltered and enclosed sites for harbour seal, representing just over 1% of the UK population and the seals are present all year round (JNCC, 2024d). Within the Eileanan agus Sgeiran Lios mor SAC, harbour seal numbers have remained fairly stable. The survey results from 2009 to 2018 suggest there may be a decline, however, this is likely to be down to natural fluctuations, due to movements between other nearby haul-out sites (Morris *et al*., 2021).

130. The Eileanan agus Sgeiran Lios mor SAC is approximately 83 km from the WDA at its closest point and therefore has been initially **screened into** the HRA (**Table 6.2**). Given the distance to this SAC, there is potential that the Eileanan agus Sgeiran Lios mor SAC could be either screened in or out of the HRA following the update in line with NatureScot advice (see response in **Table 6.1**), depending on the Projects' specific effect ranges.

This page is intentionally blank




| REV | REV DATE | GIS CREATOR | GIS REVIEWER | TECHNICAL CHECKER | TECHNICAL APPROVER |
|---|---|---|---|---|---|
| 1 | 15/05/2024 | MT | AB | CB | PB |

| | |
|---|---|
| DRAWING NUMBER | MCW-GEN-GIS-MAP-RHS-000058 |
| DATUM | ETRS89 |
| PROJECTION | UTM Zone 29N |
| SCALE | 1:1,250,000 |
| PAGE SIZE | A3 |
| PROJECT TITLE | MachairWind |

**Figure 6.6 Screening of Harbour seal Special Area of Conservation**



NOT TO BE USED FOR NAVIGATION

Royal HaskoningDHV
Enhancing Society Together

ScottishPower Renewables

Project: C:\Users\304634\OneDrive - Royal HaskoningDHV\WIP\PC3479 Team\PC3479 - WIP\E02 GIS & Drawings\F02_Figures\02_Scoping\WindFarmSite\HRA\HRA.aprx
Name: MCW-GEN-GIS-MAP-RHS-000058 Screening of Harbour seal SACs

This page is intentionally blank

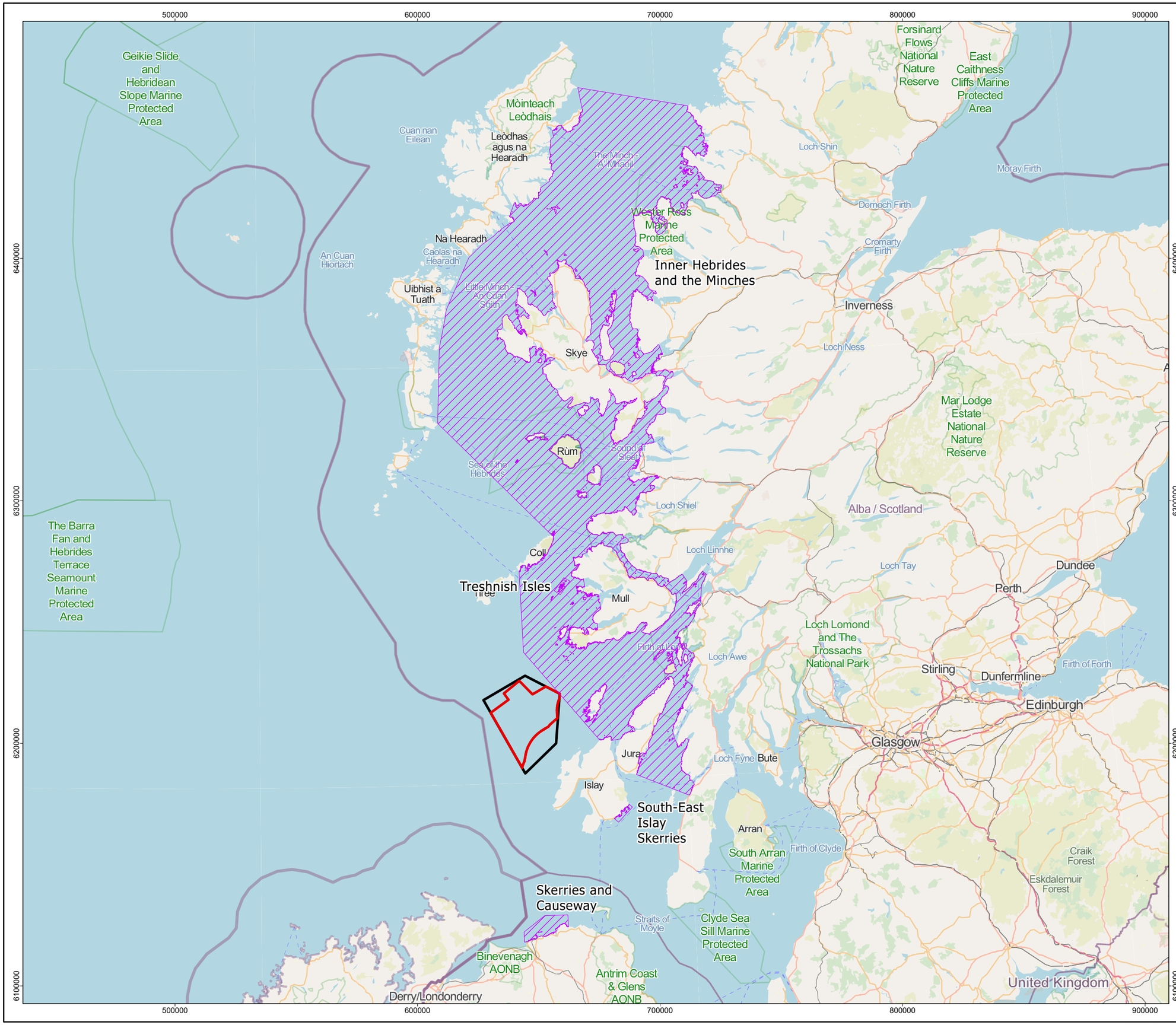
### 6.3.4 Summary of Annex II Marine Mammals Site Screening

131. **Table 6.2** summarises the SACs that have been screened into the HRA. At this stage, three SACs have been screened out due to the distance from WDA. All SACs to be screened in are presented in **Figure 6.7**.

*Table 6.2 Summary of designated sites to be screened in or screened out of the Habitats Regulations Appraisal*

| Designated Site | Qualifying feature(s) | Closest distance from Windfarm Development Area (WDA) (km) | Screened in (✓) or screened out (×) |
|---|---|---|---|
| Inner Hebrides and the Minches Special Areas of Conservation (SAC) | Harbour porpoise | 0.8 | ✓ |
| Treshnish Isles SAC | Grey seal | 35 | ✓ |
| South-East Islay Skerries SAC | Harbour seal | 58.5 | ✓ |
| Skerries and Causeway SAC | Harbour porpoise | 62 | ✓ |
| Eileanan agus Sgeiran Lios mor SAC | Harbour seal | 83 | ✓ |
| Horn Head and Rinclevan SAC | Grey seal | 103 | × |
| The Maidens SAC | Grey seal | 110 | × |
| Sound of Barra SAC | Harbour seal | 111 | × |
| North Channel SAC | Harbour porpoise | 124 | × |
| Ascrib, Isay and Dunvegan SAC | Harbour seal | 155 | × |
| Slieve Tooey/Tormore Island/Loughros Beg Bay SAC | Grey seal | 177 | × |
| Monach Islands SAC | Grey seal | 188 | × |
| Inishkea Islands SAC | Grey seal | 292 | × |
| Duvillaun Islands SAC | Grey seal | 300 | × |
| Inishbofin and Inishshark SAC | Grey seal | 351 | × |
| Slyne Head Islands SAC | Grey seal | 372 | × |

This page is intentionally blank




Windfarm Development Area

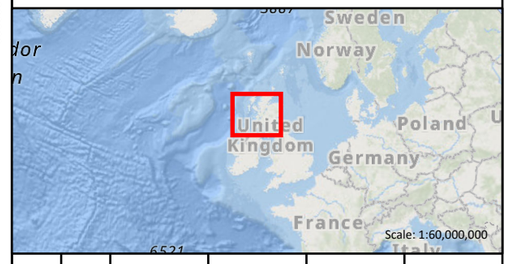
Option Agreement Area

Proposed marine mammal SACs to be screened into the HRA

Ferry routes

N

0 12.5 25 50 Kilometres




| REV | REV DATE | GIS CREATOR | GIS REVIEWER | TECHNICAL CHECKER | TECHNICAL APPROVER |
|---|---|---|---|---|---|
| 1 | 15/05/2024 | MT | AB | CB | PB |

| | |
|---|---|
| DRAWING NUMBER | MCW-GEN-GIS-MAP-RHS-000059 |
| DATUM | ETRS89 |
| PROJECTION | UTM Zone 29N |
| SCALE | 1:1,500,000 |
| PAGE SIZE | A3 |
| PROJECT TITLE | MachairWind |

**Figure 6.7 Proposed marine mammal SACs to be screened into the HRA**



Royal HaskoningDHV Enhancing Society Together

ScottishPower Renewables

This page is intentionally blank

## 6.4 PATHWAYS FOR LSE

132. Direct or indirect effects to marine mammals may arise from the permanent or temporary physical presence of the project and / or activities relating to the construction, O&M or decommissioning of the WDA infrastructure. Potential effects include indirect effects, for example through impacts on prey species, and direct effects, for example from underwater noise and vessel interactions.

133. The key factors considered during the HRA screening process are:

- Potential effects (source); and
- Proximity of source to feature (i.e. the distance between the potential effects and marine mammals from designated sites) (pathway and receptor).

134. A range of potential impacts on marine mammal receptors may occur during the construction, O&M and decommissioning phase of the WDA. These are described below, together with a justification for the conclusion regarding the potential for LSE.

135. The potential impacts on marine mammals during construction are described in **Chapter 10 Marine Mammals** of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024) and presented in **Table 6.3**.

This page is intentionally blank

*Table 6.3 Potential impacts screened in or screened out for marine mammals.*

| Potential Impact | Project Phase* Screened In (✓) / Screened Out (x) | | | Justification |
|---|---|---|---|---|
| | C | O&M | D | |
| Changes to water quality | ✘ | ✘ | ✘ | During the construction phase of the Project, the potential changes in water quality could occur through:<br>• Deterioration in water quality due to an increase in suspended sediment associated with seabed preparation for the installation of foundations and cables;<br>• Deterioration in water quality due to an increase in suspended sediment concentrations due to drill arisings for installation of piled foundations for Wind Turbine Generator (WTGs) and Offshore Substation Platforms (OSPs); and<br>• Deterioration in water quality associated with release of sediment bound contaminants.<br>The increases in suspended sediments and the risk of accidental release of contamination during construction has the potential to impact marine mammals, and their prey. The potential for water quality changes will be determined in the marine geology, oceanography, and physical processes chapters of the Windfarm Development Area (WDA) Environmental Impact Assessment Report (EIAR), including the best practice and management measures that would be put in place. Any changes to water quality would be localised and short lived, and the potential for any impacts from changes in water quality on marine mammals is not expected to be significant. Potential impacts on marine mammals related to changes in water quality during construction are **screened out** of the Habitats Regulations Appraisal (HRA).<br>As described in **Chapter 6 Marine Physical Environment** of the WDA Environmental Impact Assessment (EIA) Scoping Report (Royal HaskoningDHV, 2024), contaminants survey data collected across the Option Agreement Area (OAA) shows that the seabed sediments within the 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.<br>Therefore, any changes to water quality during all Project phases would be localised and short lived, and the potential for any effects from changes in water quality on marine mammals is not expected to have the potential for Likely Significant Effects (LSE) and is therefore **screened out** of the HRA. |
| Direct Electro-Magnetic Field (EMF) Effects | ✘ | ✘ | ✘ | Subsea electrical cabling produces EMFs which have the potential to affect marine mammals both directly and indirectly (i.e. through prey interaction pathways). This particularly relates to non-buried cables (either dynamic Inter-Array Cable(s) (IACs) in the water column, or cables laid directly on the seabed). The Project will use fixed WTG foundations and therefore EMFs from dynamic IACs in the water column would not occur. Additionally, unburied cables would very likely be covered with external cable protection which would attenuate EMFs. Studies indicate that magnetic fields decrease rapidly with vertical and horizontal distance from subsea cables, and that the reduction is greater the deeper cables are buried (Normandeau et al., 2011).<br>Although it is assumed that marine mammals are capable of detecting small differences in magnetic field strength, this is unproven and is based on circumstantial information. There is also, at present, no evidence to suggest that existing subsea cables influence cetacean movements, and there are no regulatory thresholds or guidelines that define acceptable levels of EMF emissions into the marine environment (Copping et al., 2020).<br>For impacts during O&M, NatureScot confirmed during the scoping workshop on 01 May 2024 that direct EMF effects on marine mammals could be scoped out of the EIA with only indirect effects of EMF on prey species being required to be assessed (see **Table 6.1**).<br>Therefore, the direct effects of EMF on marine mammals have been **screened out** as it is not expected to be significant and therefore, not considered to have the potential for LSE. However, as a precautionary approach, the potential for EMF to affect marine mammal prey resources is screened in (see below). |
| Barrier effects (Physical presence of the WDA infrastructure) | N/A | ✘ | N/A | The presence of the WDA infrastructure could be perceived as having the potential to create a physical barrier, preventing movement or migration of marine mammals between important feeding and/or breeding areas, or potentially increasing swimming distances if marine mammals avoid the site and go round it.<br>Tagged harbour seals have been recorded within two operational Offshore Windfarms (OWFs) (Alpha Ventus in Germany and Sheringham Shoal in UK), with the movement of several of the seals suggesting foraging behaviour around WTG fixed foundation structures (Russell and McConnell, 2014).<br>Therefore, the potential for a barrier effect from the physical presence of the WDA infrastructure is not expected to have the potential for LSE and is therefore **screened out** of the HRA. |

| Potential Impact | Project Phase* Screened In (✓) / Screened Out (x) | | | Justification |
|---|---|---|---|---|
| | C | O&M | D | |
| Underwater noise during construction:<br>• Unexploded Ordnance (UXO) clearance;<br>• Impact pile driving;<br>• Other construction activities; and**<br>• Increased vessel activity. | ✓ | ✘ | ✘ | Underwater noise modelling will be undertaken by Subacoustech Environmental Ltd. The underwater noise modelling will include modelling for auditory injury Permanent Threshold Shift (PTS) and Temporary Threshold Shift (TTS). The potential for disturbance will be assessed using dose response curves as described in **Section 10.3** of **Chapter 10 Marine Mammals** of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024). It is proposed that the potential effect ranges for PTS and TTS will be based on the Southall et al., (2019) metrics and criteria.<br>The underwater noise modelling for piling will provide the range and area of the potential effects for each species group. The maximum predicted effect areas, based on the worst-case scenario, will be used to estimate the potential number of individuals that could be affected, based on the species or Special Areas of Conservation (SAC) density estimates. The number of individuals of each species that could be affected will be considered as a proportion of the appropriate reference population (i.e. SAC population for seals).<br>For other construction activities and vessels, it should be noted that the potential for auditory injury may be later ruled out on the basis of underwater noise modelling results, which are expected to show extremely localised areas of potential effect.<br>Underwater noise during construction activities could have the potential to create a barrier effect preventing movement or migration of marine mammals between important feeding and/or breeding areas, or potential increased swimming distances if marine mammals avoid the area and go around it. Barrier effects can prevent harbour porpoise accessing foraging areas and grey and harbour seal as they move in-between haul-out sites. The dose response curve assessments will use the most appropriate density estimate for wider-scale effects (e.g. either Waggitt et al., 2019 or Gilles et al., 2023 for harbour porpoise, and the SAC specific Carter et al., 2022 density estimates for both seal species). The disturbance assessment for other activities and vessels will be based on a literature review of potential effect ranges and areas and will be undertaken quantitively wherever possible.<br>A Marine Mammal Mitigation Protocol will be produced to reduce the risk of permanent auditory injury (PTS) in marine mammals from both UXO clearance and impact piling (see **Section 10.8** of **Chapter 10 Marine Mammals** and of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024)).<br>It is important to note, if there is the potential for significant disturbance to result in a population-level effect, then alternative mitigation options will be considered, and a European Protected Species (EPS) license application submitted.<br>All underwater noise related effects, as discussed above, are considered to have the potential for LSE and are therefore **screened into** the HRA for the construction phase. |
| Underwater noise from O&M Operational noise from WTGs:<br>• O&M preventive and corrective activities underwater, such as surveys, repairs, IAC re-burial (if buried) and any additional rock placement; and<br>• O&M vessel activity. | ✘ | ✓ | ✘ | Underwater noise modelling will be undertaken to determine the potential effects on marine mammals during the above activities and will include modelling for auditory injury. For all underwater noise sources during the operational phase, the potential for auditory injury may be later ruled out based on underwater noise modelling results which are expected to show extremely localised areas of potential effect.<br>The disturbance assessment for all potential noise sources during O&M will be based on a literature review of potential effect ranges and areas and will be undertaken quantitively wherever possible.<br>All underwater noise related effects, as discussed above, are considered to have the potential for LSE and are therefore **screened into** the HRA for the operation and maintenance phase. |
| Underwater noise during decommissioning:<br>• Decommissioning activities underwater, such as foundation removal, cutting etc; and<br>• Decommissioning vessel activity. | ✘ | ✘ | ✓ | During the decommissioning phase, there is a potential risk of auditory injury or behaviour disturbance from noise associated with foundation removal (e.g. cutting) depending on the methods used. Underwater noise modelling will be undertaken to determine the risk of auditory injury.<br>Potential impacts on marine mammals associated with decommissioning will be assessed, based on the potential impacts during construction; however, further assessment will be carried out ahead of any decommissioning works taking account of known information at that time, including all relevant guidance and legislation.<br>All underwater noise related effects, as discussed above, are considered to have the potential for LSE and are therefore **screened into** the HRA for the decommissioning phase. |
| Barrier effects due to underwater noise | ✓ | ✓ | ✓ | Underwater noise during construction, O&M and decommissioning could have the potential to create a barrier effect preventing movement or migration of marine mammals between important feeding and/or breeding areas, or potential increased swimming distances if marine mammals avoid the area and go around it.<br>The marine mammal species that could potentially be most affected by barrier effects from underwater noise are harbour porpoise accessing foraging areas, baleen whales and dolphin species if they are moving between areas, and grey and harbour seal as they move to and from haul-out sites.<br>Harbour porpoise have relatively high daily energy demands and need to capture enough prey to meet daily energy requirements. It has been estimated that, depending on the environmental conditions, harbour porpoise can rely on stored energy (primarily blubber) for three to five days, depending on body condition (Kastelein et al., 1997). Underwater noise during construction could have the potential to create a barrier effect, preventing movement or migration of grey and harbour seals between important feeding and / or breeding areas, or potentially increasing swimming distances if seals avoid the site and go around it.<br>Therefore, the potential for barrier effects which could restrict access to foraging areas and could have implications for individual animals are considered to have the potential for LSE and are therefore **screened into** the HRA for all phases. |

| Potential Impact | Project Phase* Screened In (✓) / Screened Out (x) | | | Justification |
|---|---|---|---|---|
| | C | O&M | D | |
| Vessel interaction (increase in risk of collision) | ✓ | ✓ | ✓ | An increase in vessel presence during the construction phase could lead to a potential increase in the risk of vessel collision. The risk of vessel collision is associated with the vessels within the WDA, as well as those vessels in transit to and from site. Despite the potential for marine mammals to detect and avoid vessels, ship strikes are known to occur (Wilson et al., 2007; Schoeman et al., 2020).<br><br>Vessel best practice measures such as the Scottish Marine Wildlife Watching Code (SNH [now NatureScot], 2017) approach will be followed where safe to do so to minimise the risk of disturbance, by reducing vessel transit speeds and by maintaining speed and course when in the presence of marine mammal species. This code will be followed for all vessels transiting to and from the WDA.<br><br>The assessment of the potential effect of vessel interaction will take into account the type and number of vessels to be used during the construction, O&M and decommissioning period and the potential collision risk associated with those vessels. A literature review will be undertaken to determine the sensitivity of each marine mammal species to vessel collisions (and their ability to avoid vessels), alongside a review of the risk of collision due to the type, size, and speed of vessels associated with the Project.<br><br>The increase in vessel movements during all phases of the Project will be put into the context of current vessel movements in and around the WDA.<br><br>The increased risk of vessel interaction (collision risk) with marine mammals during all phases has the potential for LSE and has therefore been **screened into** the HRA for all phases, taking into account the most recent and robust research, guidance and information available. |
| Disturbance at seal haul-out sites | ✓ | ✓ | ✓ | Seal haul-out sites are coastal locations that seals use to breed, moult and rest. Almost 200 seal haul-out sites have been designated through The Protection of Seals (Designation of Haul-Out Sites) (Scotland) Order 2014 which was amended with additional sites in 2017 (**Figure 6.8**). These haul-out sites are protected under Section 117 of the Marine (Scotland) Act 2010. The Act is designed to assist in protecting the seals when they are at their most vulnerable, and as such provide additional protection from intentional or reckless harassment.<br><br>Disturbance from vessel transits to and from the WDA and with the construction, O&M and decommissioning ports (yet to be determined) has the potential to disturb seals at haul-out sites, depending on the route and proximity to the haul-out sites.<br><br>The likelihood of increased vessels near to the locations of nearby seal haul-out sites will be used to determine the level of potential disruption and behavioural impact caused to the seals. Expert judgement will be made using current scientific knowledge. A literature review of the latest research and evidence of disturbance at seal haul-out sites will be undertaken to determine the potential magnitude and sensitivity of effect.<br><br>The worst-case duration of construction vessel movement to and from the WDA will be assessed. The increase in vessel movements during construction will be put into the context of current vessel movements in and around the Inner and Outer Hebrides.<br><br>As the port(s) for all phases of the Project is not yet known, the potential for any disturbance of seals at or from seal haul-out sites during all phases (due to vessel transits) has the potential for LSE and has been **screened into** the HRA for all phases. Only seals at haul-out sites with potential connectivity to the relevant designated site will be considered and assessed, taking into account the most recent and robust research, guidance and information available. |
| Changes to prey resources | ✓ | ✓ | ✓ | **Chapter 9 Fish (Including Basking Shark) and Shellfish Ecology** of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024) outlines the potential impacts on fish species and therefore the prey resource for marine mammals during construction.<br><br>The potential for any changes to marine mammal prey resources during all phases is currently unknown and therefore has the potential for LSE and has been **screened into** the HRA for all phases. Assessments will be based on the assessments in the fish (including basking shark) and shellfish ecology chapter of the EIAR. |
| *C, O&M, D = Construction, Operation and Maintenance and Decommissioning respectively<br><br>** Where there is limited information available on the potential for disturbance from other construction activities, underwater noise thresholds for TTS / fleeing response may be used as a proxy. | | | | |

Windfarm Development Area

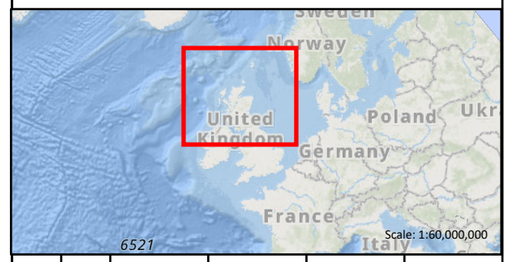
Option Agreement Area

Seal haul outs sites

N

0 25 50 100 150

Kilometres




| 1 | 15/05/2024 | MT | AB | CB | PB |
|---|---|---|---|---|---|
| REV | REV DATE | GIS CREATOR | GIS REVIEWER | TECHNICAL CHECKER | TECHNICAL APPROVER |

| | |
|---|---|
| DRAWING NUMBER | MCW-GEN-GIS-MAP-RHS-000033 |
| DATUM | ETRS89 |
| PROJECTION | UTM Zone 29N |
| SCALE | 1:3,500,000 |
| PAGE SIZE | A3 |
| PROJECT TITLE | MachairWind |

**Figure 6.8 Protected seal haul out sites**



NOT TO BE USED FOR NAVIGATION

Royal HaskoningDHV
Enhancing Society Together

ScottishPower Renewables

### 6.4.1 Potential for In-Combination Effects (All Phases)

136. The in-combination assessment will consider plans or projects where their predicted effects have the potential to interact with effects from the proposed construction, O&M or decommissioning of the Project.

137. Screening of the plans and projects will be based on whether:

- They are located in the relevant marine mammal MU; and
- There is the potential for connectivity and a clear pathway for the in-combination effect and marine mammals from the designated sites, e.g. the distance between the potential effect and a designated site with marine mammals as a qualifying feature is within the range for which there could be an interaction.

138. The marine mammal in-combination assessment will consider projects, plans and activities which have sufficient information available to undertake the assessment, and will include the potential effects of:

- Underwater noise;
- Vessel interaction (collision risk);
- Disturbance to seal haul-outs; and
- Changes to prey resources.

139. The approach to identifying projects for potential in-combination assessment with the Project will be agreed in consultation with Statutory Nature Conservation Bodies.

### 6.4.2 Potential for Transboundary Effects (All Phases)

140. Populations of marine mammals are highly mobile and there is potential for transboundary effects especially when considering underwater noise impacts.

141. Transboundary effects will be assessed, where possible, in consultation with developers in the Republic of Ireland to obtain up to date project information to feed into the assessment.

142. The potential for transboundary effects will be addressed by considering the marine mammal MU's and potential linkages to international designated sites as identified through telemetry studies for seals and ranges and movements of cetacean species.

143. The assessment of the effect on the integrity of the transboundary European sites as a result of effects on the designated marine mammal populations will be undertaken and presented in the RIAA.

### 6.4.3 Summary of Likely Significant Effect Screening

144. A summary of the potential impacts during construction, O&M and decommissioning is presented in **Table 6.4**.

*Table 6.4 Summary of potential effects on marine mammals screened in or out of the Habitats Regulations Appraisal*

| Potential Impact | Project Phase* | | |
|---|---|---|---|
| | C | O&M | D |
| Auditory injury (Permanent Threshold Shift (PTS) / Temporary Threshold Shift (TTS)) resulting from underwater noise | ✓ | ✓ | ✓ |
| Behavioural impacts resulting from underwater noise | ✓ | ✓ | ✓ |
| Disturbance from vessels due to the presence and underwater noise | ✓ | ✓ | ✓ |
| Barrier effects from underwater noise | ✓ | ✓ | ✓ |
| Vessel interaction (collision risk) | ✓ | ✓ | ✓ |
| Disturbance at seal haul-out sites | ✓ | ✓ | ✓ |
| Barrier effects due to the physical presence of Windfarm Development Area (WDA) infrastructure | ✗ | ✗ | ✗ |
| Changes to prey resources | ✓ | ✓ | ✓ |
| Direct Electro-Magnetic Field (EMF) effects | N/A | ✗ | N/A |
| Changes to water quality | ✗ | ✗ | ✗ |
| In-combination effects | ✓ | ✓ | ✓ |
| Transboundary impacts | ✓ | ✓ | ✓ |
| * Screened in (✓) or screened out (×), C = Construction, O&M = Operation and Maintenance, D = Decommissioning | | | |

## 6.5 SUMMARY OF SCREENING OF SITES FOR ANNEX II MARINE MAMMAL FEATURES

145. In total, five SACs (**Figure 6.6**) have been screened in for further assessment to determine the potential for any adverse effects on the integrity of the European sites in relation to the conservation objectives, as a result of the WDA alone or in-combination with other projects and activities (**Table 6.5**). These are:

- Inner Hebrides and the Minches SAC (harbour porpoise);
- Skerries and Causeway SAC (harbour porpoise);
- Treshnish Isles SAC (grey seal);
- South-East Islay Skerries SAC (harbour seal); and
- Eileanan agus Sgeiran Lios mor SAC (harbour seal).

*Table 6.5 Likely significant effect matrix for designated sites where marine mammals are a qualifying feature*

| Site and Qualifying Feature of the Site | Underwater Noise (All Potential Sources) | | | Vessel Interaction (Collision Risk) | | | Disturbance at Seal Haul-Out Sites | | | Changes in Prey Availability | | | Changes in Water Quality | | | In-Combination Effects | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C* | O&M | D | C | O&M | D | C | O&M | D | C | O&M | D | C | O&M | D | C | O&M | D |
| Inner Hebrides and the Minches Special Areas of Conservation (SAC) **(Screened In)** | | | | | | | | | | | | | | | | | | |
| Harbour** porpoise | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | N/A | N/A | N/A | ✓ | ✓ | ✓ | × | × | × | ✓ | ✓ | ✓ |
| Skerries and Causeway SAC **(Screened In)** | | | | | | | | | | | | | | | | | | |
| Harbour porpoise | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | N/A | N/A | N/A | ✓ | ✓ | ✓ | × | × | × | ✓ | ✓ | ✓ |
| Treshnish Isles SAC **(Screened In)** | | | | | | | | | | | | | | | | | | |
| Grey seal | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | × | × | × | ✓ | ✓ | ✓ |
| South-East Islay Skerries SAC **(Screened In)** | | | | | | | | | | | | | | | | | | |
| Harbour seal | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | × | × | × | ✓ | ✓ | ✓ |
| Eileanan agus Sgeiran Lios mor SAC **(Screened In)** | | | | | | | | | | | | | | | | | | |
| Harbour seal | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | × | × | × | ✓ | ✓ | ✓ |

* C = Construction, O&M = Operation and Maintenance, D = Decommissioning.

** ✓ = Potential for Likely Significant Effect, × = No Potential for Likely Significant Effect.

# 7 SITES DESIGNATED FOR OFFSHORE ORNITHOLOGY FEATURES

## 7.1 APPROACH TO SCREENING

146. Direct or indirect effects on ornithological features or assemblage component species of Special Protection Areas (SPAs) and Ramsar sites may arise from activities relating to WDA construction, O&M and decommissioning phases.

147. This HRA Screening Report considers SPAs and Ramsar sites which meet at least one of the following criteria:

- The site overlaps with the WDA or is within the ZoI in which potential effects from the Project may extend;
- The site includes seabird qualifying features that use waters in and around the WDA in the breeding and / or non-breeding seasons;
- The site includes qualifying features, such as waterbirds, that may migrate through the WDA.

148. For this HRA Screening Report, the SPAs and Ramsar sites that meet the criteria outlined above are defined as:

- Marine SPAs;
- Breeding seabird colony SPAs;
- SPAs and Ramsar sites with migratory waterbird qualifying features (in this report these are termed 'migratory waterbird SPAs'); and
- Other SPAs / Ramsar sites located within the ZoI of the WDA.

149. The ZoI from the WDA is the area across which ornithology features may be affected by all the phases of the Project and associated activities. This extends beyond the WDA. In the breeding season seabird colonies within foraging range of the WDA will be within the ZoI. In the non-breeding season, the Biologically Defined Minimum Population Scales (BDMPS) regional seabird population will be within the ZoI of the WDA. For terrestrial migratory birds the ZoI extends to the designed sites with potential connectivity. These are the sites that migratory birds that may pass through the WDA are migrating to, or from.

150. The ZoI will include the offshore export cable route up to Mean High Water Springs. This will be defined at a later date when the offshore cable route has been defined.

### 7.1.1 Identification of Sites

151. The screening of sites where LSE cannot be excluded was based on the combination of potential impacts on seabirds and terrestrial migratory birds from the WDA and potential connectivity to SPAs designated for those species.

152. The potential impacts on the SPAs designated for these species are described in **Section 7.2.** The screening of species from SPAs is described in **Section 7.4.1.** The identification of SPAs for those species screened into the assessment is described in **Section 7.4.2** and the approach to assessing potential in-combination impact sources is described in **Section 7.5**.

### 7.1.2 Screening Matrix

153. While screening matrices have been common in the past in England and have been applied more recently to HRA screening reports in Scotland, this approach has not been followed here. NatureScot guidance[1] on whether a plan or project (either alone or in combination with other plans or projects) is likely to have a significant effect on a European site, states that screening should be a *"relatively quick and straightforward decision but should be fully justified and recorded".* The guidance also states that, *"If you need to ask for a lot of detailed information then it is likely that an appropriate assessment is required".* The screening matrix approach fits well for the more detailed and complex approach advised in England but does not fit the simpler screening approach recommended by NatureScot in Scotland.

## 7.2 CONSULTATION

154. To date, consultation in relation to offshore ornithology has been undertaken as part of an offshore ornithology ETG with meetings held on 14 June 2023 and 23 January 2024. ETG members include NatureScot, Royal Society for the Protection of Birds and DAERA, Northern Ireland. Consultation through the ETG will continue beyond submission of this HRA Screening report and will inform the RIAA. In addition, a Scoping Workshop was held on 01 May 2024 which provided the opportunity for the Applicant to present its proposed approach to HRA Screening and to seek feedback from stakeholders. Feedback received has been incorporated into this HRA Screening Report where appropriate and will inform the development of the RIAA.

155. Given the crossover between offshore ornithology EIA Scoping and HRA Screening, many of the stakeholder comments apply to both and therefore it is not practical to separate comments specific to each given the complexity and duplication that would result. All consultation relevant to offshore ornithology is provided in **Chapter 11 Offshore Ornithology** of the WDA EIA Scoping Report (Royal HaskoningDHV, 2024).

## 7.3 POTENTIAL EFFECTS CONSIDERED IN SCREENING

156. OWF developments have the potential to impact marine bird populations through a variety of impact pathways. The primary impact pathways are:

- Collisions with operational Wind Turbine Generators (WTGs);
- Displacement from constructed OWFs;
- Barrier effects from operational OWFs; and
- Indirect effects on marine bird species prey and their habitats.

157. However, there are additional potential impact pathways that will also need to be considered in the HRA for the Project. NatureScot recommend the use of the Feature Activity Sensitivity Tool (FeAST) published by the Scottish Government, Joint Nature Conservation Committee (JNCC), NatureScot and the Scottish Environment Protection Agency.[2] At the time of writing, the tool was not fully functional for seabirds. Information was provided by NatureScot on the pressures on seabirds that will be provided in FeAST, and these are summarised below. However, these pressures are from activities other than OWF development. When FeAST is fully working, the pressures on seabirds from OWF developments will be re-assessed. It is likely that the number of pressures listed below will be reduced.

[1] https://www.nature.scot/professional-advice/planning-and-development/environmental-assessment/habitats-regulations-appraisal-hra
[2] https://feature-activity-sensitivity-tool.scot/

### 7.3.1 FeAST

158. Pressures screened out of the HRA for the Project that were identified using FeAST are:

- De-oxygenation;
- Electromagnetic changes;
- Nitrogen & phosphorus enrichment;
- Organic enrichment;
- Physical loss (to land or freshwater habitat);
- Physical removal (extraction of substratum);
- Salinity changes – local;
- Siltation rate changes (light);
- Sub-surface abrasion/penetration;
- Surface abrasion; and
- Temperature changes – local.

159. A total of 26 pressures on at least one species of seabird with the potential to be important in the HRA for the Project were identified using FeAST (**Table 7.1**). As previously stated, at the time of writing, the tool was incomplete and did not allow the identification of pressures on seabirds associated with OWFs. The pressures shown in **Table 7.1** relate to the features shown, but not to the pressures from OWF development. It is likely that some of these pressures are not relevant to OWF assessment and so will be revised for the HRA.

*Table 7.1 Pressures on key seabird species from Feature Activity Sensitivity Tool.*

| Pressure | Species | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Arctic tern | Atlantic puffin | Black-legged kittiwake | Common guillemot | European storm petrel | Great black-backed gull | Great northern diver | Great skua | Herring gull | Lesser black-backed gull | Manx shearwater | Northern fulmar | Northern gannet | Razorbill |
| Barrier to species movement | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Death or injury by collision below water | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Death or injury by collision above water | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Emergence regime changes - local | N | Y | N | Y | N | N | Y | N | N | Y | N | N | N | Y |
| Genetic modification & translocation of indigenous species | N | N | N | N | N | N | N | N | N | Y | N | N | N | N |
| Hydrocarbon & Polycyclic Aromatic Hydrocarbons contamination (Includes those priority substances listed in Annex II of Directive 2008/105/EC). | N | N | N | N | N | Y | N | N | Y | N | N | N | N | N |
| Introduction of light or shading | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Introduction of microbial pathogens (disease), viruses or parasites | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Introduction of Other Substances (Solid, Liquid or Gas) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Introduction or spread of non-indigenous species & translocations (competition) | Y | Y | Y | Y | N | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Litter | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Transition elements and organo-metal (e.g. Chromium, Copper, TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC. | Y | Y | Y | Y | Y | N | Y | Y | N | Y | Y | Y | Y | Y |
| Radionuclide contamination | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Reduction in availability or quality of prey | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Removal of non-target species (including lethal) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Removal of target species (including lethal) | Y | Y | Y | Y | N | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Siltation rate changes (heavy) | Y | Y | N | N | Y | N | N | N | N | N | N | N | N | N |
| Synthetic compound contamination (inc. pesticides, antifoulants, pharmaceuticals) Includes those priority substances listed in Annex II of Directive 2008/105/EC. | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Temperature changes - regional/national | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Transition elements and organo-metal (e.g. Chromium, Copper, TBT) contamination. Includes those priority substances listed in Annex II of Directive 2008/105/EC. | N | N | N | N | N | Y | N | N | Y | N | N | N | N | N |
| Underwater noise | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Visual disturbance (behaviour) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Water clarity changes | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Water flow (tidal current) changes - local | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Wave exposure changes - local | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |

This page is intentionally blank

### 7.3.2 Consideration of Prey Species

160. In Guidance Note 6, NatureScot (2023b) notes that OWF developments may indirectly impact seabirds by affecting their prey. The Project assessment will consider impacts to fish populations and benthic habitats within the WDA and cumulatively with other OWFs in the region. These will be considered in relation to their potential to cause significant effects on seabird SPAs.

161. NatureScot recommend key impacts that will need to be considered include habitat loss, changes to trophic interactions and community structure and function, including prey species compositional changes e.g. changing from those dependent on sandy substrates to those species favouring rocky substrates. The Offshore Ornithology HRA will cross reference with the EIAR chapters on benthic habitats and fish and shellfish populations where relevant. The Offshore Ornithology HRA will include summaries of the key findings of these chapters in relation to the prey species (and their habitats) of each seabird species being assessed and hyperlinks to the relevant sections of these chapters.

### 7.3.3 Cables

162. The installation of cables, including export cable(s), OSP link cables and IACs have the potential to disturb protected seabird and intertidal bird species. In addition, indirect effects on prey and their habitats could also indirectly affect both seabirds and intertidal birds. Only potential effects from OSP link and IACs are considered in this HRA Screening Report. An HRA screening exercise for the export cable corridor aspects of the Project will be undertaken separately once they are defined.

163. Consideration of species-specific sensitivity to these kinds of disturbance will be made in reference to published studies by Jarrett et al. (2018), Goodship and Furness (2019), and Heinänen et al. (2020).

164. Cable laying disturbance will be considered for the Project alone and in-combination with other reasonably foreseeable plans and projects that could affect the same receptor populations.

## 7.4 DETERMINATION OF LIKELY SIGNIFICANT EFFECT FOR SPECIAL PROTECTION AREAS

165. The assessment of LSE for SPAs considered the question, “Is the plan or project (either alone or in combination with other plans or projects) likely to have a significant effect on a European site?”. This is a screening stage to determine whether an AA may be needed (**Section 2.2.2**). Whilst this stage of the assessment is relatively quick and straightforward it is fully justified in the process shown below.

166. The process of assessing LSE was to consider whether there is any connectivity between the WDA and the qualifying features of SPAs. Where there is no connection between the WDA and the qualifying features of SPAs the absence of an LSE can be objectively concluded. Where there was any doubt about the absence of such effects, the SPA was screened into the assessment and will be considered in the RIAA.

167. The screening of SPAs is considered both alone and in-combination with other plans or projects in the planning system (defined as having submitted a scoping report to the competent authority). This also considers any ongoing effects of completed plans or projects that are having ongoing negative effects that are not included in the baseline conditions.

168. Mitigation measures have NOT been included in the assessment of LSE and will only be included in the RIAA when considering whether it can be concluded there is no adverse effect on site integrity to each SPA assessed (**Section 2.2.2**). Embedded mitigation measures (such as site selection in the SMP) have been considered in the determination of LSE, following NatureScot guidance note on *"The handling of mitigation in Habitats Regulations Appraisal – the People Over Wind CJEU judgement"*[3].

169. The screening of SPAs has used two separate approaches for seabirds and for terrestrial migratory birds. For seabirds, the first step in the screening process was to use the species that were recorded from the 30 months of site-specific DAS of the OAA plus a 4 km buffer (Royal HaskoningDHV, 2024). From this list of species, the seabirds that occurred were considered seasonally. In the breeding season, the recommended foraging ranges of breeding seabirds from their colonies were used, based on distances recommended by NatureScot (2023a) Guidance Note 3. In the non-breeding season, the SPAs listed in the relevant BDMPS region from Furness (2015) were screened into the assessment.

170. For terrestrial migratory birds, the screening of which species should be assessed was based on the results of the study by Woodward et al. (2023). This report assessed the migration paths of terrestrial migratory species across the seas surrounding the UK, resulting in recommended species to be assessed based on the relative location of migratory routes and proposed OWFs. At present it has not been possible to refine the list of SPAs for those species further, as the guidance from NatureScot does not provide an explicit process for this. Further work is being undertaken at present by the Scottish Government and when this is complete, the screening of SPAs for terrestrial migratory species will be completed.

**Can stakeholders provide an update on when the next stage of the "Strategic study of collision risk for birds on migration and further development of the stochastic collision risk modelling tool" project will be complete?**

171. An alternative approach to assessing the potential impacts to terrestrial migratory birds, should the next stage of the strategic study of collision risk to terrestrial migratory birds be unavailable, will be to use the information in WWT and MacArthur Green (2014) report.

### 7.4.1 Screening of Species from Special Protection Areas

172. The first stage in screening the SPAs was to determine which species were recorded during DAS of the OAA and buffer. A total of 25 species were recorded, 21 of which are qualifying features of at least one SPA in the UK (see **Table 7.2** below).

[3] https://www.nature.scot/doc/naturescot-guidance-note-handling-mitigation-habitYats-regulations-appraisal-people-over-wind-cjeu

*Table 7.2 List of all species recorded from 30 digital aerial surveys of the MachairWind area and which are United Kingdom Special Protection Area qualifying features*

| Species | Special Protection Area (SPA) feature | Seabird SPA feature |
|---|---|---|
| Golden Plover *(Pluvialis apricaria)* | Y | N |
| Dunlin *(Calidris alpina)* | Y | N |
| Grey Phalarope *(Phalaropus fulicarius)* | N | N |
| Kittiwake *(Rissa tridactyla)* | Y | Y |
| Great Black-backed Gull *(Larus marinus)* | Y | Y |
| Common Gull *(Larus canus)* | Y | Y |
| Herring Gull *(Larus argentatus)* | Y | Y |
| Lesser Black-backed Gull *(Larus fuscus)* | Y | Y |
| Common Tern *(Sterna hirundo)* | Y | Y |
| Arctic Tern *(Sterna paradisaea)* | Y | Y |
| Great Skua *(Stercorarius skua)* | Y | Y |
| Arctic Skua *(Stercorarius parasiticus)* | Y | Y |
| Guillemot *(Uria aalge)* | Y | Y |
| Razorbill *(Alca torda)* | Y | Y |
| Black Guillemot *(Cepphus grille)* | N | N |
| Puffin *(Fratercula arctica)* | Y | Y |
| Red-throated Diver *(Gavia stellata)* | Y | Y |
| Great Northern Diver *(Gavia immer)* | Y | Y |
| Storm Petrel *(Hydrobates pelagicus)* | Y | Y |
| Fulmar *(Fulmarus Glacialis)* | Y | Y |
| Sooty Shearwater *(Ardenna grisea)* | N | N |
| Great Shearwater *(Ardenna gravis)* | N | N |
| Manx Shearwater *(Puffinus puffinus)* | Y | Y |
| Gannet *(Morus Bassanus)* | Y | Y |
| Little Egret *(Egretta garzetta)* | Y | N |

173. The DAS of the site are an extremely effective method for determining the use of the OAA and buffer by seabirds and are designed to estimate how many of which species use the Project area and when. However, this methodology was not designed to capture the presence of migratory species, such as ducks, geese, swans, and shorebirds. While some species of migratory terrestrial birds were recorded from DAS, this method was not used to identify connectivity to SPAs for these species.

#### *7.4.1.1 Seabirds*

174. From the results of the DAS of the Project, a total of 18 species of seabird with potential connectivity to SPAs were screened into the assessment (**Table 7.2**). The identification of SPAs screened into the assessment for these species is provided in **Section 7.4.2.1**.

#### *7.4.1.2 Migratory Birds*

175. Using the recent Strategic Review of Birds on Migration in Scottish waters (Woodward et al. 2023), the species that may migrate through the area where the Project is located were screened in or out. By comparing the relative locations of the Project to the maps of migratory routes shown in Woodward et al. (2023), species, and therefore SPAs designated for their populations, can be screened out of the assessment. Two examples are provided in **Figure 7.1**.

176. A total of 16 species were **screened out** based on the relative locations of the Project and the species migratory corridors:

- 'East Atlantic' light-bellied brent goose (North Greenland/Svalbard) (*Branta bernicla hrota)*;
- Dark-bellied brent goose (Western Siberia/Western Europe) (*Branta bernicla bernicla)*;
- 'Svalbard' barnacle goose (Svalbard/South-west Scotland) (*Branta leucopsis)*;
- Taiga bean goose (*Anser fabalis)*;
- 'European' white-fronted goose (NW Siberia and NE/NW Europe) (*Anser albifrons albifrons)*;
- Bewick's swan (*Cygnus columbianus bewickii)*;
- Nightjar (*Caprimulgus europaeus)*;
- Stone-curlew (*Burhinus oedicnemus)*;
- Avocet (*Recurvirostra avosetta)*;
- Black-tailed godwit (*Limosa limosa limosa)*;[4]
- Red-necked phalarope (*Phalaropus lobatus)*;
- Wood sandpiper (*Tringa glareola)*;
- Bittern (*Botaurus stellaris)*;
- Honey-buzzard (*Pernis apivorus)*;
- Marsh harrier (*Circus aeruginosus)*; and
- Montagu's harrier (*Circus pygargus)*.

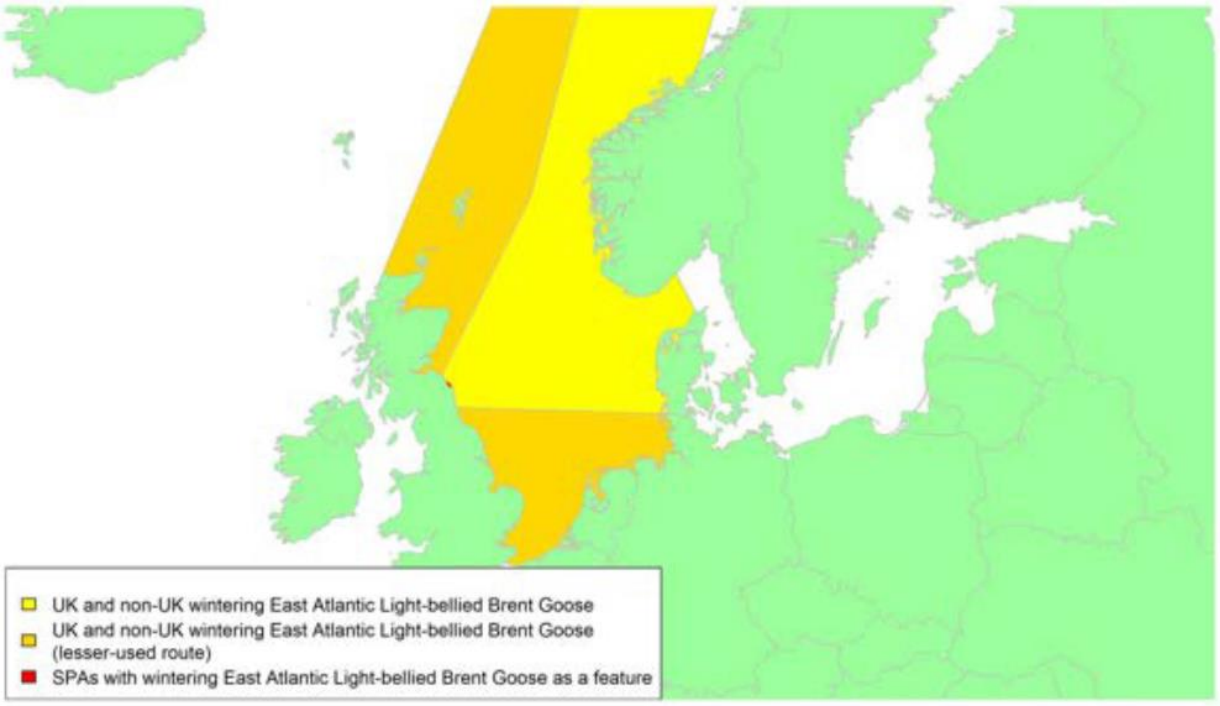
177. Consequently 51 species were screened into the HRA of terrestrial migratory species. The species selected, the proportion at collision risk height, flight speed and avoidance rate are summarised in **Table 7.3**.

[4] Note that the subspecies *Limosa limosa (islandica)* which breeds in Iceland and winters on estuaries in the UK has connectivity with the WDA and the SPAs designated for this subspecies are screened into the assessment (**Table 7.37**)

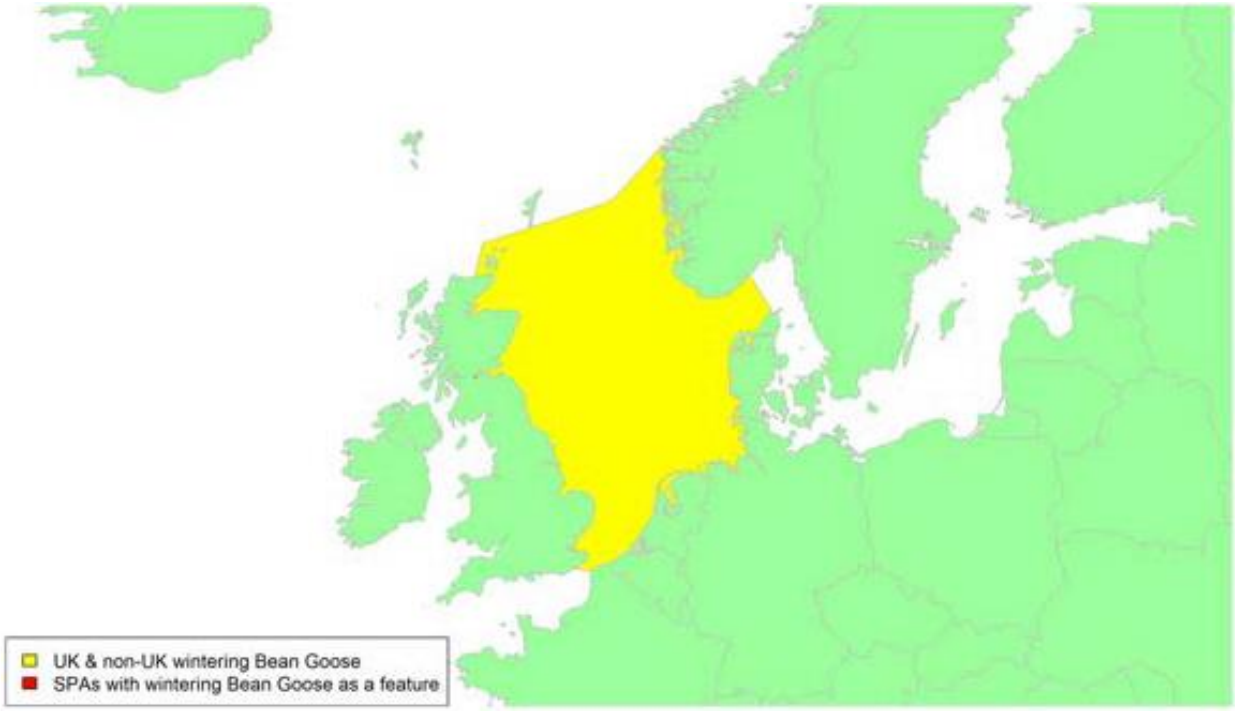
*Table 7.3 Summary of terrestrial migratory species screened into the Habitats Regulations Appraisal*

| Species | Avoidance Rate |
|---|---|
| 'Nearctic' light–bellied brent goose (Canada and Greenland/Ireland) (*Branta bernicla hrota)* | 0.9998 ± 0.00001 |
| 'Greenland' barnacle goose (East Greenland/Scotland & Ireland) (*Branta leucopsis)* | 0.9998 ± 0.00001 |
| 'Icelandic' greylag goose (Iceland/ United Kingdom (UK) & Ireland) (*Anser answer)* | 0.9998 ± 0.00001 |
| Pink-footed goose (East Greenland and Iceland/UK) (*Anser brachyrhynchus)* | 0.9999 ± 0.0002 |
| 'Greenland' white-fronted goose (Greenland/Ireland & UK) (*Anser albifrons flavirostris)* | 0.9998 ± 0.00001 |
| Whooper swan (*Cygnus cygnus)* | 0.9874 ± 0.00138 |
| Shelduck (*Tadorna tadorna)* | 0.9851 ± 0.00088 |
| Shoveler (*Spatula clypeata)* | 0.9851 ± 0.00088 |
| Gadwall (*Mareca strepera)* | 0.9851 ± 0.00088 |
| Wigeon (*Mareca penelope)* | 0.9851 ± 0.00088 |
| Mallard (*Anas platyrhynchos)* | 0.9851 ± 0.00088 |
| Pintail (*Anas acuta)* | 0.9851 ± 0.00088 |
| Teal (*Anas crecca)* | 0.9851 ± 0.00088 |
| Pochard (*Aythya ferina)* | 0.9851 ± 0.00088 |
| Tufted duck (*Aythya fuligula)* | 0.9851 ± 0.00088 |
| Scaup (*Aythya marila)* | 0.9851 ± 0.00088 |
| Eider (*Somateria mollissima mollissima)* | 0.9851 ± 0.00088 |
| Velvet scoter (*Melanitta fusca)* | 0.9851 ± 0.00088 |
| Common scoter (*Melanitta nigra)* | 0.9851 ± 0.00088 |
| Long-tailed duck (*Clangula hyemalis)* | 0.9851 ± 0.00088 |
| Goldeneye (*Bucephala clangula)* | 0.9851 ± 0.00088 |
| Goosander (*Mergus merganser)* | 0.9851 ± 0.00088 |
| Red-breasted merganser (*Mergus serrator)* | 0.9851 ± 0.00088 |
| Corncrake (*Crex crex)* | 0.9875 ± 0.00174 |
| Spotted crake (*Porzana porzana)* | 0.9875 ± 0.00174 |
| Great crested grebe (*Podiceps cristatus)* | 0.9954 ± 0.00002 |
| Slavonian grebe (*Podiceps auratus)* | 0.9954 ± 0.00002 |
| Oystercatcher (*Haematopus ostralegus)* | 0.9996 ± 0.00002 |
| Lapwing (*Vanellus vanellus)* | 0.9996 ± 0.00002 |
| Golden plover (*Pluvialis apricaria)* | 0.9996 ± 0.00002 |
| Grey plover (*Pluvialis squatarola)* | 0.9996 ± 0.00002 |
| Ringed plover (*Charadrius hiaticula)* | 0.9996 ± 0.00002 |
| Dotterel (*Charadrius morinellus)* | 0.9996 ± 0.00002 |

| Species | Avoidance Rate |
|---|---|
| Whimbrel (*Numenius phaeopus)* | 0.9996 ± 0.00002 |
| Curlew (*Numenius arquata)* | 0.9996 ± 0.00002 |
| Bar-tailed godwit (*Limosa lapponica)* | 0.9996 ± 0.00002 |
| Black-tailed godwit (*Limosa limosa* (*islandica*)) | 0.9996 ± 0.00002 |
| Turnstone (*Arenaria interpres)* | 0.9996 ± 0.00002 |
| Knot (*Calidris canutus)* | 0.9996 ± 0.00002 |
| Ruff (*Philomachus pugnax)* | 0.9996 ± 0.00002 |
| Sanderling (*Calidris alba)* | 0.9996 ± 0.00002 |
| Dunlin (*Calidris alpina)* | 0.9996 ± 0.00002 |
| Purple sandpiper (*Calidris maritima)* | 0.9996 ± 0.00002 |
| Snipe (*Gallinago gallinago)* | 0.9996 ± 0.00002 |
| Redshank (*Tringa tetanus)* | 0.9996 ± 0.00002 |
| Greenshank (*Tringa nebularia)* | 0.9996 ± 0.00002 |
| Osprey (*Pandion haliaetus)* | 0.9957 ± 0.00006 |
| Hen harrier (*Circus cyaneus)* | 0.9957 ± 0.00006 |
| White-tailed eagle (*Haliaeetus albicilla)* | 0.9872 ± 0.00192 |
| Short-eared owl (*Asio flammeus)* | 0.9957 ± 0.00006 |
| Merlin (*Falco columbarius)* | 0.9891 ± 0.00033 |




'East Atlantic' light-bellied brent goose (North Greenland/Svalbard)




Taiga bean goose

*Figure 7.1 Examples of terrestrial migratory birds screened out of the assessment*

### 7.4.2 Screening of Special Protection Areas

178. From the species screened into the assessment (**Section 7.4.1**), the SPAs in the UK designated for populations of those species were identified. Once those SPAs were identified, the potential for negative effects on those SPAs were assessed using the combination of identified pressures from the Project and the potential for connectivity between the Project and each SPA.

#### *7.4.2.1 Special Protection Areas for Breeding and Wintering Seabirds*

179. For seabirds screened into the assessment, including those in marine SPAs, it was assumed that all species would be subject to multiple pressures from the WDA, although the key impacts were those listed in **Section 7.2** (e.g. including collision mortality, displacement effects, etc.). The species identified from DAS (**Section 7.4.1.1**) were each considered in relation to the potential for connectivity between SPAs and the WDA. Therefore, where connectivity could not be excluded it was assumed that there was an LSE on the SPA.

##### 7.4.2.1.1 Kittiwake

180. The breeding season connectivity between the Project and SPAs for kittiwake was based on a mean of the maximum foraging range plus one standard deviation of 300.6 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with kittiwake as a breeding feature resulted in 16 SPAs with connectivity ranging from the North Colonsay and Western Cliffs SPA 11.2 km from the Project to Cape Wrath SPA 283.6 km from the Project (**Table 7.4**).

181. However, it is highly unlikely that kittiwakes would be flying in straight lines over land on breeding season foraging trips, so the shortest distance by sea between SPAs and the Project were calculated. This resulted in ten SPAs with connectivity (**Table 7.4**).

182. The non-breeding season connectivity between the Project and SPAs with kittiwake as a qualifying feature was determined in reference to the BDMPS region “UK western waters & Channel” (Furness, 2015). A total of 33 SPAs were screened into the assessment (**Table 7.4**).

*Table 7.4 Special Protection Areas with breeding kittiwakes as a qualifying feature with connectivity in the breeding and non-breeding season*

| Special Protection Area (SPA) | Breeding season | | | | Non-breeding season |
|---|---|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | Non-Euclidian distance (km) | Within foraging range (by sea) | United Kingdom (UK) western waters |
| North Colonsay and Western Cliffs | 11.2 | Yes | 18.3 | Yes | Yes |
| Rathlin Island | 60.2 | Yes | 70.5 | Yes | Yes |
| Rum | 81.2 | Yes | 95.4 | Yes | Yes |
| Mingulay and Berneray | 83.8 | Yes | 90.1 | Yes | Yes |
| Canna and Sanday | 95.1 | Yes | 99.8 | Yes | Yes |
| Ailsa Craig | 110.2 | Yes | 128.3 | Yes | Yes |
| Shiant Isles | 188.4 | Yes | 198.5 | Yes | Yes |
| Forth Islands | 190.1 | Yes | 744.2 | No | Yes |
| Outer Firth of Forth and St Andrews Bay Complex | 192.5 | Yes | 732.8 | No | No |
| St Kilda | 205.9 | Yes | 217.7 | Yes | Yes |
| Flannan Isles | 237.2 | Yes | 244.5 | Yes | Yes |
| Handa | 257.5 | Yes | 283.6 | Yes | Yes |
| St Abb's Head to Fast Castle | 260.8 | Yes | 754.3 | No | Yes |
| Fowlsheugh | 275.4 | Yes | 646.0 | No | Yes |
| East Caithness Cliffs | 282.3 | Yes | 476.2 | No | Yes |
| Cape Wrath | 283.6 | Yes | 316.0 | No | Yes |
| Farne Islands | 303.5 | No | 784.3 | No | Yes |
| Troup, Pennan and Lion's Heads | 304.7 | No | 542.9 | No | Yes |
| Buchan Ness to Collieston Coast | 307.6 | No | 587.6 | No | Yes |

| Special Protection Area (SPA) | Breeding season | | | | Non-breeding season |
|---|---|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | Non-Euclidian distance (km) | Within foraging range (by sea) | United Kingdom (UK) western waters |
| North Caithness Cliffs | 313.2 | No | 408.3 | No | Yes |
| North Rona and Sula Sgeir | 323.5 | No | 335.6 | No | Yes |
| Hoy | 350.6 | No | 412.2 | No | Yes |
| Marwick Head | 380.2 | No | 421.5 | No | Yes |
| Copinsay | 380.3 | No | 452.6 | No | Yes |
| Rousay | 392.5 | No | 444.7 | No | Yes |
| West Westray | 405.9 | No | 447.1 | No | Yes |
| Calf of Eday | 410.8 | No | 461.5 | No | Yes |
| Flamborough and Filey Coast | 434.6 | No | 961.1 | No | Yes |
| Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro | 457.2 | No | 500.2 | No | Yes |
| Fair Isle | 471.4 | No | 531.1 | No | Yes |
| Foula | 511.2 | No | 548.0 | No | Yes |
| Sumburgh Head | 514.9 | No | 565.8 | No | Yes |
| Noss | 547.9 | No | 601.1 | No | Yes |
| Hermaness, Saxa Vord and Valla Field | 606.8 | No | 648.9 | No | Yes |

183. The SPAs identified in **Table 7.4** resulted in a total of 33 SPAs designated for kittiwakes where it was possible to conclude that there was an LSE. Predicted impacts from the Project in the breeding season will be combined with predicted impacts from the Project in the non-breeding season to assess for the absence of adverse effects on site integrity to each SPA shown in **Table 7.5**.

*Table 7.5 Summary of Special Protection Areas for breeding kittiwakes as a qualifying feature screened into the Habitats Regulations Appraisal*

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Ailsa Craig | Yes | Yes |
| Buchan Ness to Collieston Coast | No | Yes |
| Calf of Eday | No | Yes |
| Canna and Sanday | Yes | Yes |
| Cape Wrath | No | Yes |
| Copinsay | No | Yes |
| East Caithness Cliffs | No | Yes |
| Fair Isle | No | Yes |
| Farne Islands | No | Yes |
| Flamborough and Filey Coast | No | Yes |
| Flannan Isles | Yes | Yes |
| Forth Islands | No | Yes |
| Foula | No | Yes |
| Fowlsheugh | No | Yes |
| Handa | Yes | Yes |
| Hermaness, Saxa Vord and Valla Field | No | Yes |
| Hoy | No | Yes |
| Marwick Head | No | Yes |
| Mingulay and Berneray | Yes | Yes |
| North Caithness Cliffs | No | Yes |
| North Colonsay and Western Cliffs | Yes | Yes |
| North Rona and Sula Sgeir | No | Yes |
| Noss | No | Yes |
| Rathlin Island | Yes | Yes |
| Rousay | No | Yes |
| Rum | Yes | Yes |
| Shiant Isles | Yes | Yes |
| Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro | No | Yes |

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| St Abb's Head to Fast Castle | No | Yes |
| St Kilda | Yes | Yes |
| Sumburgh Head | No | Yes |
| Troup, Pennan and Lion's Heads | No | Yes |
| West Westray | No | Yes |

7.4.2.1.2 Great black-backed gull

184. The breeding season connectivity between the Project and SPAs for great black-backed gull was based on a mean of the maximum foraging range plus one standard deviation of 73 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with great black-backed gull as a breeding feature resulted in no SPAs with connectivity (**Table 7.6**).

185. Unlike some other seabirds, it is likely that great black-backed gulls would fly over land on breeding season foraging trips, so the shortest distance by sea between SPAs and the Project was not used to assess connectivity.

*Table 7.6 Special Protection Areas with breeding great black-backed gulls as a qualifying feature with connectivity in the breeding and non-breeding season*

| Special Protection Area (SPA) | Breeding season | | Non-breeding season |
|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | United Kingdom (UK) west of Scotland waters |
| East Caithness Cliffs | 282.3 | No | Yes |
| North Rona and Sula Sgeir | 323.5 | No | Yes |
| Hoy | 350.6 | No | Yes |
| Copinsay | 380.3 | No | Yes |
| Calf of Eday | 410.8 | No | Yes |
| Isles of Scilly | 648.7 | No | Yes |

186. The non-breeding season connectivity between the Project and SPAs with great black-backed gull as a qualifying feature was determined in reference to the BDMPS region “UK west of Scotland waters” (Furness, 2015). A total of six SPAs were screened into the assessment (**Table 7.6**).

187. The SPAs identified in **Table 7.6** resulted in a total of six SPAs designated for great black-backed gull where it was possible to conclude there was an LSE. Predicted impacts from the Project in the breeding season will be combined with predicted impacts from the Project in the non-breeding season to assess for the absence of adverse effects on site integrity to each SPA shown in **Table 7.7**.

*Table 7.7 Summary of Special Protection Areas for breeding great black-backed gulls as a qualifying feature screened into the Habitats Regulations Appraisal*

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Calf of Eday | No | Yes |
| Copinsay | No | Yes |
| East Caithness Cliffs | No | Yes |
| Hoy | No | Yes |
| Isles of Scilly | No | Yes |
| North Rona and Sula Sgeir | No | Yes |

7.4.2.1.3 Common gull

188. The breeding season connectivity between the Project and SPAs for common gull was based on a mean of the maximum foraging range plus one standard deviation of 50 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with common gull as a breeding feature resulted in no SPAs with connectivity (**Table 7.8**).

*Table 7.8 Special Protection Areas with breeding common gull as a qualifying feature with connectivity in the breeding season*

| Special Protection Area (SPA) | Straight line distance (km) | Within foraging range? |
|---|---|---|
| Rathlin Island | 60.2 | No |
| Lough Neagh & Lough Beg | 123 | No |
| Tips of Corsemaul and Tom Mor | 273.8 | No |

189. The non-breeding season connectivity between the Project and SPAs with common gull as a qualifying feature could not be determined with reference to the BDMPS report (Furness, 2015), as this species was not included in the report. As a result, no SPAs have been screened into the HRA for the Project.

7.4.2.1.4 Herring gull

190. The breeding season connectivity between the Project and SPAs for herring gull was based on a mean of the maximum foraging range plus one standard deviation of 85.6 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with herring gull as a breeding feature resulted in no SPAs with connectivity (**Table 7.9**).

191. Unlike some other seabirds, it is likely that herring gulls would fly over land on breeding season foraging trips, so the shortest distance by sea between SPAs and the Project was not used to assess connectivity.

*Table 7.9 Special Protection Areas with breeding herring gull as a qualifying feature with connectivity in the breeding and non-breeding season*

| Special Protection Area (SPA) | Breeding season | | Non-breeding season |
|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | UK western waters |
| Canna and Sanday | 95.1 | No | Yes |
| Ailsa Craig | 110.2 | No | Yes |
| Solway Firth* | 176.7 | No | No |
| Forth Islands | 190.1 | No | Yes |
| Outer Firth of Forth and St Andrews Bay Complex* | 192.5 | No | No |
| Morecambe Bay and Duddon Estuary | 259.6 | No | Yes |
| St Abb's Head to Fast Castle | 260.8 | No | Yes |
| Fowlsheugh | 275.4 | No | Yes |
| East Caithness Cliffs | 282.3 | No | Yes |
| Troup, Pennan and Lion's Heads | 304.7 | No | Yes |
| Buchan Ness to Collieston Coast | 307.6 | No | Yes |
| * These marine SPAs were designed for wintering gulls (among other features). NatureScot Guidance (Guidance Note 4). Connectivity in the non-breeding season is based on breeding season foraging range. | | | |

192. The non-breeding season connectivity between the Project and SPAs with herring gull as a qualifying feature was determined in reference to the BDMPS region “UK western waters” (Furness, 2015). A total of ten SPAs were screened into the assessment (**Table 7.9**).

193. The SPAs identified in **Table 7.9** resulted in a total of nine SPAs designated for herring gull where it was possible to conclude there was an LSE. Predicted impacts from the Project in the breeding season will be combined with predicted impacts from the Project in the non-breeding season to assess for the absence of adverse effects on site integrity to each SPA shown in **Table 7.10**.

*Table 7.10 Summary of Special Protection Areas for breeding herring gull as a qualifying feature screened into the Habitats Regulations Appraisal for the Project*

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Ailsa Craig | No | Yes |
| Buchan Ness to Collieston Coast | No | Yes |
| Canna and Sanday | No | Yes |
| East Caithness Cliffs | No | Yes |
| Forth Islands | No | Yes |
| Fowlsheugh | No | Yes |
| Morecambe Bay and Duddon Estuary | No | Yes |

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| St Abb's Head to Fast Castle | No | Yes |
| Troup, Pennan and Lion's Heads | No | Yes |

7.4.2.1.5 Lesser black-backed gull

194. The breeding season connectivity between the Project and SPAs for lesser black-backed gull was based on a mean of the maximum foraging range plus one standard deviation of 236 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with lesser black-backed gull as a breeding feature resulted in four SPAs with connectivity (**Table 7.11**).

195. Unlike some other seabirds, it is likely that lesser black-backed gulls would fly over land on breeding season foraging trips, so the shortest distance by sea between SPAs and the Project was not used to assess connectivity.

*Table 7.11 Special Protection Areas with breeding lesser black-backed gull as a qualifying feature with connectivity in the breeding and non-breeding season*

| Special Protection Area (SPA) | Breeding season | | Non-breeding season |
|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | UK western waters |
| Rathlin Island | 60.2 | Yes | Yes |
| Ailsa Craig | 110.2 | Yes | Yes |
| Lough Neagh & Lough Beg | 123.0 | Yes | Yes |
| Forth Islands | 190.1 | Yes | Yes |
| Morecambe Bay and Duddon Estuary | 259.6 | No | Yes |
| Ribble and Alt Estuaries | 324.5 | No | Yes |
| Bowland Fells | 325.0 | No | Yes |
| Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro | 457.2 | No | Yes |
| Isles of Scilly | 648.7 | No | Yes |

196. The non-breeding season connectivity between the Project and SPAs with lesser black-backed gull as a qualifying feature was determined in reference to the BDMPS region “UK western waters” (Furness, 2015). A total of ten SPAs were screened into the assessment (**Table 7.11**).

197. The SPAs identified in **Table 7.11** resulted in a total of nine SPAs designated for lesser black-backed gull where it was possible to conclude there was an LSE. Predicted impacts from the Project in the breeding season will be combined with predicted impacts from the Project in the non-breeding season to assess for the absence of adverse effects on site integrity to each SPA shown in **Table 7.12**.

*Table 7.12 Summary of Special Protection Areas for breeding lesser black-backed gull as a qualifying feature screened into the Habitats Regulations Appraisal for the Project*

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Ailsa Craig | Yes | Yes |
| Bowland Fells | No | Yes |
| Forth Islands | Yes | No |
| Isles of Scilly | No | Yes |
| Lough Neagh & Lough Beg | Yes | Yes |
| Morecambe Bay and Duddon Estuary | No | Yes |
| Rathlin Island | Yes | Yes |
| Ribble and Alt Estuaries | No | Yes |
| Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro | No | Yes |

7.4.2.1.6 Common tern

198. The breeding season connectivity between the Project and SPAs for common tern was based on a mean of the maximum foraging range plus one standard deviation of 26.9 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with common tern as a breeding feature resulted in no SPAs with connectivity (**Table 7.13**).

*Table 7.13 Special Protection Areas with breeding common tern as a qualifying feature with connectivity in the breeding and non-breeding season*

| Special Protection Area (SPA) | Breeding season | | Non-breeding season |
|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | UK western waters |
| Glas Eileanan | 83.1 | No | Yes |
| Larne Lough | 121.0 | No | Yes |
| Lough Neagh & Lough Beg | 123.0 | No | Yes |
| Strangford Lough | 151.3 | No | Yes |
| Forth Islands | 190.1 | No | Yes |
| Inner Moray Firth | 195.2 | No | Yes |
| Carlingford Lough | 196.2 | No | Yes |
| Cromarty Firth | 205.4 | No | Yes |
| Anglesey Terns / Morwenoliaid Ynys Môn / Morwenoliaid Ynys Mon | 283.7 | No | Yes |
| Ythan Estuary, Sands of Forvie and Meikle Loch | 292.9 | No | Yes |
| Farne Islands | 303.5 | No | Yes |
| Coquet Island | 318.3 | No | Yes |

| Special Protection Area (SPA) | Breeding season | | Non-breeding season |
|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | UK western waters |
| Ribble and Alt Estuaries | 324.5 | No | Yes |
| The Dee Estuary | 347.2 | No | Yes |
| The Wash | 537.5 | No | Yes |
| North Norfolk Coast | 561.1 | No | Yes |
| Solent and Southampton Water | 644.0 | No | Yes |
| Breydon Water | 644.6 | No | Yes |
| Poole Harbour | 644.6 | No | Yes |
| Foulness (Mid-Essex Coast Phase 5) | 681.7 | No | Yes |
| Dungeness, Romney Marsh and Rye Bay | 729.7 | No | Yes |

199. The non-breeding season connectivity between the Project and SPAs with common tern as a qualifying feature was determined in reference to the BDMPS region "UK western waters" (Furness, 2015). A total of 21 SPAs were screened into the assessment (see **Table 7.13**).

200. The SPAs identified in **Table 7.13** resulted in a total of 21 SPAs designated for common tern where it was possible to conclude there was an LSE. Predicted impacts from the Project in the breeding season will be combined with predicted impacts from the Project in the non-breeding season to assess for the absence of adverse effects on site integrity to each SPA shown in **Table 7.14**.

*Table 7.14 Special Protection Areas with breeding common tern as a qualifying feature screened into the Habitats Regulations Appraisal for the Project*

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Anglesey Terns / Morwenoliaid Ynys Môn / Morwenoliaid Ynys Mon | No | Yes |
| Breydon Water | No | Yes |
| Carlingford Lough | No | Yes |
| Coquet Island | No | Yes |
| Cromarty Firth | No | Yes |
| Dungeness, Romney Marsh and Rye Bay | No | Yes |
| Farne Islands | No | Yes |
| Forth Islands | No | Yes |
| Foulness (Mid-Essex Coast Phase 5) | No | Yes |
| Glas Eileanan | No | Yes |
| Inner Moray Firth | No | Yes |
| Larne Lough | No | Yes |
| Lough Neagh & Lough Beg | No | Yes |
| North Norfolk Coast | No | Yes |

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Poole Harbour | No | Yes |
| Ribble and Alt Estuaries | No | Yes |
| Solent and Southampton Water | No | Yes |
| Strangford Lough | No | Yes |
| The Dee Estuary | No | Yes |
| The Wash | No | Yes |
| Ythan Estuary, Sands of Forvie and Meikle Loch | No | Yes |

#### 7.4.2.1.7 Arctic tern

201. The breeding season connectivity between the Project and SPAs for Arctic tern was based on a mean of the maximum foraging range plus one standard deviation of 40.5 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with Arctic tern as a breeding feature resulted in no SPAs with connectivity (**Table 7.15**).

*Table 7.15 Special Protection Areas with breeding Arctic tern as a qualifying feature with connectivity in the breeding and non-breeding season*

| Special Protection Area (SPA) | Breeding season | | Non-breeding season |
|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | UK western waters |
| Outer Ards | 140.6 | No | Yes |
| Strangford Lough | 151.3 | No | Yes |
| Forth Islands | 190.1 | No | Yes |
| Anglesey Terns / Morwenoliaid Ynys Môn / Morwenoliaid Ynys Mon | 283.7 | No | Yes |
| Farne Islands | 303.5 | No | Yes |
| Coquet Island | 318.3 | No | Yes |
| Pentland Firth Islands | 376.6 | No | Yes |
| Rousay | 392.5 | No | Yes |
| West Westray | 405.9 | No | Yes |
| Auskerry | 414.5 | No | Yes |
| Papa Westray (North Hill and Holm) | 439.6 | No | Yes |
| Fair Isle | 471.4 | No | Yes |
| Foula | 511.2 | No | Yes |
| Sumburgh Head | 514.9 | No | Yes |
| Papa Stour | 545.8 | No | Yes |
| Mousa | 546.1 | No | Yes |
| Fetlar | 589.3 | No | Yes |

202. The non-breeding season connectivity between the Project and SPAs with Arctic tern as a qualifying feature was determined in reference to the BDMPS region "UK western waters" (Furness, 2015). A total of 17 SPAs were screened into the assessment (**Table 7.15**).

203. The SPAs identified in **Table 7.15** resulted in a total of 17 SPAs designated for Arctic tern where it was possible to conclude there was an LSE. Predicted impacts from the Project in the breeding season will be combined with predicted impacts from the Project in the non-breeding season to assess for the absence of adverse effects on site integrity to each SPA shown in **Table 7.16**.

*Table 7.16 Summary of Special Protection Areas for breeding Arctic tern as a qualifying feature screened into the Habitats Regulations Appraisal*

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Anglesey Terns / Morwenoliaid Ynys Môn / Morwenoliaid Ynys Mon | No | Yes |
| Auskerry | No | Yes |
| Coquet Island | No | Yes |
| Fair Isle | No | Yes |
| Farne Islands | No | Yes |
| Fetlar | No | Yes |
| Forth Islands | No | Yes |
| Foula | No | Yes |
| Mousa | No | Yes |
| Outer Ards | No | Yes |
| Papa Stour | No | Yes |
| Papa Westray (North Hill and Holm) | No | Yes |
| Pentland Firth Islands | No | Yes |
| Rousay | No | Yes |
| Strangford Lough | No | Yes |
| Sumburgh Head | No | Yes |
| West Westray | No | Yes |

#### 7.4.2.1.8 Great skua

204. The breeding season connectivity between the Project and SPAs for great skua was based on a mean of the maximum foraging range plus one standard deviation of 931.2 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with great skua as a breeding feature resulted in eight SPAs with connectivity (**Table 7.17**).

*Table 7.17 Special Protection Areas with breeding great skua as a qualifying feature with connectivity in the breeding and non-breeding season*

| Special Protection Area (SPA) | Breeding season | | Non-breeding season |
|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | UK western waters |
| St Kilda | 205.9 | Yes | Yes |
| Handa | 257.5 | Yes | Yes |
| Hoy | 350.6 | Yes | Yes |
| Fair Isle | 471.4 | Yes | Yes |
| Foula | 511.2 | Yes | Yes |
| Noss | 547.9 | Yes | Yes |
| Fetlar | 589.3 | Yes | Yes |
| Hermaness, Saxa Vord and Valla Field | 606.8 | Yes | Yes |

205. The non-breeding season connectivity between the Project and SPAs with great skua as a qualifying feature was determined in reference to the BDMPS region "UK western waters" (Furness, 2015). A total of eight SPAs were screened into the assessment (**Table 7.17**).

206. The SPAs identified in **Table 7.17** resulted in a total of eight SPAs designated for great skua where it was possible to conclude there was an LSE. Predicted impacts from the Project in the breeding season will be combined with predicted impacts from the Project in the non-breeding season to assess for the absence of adverse effects on site integrity to each SPA shown in **Table 7.18**.

*Table 7.18 Summary of Special Protection Areas for breeding great skua as a qualifying feature screened into the Habitat Regulations Appraisal*

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Fair Isle | Yes | Yes |
| Fetlar | Yes | Yes |
| Foula | Yes | Yes |
| Handa | Yes | Yes |
| Hermaness, Saxa Vord and Valla Field | Yes | Yes |
| Hoy | Yes | Yes |
| Noss | Yes | Yes |
| St Kilda | Yes | Yes |

#### 7.4.2.1.9 Arctic skua

207. The breeding season connectivity between the Project and SPAs for Arctic skua was based on a mean foraging range plus one standard deviation of 2.7 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with Arctic skua as a breeding feature resulted in no SPAs with connectivity (**Table 7.19**).

*Table 7.19 Special Protection Areas with breeding Arctic skua as a qualifying feature with connectivity in the breeding and non-breeding season*

| Special Protection Area (SPA) | Breeding season | | Non-breeding season |
|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | UK western waters |
| Hoy | 350.6 | No | Yes |
| Rousay | 392.5 | No | Yes |
| West Westray | 405.9 | No | Yes |
| Papa Westray (North Hill and Holm) | 439.6 | No | Yes |
| Fair Isle | 471.4 | No | Yes |
| Foula | 511.2 | No | Yes |
| Fetlar | 589.3 | No | Yes |

208. The non-breeding season connectivity between the Project and SPAs with Arctic skua as a qualifying feature was determined in reference to the BDMPS region "UK western waters" (Furness, 2015). A total of seven SPAs were screened into the assessment (**Table 7.19**).

209. The SPAs identified in **Table 7.19** resulted in a total of seven SPAs designated for Arctic skua where it was possible to conclude there was an LSE. Predicted impacts from the Project in the breeding season will be combined with predicted impacts from the Project in the non-breeding season to assess for the absence of adverse effects on site integrity to each SPA shown in **Table 7.20**.

*Table 7.20 Summary of Special Protection Areas for breeding Arctic skua as a qualifying feature screened into the Habitat Regulations Appraisal for the Project*

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Fair Isle | No | Yes |
| Fetlar | No | Yes |
| Foula | No | Yes |
| Hoy | No | Yes |
| Papa Westray (North Hill and Holm) | No | Yes |
| Rousay | No | Yes |
| West Westray | No | Yes |

7.4.2.1.10 Guillemot

210. The breeding and non-breeding season connectivity between the Project and SPAs for guillemot was based on a mean of the maximum foraging range plus one standard deviation of 95.2 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with guillemot as a breeding feature resulted in five SPAs with connectivity ranging from the North Colonsay and Western Cliffs SPA 11.2 km from the Project to Canna and Sanday SPA 95.1 km from the Project (**Table 7.21**).

211. However, it is highly unlikely that guillemots would fly in a straight line over land on foraging trips, so the shortest distance by sea between SPAs and the Project were calculated. This resulted in three SPAs where it was possible to conclude there was an LSE (**Table 7.21**): North Colonsay and Western Cliffs, Rathlin Island and Mingulay and Berneray SPAs.

212. NatureScot recommend using a longer foraging range for SPAs from the Northern Isles (NatureScot, 2023a). Applying the longer foraging range of 153.7 km from the Project resulted in no SPAs in the Northern Isles being screened into the assessment.

*Table 7.21 Special Protection Areas with breeding guillemot as a qualifying feature with connectivity in the breeding and non-breeding season.*

| Special Protection Area (SPA) | Breeding and non-breeding seasons | | | |
|---|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | Non-Euclidian distance (km) | Within foraging range (by sea) |
| North Colonsay and Western Cliffs | 11.2 | Yes | 18.3 | Yes |
| Rathlin Island | 60.2 | Yes | 70.5 | Yes |
| Rum | 81.2 | Yes | 95.4 | No |
| Mingulay and Berneray | 83.8 | Yes | 90.1 | Yes |
| Canna and Sanday | 95.1 | Yes | 99.8 | No |
| Ailsa Craig | 110.2 | No | 128.3 | No |
| Shiant Isles | 188.4 | No | 198.5 | No |
| Seas off St Kilda | 190.0 | No | 242.0 | No |
| Forth Islands | 190.1 | No | 744.2 | No |
| Outer Firth of Forth and St Andrews Bay Complex | 192.5 | No | 732.8 | No |
| St Kilda | 205.9 | No | 217.7 | No |
| Flannan Isles | 237.2 | No | 244.5 | No |
| Handa | 257.5 | No | 283.6 | No |
| St Abb's Head to Fast Castle | 260.8 | No | 754.3 | No |
| Fowlsheugh | 275.4 | No | 646.0 | No |
| Northumberland Marine | 282.2 | No | 800.1 | No |
| East Caithness Cliffs | 282.3 | No | 476.2 | No |
| Cape Wrath | 283.6 | No | 316.0 | No |
| Farne Islands | 303.5 | No | 784.3 | No |

| Special Protection Area (SPA) | Breeding and non-breeding seasons | | | |
|---|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | Non-Euclidian distance (km) | Within foraging range (by sea) |
| Troup, Pennan and Lion's Heads | 304.7 | No | 542.9 | No |
| Buchan Ness to Collieston Coast | 307.6 | No | 587.6 | No |
| North Caithness Cliffs | 313.2 | No | 408.3 | No |
| North Rona and Sula Sgeir | 323.5 | No | 335.6 | No |
| Sule Skerry and Sule Stack | 340.1 | No | 368.1 | No |
| Hoy | 350.6 | No | 412.2 | No |
| Marwick Head | 380.2 | No | 421.5 | No |
| Copinsay | 380.3 | No | 452.6 | No |
| Rousay | 392.5 | No | 444.7 | No |
| West Westray | 405.9 | No | 447.1 | No |
| Calf of Eday | 410.8 | No | 461.5 | No |
| Flamborough and Filey Coast | 434.6 | No | 961.1 | No |
| Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro | 457.2 | No | 500.2 | No |
| Fair Isle | 471.4 | No | 531.1 | No |
| Seas off Foula | 481.2 | No | 532.7 | No |
| Foula | 511.2 | No | 548.0 | No |
| Sumburgh Head | 514.9 | No | 565.8 | No |
| Noss | 547.9 | No | 601.1 | No |
| Hermaness, Saxa Vord and Valla Field | 606.8 | No | 648.9 | No |

#### 7.4.2.1.11 Razorbill

213. The breeding season connectivity between the Project and SPAs for razorbill was based on a mean of the maximum foraging range plus one standard deviation of 122.2 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with razorbill as a breeding feature resulted in two SPAs with connectivity: Rathlin Island SPA 60.2 km from the Project and Mingulay and Berneray SPA 83.8 km from the Project (**Table 7.22**).

214. However, it is highly unlikely that razorbill would fly in a straight line over land on breeding season foraging trips, so the shortest distance by sea between SPAs and the Project were calculated. This resulted in the same two SPAs having connectivity (**Table 7.22**).

215. The non-breeding season connectivity between the Project and SPAs with razorbill as a qualifying feature was determined in reference to the BDMPS region “UK western waters & Channel” (Furness, 2015). A total of 19 SPAs were screened into the assessment (**Table 7.22**).

216. NatureScot recommend using a longer foraging range for SPAs from the Northern Isles (NatureScot, 2023a). Applying the longer foraging range of 164.6 km from the Project resulted in no SPAs in the Northern Isles being screened into the assessment.

*Table 7.22 Special Protection Areas with breeding razorbill as a qualifying feature with connectivity in the breeding and non-breeding season*

| Special Protection Area (SPA) | Breeding season | | | | Non-breeding season |
|---|---|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | Non-Euclidian distance (km) | Within foraging range (by sea) | UK western waters & Channel |
| Rathlin Island | 60.2 | Yes | 70.5 | Yes | Yes |
| Mingulay and Berneray | 83.8 | Yes | 90.1 | Yes | Yes |
| Shiant Isles | 188.4 | No | 198.5 | No | Yes |
| Forth Islands | 190.1 | No | 744.2 | No | Yes |
| Outer Firth of Forth and St Andrews Bay Complex | 192.5 | No | 732.8 | No | No |
| St Kilda | 205.9 | No | 217.7 | No | Yes |
| Flannan Isles | 237.2 | No | 244.5 | No | Yes |
| Handa | 257.5 | No | 283.6 | No | Yes |
| St Abb's Head to Fast Castle | 260.8 | No | 754.3 | No | Yes |
| Fowlsheugh | 275.4 | No | 646.0 | No | Yes |
| East Caithness Cliffs | 282.3 | No | 476.2 | No | Yes |
| Cape Wrath | 283.6 | No | 316.0 | No | Yes |
| Troup, Pennan and Lion's Heads | 304.7 | No | 542.9 | No | Yes |
| North Caithness Cliffs | 313.2 | No | 408.3 | No | Yes |
| North Rona and Sula Sgeir | 323.5 | No | 335.6 | No | Yes |
| West Westray | 405.9 | No | 447.1 | No | Yes |
| Flamborough and Filey Coast | 434.6 | No | 961.1 | No | Yes |
| Fair Isle | 471.4 | No | 531.1 | No | Yes |
| Foula | 511.2 | No | 548.0 | No | Yes |

217. The SPAs identified in **Table 7.22** resulted in a total of 18 SPAs designated for razorbill where it was possible to conclude there was an LSE. Predicted impacts from the Project in the breeding season will be combined with predicted impacts from the Project in the non-breeding season to assess for the absence of adverse effects on site integrity to each SPA shown in **Table 7.23**.

*Table 7.23 Summary of Special Protection Areas for breeding razorbill as a qualifying feature screened into the Habitat Regulations Appraisal*

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Cape Wrath | No | Yes |
| East Caithness Cliffs | No | Yes |
| Fair Isle | No | Yes |
| Flamborough and Filey Coast | No | Yes |
| Flannan Isles | No | Yes |
| Forth Islands | No | Yes |
| Foula | No | Yes |
| Fowlsheugh | No | Yes |
| Handa | No | Yes |
| Mingulay and Berneray | Yes | Yes |
| North Caithness Cliffs | No | Yes |
| North Rona and Sula Sgeir | No | Yes |
| Rathlin Island | Yes | Yes |
| Shiant Isles | No | Yes |
| St Abb's Head to Fast Castle | No | Yes |
| St Kilda | No | Yes |
| Troup, Pennan and Lion's Heads | No | Yes |
| West Westray | No | Yes |

#### 7.4.2.1.12 Puffin

218. The breeding season connectivity between the Project and SPAs for puffin was based on a mean of the maximum foraging range plus one standard deviation of 265.4 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with puffin as a breeding feature resulted in nine SPAs with connectivity ranging from Rathlin Island SPA 60.2 km from the Project to Flannan Isles SPA 237.2 km from the Project (**Table 7.24**).

219. However, it is highly unlikely that puffin would fly in a straight line over land on breeding season foraging trips, so the shortest distance by sea between SPAs and the Project were calculated. This resulted in seven SPAs with connectivity (**Table 7.24**).

220. The non-breeding season connectivity between the Project and SPAs with puffin as a qualifying feature was determined in reference to the BDMPS region “UK western waters” (Furness, 2015). A total of 24 SPAs were screened into the assessment (**Table 7.24**).

*Table 7.24 Special Protection Areas with breeding puffin as a qualifying feature with connectivity in the breeding and non-breeding season*

| Special Protection Area (SPA) | Breeding season | | | | Non-breeding season |
|---|---|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | Non-Euclidian distance (km) | Within foraging range (by sea) | UK western waters & Channel |
| Rathlin Island | 60.2 | Yes | 70.5 | Yes | Yes |
| Mingulay and Berneray | 83.8 | Yes | 90.1 | Yes | Yes |
| Canna and Sanday | 95.1 | Yes | 99.8 | Yes | Yes |
| Shiant Isles | 188.4 | Yes | 198.5 | Yes | Yes |
| Seas off St Kilda | 190.0 | Yes | 242.0 | Yes | Yes* |
| Forth Islands | 190.1 | Yes | 744.2 | No | Yes |
| Outer Firth of Forth and St Andrews Bay Complex | 192.5 | Yes | 732.8 | No | No |
| St Kilda | 205.9 | Yes | 217.7 | Yes | Yes |
| Flannan Isles | 237.2 | Yes | 244.5 | Yes | Yes |
| Northumberland Marine | 282.2 | No | 800.1 | No | Yes* |
| Cape Wrath | 283.6 | No | 316.0 | No | Yes |
| Farne Islands | 303.5 | No | 784.3 | No | Yes |
| North Caithness Cliffs | 313.2 | No | 408.3 | No | Yes |
| Coquet Island | 318.3 | No | 818.4 | No | Yes |
| North Rona and Sula Sgeir | 323.5 | No | 335.6 | No | Yes |
| Sule Skerry and Sule Stack | 340.1 | No | 368.1 | No | Yes |
| Hoy | 350.6 | No | 412.2 | No | Yes |
| Flamborough and Filey Coast | 434.6 | No | 961.1 | No | Yes |

| Special Protection Area (SPA) | Breeding season | | | | Non-breeding season |
|---|---|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | Non-Euclidian distance (km) | Within foraging range (by sea) | UK western waters & Channel |
| Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro | 457.2 | No | 500.2 | No | Yes |
| Fair Isle | 471.4 | No | 531.1 | No | Yes |
| Seas off Foula | 481.2 | No | 532.7 | No | No |
| Foula | 511.2 | No | 548.0 | No | Yes |
| Noss | 547.9 | No | 601.1 | No | Yes |
| Hermaness, Saxa Vord and Valla Field | 606.8 | No | 648.9 | No | Yes |
| * SPAs that were not designated when Furness (2015) was published but assumed to have non-breeding season connectivity | | | | | |

221. The SPAs identified in **Table 7.24** resulted in a total of 19 SPAs designated for puffin where it was possible to conclude there was an LSE. Predicted impacts from the Project in the breeding season will be combined with predicted impacts from the Project in the non-breeding season to assess for the absence of adverse effects on site integrity to each SPA shown in **Table 7.25**.

*Table 7.25 Special Protection Areas with breeding puffin as a qualifying feature screened into the Habitat Regulations Appraisal for the Project*

| SPA Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Canna and Sanday | Yes | Yes |
| Cape Wrath | No | Yes |
| Coquet Island | No | Yes |
| Fair Isle | No | Yes |
| Farne Islands | No | Yes |
| Flamborough and Filey Coast | No | Yes |
| Flannan Isles | Yes | Yes |
| Forth Islands | No | Yes |
| Foula | No | Yes |
| Hermaness, Saxa Vord and Valla Field | No | Yes |
| Hoy | No | Yes |
| Mingulay and Berneray | Yes | Yes |
| North Caithness Cliffs | No | Yes |
| North Rona and Sula Sgeir | No | Yes |
| Northumberland Marine | No | Yes |
| Noss | No | Yes |
| Rathlin Island | Yes | Yes |
| Seas off St Kilda | Yes | Yes |
| Shiant Isles | Yes | Yes |

#### 7.4.2.1.13 Red-throated diver

222. The breeding season connectivity between the Project and SPAs for red-throated diver was based on a mean of the maximum foraging range plus one standard deviation of 9 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with red-throated diver as a breeding feature resulted in no SPAs with connectivity (**Table 7.26**).

*Table 7.26 Special Protection Areas with breeding red-throated diver as a qualifying feature with connectivity in the breeding and non-breeding season.*

| Special Protection Area (SPA) | Breeding season | | Non-breeding season |
|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | UK west of Scotland waters |
| Rum | 81.2 | No | Yes |
| West Coast of the Outer Hebrides | 93.3 | No | No |
| Mointeach Scadabhaigh | 163.0 | No | Yes |
| Lewis Peatlands | 209.2 | No | Yes |
| Caithness and Sutherland Peatlands | 261.7 | No | Yes |
| Hoy | 350.6 | No | Yes |
| Scapa Flow | 354.9 | No | Yes* |
| North Orkney | 380.1 | No | Yes* |
| Orkney Mainland Moors | 388.1 | No | Yes |
| Foula | 511.2 | No | Yes |
| East Mainland Coast, Shetland | 548.3 | No | No |
| Ronas Hill – North Roe and Tingon | 581.7 | No | Yes |
| Otterswick and Graveland | 593.1 | No | Yes |
| Hermaness, Saxa Vord and Valla Field | 606.8 | No | Yes |
| * SPAs that were not designated when Furness (2015) was published but assumed to have non-breeding season connectivity | | | |

223. The non-breeding season connectivity between the Project and SPAs with red-throated diver as a qualifying feature was determined in reference to the BDMPS region “UK western waters” (Furness, 2015). Additional marine SPAs have been designated since the publication of the BDMPS report. NatureScot’s advice on the connectivity with marine SPAs recommends a generic 15 km buffer from the SPA boundary. This applies to all elements of the Project. However, this screening report only applies to the WDA. Thus, none of the marine SPAs designated for red-throated diver were screened into the assessment (**Table 7.26**). Thus, only the SPAs included in the BDMPS report were screened into the assessment in the three non-breeding seasons resulting in a total of 12 SPAs being screened in (**Table 7.26**). A separate HRA screening exercise for the OfTDA will be undertaken once there is greater certainty on the grid connection location (**Section 1.1**).

224. The SPAs identified in **Table 7.26** resulted in 12 SPAs designated for red-throated diver being screened into the assessment. Predicted impacts from the Project in the breeding season will be combined with predicted impacts from the Project in the non-breeding season to assess for the absence of adverse effects on site integrity to each SPA shown in **Table 7.27**.

*Table 7.27 Summary of Special Protection Areas for breeding and non-breeding red-throated diver as a qualifying feature screened into the Habitat Regulations Appraisal*

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Caithness and Sutherland Peatlands | No | Yes |
| Foula | No | Yes |
| Hermaness, Saxa Vord and Valla Field | No | Yes |
| Hoy | No | Yes |
| Lewis Peatlands | No | Yes |
| Mointeach Scadabhaigh | No | Yes |
| North Orkney | No | Yes |
| Orkney Mainland Moors | No | Yes |
| Otterswick and Graveland | No | Yes |
| Ronas Hill – North Roe and Tingon | No | Yes |
| Rum | No | Yes |
| Scapa Flow | No | Yes |

7.4.2.1.14 Great northern diver

225. There are no breeding great northern divers in the UK so there are no SPAs designated for breeding great northern diver populations in the UK.

226. In the non-breeding season, there were no SPAs designated for great northern diver in the UK when the BDMPS report was published (Furness, 2015). An additional eight marine SPAs have been designated for great northern divers since the publication of the BDMPS report. NatureScot's advice on the connectivity with marine SPAs recommends a generic 15 km buffer from the SPA boundary. This applies to all elements of the Project. However, this screening report only applies to the WDA. Thus, none of the marine SPAs designated for great northern diver were screened into the assessment (**Table 7.28**). A separate HRA screening exercise for the OfTDA will be undertaken once there is greater certainty on the grid connection location (**Section 1.1**).

*Table 7.28 Special Protection Areas with great northern diver as a qualifying feature with connectivity in the non-breeding season*

| Special Protection Area (SPA) | Straight line distance (km) |
|---|---|
| Coll and Tiree | 24.1 |
| Sound of Gigha | 48.0 |
| West Coast of the Outer Hebrides | 93.3 |
| Moray Firth | 198.1 |
| Scapa Flow | 354.9 |
| North Orkney | 380.1 |
| East Mainland Coast, Shetland | 548.3 |
| Falmouth Bay to St Austell Bay | 622.8 |

#### 7.4.2.1.15 Storm petrel

227. The breeding season connectivity between the Project and SPAs for storm petrel was based on a mean of the maximum foraging range plus one standard deviation of 336 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with storm petrel as a breeding feature resulted in five SPAs with connectivity ranging from the Treshnish Isles SPA 32.7 km from the Project and North Rona and Sula Sgeir SPA 323.5 km from the Project (**Table 7.29**).

228. However, it is highly unlikely that storm petrel would fly in a straight line over land on breeding season foraging trips, so the shortest distance by sea between SPAs and the Project were calculated. This resulted in the same five SPAs with connectivity (**Table 7.29**).

*Table 7.29 Special Protection Areas with breeding storm petrel as a qualifying feature with connectivity in the breeding season*

| Special Protection Area (SPA) | Breeding season | | | |
|---|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | Non-Euclidian distance (km) | Within foraging range (by sea) |
| Treshnish Isles | 32.7 | Yes | 39.7 | Yes |
| Seas off St Kilda | 190.0 | Yes | 242.0 | Yes |
| St Kilda | 205.9 | Yes | 217.7 | Yes |
| Priest Island (Summer Isles) | 210.3 | Yes | 240.1 | Yes |
| North Rona and Sula Sgeir | 323.5 | Yes | 335.6 | Yes |
| Sule Skerry and Sule Stack | 340.1 | No | 368.1 | No |
| Auskerry | 414.5 | No | 463.5 | No |
| Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro | 457.2 | No | 500.2 | No |
| Mousa | 546.1 | No | 588.8 | No |
| Isles of Scilly | 648.7 | No | 683.7 | No |

229. Storm petrels migrate to the South Atlantic in the winter, so were not included in the BDMPS report (Furness, 2015). As such there is no need to assess impacts in the non-breeding season to SPAs designated for their storm petrel populations. Thus, the SPAs where it was possible to conclude there was an LSE and which are therefore screened into the HRA for the Project are:

- North Rona and Sula Sgeir SPA;
- Priest Island (Summer Isles) SPA;
- Seas off St Kilda SPA;
- St Kilda SPA; and
- Treshnish Isles SPA.

7.4.2.1.16 Fulmar

230. The breeding season connectivity between the Project and SPAs for fulmar was based on a mean of the maximum foraging range plus one standard deviation of 1,200.2 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with fulmar as a breeding feature resulted in 25 SPAs with connectivity ranging from the Mingulay and Berneray SPA 83.8 km from the Project and Hermaness, Saxa Vord and Valla Field SPA 606.8 km from the Project (**Table 7.30**).

231. However, it is highly unlikely that fulmar would fly in a straight line over land on breeding season foraging trips, so the shortest distance by sea between SPAs and the Project were calculated. This resulted in the same 25 SPAs with connectivity (**Table 7.30**).

232. The non-breeding season connectivity between the Project and SPAs with fulmar as a qualifying feature was determined in reference to the BDMPS region “UK western waters & Channel” (Furness, 2015). A total of 25 SPAs were screened into the assessment (**Table 7.30**).

*Table 7.30 Special Protection Areas with breeding fulmar as a qualifying feature with connectivity in the breeding and non-breeding season*

| Special Protection Area (SPA) | Breeding season | | | | Non-breeding season |
|---|---|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | Non-Euclidian distance (km) | Within foraging range (by sea) | UK western waters & Channel |
| Mingulay and Berneray | 83.8 | Yes | 90.1 | Yes | Yes |
| Shiant Isles | 188.4 | Yes | 198.5 | Yes | Yes |
| Seas off St Kilda | 190.0 | Yes | 242.0 | Yes | No* |
| St Kilda | 205.9 | Yes | 217.7 | Yes | Yes |
| Flannan Isles | 237.2 | Yes | 244.5 | Yes | Yes |
| Handa | 257.5 | Yes | 283.6 | Yes | Yes |
| Fowlsheugh | 275.4 | Yes | 646.0 | Yes | Yes |
| East Caithness Cliffs | 282.3 | Yes | 476.2 | Yes | Yes |
| Cape Wrath | 283.6 | Yes | 316.0 | Yes | Yes |
| Troup, Pennan and Lion's Heads | 304.7 | Yes | 542.9 | Yes | Yes |
| Buchan Ness to Collieston Coast | 307.6 | Yes | 587.6 | Yes | Yes |
| North Caithness Cliffs | 313.2 | Yes | 408.3 | Yes | Yes |
| North Rona and Sula Sgeir | 323.5 | Yes | 335.6 | Yes | Yes |
| Hoy | 350.6 | Yes | 412.2 | Yes | Yes |
| Copinsay | 380.3 | Yes | 452.6 | Yes | Yes |
| Rousay | 392.5 | Yes | 444.7 | Yes | Yes |
| West Westray | 405.9 | Yes | 447.1 | Yes | Yes |
| Calf of Eday | 410.8 | Yes | 461.5 | Yes | Yes |
| Fair Isle | 471.4 | Yes | 531.1 | Yes | Yes |

| Special Protection Area (SPA) | Breeding season | | | | Non-breeding season |
|---|---|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | Non-Euclidian distance (km) | Within foraging range (by sea) | UK western waters & Channel |
| Seas off Foula | 481.2 | Yes | 532.7 | Yes | No* |
| Foula | 511.2 | Yes | 548.0 | Yes | Yes |
| Sumburgh Head | 514.9 | Yes | 565.8 | Yes | Yes |
| Noss | 547.9 | Yes | 601.1 | Yes | Yes |
| Fetlar | 589.3 | Yes | 653.0 | Yes | Yes |
| Hermaness, Saxa Vord and Valla Field | 606.8 | Yes | 648.9 | Yes | Yes |
| * NatureScot Guidance (Guidance Note 4) states that connectivity in the non-breeding season is based on a generic 15 km buffer | | | | | |

233. The SPAs identified in **Table 7.30** resulted in a total of 25 SPAs designated for fulmar where it was possible to conclude there was an LSE. Predicted impacts from the Project in the breeding season will be combined with predicted impacts from the Project in the non-breeding season to assess for the absence of adverse effects on site integrity to each SPA shown in **Table 7.31**.

*Table 7.31 Special Protection Areas with breeding fulmar as a qualifying feature screened into the Habitat Regulations Appraisal*

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Buchan Ness to Collieston Coast | Yes | Yes |
| Calf of Eday | Yes | Yes |
| Cape Wrath | Yes | Yes |
| Copinsay | Yes | Yes |
| East Caithness Cliffs | Yes | Yes |
| Fair Isle | Yes | Yes |
| Fetlar | Yes | Yes |
| Flannan Isles | Yes | Yes |
| Foula | Yes | Yes |
| Fowlsheugh | Yes | Yes |
| Handa | Yes | Yes |
| Hermaness, Saxa Vord and Valla Field | Yes | Yes |
| Hoy | Yes | Yes |
| Mingulay and Berneray | Yes | Yes |
| North Caithness Cliffs | Yes | Yes |
| North Rona and Sula Sgeir | Yes | Yes |
| Noss | Yes | Yes |
| Rousay | Yes | Yes |
| Seas off Foula | Yes | No |
| Seas off St Kilda | Yes | No |
| Shiant Isles | Yes | Yes |
| St Kilda | Yes | Yes |
| Sumburgh Head | Yes | Yes |
| Troup, Pennan and Lion's Heads | Yes | Yes |
| West Westray | Yes | Yes |

#### 7.4.2.1.17 Manx shearwater

234. The breeding season connectivity between the Project and SPAs for Manx shearwater was based on a mean of the maximum foraging range plus one standard deviation of 2,365.5 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with Manx shearwater as a breeding feature resulted in seven SPAs with connectivity ranging from the Rum SPA which is 81.2 km from the Project and Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA which is 457.2 km from the Project (**Table 7.32**).

235. However, it is highly unlikely that Manx shearwater would fly in a straight line over land on breeding season foraging trips, so the shortest distance by sea between SPA and the Project were calculated. This resulted in the same seven SPAs with connectivity (**Table 7.32**).

236. The non-breeding season connectivity between the Project and SPAs with Manx shearwater as a qualifying feature was determined in reference to the BDMPS region “UK western waters & Channel” (Furness, 2015). A total of seven SPAs were screened into the assessment (**Table 7.32**).

*Table 7.32 Special Protection Areas with breeding Manx shearwater as a qualifying feature with connectivity in the breeding and non-breeding season*

| Special Protection Area (SPA) | Breeding season | | | | Non-breeding season |
|---|---|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | Non-Euclidian distance (km) | Within foraging range (by sea) | UK western waters & Channel |
| Rum | 81.2 | Yes | 95.4 | Yes | Yes |
| Copeland Islands | 144.7 | Yes | 148.3 | Yes | Yes |
| Outer Firth of Forth and St Andrews Bay Complex+ | 192.5 | Yes | 732.8 | Yes | No |
| St Kilda | 205.9 | Yes | 217.7 | Yes | Yes |
| Irish Sea Front | 247.0 | Yes | 262.7 | Yes | Yes* |
| Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island | 350.4 | Yes | 368.9 | Yes | Yes |
| Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro | 457.2 | Yes | 500.2 | Yes | Yes |
| + NatureScot Guidance Note 4 states that a 15 km buffer should be applied for Manx shearwater.<br>* SPAs that were not designated when Furness (2015) was published but assumed to have non-breeding season connectivity. | | | | | |

237. The SPAs identified in **Table 7.32** resulted in a total of six SPAs designated for Manx shearwater where it was possible to conclude there was an LSE. Predicted impacts from the Project in the breeding season will be combined with predicted impacts from the Project in the non-breeding season to assess for the absence of adverse effects on site integrity to each SPA shown in **Table 7.33**. Note that the Irish Sea front SPA was designated after the publication of the BDMPS report, so was not included. It has been screened into the HRA for the Project.

*Table 7.33 Summary of Special Protection Areas for breeding Manx shearwater as a qualifying feature screened into the Habitat Regulations Appraisal*

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Copeland Islands | Yes | Yes |
| Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island | Yes | Yes |
| Irish Sea Front | Yes | Yes |
| Rum | Yes | Yes |
| Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro | Yes | Yes |
| St Kilda | Yes | Yes |

7.4.2.1.18 Gannet

238. The breeding season connectivity between the Project and SPAs for gannet was based on a mean of the maximum foraging range plus one standard deviation of 509.4 km. Using a minimum straight line (Euclidian) distance between the Project and SPAs with gannet as a breeding feature resulted in ten SPAs with connectivity ranging from the Ailsa Craig SPA 110.2 km from the Project and Fair Isle SPA 471.4 km from the Project (**Table 7.34**).

239. However, it is highly unlikely that gannet would fly in a straight line over land on breeding season foraging trips, so the shortest distance by sea between SPA and the Project were calculated. This resulted in six SPAs with connectivity (**Table 7.34**).

240. The non-breeding season connectivity between the Project and SPAs with gannet as a qualifying feature was determined in reference to the BDMPS region “UK western waters” (Furness, 2015). A total of 12 SPAs were screened into the assessment (**Table 7.34**)

241. NatureScot recommend using a longer foraging range for SPAs from the Forth Islands (590 km), Grassholm (516.7 km) and St Kilda (709 km) (NatureScot, 2023a). Applying these longer foraging ranges from the Project resulted in no change to the SPAs being screened into the assessment.

*Table 7.34 Special Protection Areas with breeding gannet as a qualifying feature with connectivity in the breeding and non-breeding season*

| Special Protection Area (SPA) | Breeding season | | | | Non-breeding season |
|---|---|---|---|---|---|
| | Straight line distance (km) | Within foraging range (Straight line) | Non-Euclidian distance (km) | Within foraging range (by sea) | UK western waters |
| Ailsa Craig | 110.2 | Yes | 128.3 | Yes | Yes |
| Seas off St Kilda+ | 190.0 | Yes | 242.0 | Yes | No |
| Forth Islands | 190.1 | Yes | 744.2 | No | Yes |
| Outer Firth of Forth and St Andrews Bay Complex+ | 192.5 | Yes | 732.8 | No | No |
| St Kilda | 205.9 | Yes | 217.7 | Yes | Yes |
| North Rona and Sula Sgeir | 323.5 | Yes | 335.6 | Yes | Yes |
| Sule Skerry and Sule Stack | 340.1 | Yes | 368.1 | Yes | Yes |
| Flamborough and Filey Coast | 434.6 | Yes | 961.1 | No | Yes |
| Grassholm | 458.9 | Yes | 478.3 | Yes | Yes |
| Fair Isle | 471.4 | Yes | 531.1 | No | Yes |
| Noss | 547.9 | No | 601.1 | No | Yes |
| Hermaness, Saxa Vord and Valla Field | 606.8 | No | 648.9 | No | Yes |

+ NatureScot Guidance Note 4 states that a 15 km buffer should be applied for non-breeding seabirds.

* SPAs that were not designated when Furness (2015) was published but assumed to have non-breeding season connectivity.

242. The SPAs identified in **Table 7.34** resulted in a total of 11 SPAs designated for gannet where it was possible to conclude there was an LSE. Predicted impacts from the Project in the breeding season will be combined with predicted impacts from the Project in the non-breeding season to assess for the absence of adverse effects on site integrity to each SPA shown in **Table 7.35**.

*Table 7.35 Special Protection Areas with breeding gannet as a qualifying feature screened into the Habitat Regulations Appraisal*

| Special Protection Area (SPA) | Breeding season | Non-breeding season |
|---|---|---|
| Ailsa Craig | Yes | Yes |
| Seas off St Kilda | Yes | No |
| Forth Islands | No | Yes |
| St Kilda | Yes | Yes |
| North Rona and Sula Sgeir | Yes | Yes |
| Sule Skerry and Sule Stack | Yes | Yes |
| Flamborough and Filey Coast | No | Yes |
| Grassholm | Yes | Yes |
| Fair Isle | No | Yes |
| Noss | No | Yes |
| Hermaness, Saxa Vord and Valla Field | No | Yes |

7.4.2.1.19 Summary of SPA Screening in for Seabird Features

243. The process of screening the SPAs with potential connectivity with the Project resulted in a total of 79 SPAs designated for seabirds where it was possible to conclude there was an LSE for 16 species (**Table 7.36**).

*Table 7.36 Summary of the Special Protection Areas screened into the assessment as a result of connectivity with SPAs designated for seabird populations.*

| Special Protection Area (SPA) | Qualifying feature |
|---|---|
| Ailsa Craig | • Kittiwake<br>• Herring gull<br>• Lesser black-backed gull<br>• Gannet |
| Anglesey Terns / Morwenoliaid Ynys Môn / Morwenoliaid Ynys Mon | • Common tern<br>• Arctic tern |
| Auskerry | • Arctic tern |
| Bowland Fells | • Lesser black-backed gull |
| Breydon Water | • Common tern |
| Buchan Ness to Collieston Coast | • Kittiwake<br>• Herring gull<br>• Fulmar |
| Caithness and Sutherland Peatlands | • Red-throated diver |

| Special Protection Area (SPA) | Qualifying feature |
|---|---|
| Calf of Eday | • Kittiwake<br>• Great black-backed gull<br>• Fulmar |
| Canna and Sanday | • Kittiwake<br>• Herring gull<br>• Puffin |
| Cape Wrath | • Kittiwake<br>• Razorbill<br>• Puffin<br>• Fulmar |
| Carlingford Lough | • Common tern |
| Copeland Islands | • Manx shearwater |
| Copinsay | • Kittiwake<br>• Great black-backed gull<br>• Fulmar |
| Coquet Island | • Common tern<br>• Arctic tern<br>• Puffin |
| Cromarty Firth | • Common tern |
| Dungeness, Romney Marsh and Rye Bay | • Common tern |
| East Caithness Cliffs | • Kittiwake<br>• Great black-backed gull<br>• Herring gull<br>• Razorbill<br>• Fulmar |
| Fair Isle | • Kittiwake<br>• Arctic tern<br>• Great skua<br>• Arctic skua<br>• Razorbill<br>• Puffin<br>• Fulmar<br>• Gannet |
| Farne Islands | • Kittiwake<br>• Common tern<br>• Arctic tern<br>• Puffin |
| Fetlar | • Arctic tern<br>• Great skua<br>• Arctic skua<br>• Fulmar |
| Flamborough and Filey Coast | • Kittiwake<br>• Herring gull<br>• Razorbill<br>• Puffin<br>• Gannet |

| Special Protection Area (SPA) | Qualifying feature |
|---|---|
| Flannan Isles | • Kittiwake<br>• Razorbill<br>• Puffin<br>• Fulmar |
| Forth Islands | • Kittiwake<br>• Herring gull<br>• Lesser black-backed gull<br>• Common tern<br>• Arctic tern<br>• Razorbill<br>• Puffin<br>• Gannet |
| Foula | • Kittiwake<br>• Arctic tern<br>• Great skua<br>• Arctic skua<br>• Razorbill<br>• Puffin<br>• Red-throated diver<br>• Fulmar |
| Foulness (Mid-Essex Coast Phase 5) | • Common tern |
| Fowlsheugh | • Kittiwake<br>• Herring gull<br>• Razorbill<br>• Fulmar |
| Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island | • Manx shearwater |
| Glas Eileanan | • Common tern |
| Grassholm | • Gannet |
| Handa | • Kittiwake<br>• Great skua<br>• Razorbill<br>• Fulmar |
| Hermaness, Saxa Vord and Valla Field | • Kittiwake<br>• Great skua<br>• Puffin<br>• Red-throated diver<br>• Fulmar<br>• Gannet |
| Hoy | • Kittiwake<br>• Great black-backed gull<br>• Great skua<br>• Arctic skua<br>• Puffin<br>• Red-throated diver<br>• Fulmar |
| Imperial Dock Lock | • Common tern |

| Special Protection Area (SPA) | Qualifying feature |
|---|---|
| Inner Moray Firth | • Common tern |
| Irish Sea Front | • Manx shearwater |
| Isles of Scilly | • Great black-backed gull<br>• Lesser black-backed gull |
| Larne Lough | • Common tern |
| Lewis Peatlands | • Red-throated diver |
| Lough Neagh & Lough Beg | • Lesser black-backed gull<br>• Common tern |
| Marwick Head | • Kittiwake |
| Mingulay and Berneray | • Kittiwake<br>• Guillemot<br>• Razorbill<br>• Puffin<br>• Fulmar |
| Mointeach Scadabhaigh | • Red-throated diver |
| Morecambe Bay and Duddon Estuary | • Herring gull<br>• Lesser black-backed gull |
| Mousa | • Arctic tern |
| North Caithness Cliffs | • Kittiwake<br>• Razorbill<br>• Puffin<br>• Fulmar |
| North Colonsay and Western Cliffs | • Kittiwake<br>• Guillemot |
| North Norfolk Coast | • Common tern |
| North Rona and Sula Sgeir | • Kittiwake<br>• Great black-backed gull<br>• Razorbill<br>• Puffin<br>• Storm petrel<br>• Fulmar<br>• Gannet |
| Northumberland Marine | • Guillemot<br>• Puffin |
| Noss | • Kittiwake<br>• Great skua<br>• Puffin<br>• Fulmar<br>• Gannet |
| Orkney Mainland Moors | • Red-throated diver |
| Otterswick and Graveland | • Red-throated diver |
| Outer Ards | • Arctic tern |
| Papa Stour | • Arctic tern |

| Special Protection Area (SPA) | Qualifying feature |
|---|---|
| Papa Westray (North Hill and Holm) | • Arctic tern |
| Pentland Firth Islands | • Arctic tern |
| Poole Harbour | • Common tern |
| Priest Island (Summer Isles) | • Storm petrel |
| Rathlin Island | • Kittiwake<br>• Herring gull<br>• Lesser black-backed gull<br>• Guillemot<br>• Razorbill<br>• Puffin |
| Ribble and Alt Estuaries | • Lesser black-backed gull<br>• Common tern |
| Ronas Hill – North Roe and Tingon | • Red-throated diver |
| Rousay | • Arctic tern<br>• Arctic skua<br>• Fulmar |
| Rum | • Kittiwake<br>• Red-throated diver<br>• Manx shearwater |
| Seas off Foula | • Fulmar |
| Seas off St Kilda | • Puffin<br>• Storm petrel<br>• Fulmar<br>• Gannet |
| Shiant Isles | • Kittiwake<br>• Razorbill<br>• Puffin<br>• Fulmar |
| Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro | • Kittiwake<br>• Lesser black-backed gull<br>• Razorbill<br>• Puffin<br>• Manx shearwater |
| Solent and Southampton Water | • Common tern |
| St Abb's Head to Fast Castle | • Kittiwake<br>• Herring gull<br>• Razorbill |
| St Kilda | • Kittiwake<br>• Great skua<br>• Razorbill<br>• Puffin<br>• Storm petrel<br>• Fulmar<br>• Manx shearwater<br>• Gannet |

| Special Protection Area (SPA) | Qualifying feature |
|---|---|
| Strangford Lough | • Common tern<br>• Arctic tern |
| Sule Skerry and Sule Stack | • Puffin<br>• Gannet |
| Sumburgh Head | • Kittiwake<br>• Arctic tern<br>• Fulmar |
| The Dee Estuary | • Common tern |
| The Wash | • Common tern |
| Treshnish Isles | • Storm petrel |
| Troup, Pennan and Lion's Heads | • Kittiwake<br>• Herring gull<br>• Razorbill<br>• Fulmar |
| West Westray | • Kittiwake<br>• Arctic tern<br>• Arctic skua<br>• Razorbill<br>• Fulmar |
| Ythan Estuary, Sands of Forvie and Meikle Loch | • Common tern |

244. The SPAs for seabirds screened into the assessment cover a spatial area of most of the UK, from the Isles of Scilly SPA in the south-west to Hermaness Saxa Vord & Valla Field SPA in the north of Shetland (**Figure 7.2**).

| Label | SPA Name |
|---|---|
| 1 | Hermaness, Saxa Vord and Valla Field |
| 2 | Fetlar |
| 3 | Papa Stour |
| 4 | Noss |
| 5 | Seas off Foula |
| 6 | Foula |
| 7 | Mousa |
| 8 | Sumburgh Head |
| 9 | Fair Isle |
| 10 | Papa Westray (North Hill and Holm) |
| 11 | West Westray |
| 12 | Calf of Eday |
| 13 | Rousay |
| 14 | North Rona and Sula Sgeir |
| 15 | Marwick Head |
| 16 | Sule Skerry and Sule Stack |
| 17 | Auskerry |
| 18 | Copinsay |
| 19 | Hoy |
| 20 | Pentland Firth Islands |
| 21 | North Caithness Cliffs |
| 22 | Cape Wrath |
| 23 | Handa |
| 24 | Flannan Isles |
| 25 | East Caithness Cliffs |
| 26 | Seas off St Kilda |
| 27 | Priest Island (Summer Isles) |
| 28 | St Kilda |
| 29 | Shiant Isles |
| 30 | Cromarty Firth |
| 31 | Troup, Pennan and Lion's Heads |
| 32 | Inner Moray Firth |
| 33 | Buchan Ness to Collieston Coast |
| 34 | Ythan Estuary, Sands of Forvie and Meikle Loch |
| 35 | Canna and Sanday |
| 36 | Rum |
| 37 | Mingulay and Berneray |
| 38 | Fowlsheugh |
| 39 | Treshnish Isles |
| 40 | Glas Eileanan |
| 41 | Forth Islands |
| 42 | North Colonsay and Western Cliffs |
| 43 | Outer Firth of Forth and St Andrews Bay Complex |
| 44 | Imperial Dock Lock, Leith |
| 45 | St Abb's Head to Fast Castle |
| 46 | Farne Islands |
| 47 | Rathlin Island |
| 48 | Coquet Island |
| 49 | Ailsa Craig |
| 50 | Larne Lough |
| 51 | Copeland Islands |
| 52 | Lough Neagh and Lough Beg |
| 53 | Outer Ards |
| 54 | Strangford Lough |
| 55 | Flamborough and Filey Coast |
| 56 | Carlingford Lough |
| 57 | Morecambe Bay and Duddon Estuary |
| 58 | Bowland Fells |
| 59 | Irish Sea Front |
| 60 | Ribble and Alt Estuaries |
| 61 | The Dee Estuary |
| 62 | Anglesey Terns / Morwenoliaid Ynys Môn |
| 63 | North Norfolk Coast |
| 64 | The Wash |
| 65 | Glannau Aberdaron ac Ynys Enlli/ Aberdaron Coast and Bardsey Island |
| 66 | Breydon Water |
| 67 | Alde-Ore Estuary |
| 68 | Grassholm |
| 69 | Foulness (Mid-Essex Coast Phase 5) |
| 70 | Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro |
| 71 | Dungeness, Romney Marsh and Rye Bay |
| 72 | Solent and Southampton Water |
| 73 | Poole Harbour |
| 74 | Isles of Scilly |

Windfarm Development Area

Option Agreement Area

Special Protection Areas

N

0 100 200 Kilometres


| REV | REV DATE | GIS CREATOR | GIS REVIEWER | TECHNICAL CHECKER | TECHNICAL APPROVER |
|---|---|---|---|---|---|
| 3 | 08/08/2024 | MMM | LD | RM | RM |

| | | | |
|---|---|---|---|
| DRAWING NUMBER | MCW-GEN-GIS-MAP-RHS-000071 | | |
| DATUM | ETRS89 | PROJECTION | UTM Zone 29N |
| SCALE | 1:5,000,000 | PAGE SIZE | A3 |
| PROJECT TITLE | MachairWind | | |

**Figure 7.2 Seabird Special Protection Areas Screened into the Assessment**



NOT TO BE USED FOR NAVIGATION

MacArthur Green

ScottishPower Renewables

Project: S:\Projects\RHDHV\Machair Wind EIA & HRA\03_GIS\ReportFigure_SPA.aprx
Name: Offshore_SPA_MCH

This page is intentionally blank

#### *7.4.2.2 SPAs for Terrestrial Migratory Birds*

245. Terrestrial migratory birds would be subject to potential collision mortality or barrier effects from the Project. Therefore, any SPA with potential connectivity cannot exclude an LSE. Therefore, for SPAs with connectivity to the Project, it was assumed that there was an LSE and therefore these SPAs were screened into the next stage of the assessment.

246. With the publication of the "Strategic study of collision risk for birds on migration and further development of the stochastic collision risk modelling tool Work Package 1: Strategic review of birds on migration in Scottish waters" (Woodward et al. (2023)) it was possible to screen the terrestrial migratory species with hypothetical connectivity with the Project. From those species, all of the SPAs designated in the UK for those species could be identified (**Table 7.37**).

247. It is highly unlikely that all of the SPAs for these species will have connectivity with the Project. However, at present NatureScot guidance is to use WWT and MacArthur Green (2014) until remaining reports and tools from the "Strategic study of collision risk for birds on migration and further development of the stochastic collision risk modelling tool" (the 'Study') are published. Therefore, it is not possible to accurately screen the SPAs for terrestrial migratory species at this time. When the Study is completed, screening for the species listed in **Table 7.37** will be completed and shared with stakeholders.

*Table 7.37 Terrestrial migratory species screened into the Project assessment and all Special Protection Areas for those species*

| Species | Special Protection Area (SPA)s |
|---|---|
| 'Nearctic' Light–bellied Brent Goose (Canada and Greenland/Ireland) (*Branta bernicla hrota)* | • Lindisfarne<br>• Carlingford Lough<br>• Killough Bay<br>• Larne Lough<br>• Lough Foyle<br>• Outer Ards<br>• Strangford Lough |
| 'Greenland' Barnacle Goose (East Greenland/Scotland & Ireland) (*Branta leucopsis)* | • Solway Firth<br>• Bridgend Flats, Islay<br>• Coll<br>• Gruinart Flats, Islay<br>• Laggan, Islay<br>• Loch of Strathbeg<br>• Monach Islands<br>• North Sutherland Coastal Islands<br>• North Uist Machair and Islands<br>• Shiant Isles<br>• Sléibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)<br>• Switha<br>• Treshnish Isles |
| 'Icelandic' Greylag Goose (Iceland/ UK & Ireland) (*Anser answer)* | • Holburn Lake and Moss<br>• Lindisfarne<br>• Caithness Lochs<br>• Cromarty Firth<br>• Dornoch Firth and Loch Fleet<br>• Firth of Tay and Eden Estuary<br>• Inner Moray Firth<br>• Loch of Strathbeg |

| Species | Special Protection Area (SPA)s |
|---|---|
| | • Montrose Basin<br>• Moray and Nairn Coast |
| Pink-footed Goose (East Greenland and Iceland/UK) (*Anser brachyrhynchus)* | • Martin Mere<br>• North Norfolk Coast<br>• Ribble and Alt Estuaries<br>• The Wash<br>• Morecambe Bay and Duddon Estuary<br>• Solway Firth<br>• Cameron Reservoir<br>• Castle Loch, Lochmaben<br>• Din Moss - Hoselaw Loch<br>• Fala Flow<br>• Firth of Forth<br>• Firth of Tay and Eden Estuary<br>• Gladhouse Reservoir<br>• Greenlaw Moor<br>• Loch Leven<br>• Loch of Kinnordy<br>• Loch of Strathbeg<br>• Montrose Basin<br>• Moray and Nairn Coast<br>• South Tayside Goose Roosts<br>• Westwater<br>• Ythan Estuary, Sands of Forvie and Meikle Loch |
| 'Greenland' White-fronted Goose (Greenland/Ireland & UK) (*Anser albifrons flavirostris)* | • Caithness Lochs<br>• Coll<br>• Eilean na Muice Duibhe (Duich Moss)<br>• Gruinart Flats, Islay<br>• Kintyre Goose Roosts<br>• Laggan, Islay<br>• Loch Ken and River Dee Marshes<br>• Loch Lomond<br>• Loch of Inch and Torrs Warren<br>• Rinns of Islay<br>• Sléibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)<br>• Dyfi Estuary / Aber Dyfi |
| Whooper Swan (*Cygnus cygnus)* | • Broadland<br>• Lindisfarne<br>• Martin Mere<br>• Ouse Washes<br>• Ribble and Alt Estuaries<br>• Morecambe Bay and Duddon Estuary<br>• Solway Firth<br>• Lough Foyle<br>• Lough Neagh and Lough Beg<br>• Upper Lough Erne<br>• Black Cart<br>• Caithness Lochs<br>• Cromarty Firth<br>• Loch Eye |

| Species | Special Protection Area (SPA)s |
|---|---|
| | • Loch Leven<br>• Loch of Strathbeg<br>• Lochs of Spiggie and Brow<br>• Rinns of Islay<br>• River Spey - Insh Marshes |
| Shelduck (*Tadorna tadorna)* | • Chichester and Langstone Harbours<br>• Hamford Water<br>• Humber Estuary<br>• Lindisfarne<br>• Medway Estuary and Marshes<br>• Mersey Estuary<br>• Poole Harbour<br>• Ribble and Alt Estuaries<br>• Stour and Orwell Estuaries<br>• The Wash<br>• Morecambe Bay and Duddon Estuary<br>• Solway Firth<br>• Severn Estuary<br>• The Dee Estuary<br>• Firth of Forth<br>• Firth of Tay and Eden Estuary<br>• Montrose Basin<br>• Burry Inlet |
| Shoveler (*Spatula clypeata)* | • Abberton Reservoir<br>• Broadland<br>• Chew Valley Lake<br>• Chichester and Langstone Harbours<br>• Dungeness, Romney Marsh and Rye Bay<br>• Lee Valley<br>• Lower Derwent Valley<br>• Medway Estuary and Marshes<br>• Minsmere-Walberswick<br>• Nene Washes<br>• Ouse Washes<br>• Rutland Water<br>• South West London Waterbodies<br>• Stodmarsh<br>• Upper Nene Valley Gravel Pits<br>• Solway Firth<br>• Loch Leven<br>• Burry Inlet |
| Gadwall (*Mareca strepera)* | • Abberton Reservoir<br>• Avon Valley<br>• Broadland<br>• Hornsea Mere<br>• Lee Valley<br>• Minsmere-Walberswick<br>• Nene Washes<br>• Ouse Washes<br>• Rutland Water |

| Species | Special Protection Area (SPA)s |
|---|---|
| | • South West London Waterbodies<br>• Stodmarsh<br>• Stour and Orwell Estuaries<br>• The Swale<br>• The Wash<br>• Upper Nene Valley Gravel Pits<br>• Severn Estuary<br>• Loch Leven |
| Wigeon (*Mareca penelope)* | • Abberton Reservoir<br>• Broadland<br>• Chesil Beach and The Fleet<br>• Chichester and Langstone Harbours<br>• Humber Estuary<br>• Lindisfarne<br>• Lower Derwent Valley<br>• Martin Mere<br>• Medway Estuary and Marshes<br>• Mersey Estuary<br>• Nene Washes<br>• North Norfolk Coast<br>• Ouse Washes<br>• Ribble and Alt Estuaries<br>• Rutland Water<br>• Stodmarsh<br>• Stour and Orwell Estuaries<br>• The Wash<br>• Upper Nene Valley Gravel Pits<br>• Caithness and Sutherland Peatlands<br>• Cromarty Firth<br>• Dornoch Firth and Loch Fleet<br>• Firth of Forth<br>• Inner Moray Firth<br>• Montrose Basin<br>• Moray and Nairn Coast<br>• River Spey - Insh Marshes<br>• South Tayside Goose Roosts<br>• Burry Inlet |
| Mallard (*Anas platyrhynchos)* | • Humber Estuary<br>• Medway Estuary and Marshes<br>• Ouse Washes<br>• Stodmarsh<br>• Upper Nene Valley Gravel Pits<br>• Firth of Forth |
| Pintail (*Anas acuta)* | • Chichester and Langstone Harbours<br>• Martin Mere<br>• Medway Estuary and Marshes<br>• Mersey Estuary<br>• Nene Washes<br>• Ouse Washes<br>• Ribble and Alt Estuaries |

| Species | Special Protection Area (SPA)s |
|---|---|
| | • Stour and Orwell Estuaries<br>• The Wash<br>• Morecambe Bay and Duddon Estuary<br>• Solway Firth<br>• The Dee Estuary<br>• Cromarty Firth<br>• Burry Inlet |
| Teal (*Anas crecca)* | • Abberton Reservoir<br>• Chichester and Langstone Harbours<br>• Hamford Water<br>• Humber Estuary<br>• Lower Derwent Valley<br>• Medway Estuary and Marshes<br>• Mersey Estuary<br>• Minsmere-Walberswick<br>• Nene Washes<br>• Ouse Washes<br>• Ribble and Alt Estuaries<br>• Rutland Water<br>• Solent and Southampton Water<br>• Somerset Levels and Moors<br>• The Swale<br>• Solway Firth<br>• The Dee Estuary<br>• Dornoch Firth and Loch Fleet<br>• Inner Moray Firth<br>• Loch Leven<br>• Loch of Strathbeg<br>• Burry Inlet |
| Pochard (*Aythya ferina)* | • Abberton Reservoir<br>• Blackwater Estuary (Mid-Essex Coast Phase 4)<br>• Colne Estuary (Mid-Essex Coast Phase 2)<br>• Humber Estuary<br>• Medway Estuary and Marshes<br>• Ouse Washes<br>• Stodmarsh<br>• Upper Nene Valley Gravel Pits<br>• Lough Neagh and Lough Beg<br>• Loch Leven |
| Tufted Duck (*Aythya fuligula)* | • Abberton Reservoir<br>• Ouse Washes<br>• Rutland Water<br>• Stodmarsh<br>• Upper Nene Valley Gravel Pits<br>• Lough Neagh and Lough Beg<br>• Loch Leven |
| Scaup (*Aythya marila)* | • Humber Estuary<br>• Ribble and Alt Estuaries<br>• Stour and Orwell Estuaries<br>• Solway Firth |

| Species | Special Protection Area (SPA)s |
|---|---|
| | • Cromarty Firth<br>• Dornoch Firth and Loch Fleet<br>• Firth of Forth<br>• Inner Moray Firth<br>• Moray Firth |
| Eider (*Somateria mollissima mollissima)* | • Lindisfarne<br>• Firth of Forth<br>• Firth of Tay and Eden Estuary<br>• Montrose Basin<br>• Ythan Estuary, Sands of Forvie and Meikle Loch<br>• Coll and Tiree<br>• Moray Firth<br>• Scapa Flow<br>• Sound of Gigha<br>• West Coast of the Outer Hebrides<br>• Outer Firth of Forth and St Andrews Bay Complex |
| Velvet Scoter (*Melanitta fusca)* | • Firth of Forth<br>• Firth of Tay and Eden Estuary<br>• Moray Firth<br>• North Orkney<br>• Outer Firth of Forth and St Andrews Bay Complex |
| Common Scoter (*Melanitta nigra)* | • Lindisfarne<br>• Ribble and Alt Estuaries<br>• The Wash<br>• Greater Wash<br>• Liverpool Bay / Bae Lerpwl<br>• Solway Firth<br>• Caithness and Sutherland Peatlands<br>• Firth of Forth<br>• Firth of Tay and Eden Estuary<br>• Rinns of Islay<br>• West Inverness-shire Lochs<br>• Moray Firth<br>• Outer Firth of Forth and St Andrews Bay Complex<br>• Bae Caerfyrddin/ Carmarthen Bay |
| Long-tailed Duck (*Clangula hyemalis)* | • Lindisfarne<br>• Firth of Forth<br>• Firth of Tay and Eden Estuary<br>• Moray Firth<br>• Scapa Flow<br>• West Coast of the Outer Hebrides<br>• Outer Firth of Forth and St Andrews Bay Complex |
| Goldeneye (*Bucephala clangula)* | • Abberton Reservoir<br>• Humber Estuary<br>• Rutland Water<br>• Stour and Orwell Estuaries<br>• The Wash<br>• Solway Firth<br>• Lough Neagh and Lough Beg<br>• Firth of Forth |

| Species | Special Protection Area (SPA)s |
|---|---|
| | • Firth of Tay and Eden Estuary<br>• Inner Moray Firth<br>• Loch Leven<br>• Loch of Skene<br>• Loch of Strathbeg<br>• Moray Firth<br>• Outer Firth of Forth and St Andrews Bay Complex |
| Goosander (*Mergus merganser)* | • Rutland Water<br>• Solway Firth<br>• Firth of Tay and Eden Estuary<br>• Inner Moray Firth<br>• Loch of Skene |
| Red-breasted Merganser (*Mergus serrator)* | • Chichester and Langstone Harbours<br>• Lindisfarne<br>• Portsmouth Harbour<br>• Cromarty Firth<br>• Firth of Forth<br>• Firth of Tay and Eden Estuary<br>• Inner Moray Firth<br>• Moray and Nairn Coast<br>• Moray Firth<br>• Scapa Flow<br>• Sound of Gigha<br>• West Coast of the Outer Hebrides<br>• Outer Firth of Forth and St Andrews Bay Complex<br>• Traeth Lafan/ Lavan Sands, Conway Bay |
| Corncrake (*Crex crex)* | • Aird and Borve, Benbecula<br>• Coll (corncrake)<br>• Eoligarry, Barra<br>• Kilpheder and Smerclate, South Uist<br>• Ness and Barvas, Lewis<br>• North Uist Machair and Islands<br>• Oronsay and South Colonsay<br>• Rinns of Islay<br>• South Uist Machair and Lochs<br>• Tiree (corncrake) |
| Spotted Crake (*Porzana porzana)* | • River Spey - Insh Marshes |
| Great Crested Grebe (*Podiceps cristatus)* | • Abberton Reservoir<br>• Medway Estuary and Marshes<br>• Mersey Estuary<br>• Rutland Water<br>• Stour and Orwell Estuaries<br>• Upper Nene Valley Gravel Pits<br>• Belfast Lough Open Water<br>• Firth of Forth<br>• Traeth Lafan/ Lavan Sands, Conway Bay |
| Slavonian Grebe (*Podiceps auratus)* | • Exe Estuary<br>• Falmouth Bay to St Austell Bay<br>• Firth of Forth |

| Species | Special Protection Area (SPA)s |
|---|---|
| | • Loch Ashie<br>• Loch Flemington<br>• Loch Knockie and Nearby Lochs<br>• Loch Ruthven<br>• Loch Vaa<br>• North Inverness Lochs<br>• East Mainland Coast, Shetland<br>• Moray Firth<br>• North Orkney<br>• Scapa Flow<br>• Sound of Gigha<br>• West Coast of the Outer Hebrides<br>• Outer Firth of Forth and St Andrews Bay Complex |
| Oystercatcher (*Haematopus ostralegus)* | • Exe Estuary<br>• Foulness (Mid-Essex Coast Phase 5)<br>• Humber Estuary<br>• Medway Estuary and Marshes<br>• Mersey Narrows and North Wirral Foreshore<br>• Ribble and Alt Estuaries<br>• The Swale<br>• The Wash<br>• Morecambe Bay and Duddon Estuary<br>• Solway Firth<br>• The Dee Estuary<br>• Cromarty Firth<br>• Dornoch Firth and Loch Fleet<br>• Firth of Forth<br>• Firth of Tay and Eden Estuary<br>• Inner Moray Firth<br>• Montrose Basin<br>• Moray and Nairn Coast<br>• North Uist Machair and Islands<br>• Sléibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)<br>• South Uist Machair and Lochs<br>• Burry Inlet<br>• Traeth Lafan/ Lavan Sands, Conway Bay |
| Lapwing (*Vanellus vanellus)* | • Breydon Water<br>• Humber Estuary<br>• Mersey Estuary<br>• Ribble and Alt Estuaries<br>• Somerset Levels and Moors<br>• Stodmarsh<br>• Stour and Orwell Estuaries<br>• Upper Nene Valley Gravel Pits<br>• Solway Firth<br>• Firth of Forth<br>• Ythan Estuary, Sands of Forvie and Meikle Loch |
| Golden Plover (*Pluvialis apricaria)* | • Breydon Water<br>• Dungeness, Romney Marsh and Rye Bay<br>• Humber Estuary |

| Species | Special Protection Area (SPA)s |
|---|---|
| | • Lindisfarne<br>• Lower Derwent Valley<br>• Mersey Estuary<br>• North Pennine Moors<br>• North York Moors<br>• Peak District Moors (South Pennine Moors Phase 1)<br>• Ribble and Alt Estuaries<br>• Somerset Levels and Moors<br>• South Pennine Moors Phase 2<br>• Stour and Orwell Estuaries<br>• Thanet Coast and Sandwich Bay<br>• Upper Nene Valley Gravel Pits<br>• Morecambe Bay and Duddon Estuary<br>• Solway Firth<br>• Outer Ards<br>• Pettigoe Plateau<br>• Caithness and Sutherland Peatlands<br>• Firth of Forth<br>• Lewis Peatlands<br>• Muirkirk and North Lowther Uplands |
| Grey Plover (*Pluvialis squatarola)* | • Benfleet and Southend Marshes<br>• Blackwater Estuary (Mid-Essex Coast Phase 4)<br>• Chichester and Langstone Harbours<br>• Dengie (Mid-Essex Coast Phase 1)<br>• Exe Estuary<br>• Foulness (Mid-Essex Coast Phase 5)<br>• Gibraltar Point<br>• Hamford Water<br>• Humber Estuary<br>• Lindisfarne<br>• Medway Estuary and Marshes<br>• Mersey Estuary<br>• Mersey Narrows and North Wirral Foreshore<br>• Ribble and Alt Estuaries<br>• Stour and Orwell Estuaries<br>• Thames Estuary and Marshes<br>• The Swale<br>• The Wash<br>• Morecambe Bay and Duddon Estuary<br>• Solway Firth<br>• The Dee Estuary<br>• Firth of Forth<br>• Firth of Tay and Eden Estuary<br>• Burry Inlet |
| Ringed Plover (*Charadrius hiaticula)* | • Benfleet and Southend Marshes<br>• Blackwater Estuary (Mid-Essex Coast Phase 4)<br>• Chichester and Langstone Harbours<br>• Colne Estuary (Mid-Essex Coast Phase 2)<br>• Foulness (Mid-Essex Coast Phase 5)<br>• Hamford Water |

| Species | Special Protection Area (SPA)s |
|---|---|
| | • Humber Estuary<br>• Lindisfarne<br>• Medway Estuary and Marshes<br>• Mersey Estuary<br>• Ribble and Alt Estuaries<br>• Solent and Southampton Water<br>• Stour and Orwell Estuaries<br>• Thames Estuary and Marshes<br>• The Swale<br>• Morecambe Bay and Duddon Estuary<br>• Solway Firth<br>• Outer Ards<br>• Firth of Forth<br>• North Uist Machair and Islands<br>• Papa Stour<br>• Sléibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)<br>• South Uist Machair and Lochs |
| Dotterel (*Charadrius morinellus)* | • Beinn Dearg<br>• Ben Alder<br>• Ben Wyvis<br>• Caenlochan<br>• Cairngorms<br>• Creag Meagaidh<br>• Drumochter Hills<br>• Lochnagar |
| Whimbrel (*Numenius phaeopus)* | • Humber Estuary<br>• Ribble and Alt Estuaries<br>• Fetlar |
| Curlew (*Numenius arquata)* | • Chichester and Langstone Harbours<br>• Humber Estuary<br>• Medway Estuary and Marshes<br>• Mersey Estuary<br>• Ribble and Alt Estuaries<br>• Stour and Orwell Estuaries<br>• The Swale<br>• The Wash<br>• Morecambe Bay and Duddon Estuary<br>• Solway Firth<br>• The Dee Estuary<br>• Cromarty Firth<br>• Dornoch Firth and Loch Fleet<br>• Firth of Forth<br>• Inner Moray Firth<br>• Burry Inlet<br>• Traeth Lafan/ Lavan Sands, Conway Bay |
| Bar-tailed Godwit (*Limosa lapponica)* | • Chichester and Langstone Harbours<br>• Foulness (Mid-Essex Coast Phase 5)<br>• Gibraltar Point<br>• Humber Estuary<br>• Lindisfarne |

| Species | Special Protection Area (SPA)s |
|---|---|
| | • Mersey Narrows and North Wirral Foreshore<br>• Ribble and Alt Estuaries<br>• The Wash<br>• Morecambe Bay and Duddon Estuary<br>• Solway Firth<br>• The Dee Estuary<br>• Belfast Lough<br>• Lough Foyle<br>• Cromarty Firth<br>• Dornoch Firth and Loch Fleet<br>• East Sanday Coast<br>• Firth of Forth<br>• Firth of Tay and Eden Estuary<br>• Moray and Nairn Coast |
| Black-tailed Godwit *(Limosa limosa* (*islandica*)) | • Blackwater Estuary (Mid-Essex Coast Phase 4)<br>• Exe Estuary<br>• Hamford Water<br>• Humber Estuary<br>• Medway Estuary and Marshes<br>• Mersey Estuary<br>• Nene Washes<br>• Ouse Washes<br>• Poole Harbour<br>• Portsmouth Harbour<br>• Ribble and Alt Estuaries<br>• Solent and Southampton Water<br>• Stour and Orwell Estuaries<br>• Thames Estuary and Marshes<br>• The Wash<br>• Morecambe Bay and Duddon Estuary<br>• The Dee Estuary<br>• Belfast Lough<br>• Firth of Tay and Eden Estuary |
| Turnstone *(Arenaria interpres)* | • Chichester and Langstone Harbours<br>• Humber Estuary<br>• Medway Estuary and Marshes<br>• Stour and Orwell Estuaries<br>• Thanet Coast and Sandwich Bay<br>• The Wash<br>• Morecambe Bay and Duddon Estuary<br>• Northumbria Coast<br>• Solway Firth<br>• Outer Ards<br>• East Sanday Coast<br>• Firth of Forth<br>• North Uist Machair and Islands<br>• Sléibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)<br>• Burry Inlet |
| Knot *(Calidris canutus)* | • Benfleet and Southend Marshes<br>• Dengie (Mid-Essex Coast Phase 1) |

| Species | Special Protection Area (SPA)s |
|---|---|
| | • Foulness (Mid-Essex Coast Phase 5)<br>• Humber Estuary<br>• Medway Estuary and Marshes<br>• Mersey Narrows and North Wirral Foreshore<br>• North Norfolk Coast<br>• Ribble and Alt Estuaries<br>• Stour and Orwell Estuaries<br>• Teesmouth and Cleveland Coast<br>• Thames Estuary and Marshes<br>• The Wash<br>• Morecambe Bay and Duddon Estuary<br>• Solway Firth<br>• The Dee Estuary<br>• Strangford Lough<br>• Cromarty Firth<br>• Firth of Forth<br>• Montrose Basin<br>• Burry Inlet |
| Ruff *(Philomachus pugnax)* | • Alde-Ore Estuary<br>• Breydon Water<br>• Broadland<br>• Dungeness, Romney Marsh and Rye Bay<br>• Humber Estuary<br>• Lower Derwent Valley<br>• Ouse Washes<br>• Pagham Harbour<br>• Ribble and Alt Estuaries<br>• Teesmouth and Cleveland Coast<br>• Morecambe Bay and Duddon Estuary |
| Sanderling *(Calidris alba)* | • Chichester and Langstone Harbours<br>• Gibraltar Point<br>• Humber Estuary<br>• Lindisfarne<br>• Mersey Narrows and North Wirral Foreshore<br>• Ribble and Alt Estuaries<br>• The Wash<br>• Morecambe Bay and Duddon Estuary<br>• Solway Firth<br>• Firth of Tay and Eden Estuary<br>• South Uist Machair and Lochs |
| Dunlin *(Calidris alpina)* | • Benfleet and Southend Marshes<br>• Blackwater Estuary (Mid-Essex Coast Phase 4)<br>• Chichester and Langstone Harbours<br>• Exe Estuary<br>• Humber Estuary<br>• Lindisfarne<br>• Medway Estuary and Marshes<br>• Mersey Estuary<br>• Mersey Narrows and North Wirral Foreshore<br>• Portsmouth Harbour |

| Species | Special Protection Area (SPA)s |
|---|---|
| | • Ribble and Alt Estuaries<br>• Stour and Orwell Estuaries<br>• Thames Estuary and Marshes<br>• The Swale<br>• The Wash<br>• Morecambe Bay and Duddon Estuary<br>• Solway Firth<br>• Severn Estuary<br>• The Dee Estuary<br>• Caithness and Sutherland Peatlands<br>• Cromarty Firth<br>• Dornoch Firth and Loch Fleet<br>• Fetlar<br>• Firth of Forth<br>• Firth of Tay and Eden Estuary<br>• Lewis Peatlands<br>• Montrose Basin<br>• Moray and Nairn Coast<br>• North Uist Machair and Islands<br>• Sléibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)<br>• South Uist Machair and Lochs<br>• Burry Inlet |
| Purple Sandpiper *(Calidris maritima)* | • Northumbria Coast<br>• East Sanday Coast<br>• North Uist Machair and Islands |
| Snipe *(Gallinago gallinago)* | • Stodmarsh |
| Redshank *(Tringa tetanus)* | • Alde-Ore Estuary<br>• Chichester and Langstone Harbours<br>• Colne Estuary (Mid-Essex Coast Phase 2)<br>• Foulness (Mid-Essex Coast Phase 5)<br>• Hamford Water<br>• Humber Estuary<br>• Lindisfarne<br>• Medway Estuary and Marshes<br>• Mersey Estuary<br>• Mersey Narrows and North Wirral Foreshore<br>• Ribble and Alt Estuaries<br>• Stour and Orwell Estuaries<br>• Teesmouth and Cleveland Coast<br>• Thames Estuary and Marshes<br>• The Swale<br>• The Wash<br>• Morecambe Bay and Duddon Estuary<br>• Solway Firth<br>• Severn Estuary<br>• The Dee Estuary<br>• Belfast Lough<br>• Strangford Lough<br>• Cromarty Firth<br>• Dornoch Firth and Loch Fleet |

| Species | Special Protection Area (SPA)s |
|---|---|
| | • Firth of Forth<br>• Firth of Tay and Eden Estuary<br>• Inner Clyde Estuary<br>• Inner Moray Firth<br>• Montrose Basin<br>• Moray and Nairn Coast<br>• North Uist Machair and Islands<br>• Sléibhtean agus Cladach Thiriodh (Tiree Wetlands and Coast)<br>• South Uist Machair and Lochs<br>• Ythan Estuary, Sands of Forvie and Meikle Loch<br>• Burry Inlet<br>• Traeth Lafan/ Lavan Sands, Conway Bay |
| Greenshank *(Tringa nebularia)* | • Humber Estuary<br>• Medway Estuary and Marshes<br>• Caithness and Sutherland Peatlands<br>• Lewis Peatlands |
| Osprey *(Pandion haliaetus)* | • Abernethy Forest<br>• Cairngorms<br>• Cromarty Firth<br>• Dornoch Firth and Loch Fleet<br>• Forest of Clunie<br>• Glen Tanar<br>• Inner Moray Firth<br>• Moray and Nairn Coast<br>• River Spey - Insh Marshes |
| Hen Harrier *(Circus cyaneus)* | • Blackwater Estuary (Mid-Essex Coast Phase 4)<br>• Bowland Fells<br>• Broadland<br>• Colne Estuary (Mid-Essex Coast Phase 2)<br>• Dengie (Mid-Essex Coast Phase 1)<br>• Dorset Heathlands<br>• Dungeness, Romney Marsh and Rye Bay<br>• Foulness (Mid-Essex Coast Phase 5)<br>• Humber Estuary<br>• Medway Estuary and Marshes<br>• Minsmere-Walberswick<br>• New Forest<br>• North Pennine Moors<br>• Ouse Washes<br>• Salisbury Plain<br>• Stodmarsh<br>• Thames Estuary and Marshes<br>• Antrim Hills<br>• Slieve Beagh - Mullaghfad - Lisnaskea<br>• Arran Moors<br>• Caithness and Sutherland Peatlands<br>• Forest of Clunie<br>• Glen App and Galloway Moors<br>• Glen Tanar<br>• Langholm - Newcastleton Hills |

| Species | Special Protection Area (SPA)s |
|---|---|
| | • Loch of Inch and Torrs Warren<br>• Muirkirk and North Lowther Uplands<br>• Orkney Mainland Moors<br>• Renfrewshire Heights<br>• Rinns of Islay<br>• River Spey - Insh Marshes<br>• Strath Carnaig and Strath Fleet Moors<br>• Berwyn<br>• Migneint-Arenig-Dduallt |
| White-tailed Eagle *(Haliaeetus albicilla)* | • None |
| Short-eared Owl *Asio flammeus)* | • Peak District Moors (South Pennine Moors Phase 1)<br>• South Pennine Moors Phase 2<br>• Caithness and Sutherland Peatlands<br>• Forest of Clunie<br>• Muirkirk and North Lowther Uplands<br>• Orkney Mainland Moors<br>• Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro |
| Merlin *(Falco columbarius)* | • Bowland Fells<br>• Dorset Heathlands<br>• Medway Estuary and Marshes<br>• North Pennine Moors<br>• North York Moors<br>• Peak District Moors (South Pennine Moors Phase 1)<br>• South Pennine Moors Phase 2<br>• Antrim Hills<br>• Cairngorms<br>• Caithness and Sutherland Peatlands<br>• Drumochter Hills<br>• Forest of Clunie<br>• Lewis Peatlands<br>• Muirkirk and North Lowther Uplands<br>• Berwyn<br>• Elenydd - Mallaen<br>• Migneint-Arenig-Dduallt |

## 7.5 IN-COMBINATION ASSESSMENT

248. Potential impacts from the Project on SPAs could occur in-combination with other plans or projects and result in a larger overall effect on the SPA. Therefore, it is necessary to consider the in-combination sources of impact on each SPA assessed.

249. These were considered for the screening of SPAs and will also be considered in the RIAA for the Project. The in-combination sources will need to be accounted for in different ways.

250. Firstly, quantitative assessment of predicted impacts on seabirds and terrestrial migratory birds will be undertaken using available information from other OWFs. For terrestrial migratory birds, quantitative impacts from onshore windfarms may also be available. For other impact sources, the assessment will be considered qualitatively only.

251. For seabirds, the Cumulative Effects Framework, being produced for the Scottish Government is expected to be published in November 2024 and if it is available in time then it will be used. If for any reason, such as a delay to its publication, this tool is not available for this Project, quantitative assessment of impacts from other OWFs will be collated based on breeding and non-breeding season connectivity. In the breeding season, other OWFs within the recommended foraging range of the SPA will be screened into the assessment and their breeding season predicted impacts will be added to the predicted breeding season impacts of the Project.

252. In the non-breeding season, the predicted impacts from OWFs in the BDMPS regions with that SPA included will be collated and added to the Project alone impacts. All breeding and non-breeding season impacts from the Project alone, in-combination without the Project and in-combination with the Project will be collated into a single annual impact on each SPA qualifying feature. This will be compared to the most recent population size estimate for the SPA. This will be matched to the timing of the DAS where there is more than one population size available. A Population Viability Analysis will be run where the predicted Project alone impact results in a 0.02 percentage point, or larger, reduction in adult survival of the SPA population.

253. At present, it is not possible to identify which OWF projects will be screened into the assessment, as this is likely to change as the assessment progresses. Six months prior to the submission of the application no further OWF projects will be added to the in-combination totals for each SPA (**Section 2.3.2**).

## 7.6 SUMMARY OF OFFSHORE ORNITHOLOGY HABITATS REGULATIONS APPRAISAL SCREENING

254. At this stage of the assessment, it is possible to screen in a total of 79 SPAs designated for seabirds where it was possible to conclude there was an LSE (**Table 7.36**). Other SPAs will be screened into the assessment for terrestrial migratory birds when the next stage of the Scottish Government project "Strategic study of collision risk for birds on migration and further development of the stochastic collision risk modelling tool" is published and available for use in project applications.

255. It was possible to screen out the following SPAs for seabirds due to a lack of connectivity, and therefore a conclusion of no LSE can be made:

- Alde-Ore Estuary;
- Coll and Tiree;
- East Mainland Coast, Shetland;
- Falmouth Bay to St Austell Bay;
- Moray Firth;
- Sound of Gigha;
- Tips of Corsemaul and Tom Mor; and
- West Coast of the Outer Hebrides.

## 7.7 APPROACH TO SPECIAL PROTECTION AREAS ASSESSMENT IN THE REPORT TO INFORM APPROPRIATE ASSESSMENT

256. Those SPAs screened into the assessment will be subject to an AA. It is only where the absence of such effects can be excluded that it will be possible to conclude that there is no adverse effect on site integrity to each SPA qualifying feature being assessed. This conclusion can only be reached in the absence of reasonable scientific doubt of an adverse effect on site integrity potentially occurring if the Project were consented.

257. The assessment will consider the impacts from the Project alone and in-combination with other reasonably foreseeable plans and projects. The integrity of a site is directly linked to the conservation objectives of the site. Where the Project does not undermine the conservation objectives of the site then integrity will be maintained.

258. Where it may not be possible to conclude no adverse effect on site integrity, mitigation measures may be applied to reduce the predicted effect to an acceptable level.

259. For most of the SPAs in Scotland, the conservation objectives will be:

*"To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and*

*To ensure for the qualifying species that the following are maintained in the long term:*

- *Population of the species as a viable component of the site;*
- *Distribution of the species within site;*
- *Distribution and extent of habitats supporting the species;*
- *Structure, function and supporting processes of habitats supporting the species; and*
- *No significant disturbance of the species".*

260. For SPAs with these conservation objectives, the primary conservation objective that will be considered will be the "*Population of the species as a viable component of the site*". The WDA does not overlap with any SPAs nor is within the distance where direct disturbance in possible. Where it can be shown that the population of the site will remain a viable component a conclusion of no

adverse effect on site integrity may be reached. This will need to be considered carefully for each individual SPA qualifying feature that is assessed.

261. The assessment of seabirds that are qualifying features of SPAs will use the predicted impacts from the EIA. The predicted impacts on the breeding season regional populations will be apportioned using the NatureScot apportioning model[5]. While there is a Marine Scotland tool (Butler et al. 2020) for also undertaking breeding season apportioning, it is understood that this model produces very similar results to the NatureScot model. Between the two models, the NatureScot model is the simpler model, and so is preferred.

262. The NatureScot model will be parameterised through three key inputs:

- The distance from the centre of the SPA to the centre of the WDA;
- The size of the colony; and
- The area of sea within foraging range (using NatureScot species specific foraging ranges) of each SPA.

263. These three parameters will be used to calculate the "SPA weight" for each SPA qualifying feature within foraging range. The relative proportion of each SPA weight will then be used to apportion impacts in the breeding season to each SPA.

264. In the non-breeding season, it will be necessary to use the relative proportions of birds from SPAs within the BDMPS (Furness, 2015) region relevant for each SPA qualifying feature. However, Furness (2015) splits the non-breeding season into multiple seasons (e.g. for kittiwakes there is an autumn season and a spring season within the non-breeding season). The months of the BDMPS season do not match the months used in the seasonal definitions for the seasons recommended by NatureScot.

265. For species where the quantitative assessment of impact is only through collision risk modelling, it will be possible to apportion the impacts in the non-breeding season using BDMPS seasons by adding the monthly predicted impacts together. However, Guidance Note 8 for the assessment of displacement from NatureScot (2023c) uses the recommended non-breeding seasons to estimate a total non-breeding season impact using the mean peak abundance estimates from the WDA plus a 2 km buffer. Thus, it is not possible to apply the single non-breeding season displacement impact based on the NatureScot recommended non-breeding season to multiple BDMPS non-breeding seasons.

**Advice is requested from NatureScot on how to undertake the non-breeding season apportionment of impact to SPAs using the BDMPS approach where there is more than one non-breeding season.**

[5] https://www.nature.scot/doc/interim-guidance-apportioning-impacts-marine-renewable-developments-breeding-seabird-populations

# 8 SUMMARY OF STAGE 1: LIKELY SIGNIFICANT EFFECT SCREENING

266. A summary of the European/Ramsar sites and relevant qualifying features for which potential Likely Significant Effects (LSEs) have been identified and screened in for further assessment in RIAA is provided for marine mammals in **Table 6.5** and for offshore ornithology in **Table 7.36**. European sites designated for Annex I habitats and Annex II diadromous fish have been screened out of further assessment as described in **Sections 4** and **5** respectively.

# 9 REFERENCES

Booth, C.G., Embling, C., Gordon, J., Calderan, S.V. and Hammond, P.S. (2013). Habitat preferences and distribution of the harbour porpoise Phocena phocena west of Scotland. Marine Ecology Progress Series 478: 273-285.

Butler, A., Carroll, M., Searle, K., Bolton, M., Waggitt, J., Evans, P., Rehfisch, M., Goddard, B., Brewer, M., Burthe, S. and Daunt, F. (2020). Attributing seabirds at sea to appropriate breeding colonies and populations (CR/2015/18). Scottish Marine and Freshwater Science 11: 8, 140pp. DOI: 10.7489/2006-1.

Carroll, E.L., Hall, A., Olsen, M.T., Onoufriou, A.B., Gaggiotti, O.E. and Russell, D.J., (2020). Perturbation drives changing metapopulation dynamics in a top marine predator. Proceedings of the Royal Society B, 287(1928).

Carter, M.I.D., Boehme, L., Cronin, M.A., Duck, C.D., Grecian, W.J., Hastie, G.D., Jessopp, M., Matthiopoulos, J., McConnell, B.J., Miller, D.L., Morris, C.D., Moss, S.E.W., Thompson, D., Thompson, P.M. and Russell, D.J.F. (2022). Sympatric Seals, Satellite Tracking and Protected Areas: Habitat-Based Distribution Estimates for Conservation and Management. Front. Mar. Sci. 9:875869.

European Commission (2021). Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=OJ%3AC%3A2021%3A437%3AFULL. [Accessed 02/02/2024].

Furness, R.W. (2015). Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS). Natural England Commissioned Reports, Number 164.

Gilles, A., Authier, M., Ramirez-Martinez, N.C., Araújo, H., Blanchard, A., Carlström, J., Eira, C., Dorémus, G., FernándezMaldonado, C., Geelhoed, S.C.V., Kyhn, L., Laran, S., Nachtsheim, D., Panigada, S., Pigeault, R., Sequeira, M., Sveegaard, S., Taylor, N.L., Owen, K., Saavedra, C., Vázquez-Bonales, J.A., Unger, B., Hammond, P.S. (2023). Estimates of cetacean abundance in European Atlantic waters in summer 2022 from the SCANS-IV aerial and shipboard surveys. Final report published 29 September 2023. 64 pp. https://tinyurl.com/3ynt6swa.

Goodship, N.M. and Furness, R.W. (2019). Disturbance distances: An updated literature review of disturbance distances of selected bird species. NatureScot Research Report 1283.

Hall, K., Cunnigham, S., Pinn, E., Bennett, F. (2016). Inshore Special Area of Conservation: Inner Hebrides and the Minches.

Heinänen, S, Žydelis, R, Kleinschmidt, B, Dorsch, M, Burger, C, Morkūnas, J, Quillfeldt, P, Nehls, G. (2020). Satellite telemetry and digital aerial surveys show strong displacement of red-throated divers (*Gavia stellata*) from offshore windfarms. Marine Environmental Research: 160.

Heinänen, S. and Skov, H. (2015). The identification of discrete and persistent areas of relatively high harbour porpoise density in the wider UK marine area. JNCC Report No. 544. Available at: https://data.jncc.gov.uk/data/f7450390-9a89-4986-8389-9bff5ea1978a/JNCC-Report-544-FINAL-WEB.pdf.

IAMMWG (2013). Marine Mammal Management Units in UK waters (2023).

IAMMWG (2023). Review of Management Unit boundaries for cetaceans in UK waters (2023). JNCC Report 734, JNCC, Peterborough, ISSN 0963-8091. https://hub.jncc.gov.uk/assets/b48b8332-349f-4358-b080-b4506384f4f7.

Jarrett, D., Cook, A.S.C.P., Woodward, I., Ross., K., Horswill, C., Dadam, D., Humphreys, E.M. (2018). Short-term behavioural responses of wintering waterbirds to marine activity. Scottish Marine and Freshwater Science. 9(7).

JNCC (2009). Selection Criteria and Guiding Principles for Selection of Special Areas of Conservation (SACs) for Marine Annex I.

JNCC (2024b). Treshnish Isles. Available online at: https://sac.jncc.gov.uk/site/UK0030289.

JNCC (2024c). South-East Islay Skerries. Available online at: South-East Islay Skerries - Special Areas of Conservation (jncc.gov.uk)

JNCC (2024d). Eileanan agus Sgeiran Lios mor. Available online at: Eileanan agus Sgeiran Lios mor - Special Areas of Conservation (jncc.gov.uk)

MD-LOT (2024). Scoping Opinion – Broadshore Hub Wind Farm Development Areas. Appendix I Consultation Responses and Advice. PDF pp.108 https://marine.gov.scot/sites/default/files/scop-0040_-_broadshore_hub_wfdas_scoping_-_appendix_i_-_consultation_responses_and_advice_-_may_2024.pdf

Morris, C.D., Duck, C.D.,and Thompson, D. (2021). Aerial surveys of seals in Scotland during the harbour seal moult, 2016-2019. NatureScot Research Report 1256.

NatureScot (2019). NatureScot Guidance Note - The handling of mitigation in Habitats Regulations Appraisal – the People Over Wind CJEU judgement. Available at https://www.nature.scot/doc/naturescot-guidance-note-handling-mitigation-habitats-regulationsappraisal-people-over-wind-cjeu. [Accessed 02/02/2024].

NatureScot (2023). Habitats Regulations Appraisal (HRA) of Local Development Plans (LDPs) Guidance for planning authorities in Scotland. Available at: https://www.nature.scot/sites/default/files/2023-11/Habitats%20Regulations%20Appraisal%20of%20Local%20Development%20Plans%20-%20Guidance%20for%20planning%20authorities%20in%20Scotland.pdf. [Accessed 02/02/2024].

NatureScot (2023a). Guidance Note 3: Guidance to support Offshore Wind applications: Marine Birds – Identifying theoretical connectivity with breeding site Special Protection Areas using breeding season foraging ranges. Version 1, published January 2023.

NatureScot (2023b). Guidance Note 6: Guidance to support Offshore Wind Applications – Marine Ornithology Impact Pathways for Offshore Wind Developments. Version 1: January 2023.

NatureScot (2023c). Guidance Note 8: Guidance to support Offshore Wind Applications: Marine Ornithology Advice for assessing the distributional responses, displacement and barrier effects of Marine birds. Version 1, published January 2023.

NatureScot (2024a). Habitats Regulations Appraisal (HRA). Available online at: https://www.nature.scot/professional-advice/planning-and-development/environmental-assessment/habitats-regulations-appraisal-hra [accessed 15/5/2024]

NatureScot (2024b). European Site Casework Guidance: How to consider plans and projects affecting Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). Available online at: https://www.nature.scot/doc/european-site-casework-guidance-how-consider-plans-and-projects-affecting-special-areas-conservation [Accessed 15/5/2024]

Pothanikat, L, and Breen, J. (2017). Skerries and causeway SAC Conservation objectives. Available on line at: https://www.daera-ni.gov.uk/sites/default/files/publications/daera/Skerries%20and%20Causeway%20SAC%20Conservation%20Objectives%202017.PDF

Royal HaskoningDHV (2024). MachairWind Offshore Windfarm Development Area Scoping Report. Report produced by Royal HaskoningDHV, SPR Doc ID: MCW-GEN-PMG-REP-IBR-000068.

Russell, D.J.F. and McConnell, B.J. (2014). Seal at-sea distribution, movements and behaviour. Report to DECC. URN: 14D/085. March 2014 (final revision).

SCANS-II (2008). Small Cetaceans in the European Atlantic and North Sea (SCANS-II). Final Report. University of St Andrews, UK. http://biology.st-andrews.ac.uk/scans2/.

SCOS (2012). Scientific Advice on Matters Related to the Management of Seal Populations: 2012 Natural Environment Research Council Special Committee on Seals (SCOS). http://www.smru.st-andrews.ac.uk/files/2016/08/SCOS-2012.pdf.

SCOS (2019). Scientific Advice on Matters Related to the Management of Seal Populations: 2019. Available at: https://www.smru.st-andrews.ac.uk/files/2020/08/SCOS-2019.pdf.

SCOS (2022). Scientific Advice on Matters Related to the Management of Seal Populations: 2022 Natural Environment Research Council Special Committee on Seals (SCOS). http://www.smru.st-andrews.ac.uk/files/2023/09/SCOS-2022.pdf.

Scottish Government (2019). Strategic Habitat Regulations Appraisal (HRA): Screening and Appropriate Assessment Information Report – Final. Available at: https://www.gov.scot/binaries/content/documents/govscot/publications/impact-assessment/2019/12/draft-sectoral-marine-plan-offshore-wind-energy-habitat-regulations-appraisal/documents/sectoral-marine-plan-offshore-wind-energy-strategic-habitat-regulations-appraisal-screening-appropriate-assessment-information-report-final/sectoral-marine-plan-offshore-wind-energy-strategic-habitat-regulations-appraisal-screening-appropriate-assessment-information-report-final/govscot%3Adocument/sectoral-marine-plan-offshore-wind-energy-strategic-habitat-regulations-appraisal-screening-appropriate-assessment-information-report-final.pdf [Accessed 02/02/2024].

Scottish Government (2020a). EU Exit: habitats regulations in Scotland. Available at: https://www.gov.scot/publications/eu-exit-habitats-regulations-scotland-2/pages/2/. [Accessed 10/01/2024].

Scottish Government (2020b). Sectoral Marine Plan for Offshore Wind Energy. Available online at: https://www.gov.scot/binaries/content/documents/govscot/publications/strategyplan/2020/10/sectoral-marine-plan-offshore-wind-energy/documents/sectoral-marine-planoffshore-wind-energy/sectoral-marine-plan-offshore-windenergy/govscot%3Adocument/sectoral-marine-plan-offshore-wind-energy.pdf. [Accessed 08/01/2024].

SNH (2015). Habitat Regulations Appraisal of Plans: Guidance for Plan-making Bodies in Scotland. Version 3.0, January 2015. SNH Report, initially prepared by David Tyldesley Associates.

SNH (2016). The use of harbour porpoise sightings data to inform the development of the Inner Hebrides and the Minches proposed Special Area of Conservation on the west coast of Scotland.

SNH (2017). The Scottish Marine Wildlife Watching Code. Available from: https://www.nature.scot/sites/default/files/2017-06/Publication%202017%20-%20The%20Scottish%20Marine%20Wildlife%20Watching%20Code%20SMWWC%20-%20Part%201%20-%20April%202017%20%28A2263518%29.pdf

Woodward, I.D., Franks, S.E., Bowgen, K., Davies, J.G., Green, R.M.W., Griffin, L.R., Mitchell, C., O'Hanlon, N., Pollock, C., Rees, E.C., Tremlett, C., Wright, L. and Cook, A.S.C.P. (2023). Strategic study of collision risk for birds on migration and further development of the stochastic collision risk modelling tool: Work Package 1: Strategic review of birds on migration in Scottish waters. Report by British Trust for Ornithology, Royal Society for the Protection of Birds and ECO-LG to The Scottish Government, Crown Estate Scotland and The Crown Estate.

WWT and MacArthur Green (2014). Strategic assessment of collision risk of Scottish offshore windfarms to migrating birds. Scottish Marine and Freshwater Science Report: 5(12).


ScottishPower
Renewables