Morven South Offshore Wind Array Project

Habitats Regulations Appraisal

Volume 2, Chapter 1: Report to Inform Appropriate Assessment Part 1: Introduction

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Executive summary

This Report to Inform Appropriate Assessment (RIAA) presents the findings of a study to inform the second stage of the Habitats Regulations Appraisal (HRA) required for Morven South in order to comply with the Habitats Regulations.

The study set out in this report (a study to inform an Appropriate Assessment) assesses whether Morven South could have adverse effects (either alone or in combination with other plans or projects), on the integrity of 31 European sites (10 Special Areas of Conservation (SACs) and 21 Special Protection Areas (SPAs)) for which the potential for Likely Significant Effects (LSE^2) could not be ruled out. This included a re-screening exercise, which re-applied the exact same methodology presented in Volume 1, Chapter 1: Morven Option Lease Agreement Site: HRA Stage 1 Screening Report (hereafter referred to as 'Morven Site HRA Screening Report'), to confirm potential connectivity between Morven South and European sites.

An assessment of Morven South has been carried out in view of the conservation objectives for each European site screened into the assessment, using the best available evidence, and in view of the measures proposed to avoid or mitigate the potential for adverse effects. This has been undertaken for impacts associated with Morven South alone and in-combination with other plans and projects.

The assessment of the potential for adverse effects on European site integrity is made with reference to the sites' overall ecological functions and the lasting preservation of the constitutive characteristics of the sites.

Annex I habitats

The Morven Site HRA Screening Report and subsequent re-screening did not identify the potential for LSE^2 on any Annex I habitats, therefore none were advanced to the RIAA.

Annex II diadromous fish

The Morven Site HRA Screening Report and subsequent re-screening for Morven South identified the potential for LSE^2 on five SACs for Annex II diadromous fish species and dependent features, which have been assessed in Volume 2, Chapter 2: Report to Inform Appropriate Assessment Part 2: SAC Assessments (hereafter 'RIAA Part 2'). It has been concluded in the RIAA Part 2 that there are no Adverse Effects On Integrity (AEOI) for the European sites assessed for Annex II diadromous fish.

Annex II marine mammal

The Morven Site HRA Screening Report and subsequent re-screening for Morven South identified the potential for LSE^2 on five SACs for Annex II marine mammals, which have been assessed in the RIAA Part 2. It has been concluded in the RIAA Part 2 that there are no AEOI for the European sites assessed for Annex II marine mammals.

Offshore ornithology

The Morven Site HRA Screening Report and subsequent re-screening for Morven South identified the potential for LSE^2 on 21 SPAs for offshore ornithology features, which have been assessed in Volume 2, Chapter 3: Report to Inform Appropriate Assessment Part 3: SPA Assessments (hereafter 'RIAA Part 3'). The conclusions of a potential AEOI for four of the European sites assessed for offshore ornithology during the operation and maintenance phase of Morven South in the RIAA Part 3 summarised in Table ES 1. The 17 SPAs for which there are no AEOI are not included in Table ES 1.

Table ES 1: Summary of conclusions for the assessment of adverse effects on Special Protection Area site integrity for Morven South alone and in-combination during the operation and maintenance phase

Site name	Relevant qualifying feature	Potential impact	Conclusion for the assessment of Morven South alone	Conclusion for the assessment of Morven South in-combination with other plans and projects
Forth Islands SPA	Guillemot (non-breeding seasons only)	Displacement	No AEOI of the site	**AEOI** of the site
	Breeding seabird assemblage	Displacement	No AEOI of the site	**AEOI** of the site due to in-combination displacement impacts on guillemot
St Abb's Head to Fast Castle SPA	Kittiwake	Collision	No AEOI of the site	**AEOI** of the site
		Combined collision and displacement	No AEOI of the site	**AEOI** of the site
	Razorbill	Displacement	No AEOI of the site	**AEOI** of the site
	Breeding seabird assemblage	Collision	No AEOI of the site	**AEOI** of the site due to in-combination collision impacts on kittiwake
		Displacement	No AEOI of the site	**AEOI** of the site due to in-combination displacement impacts on razorbill
		Combined collision and displacement	No AEOI of the site	**AEOI** of the site due to in-combination combined collision and displacement impacts on kittiwake
Troup, Pennan and Lion's Heads SPA	Guillemot (non-breeding seasons only)	Displacement	No AEOI of the site	**AEOI** of the site
	Breeding seabird assemblage	Displacement	No AEOI of the site	**AEOI** of the site due to in-combination displacement impacts on guillemot

Site name	Relevant qualifying feature	Potential impact	Conclusion for the assessment of Morven South alone	Conclusion for the assessment of Morven South in-combination with other plans and projects
Outer Firth of Forth and St Andrews Bay Complex SPA	Kittiwake	Collision	No AEOI of the site	**AEOI** of the site due to in-combination collision impacts on kittiwake at the St Abb's Head to Fast Castle SPA
		Combined collision and displacement		**AEOI** of the site due to in-combination combined collision and displacement impacts on kittiwake at the St Abb's Head to Fast Castle SPA
	Guillemot	Displacement	No AEOI of the site	**AEOI** of the site due to in-combination displacement impacts on guillemot at the Forth Islands SPA
	Breeding seabird assemblage	Collision	No AEOI of the site	**AEOI** of the site due to in-combination displacement impacts on kittiwake at the St Abb's Head to Fast Castle SPA
		Displacement	No AEOI of the site	**AEOI** of the site due to in-combination displacement impacts on the guillemot feature of the Forth Islands SPA
		Combined collision and displacement	No AEOI of the site	**AEOI** of the site due to in-combination combined collision and displacement impacts on kittiwake at the St Abb's Head to Fast Castle SPA

Overarching conclusion

This report summarises the findings of a study to inform the second stage of the HRA required for Morven South to ensure compliance with the Habitats Regulations.

Based on the information presented within the RIAA Part 2, it is considered that Morven South, acting either alone or in-combination with other plans and projects, will not lead to AEOI on any of the 10 SACs considered.

Based on the information presented within the RIAA Part 3, it is considered that Morven South alone will not lead to AEOI on any of the 21 SPAs considered. However, a potential AEOI was identified at four SPAs and for three qualifying species as a result of collision, displacement and combined collision and displacement during the operation and maintenance phase of Morven South in-combination with other plans and projects:

- Forth Islands SPA;
  - guillemot and seabird assemblage (with regards to guillemot);
- St Abb's Head to Fast Castle SPA
  - kittiwake, razorbill and seabird assemblage (with regards to kittiwake and razorbill);
- Troup, Pennan and Lion's Heads SPA;
  - guillemot and seabird assemblage (with regards to guillemot);
- Outer Firth of Forth and St Andrew's Bay Complex SPA;
  - kittiwake, guillemot and breeding seabird assemblage (with regards to kittiwake and guillemot).

1 Introduction

1.1 Overview of Morven South

1.1.1.1 Morven Offshore Wind Limited (MvOWL), a joint venture between JERA Nex bp Limited (JNBP), and EnBW Energie Baden-Württemberg AG (EnBW) (hereafter The Applicant), has been awarded a seabed option, under the 2021/22 ScotWind leasing round. The Applicant is developing the Morven South Wind Array Project (hereafter 'Morven South'); an offshore wind farm within Plan Option area E1 identified in the Scottish Government's Sectoral Marine Plan for Offshore Wind Energy (the SMP) (Scottish Government, 2020a).

1.1.1.2 Subsequent to the identification of the Morven Option Lease Agreement Site (hereafter 'Morven Site'), the Applicant split the Morven Site into the Morven North and Morven South Offshore Wind Array Projects (hereafter 'Morven North and Morven South'). Separate consents will be sought for Morven South. This Habitat Regulations Appraisal (HRA) Report to Inform Appropriate Assessment (RIAA) supports the Applicant's Morven South application submission to the Marine Directorate-Licensing and Operations Team (MD-LOT), acting on behalf of Scottish Ministers, for Morven South.

1.1.1.3 Morven South is a proposed fixed-foundation offshore wind farm located approximately 86km from the Aberdeenshire coast (see Figure 1.1). The Morven South Boundary is illustrated within Figure 1.1 and covers an area of 347.7km^2. Morven South wind turbines and foundations, offshore substation platforms (OSPs) and foundations, inter-array and interconnector cables and associated infrastructure located within the Morven South Boundary.

1.1.1.4 The United Kingdom (UK) and Scottish Government's ambitions for offshore wind deployment are supported by the Offshore Transmission Network Review (OTNR). The Holistic Network Design (HND), under the OTNR's "Pathway to 2030" workstream, recommends a network design for the connection of offshore generation assets (for a total capacity of 27.6GW) to the network. Building on this, the HND Follow-Up Exercise refines and expands the original design to incorporate updated project data, stakeholder feedback, and evolving policy objectives, ensuring the network remains fit for purpose as offshore wind deployment accelerates.

1.1.1.5 As mentioned in paragraph 1.1.1.2, the Morven Site will be progressed as two separate developments: Morven North and Morven South. This separation is primarily driven by the identification of two distinct grid connection Points of Connection (POC), Branxton in East Lothian and Hawthorn Pit in County Durham. To align with the respective grid connection arrangements, Hawthorn Pit in County Durham will be consented through a Development Consent Order (DCO), while Branxton in East Lothian will proceed via a marine licence application. A separate RIAA will be produced for the offshore export cable/onshore infrastructure. The potential in-combination effects of Morven South with the offshore export cable/onshore infrastructure will be assessed within this Morven South RIAA as far as possible and practicable.

1.1.1.6 For Morven South, the Applicant will seek the following consents, licences and permissions:

- a Section 36 consent under the Electricity Act 1989 for an offshore generating station in the Scottish offshore region (12nm to 200nm) where generating capacity exceeds 50MW;
- a marine licence under the Marine and Coastal Access Act 2009 (Scottish offshore waters (beyond 12nm)) for the generating station (wind turbines, foundation and inter-array cables);
- a marine licence under the Marine and Coastal Access Act 2009 (Scottish offshore waters (beyond 12nm)) for the OSP infrastructure (OSPs, OSP foundations and interconnector cables within the Morven South Boundary).

1.1.1.7 Key components of Morven South includes:

- up to 95 fixed wind turbines, including foundations;
- inter-array cables;
- up to five OSPs, including foundations;
- scour protection;
- cable protection;
- interconnector cables.

1.1.1.8 The overall MW capacity for Morven South is not yet defined and will be a function of turbine model selection post consent. Depending on the number and capacity of the wind turbines installed within the project design envelope (PDE) parameters defined for this assessment, the final installed generation capacity may vary, provided it remains within the assessed design parameters construction activities for Morven South are expected to last up to five years. The decommissioning process will likely follow a similar, reverse sequence. The Applicant is seeking consent for an operational phase of 35-years for Morven South.

1.1.1.9 The regulations under which this RIAA is being prepared are The Conservation of Offshore Marine Habitats and Species Regulations 2017, as Morven South is located within Scottish offshore water beyond 12nm. These regulations are discussed further, along with the HRA process, in Sections 1.2 and 2.

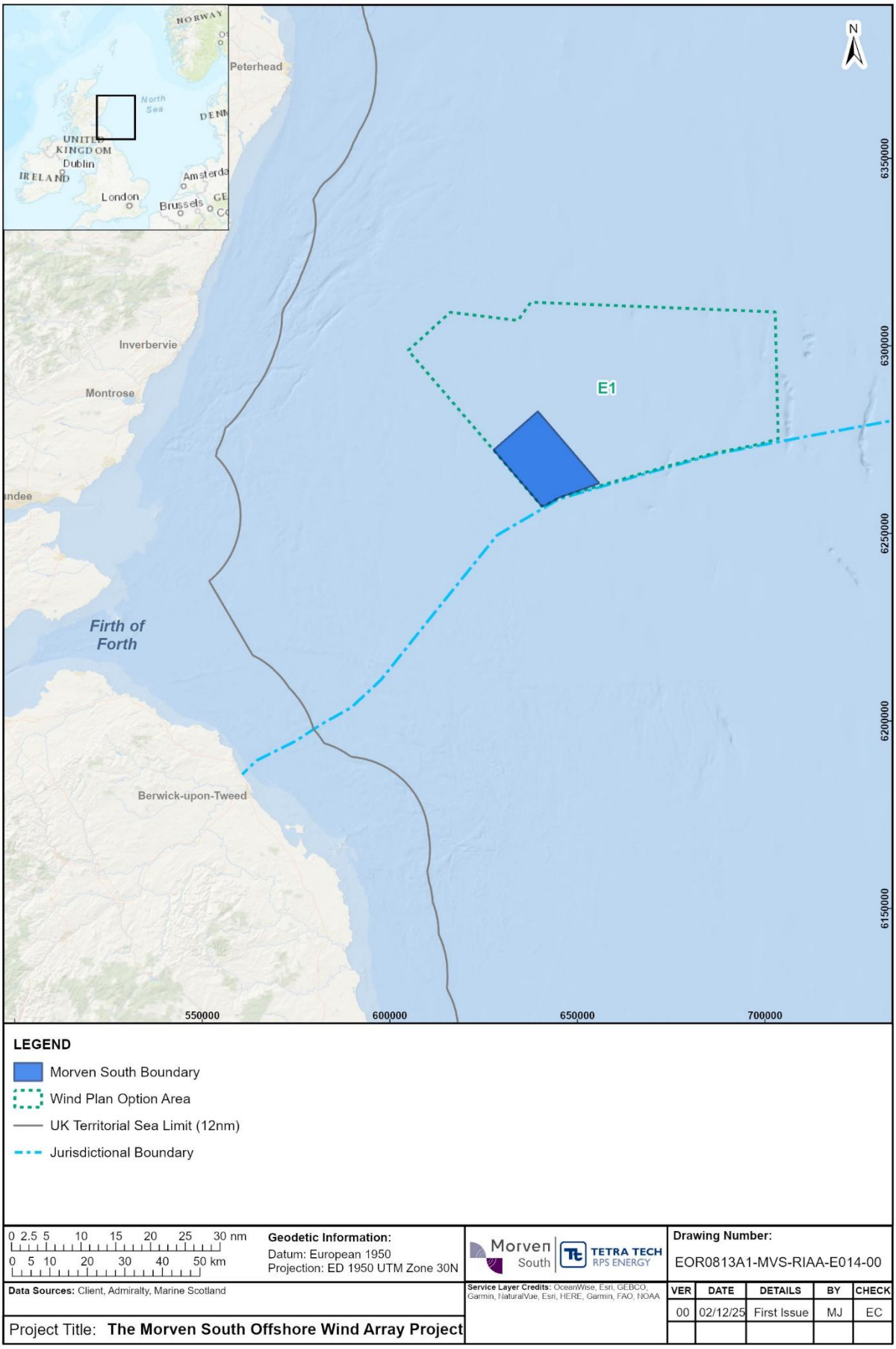

Figure 1.1: Location of the Morven South Boundary

1.2 Habitats Regulations Appraisal overview

1.2.1.1 The requirement for the consideration of the potential impacts arising from Morven South upon European sites and species is derived from the European Union's (EU's) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206/7 22.7.1992; hereafter referred to as 'the Habitats Directive') and Council Directive 2009/147/EC on the conservation of wild birds (hereafter referred to as the 'Birds Directive'). In terrestrial areas of Scotland and territorial waters out to 12nm (inshore waters), the land and marine aspects of the Habitats Directive and certain elements of the Birds Directive are transposed into domestic law by The Conservation (Natural Habitats, & c.) Regulations 1994 (as amended) and by The Conservation of Habitats and Species Regulations 2017 for certain reserved matters. The Conservation of Offshore Marine Habitats and Species Regulations 2017 apply in waters beyond 12nm (offshore waters). These regulations are collectively referred to as 'the Habitats Regulations'.

1.2.1.2 The Habitats Regulations require that an Appropriate Assessment (AA) must be carried out by the Competent Authority on all plans and projects that are likely to have a significant effect on a European site. European sites include Special Areas of Conservation (SACs), candidate SACs (cSACs), Sites of Community Importance (SCIs), Special Protection Areas (SPAs) and, as a matter of policy (Scottish Government, 2020b; Scottish Government, 2025), possible SACs (pSACs), potential SPAs (pSPAs) and Ramsar sites (listed under the Ramsar Convention on Wetlands of International Importance, where also designated as a European site).

1.2.1.3 The European Commission's (EC's) (2021) guidance "Commission Notice. 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" identifies a staged process to the assessment of plans and projects on European sites:

- Stage 1: Screening;
- Stage 2: The Appropriate Assessment;
- Stage 3: Derogation from Article 6(3) of the Habitats Directive under certain conditions.

1.2.1.4 Further information on the HRA process is provided in Section 2 of this Morven South Report to Inform Appropriate Assessment (hereafter 'Morven South RIAA') Part 1: Introduction.

1.3 Purpose of this Report to Inform Appropriate Assessment

1.3.1.1 This Morven South RIAA has been prepared by Tetra Tech RPS Energy Limited and NIRAS on behalf of the Applicant to support the HRA of Morven South in the determination of the implications upon European sites. The Morven South RIAA builds upon Volume, 1 Chapter 1: Morven Option Lease Agreement Site: HRA Stage 1 Screening Report (hereafter referred to as 'Morven Site HRA Screening Report'), submitted on 17 July 2023[1] and the Likely Significant Effects (LSE[2]) re-screening exercise undertaken for Morven South following the split of Morven Site into the two distinct Projects: Morven North and Morven South (see Section 1.1). The re-screening exercise for Morven South presented in Section 5 has re-applied the methodology presented in the Morven Site HRA Screening Report, and confirmed the European sites, qualifying features and potential impacts for which LSE[2] have been identified. The re-screening also incorporates advice from stakeholders in the Morven Option Lease Agreement Site Scoping Opinion (hereafter 'Morven Site Scoping Opinion') received in November 2023 (MD-LOT, 2023). Th Applicant has adopted the advice provided in the Morven Site Scoping Opinion on Morven Site HRA Screening Report (received 30 November 2023)

[1] The Morven Option Lease Agreement Site: HRA Stage 1 Screening Report was formally referred to as the 'Morven Offshore Wind Array Project HRA Stage 1 Screening Report', which is the name of the report published online by the Marine Directorate (Scottish Government, 2023).

across both Morven North and Morven South. These stakeholder responses have informed the scope of the Morven South RIAA, as discussed in Section 3.

1.3.1.2 The Morven South RIAA assesses the LSE[2] of Morven South as they relate to the integrity of the relevant European sites. The Morven South RIAA will provide the Competent Authority with the information required to undertake an HRA Stage 2 AA (see Section 2 for more detail on the HRA process).

1.3.1.3 The scope of this Morven South RIAA considers Morven South only (alone and in-combination with other projects and plans) and covers all relevant European sites and relevant qualifying features where LSE[2] have been identified due to potential impacts arising from Morven South. This considers both 'offshore' European sites and qualifying features seaward of Mean High Water Springs (MHWS) and potential impacts of offshore infrastructure seaward of MHWS on 'onshore' European sites (landward of Mean Low Water Springs (MLWS)).

1.3.1.4 The Applicant intends to submit separate consents, licences and permissions for Morven South and the two potential grid connection projects: the Morven Hawthorn Pit Grid Connection Project (hereafter 'MHPGC Project') and the Morven Branxton Area Grid Connection Project (hereafter 'MBAGC Project'). Therefore, Morven North, the MHPGC Project and the MBAGC Project will not be discussed further within this Morven South RIAA. Morven North, the MHPGC Project and the MBAGC Project will be given due consideration in the in-combination assessments presented in Chapter 2.1: RIAA Part 2: SAC Assessments and Chapter 2.2: RIAA Part 3: SPA and Ramsar Site Assessments, (hereafter referred to as RIAA Part 2 and RIAA Part 3 respectively).

1.4 Progress to date

1.4.1.1 HRA Stage 1 screening for Morven South consists of an HRA Stage 1 Screening Report produced for the Morven Site (Morven Site HRA Screening Report) and a re-screening exercise undertaken for Morven South (see Section 5).

1.4.1.2 The purpose of the LSE[2] screening exercise was to determine whether Morven South could result in LSE[2] on any European site, with reference to its conservation objectives. The LSE[2] screening exercise determined that certain LSE[2]s from impacts associated with Morven South could not be discounted. As such, European sites and qualifying features where LSE[2] could not be ruled out have been carried forward to the Stage 2 AA.

1.4.1.3 The LSE[2] screening exercise presented in the Morven Site HRA Screening Report and in the re-screening exercise for Morven South (see Section 5) does the following:

- Identifies the relevant European sites and qualifying features (e.g. Annex I habitats, Annex II diadromous fish, Annex II marine mammals (including otter) and offshore ornithology features) which have the potential to be impacted by all phases of Morven South.
- Identifies the qualifying features of relevant European sites that are not considered likely to be at risk of significant effects arising from Morven South (alone or in-combination with other plans and projects) so that they can be screened out of further assessment within the HRA process.
- Identifies the qualifying features of relevant European sites that are considered likely to be at risk of significant effects arising from Morven South (alone or in-combination) so that they can be screened into the HRA Stage 2 AA and assessed in this Morven South RIAA.
- Considers the potential impacts arising from Morven South (alone or in-combination with other plans and projects) that are likely to result in LSE[2] to relevant qualifying features of European sites.
- Considers the potential impacts arising from Morven South (alone or in-combination with other plans and projects) that do not have the potential to result in LSE[2]s and can be eliminated from further assessment in the HRA process.

1.4.1.4 The general approach to the HRA process is iterative and should evolve through the pre-application project phase as the project develops so the final version of the Stage 1 Screening is robust. Since the Morven Site HRA Screening Report was shared with consultees in July 2023, aspects of the design of the Morven Site have evolved, including the refinement of the Morven Site into Morven North and Morven South (see Section 1.1. The potential implications of design changes on the LSE[2] screening exercise have been considered in the re-screening exercise for Morven South, as well as consultation representations and advice with respect to the Morven Site HRA Screening Report (received in November 2023; MD-LOT, 2023). A summary of the LSE[2] re-screening exercise for Morven South is provided in Section 5 of this document and in the other relevant sections of this Morven South RIAA (i.e. RIAA Part 2 and RIAA Part 3).

1.4.1.5 Any changes to the LSE[2] screening outcomes presented in the Morven Site HRA Screening Report that have been made as a result of the re-screening exercise for Morven South are highlighted in Section 5 (Table 5.1) and in the other relevant Parts of the Morven South RIAA, with all relevant consultation to date presented in RIAA Part 2 and RIAA Part 3.

1.5 Structure of this Report to Inform Appropriate Assessment

1.5.1.1 For clarity and ease of navigation, this Morven South RIAA has been structured and reported in the below 'Parts', as follows:

- Volume 2, Chapter 1: RIAA Part 1: Introduction (this document; hereafter 'RIAA Part 1');
- Volume 2, Chapter 2: RIAA Part 2: SAC Assessments (hereafter 'RIAA Part 2');
- Volume 2, Chapter 3: RIAA Part 3: SPA and Ramsar Site Assessments hereafter 'RIAA Part 3').

1.6 Structure of this document

1.6.1.1 As stated in Paragraph 1.5.1.1, this document constitutes Part 1 of the Morven South RIAA, and provides an introduction to Morven South and the HRA process. This document is structured as follows:

- Section 1: Introduction (this section), which describes Morven South and establishes the requirement for, the purpose, and the structure of the Morven South RIAA.
- Section 2: The HRA process, which sets out the process, principles, tests, and guidance relevant and applied to the Morven South RIAA.
- Section 3: Consultation, which provides a summary of the relevant consultation undertaken to date of relevance to the Morven South HRA.
- Section 4: Information on Morven South, which provides information about the design of Morven South relevant to the Morven South RIAA, including relevant maximum design parameters and any design updates since the Morven Site HRA Screening Report.
- Section 5: LSE[2] re-screening: This section has re-applied the methodology presented in the Morven Site HRA Screening Report and confirmed the European sites, qualifying features and potential impacts for which LSE[2] have been identified as a result of Morven South.

2 The Habitat Regulations Appraisal process

2.1 Legislative context

2.1.1.1 The Habitats Directive, together with the Birds Directive, provide the EU's legal framework for the protection of wild fauna and flora and establish a network of internationally important sites, designated for their ecological status. This network of designated sites is comprised of the following:

- SACs, which are designated under the Habitats Directive and promote the protection of flora, fauna and habitats.
- SPAs, which are designated under the Birds Directive in order to protect rare, vulnerable and migratory birds.

2.1.1.2 SACs are designated for the conservation of Annex I habitats (including priority habitat types that are in danger of disappearing) and Annex II species (including diadromous fish and marine mammals). SPAs are designated for the conservation of Annex I birds and other regularly occurring migratory birds and their habitats. The habitats and species that a European site is designated for are referred to as its 'qualifying features'. The conservation objectives of a European site are set for each qualifying feature of each site and aim to ensure that a qualifying habitat or species is maintained in or restored to a Favourable Conservation Status (FCS).

2.1.1.3 Following the UK's departure from the EU on 31 December 2020 (EU Exit), the UK is no longer an EU Member State. Notwithstanding, the Habitats Regulations, which implemented the EU Habitats Directive and certain elements of the Birds Directive in the UK, continues to provide the legislative backdrop for the domestic HRA regime. The changes implemented by The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019 and The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 have implemented only minor changes to the HRA regime. These changes are not considered to have any material implications on the requirement or process for a HRA in relation to Morven South. Therefore, the HRA process implemented under the Habitats Regulations continues to apply and the UK is still bound by HRA judgements handed down by The Court of Justice of the EU (CJEU) prior to 31 December 2020.

2.1.1.4 Post EU Exit, the Habitats Regulations continue to refer to Annexes I and II of the Habitats Directive and Annex I of the Birds Directive and as such, reference is made to the annexes of the Habitats and Birds Directives in this Morven South RIAA. In addition to sites formally defined as European sites in the Habitats Regulations, Scottish Planning Policy acknowledges that Ramsar sites are afforded the same protection as if they were also designated as a European site (Scottish Government, 2020b, Scottish Government, 2025). The Scottish Government also states that authorities should afford the same level of protection to pSACs and pSPAs (i.e. sites that have been approved by Scottish Ministers for formal consultation but have not yet been designated) as they do to sites that have been designated (Scottish Government, 2020b).

2.1.1.5 Under the Habitats Regulations, before granting approval (i.e. planning permissions, licences and consents) for a development that is likely to have a significant effect on a European site, an AA must be made by the Competent Authority. This assesses the proposed plan or project's potential for adverse effects on integrity (AEOI) of the site in view of that European site's conservation objectives. If it cannot be determined there will be no AEOI then the project can only proceed if there are no alternative solutions and there is an imperative reason of overriding public interest (IROPI) (see Section 2.3).

2.2 European sites (Post European Union Exit)

2.2.1.1 In this Morven South RIAA, and in accordance with the Scottish Government's guidance, the term 'European site' has been retained to refer to SACs, cSACs, SCI, SPAs, pSACs, pSPAs and

Ramsar sites protected in Scotland, the rest of the UK and in EU Member States (Scottish Government, 2020b). However, where these sites are located in the UK, they no longer form part of the EU's Natura 2000 ecological network and now form part of the National Site Network.

2.2.1.2 The National Site Network is comprised of European sites in the UK that were already established under the Habitats Directive on 31 December 2020 or were proposed to the EC before that date. It also includes any new sites which have been designated under the Habitats Regulations through an amended designation process.

2.2.1.3 Management objectives for the National Site Network are established in the Habitats Regulations and are referred to as the network objectives. The objectives in relation to the National Site Network are to:

- maintain or restore certain habitats and species listed in the Habitats Directive to FCS;
- contribute to ensuring the survival and reproduction of certain species of wild bird in their area of distribution and to maintaining their populations at levels which correspond to ecological, scientific, and cultural requirements, while taking account of economic and recreational requirements.

2.3 Staged process

2.3.1.1 The HRA process is a progressive, multi-stage process built around the wording of Article 6(3) and 6(4) of the Habitats Directive (as transposed by the Habitats Regulations). The outcome at each stage defines the requirement for, and scope of, the next stage. Compliance with the requirements of the Habitats Regulations can be demonstrated if the stages are followed in the correct and particular sequence. These stages are summarised in Figure 2.1.

2.3.1.2 Article 6(3) of the Habitats Directive requires that: "Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon either individually or in-combination with other plans or projects, shall be subject to AA of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and if appropriate, after having obtained the opinion of the general public".

2.3.1.3 The Department for Environment, Food and Rural Affairs (Defra) *et al.* (2023) guidance "Habitats Regulations Assessments: protecting a European site" describes that the process can have up to three stages, with the first two stages as per Article 6(3) and the third as per Article 6(4). This process is also described in the NatureScot (2024) guidance and in the EC's (2021) guidance. The three stages are outlined below:

- Stage 1: Screening – involves a screening for LSE[2], which is a simple assessment to check or screen if a plan or project:
  - is directly connected with or necessary for the conservation management of a European site;
  - risks having a significant effect on a European site alone or in-combination with other plans or projects.
- Stage 2: Appropriate Assessment – this stage must be carried out if it is determined that there is a risk of an LSE[2] on a European site or if there is not enough evidence to rule out a risk. The AA should assess the LSE[2] arising from the plan or project on the integrity of the European site in relation to its conservation objectives (see Paragraph 2.2.1.3) and consider ways to avoid or reduce (mitigate) any potential for an "adverse effect on the integrity of the site", known as the "integrity test". The plan or project can only be approved if an adverse effect on the integrity of the site can be ruled out, unless the circumstances discussed under Stage 3 apply.

- Stage 3: Derogations – this stage is carried out to determine if, under certain circumstances, a plan or project that has failed the integrity test may be approved. To decide if the plan or project qualifies for a derogation, three legal tests must be applied. All three tests must be passed in sequence for a derogation to be granted:
  - Test 1: Assessment of Alternative Solutions – there are no feasible alternative solutions that would be less damaging or avoid damage to the site;
  - Test 2: Assessment of IROPI;
  - Test 3: the necessary compensatory measures can be secured.

2.3.1.4 This Morven South RIAA is concerned with the Stage 2 AA of the process (see Figure 2.1), which seeks to assess and decide whether a plan or project, alone or in-combination with other projects or plans, will have an AEOI of a European site. The Habitats Regulations make it clear that the Applicant (for the consent for the plan or project) must provide such information as the Competent Authority may reasonably require for the purposes of undertaking the AA. It is intended that this Morven South RIAA provides this information.

2.3.1.5 The documents prepared regarding Test 3 of the Stage 3 Derogation (i.e. the proposed compensation measures in relation to Morven South) are presented in Volume 3 of the HRA (including details on where AEOI can or cannot be excluded for European sites, see paragraph 2.1.1.5) and includes:

- Volume 3, Chapter 1: Derogation Case;
- Volume 3, Chapter 2: Compensation Plan;
- Volume 3, Annex 2.1: Compensation Stakeholder Consultation;
- Volume 3, Annex 2.2: Long List of Species and Compensation Options;
- Volume 3, Annex 2.3: Assessment of Offshore Islands Potentially Suitable for Predator Eradications Report;
- Volume 3, Annex 2.4: Predator Eradication Modelling Report;
- Volume 3, Annex 2.5: Islands Screening Report: Muck;
- Volume 3, Annex 2.6: Pre-eradication Field Study Report: Muck;
- Volume 3, Chapter 3: Outline Compensation Implementation, Monitoring and Adaptive Management Plan.

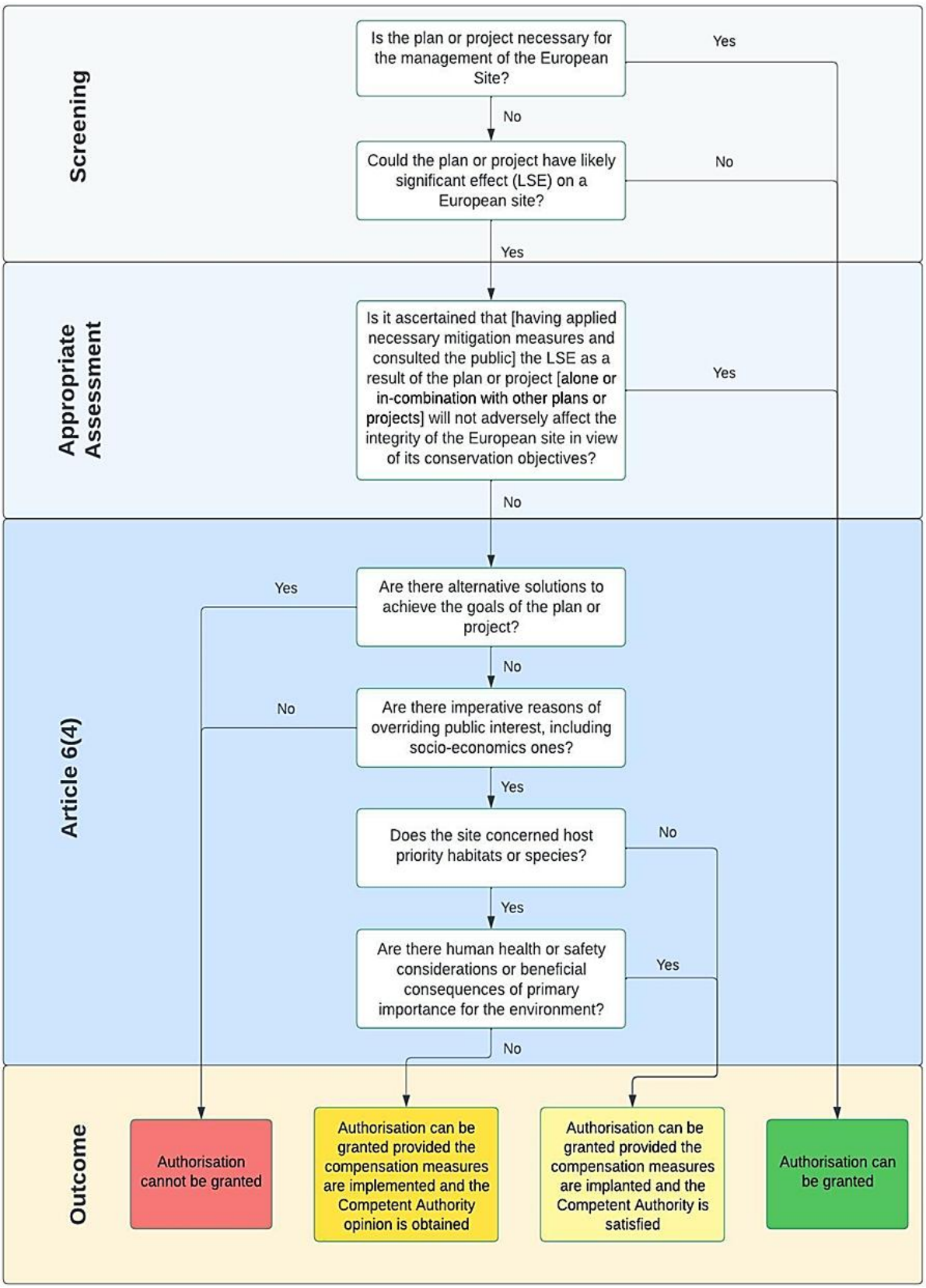

Figure 2.1: Stages in the Habitats Regulations Appraisal process (adapted from the European Commission flowchart and NatureScot guidance (EC, 2021; NatureScot, 2024))

2.4 Guidance

2.4.1.1 Following the UK's departure from the EU, reference to EC guidance on the interpretation of HRA concepts continues to apply (see Section 2.1). The Habitats Regulations in Scotland state that in the longer term, guidance may be updated and/or new guidance may be produced, to replace guidance by the EC (Scottish Government, 2020b). However, at the time of writing, existing guidance continues to apply. Therefore, this Morven South RIAA has been undertaken in accordance with the following guidance documents:

- "Habitats Regulations Appraisal (HRA) on the Firth of Forth - A Guide for developers and regulators" (NatureScot, 2024);
- "Habitats Regulations Appraisal (HRA) of Local Development Plans (LDPs) - Guidance for planning authorities in Scotland" (NatureScot, 2023a);
- "European Site Casework Guidance: How to consider plans and projects affecting Special Areas of Conservation (SACs) and Special Protection Areas (SPAs)" (NatureScot, 2023b);
- "The Habitats Regulations Assessment Handbook" (Tyldesley and Chapman, 2021);
- "Assessment of plans and projects in relation to Natura 2000 sites - Methodological guidance on Article 6(3) and (4) of the Habitats Directive 92/43/EEC" (EC, 2021);
- "Guidance document on wind energy developments and EU nature legislation" (EC, 2020);
- "Guidance Note: The handling of mitigation in Habitats Regulations Appraisal – the People Over Wind CJEU judgement" (Scottish National Heritage (SNH)[2], 2019);
- "Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC" (EC, 2019);
- "Marine Scotland Consenting and Licensing Guidance for Offshore Wind, Wave and Tidal Energy Applications" (Scottish Government, 2018);
- "HRA Advice Sheet 1 - Aligning Development Planning procedures with Habitats Regulations Appraisal requirements" (Scottish Government, 2012).

2.4.1.2 This Morven South RIAA has also been undertaken in accordance with the following publications that seek to explain the changes made to the Habitats Regulations from 01 January 2021:

- "EU Exit: The Habitats Regulations in Scotland" (Scottish Government, 2020b);
- "Policy Paper - Changes to the Habitats Regulations 2017" (Defra, 2021);
- "Habitats Regulations Assessments: protecting a European site" (Defra *et al.*, 2023).

2.4.1.3 The Statutory Nature Conservation Bodies (SNCBs) have produced conservation advice for European sites under their statutory remit. This conservation advice provides information on sites and qualifying features and guidance on how to achieve FCS. Conservation advice is discussed further for each European site, as relevant, in RIAA Part 2 and RIAA Part 3.

2.5 Relevant case law

2.5.1.1 The Case law that defines key assessment parameters for the purposes of HRA (such as the definition of "integrity" and "significance", the consideration of *ex situ* effects and the consideration of designed-in measures) are discussed in Paragraphs 2.5.2 to 2.5.4.3.

2.5.2 Consideration of designed-in measures

2.5.2.1 With respect to the consideration of designed-in measures at Stage 1 Screening, in April 2018, the CJEU issued a judgement in the People Over Wind Case (Case C323/17) clarifying the stage in a HRA process when designed-in measures can be taken into account when assessing impacts on a European site. The ruling stated that "…in order to determine whether

[2] Now NatureScot.

it is necessary to carry out, subsequently, an AA of the implications, for a site concerned, of a plan or project, 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."

2.5.2.2 NatureScot interprets the judgement to mean that it is those measures specifically intended to avoid or reduce harmful effects of a project or plan to a European site which cannot be considered at Stage 1 Screening. Commensurate with Case C323/17 (and the interpretation by NatureScot; SNH, 2019), measures intended to avoid or reduce harmful effects on a European site specifically were not considered when undertaking the screening exercise for Morven South.

2.5.2.3 Measures intended specifically to protect European sites are, however, considered distinct from those that may incidentally protect European sites to a degree, but which are intrinsic parts of the project. For example, offshore wind farms typically require post-consent plans that cover the construction and operations and maintenance phases and includes planning for accidental spills and biosecurity measures to limit the potential spread of Invasive Non-Native Species (INNS) (e.g. an Environmental Management Plan (EMP) and an INNS Management Plan (INNSMP)), irrespective of the potential effects on European sites. On the advice of NatureScot and the Scottish Ministers in relation to the Berwick Bank Offshore Windfarm (Scottish Government, 2021), the Applicant determined t was appropriate to account for such 'incidental' measures from Morven Site HRA Screening Report.

2.5.3 Adverse effects on the integrity of European sites

2.5.3.1 The EC's 2019 guidance on managing Natura 2000 sites advises that the purpose of the AA is to assess the implications of the plan or project in respect of a European site's conservation objectives, either alone or in-combination with other plans or projects. The conclusions should enable the relevant Competent Authority to ascertain whether the plan or project will adversely affect the integrity of the European site concerned. The focus of the AA is therefore specifically on the qualifying species and/or the habitats for which the European site is designated.

2.5.3.2 The EC 2019 guidance also emphasises the importance of using the best scientific knowledge when carrying out the AA in order to enable the Competent Authority to conclude beyond reasonable scientific doubt ,that there will be no AEOI of the European site. This guidance notes that it is at the time of the decision authorising implementation of the project that there must be no reasonable scientific doubt remaining as to the absence of AEOI of the European site in question.

2.5.3.3 The CJEU confirmed in its ruling in Sweetman and Others v An Bord Pleanála (C-258/11, April 2013) that: "Article 6(3) of the Habitats Directive must be interpreted as meaning that a plan or project not directly connected with or necessary to the management of a site will adversely affect the integrity of that site if it is liable to prevent the lasting preservation of the constitutive characteristics of the site that are connected to the presence of a priority natural habitat whose conservation was the objective justifying the designation of the site in the list of SCIs, in accordance with the directive. The precautionary principle should be applied for the purposes of that appraisal". The EC 2019 guidance advises that the logic of such an interpretation would also be relevant to non-priority habitat types and to habitats of qualifying species.

2.5.3.4 The "integrity of the site" can be usefully defined as the coherent sum of the European site's ecological structure, function and ecological processes, across its whole area, which enables it to sustain the habitats, complex of habitats and/or populations of species for which the site is designated (EC, 2019). In Case C-258/11 it was determined that the ecological structure and function of a European site would be adversely affected with reference to the site's overall ecological functions and "the lasting preservation of the constitutive characteristics of the site". In a dynamic ecological context, it can also be considered as having the sense of resilience and ability to evolve in ways that are favourable to conservation (EC, 2019).

2.5.3.5 The EC 2019 guidance notes that if the Competent Authority considers the designed-in measures applied to a project or plan as sufficient to avoid the AEOI on site identified in the AA, those measures will become an integral part of the specification of the final plan or project or may be listed as a condition for project approval.

2.5.3.6 The EC 2020 guidance advises that it is for the Competent Authority, in the light of the conclusions made in the AA on the implications of a plan or project for the European site in question, to approve the plan or project. This decision can only be taken after they have made certain that the plan or project will not adversely affect the integrity of the site and where no reasonable scientific doubt remains as to the absence of such effects.

2.5.3.7 The EC 2020 guidance also reaffirms that the authorisation criterion laid down in the second sentence of Article 6(3) of the Habitats Directive integrates the precautionary principle and makes it possible to effectively prevent the European sites from suffering AEOI as the result of the plans or projects. A less stringent authorisation criterion could not as effectively ensure the fulfilment of the objective of site protection intended under that provision. The onus is therefore on demonstrating the absence of adverse effects rather than their presence, reflecting the precautionary principle. It follows that the AA must be sufficiently detailed and reasoned to demonstrate the absence of adverse effects, in light of the best scientific knowledge available.

2.5.3.8 In accordance with the decision of the CJEU in the Waddenzee Case (C-127-02), the measure of significance is made against the conservation objectives for which the European sites were designated.

2.5.4 Consideration of *ex situ* effects

2.5.4.1 The EC 2019 guidance advises that Article 6(3) and Article 6(4) safeguards should be applied to European sites subject to LSE[2]s from any development pressures, including those which are external to those European site(s).

2.5.4.2 The CJEU developed this point in Brian Holohan and Others v An Bord Pleanála (Case C-461/17), which determined *inter alia* how Article 6(3) of Directive 92/43/EEC must be interpreted. The CJEU determined that an AA must on the one hand, catalogue the entirety of habitat types and species for which a European site is designated, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the site's conservation objectives.

2.5.4.3 In that regard, consideration has been given at Stage 1 Screening, and where necessary, based on the outcomes of that screening, in this Morven South RIAA to implications for habitats and species located both inside and outside of the European sites with reference to their conservation objectives, where effects upon those habitats and/or species are liable to affect the conservation objectives of the sites concerned.

3 Consultation

3.1.1.1 Consultation has been undertaken with relevant statutory stakeholders including MD-LOT, NatureScot and Natural England, alongside various other stakeholders, such as Marine Directorate Science, Evidence, Digital and Data (MD-SEDD), Fisheries Management Scotland and the Royal Society for the Protection of Birds (RSPB) Scotland, during key stages of the pre-application phase of the Morven Site and subsequently the pre-application phase of Morven South, following the refinement of the Morven Site into Morven North and Morven South (see Section 1.1).

3.1.1.2 Scoping Workshops were held for the Morven Site on the 18 and 19 April 2023 where the preliminary outputs of the Morven Site Stage 1 Screening for Annex I habitats, Annex II diadromous fish and marine mammals, and Annex II onshore species were presented. In addition to the feedback received during the Scoping Workshops for the Morven Site, written feedback was received from NatureScot on the 25 May 2023, which was considered in the Morven Site HRA Screening Report. The Applicant submitted the Morven Site HRA Screening Report to MD-LOT on 17 July 2023, and the Morven Site Scoping Opinion (which included the response to the Stage 1 Screening; MD-LOT, 2023) was received on 30 November 2023 (MD-LOT, 2023). These stakeholder responses have informed the scope of the Morven South RIAA. Other consultation undertaken for the Morven Site prior to the Morven Site split has been considered and where applicable and relevant has been taken into account in this Morven South RIAA.

3.1.1.3 The relevant consultation to the Morven South RIAA is outlined in Table 2.1 of the RIAA Part 2 and in Table 2.1 of RIAA Part 3.

3.1.1.4 Based on the outcomes of the Morven Site HRA Screening Report no potential significant transboundary effects, either alone or in-combination, were predicted for the Morven Site. Therefore, no transboundary effects are predicted for Morven South and no transboundary consultation has been carried out with respect to this Morven South RIAA.

4 Information on Morven South

4.1 Overview

4.1.1.1 This section provides a description of the infrastructure, and encompasses activities related to the construction, operations and maintenance (O&M), and decommissioning of Morven South. This section is informed by design work undertaken to date and the current understanding of the environment associated with Morven South, derived from a desk-based review of available information and site specific surveys conducted by the Applicant.

4.1.1.2 The design and engineering options considered were informed by the specific conditions and environmental factors within the Morven South Boundary. The Applicant conducted various desk-based studies and site surveys in the early development stage to inform project design and refine project design parameters. Further studies are expected to be completed beyond the planning phase and into procurement and contracting to inform the final design of Morven South, including layout, numbers, types, sizes and foundation designs for wind turbines and OSPs.

4.1.1.3 The Applicant followed the PDE approach, meaning that the maximum design parameters for Morven South included in this chapter present the maximum design scenario (MDS), (i.e. the maximum extents of the design in order to assess the LSE[2] of Morven South). For some qualifying features the MDS might be a combination of parameters, not just the maximum parameter, as explained and assessed in each qualifying feature section of the RIAA Part 2 and RIAA Part 3. The PDE presented in this section defines the maximum range of design parameters. Within the RIAA, the Applicant has determined the maximum adverse effects that could occur for given qualifying features, selecting these from within the range in the PDE to define the MDS for that qualifying feature. As a result, for each qualifying features-specific assessment, the predicted effects for any alternative parameter within the range will be no greater than those assessed.

4.1.1.4 Offshore wind is a continually evolving industry with a constant focus on safety, increased efficiency and cost reduction, therefore improvements in technology and construction methodologies occur frequently and an unnecessarily prescriptive approach could preclude the adoption of new technology and methods. Consequently, this chapter sets out a series of maximum design parameters. This project description does not refer directly to the generation capacity of the wind turbines but rather their physical dimensions. Subsequently, the assessments are not linked directly to the overall capacity of Morven South or individual wind turbine capacity, but rather the physical dimensions of the wind turbines such as blade tip height and rotor diameter. The final design of Morven South will be informed by future site investigation work and the availability of technologies, taking into account commercial availability. The final design of Morven South will be within the PDE parameters assessed in the RIAA and as presented in this section. This is considered to be an accepted/standard approach for large-scale infrastructure projects like Morven South.

4.2 Morven South infrastructure

4.2.1 Wind turbines

4.2.1.1 Morven South will consist of up to 95 wind turbines. The final number of wind turbines will be determined during the detailed design phase of Morven South ahead of construction.

4.2.1.2 A range of wind turbine parameters are included which reflect the varying generating capacities of wind turbines considered in the PDE. This allows for a degree of flexibility to account for any anticipated developments in wind turbine technology while still allowing a robust assessment of the MDS for each potential impact pathway for each SAC or SPA. Consent is therefore sought for the physical parameters of the wind turbines which form the

basis of the MDS, and is not specific to the indicative installed capacity of turbine options considered within the Morven South PDE.

4.2.1.3 The wind turbines will follow the traditional wind turbine design with a horizontal rotor axis with three blades connected to the hub of the wind turbine nacelle. The nacelle will be supported by a tower structure which is fixed to the Transition Piece (TP) and foundation. Section 4.2.3 provides details of wind turbine foundations.

4.2.1.4 The maximum blade tip height (metres (m) above Lowest Astronomical Tide (LAT)) is expected to be no greater than 363m, with a maximum rotor diameter (m) of 320m and a minimum blade tip clearance (m above LAT) of 34m. The maximum design parameters for the wind turbines are presented in Table 4.1 and a schematic of a typical offshore wind turbine is illustrated in Figure 4.1.

4.2.1.5 The Morven South layout will be designed to optimise the use of available wind resource and suitable seabed conditions, while minimising environmental effects and potential impacts on other marine users. The final layout will be confirmed following detailed design (post-consent) in consultation with relevant stakeholders and submitted to the MD-LOT for approval.

Table 4.1: Maximum design parameters: wind turbines

Parameter	Maximum design parameter
Maximum number of wind turbines	95
Maximum blade tip height (m) above LAT	363
Minimum blade tip clearance above LAT (m)	34
Maximum hub height above LAT (m)	203
Maximum rotor diameter for wind turbine option with smallest height in PDE (m)	250
Maximum rotor diameter for wind turbine option with largest height in PDE (m)	320
Maximum number of blades	3
Minimum turbine spacing (m)	1,000

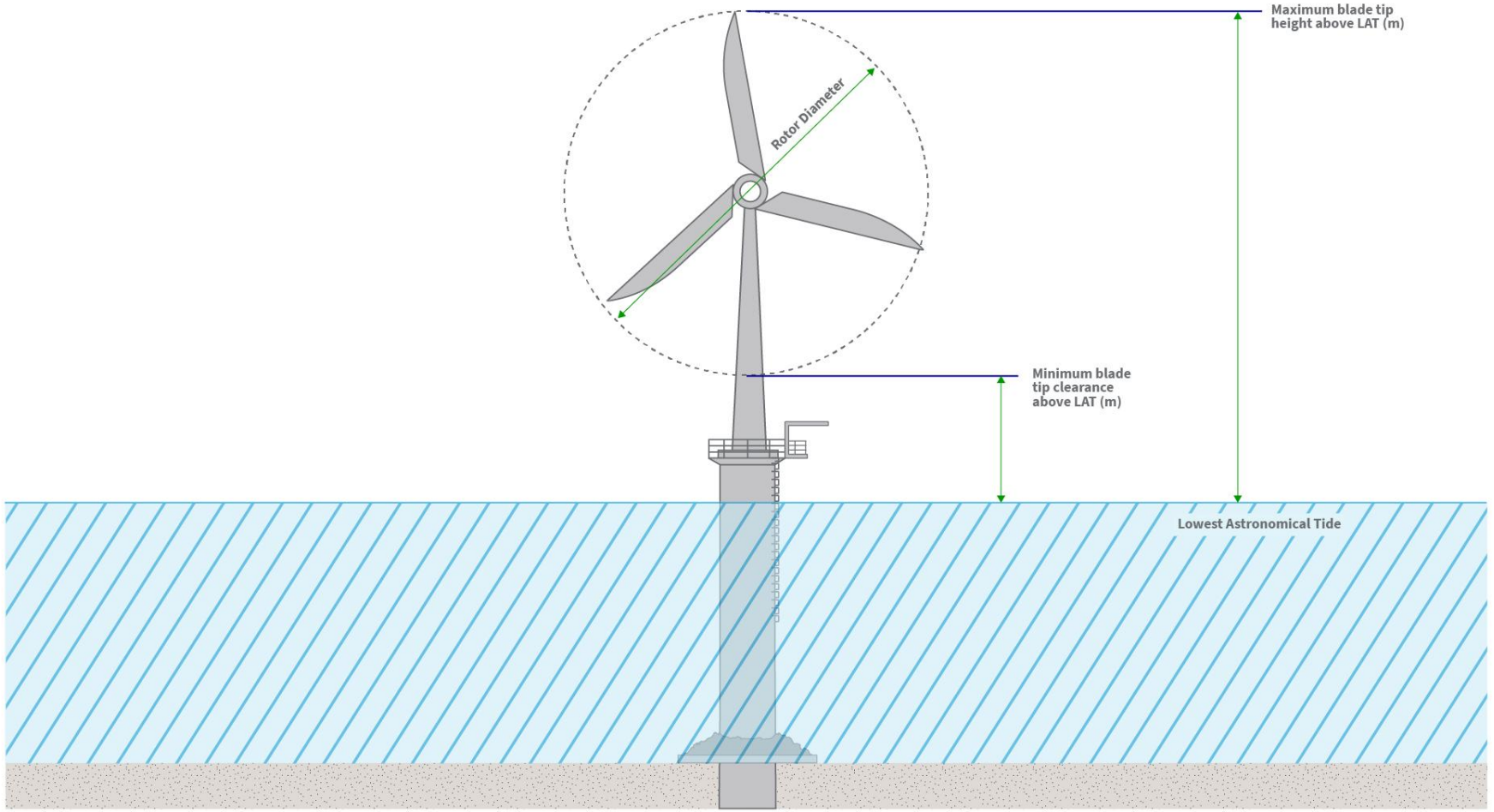

Figure 4.1: Illustration of a typical offshore wind turbine (not to scale)

4.2.2 Offshore Substation Platform topsides

4.2.2.1 The following OSP arrangement scenarios have been considered within this RIAA:

- OSP Option 1: up to five OSPs, comprising:
  - up to four High Voltage Alternating Current (HVAC) collector substation platforms;
  - up to one High Voltage Direct Current (HVDC) converter substation platform.
- OSP Option 2: up to five OSPs, comprising:
  - up to four HVAC collector substation platforms;
  - up to one bridge-linked HVDC converter substation, which consists of two HVDC converter substation platforms (including foundations) linked via a steel bridge to accommodate cabling between the platforms.

4.2.2.2 The final number and specifications of each OSP will depend on the final electrical set up for Morven South. Figure 4.2 illustrates a typical design of an OSP with the topside placed on a piled jacket foundation. Figure 4.3 illustrates a typical bridge-linked HVDC OSP.

4.2.2.3 The exact locations of the OSPs will be determined following the detailed design phase ahead of construction. The maximum design parameters for the OSP options are presented in Table 4.2 and Table 4.3, respectively.

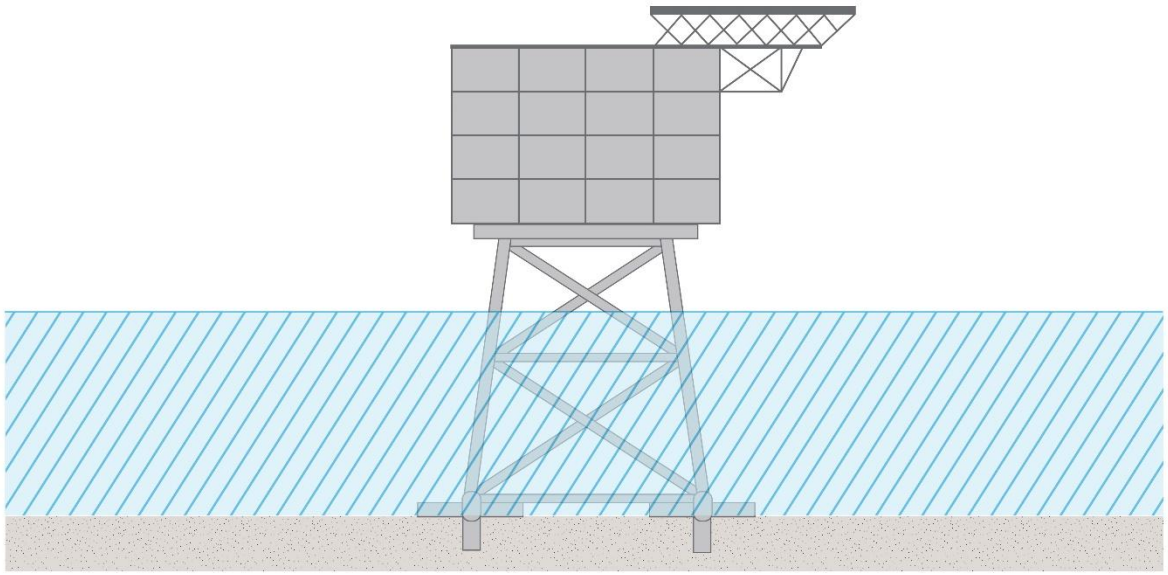

Figure 4.2: Illustration of a typical Offshore Substation Platform on a piled jacket foundation (not to scale)

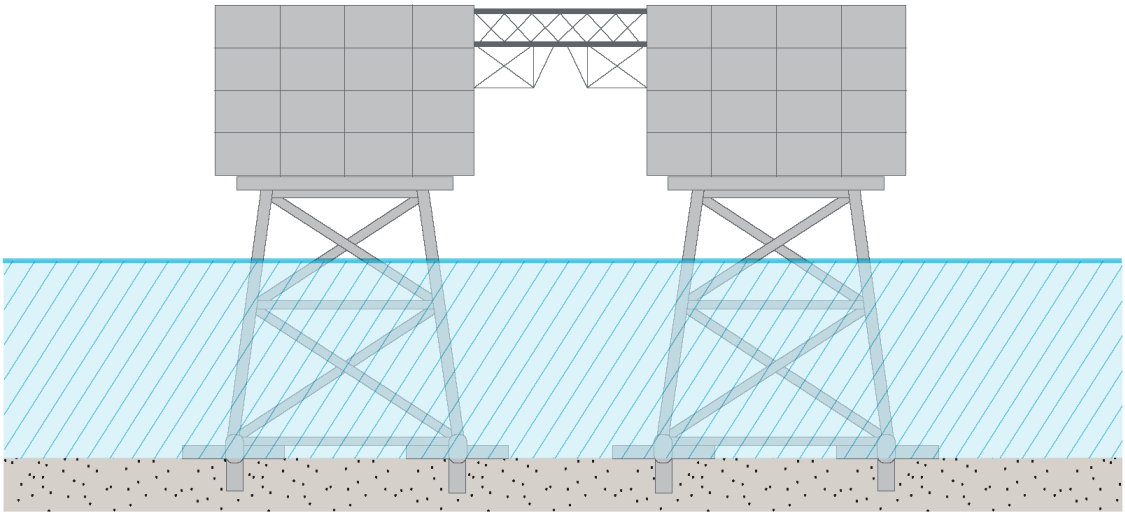

Figure 4.3: Illustration of typical Offshore Substation Platforms on piled jacket foundations connected by a bridge link (referred to as the bridge-linked High Voltage Direct Current Offshore Substation Platform and considered as a single structure) (not to scale)

Table 4.2: Maximum design parameters for the Offshore Substation Platform Option 1

Parameter	Maximum design parameter	
	HVAC Collector Substation	HVDC Convertor Substation
Maximum number of OSPs	4	1
Maximum length of topside (m)	80	240
Maximum width of topside (m)	60	180
Maximum height of topside above LAT (excluding helideck, crane, lightning protection or antenna structure) (m)	70	100
Maximum height of lightning protection above LAT (m)	90	120
Maximum height of helideck above LAT (m)	90	120
Maximum height of crane above LAT (m)	90	120
Maximum height of top of antenna structure above LAT (m)	90	120
Maximum weight of topside (t)	15,000	30,000
Topside – maximum area (m^2) (length x width)	4,800 (80 x 60)	43,200 (240 x 180)

Table 4.3: Maximum design parameters for the Offshore Substation Platform Option 2

Parameter	Maximum design parameter	
	HVAC Collector Substation	Bridge-linked HVDC OSP
Maximum number of OSPs	4	1[3]
Maximum length of topside (m)	80	580[4]
Maximum width of topside (m)	60	180
Maximum height of topside above LAT (excluding helideck, crane, lightning protection or antenna structure) (m)	70	100
Maximum height of lightning protection above LAT (m)	90	120
Maximum height of helideck above LAT (m)	90	120
Maximum height of crane above LAT (m)	90	120
Maximum height of top of antenna structure above LAT (m)	90	120
Maximum weight of topside (t)	15,000	60,000 (2 x 30,000)[5]
Topside – maximum area (m^2) (length x width)	4,800 (80 x 60)	104,400 (580 x 180)
Bridge link details (applicable to bridge-linked HVDC OSP only)		
Maximum distance between OSP edges (bridge length) (m)	N/A	100
Minimum distance between OSP edges (bridge length) (m)	N/A	10
Minimum clearance height (m) (Highest Astronomical Tide (HAT))	N/A	14

4.2.3 Foundations and support structures

4.2.3.1 The wind turbines and OSPs will be attached to the seabed by foundation structures. With only preliminary geophysical and geotechnical surveys undertaken to date, the Applicant requires flexibility in foundation choice to accommodate ground condition unknowns within the Morven South Boundary.

4.2.3.2 To allow for flexibility in final foundation design, four foundation types have been considered for Morven South, of which three are proposed for both wind turbines and OSPs, and one is considered for OSPs only:

- foundation options considered for wind turbines and OSPs:
  - monopile foundations (Foundation Option 1);

[3] It should be noted that this comprises two HVDC converter substations, however, as they are bridge linked, they are classed as one structure.

[4] Note that this value comprises the length of the two HVDC converter substations (2 x 240m) making up this single bridge-linked structure plus the bridge link (100m).

[5] Note that this value refers to two HVDC converter substation topsides with maximum weight of 30,000t each.

  - piled jacket foundations (for wind turbines – up to four legs per jacket; for OSPs – up to six legs per jacket) (Foundation Option 2);
  - suction bucket jacket foundations (for wind turbines – up to four legs per jacket; for OSPs – up to six legs per jacket) (Foundation Option 3).
- foundation options considered for OSPs only:
  - gravity base foundations (Foundation Option 4).

4.2.3.3 The foundation type will be selected during detailed design and following detailed pre-construction site investigation surveys. The foundations will be fabricated offsite, stored at a port facility and transported to Morven South for installation. This section provides an overview of the design parameters associated with each proposed foundation type for both wind turbines and OSPs.

Foundation Option 1: monopile foundations (wind turbine and High Voltage Alternating Current Offshore Substation Platforms)

4.2.3.4 Monopile foundations consist of a single steel tubular section with or without a TP (see example schematic in Figure 4.4). There may be ladders, a crane, and other components to facilitate boat landings, or connection to the tower. The TP or upper part of the monopile is typically painted yellow and marked according to relevant regulatory guidance. Monopiles are proposed as a foundation option for wind turbines and HVAC OSPs (included in OSP Options 1 and 2, as described above in Section 4.2.2); HVDC OSPs would not be installed with monopile foundations. Table 4.4 outlines the maximum design parameters for monopile foundations for wind turbines and HVAC OSPs.

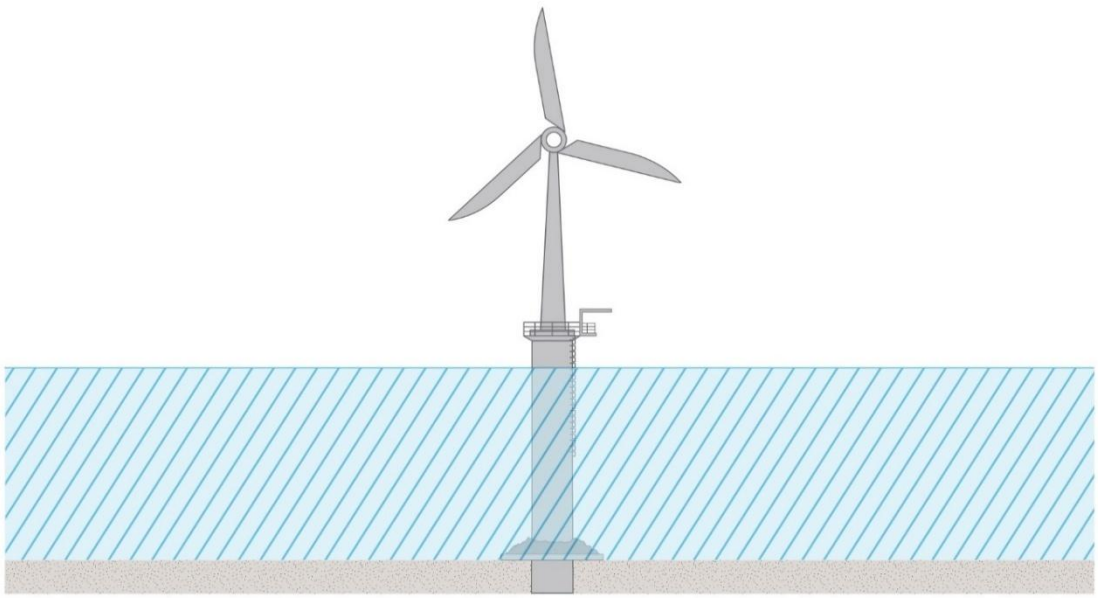

Figure 4.4: Schematic of a typical monopile foundation (wind turbine) (not to scale)

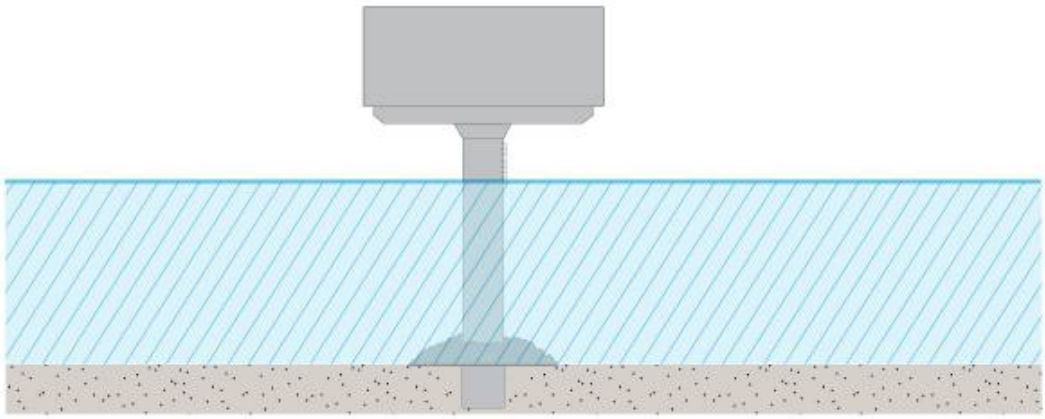

Figure 4.5: Schematic of a typical monopile foundation (High Voltage Alternating Current Offshore Substation Platform) (not to scale)

Table 4.4: Maximum design parameters for foundation option 1 (monopiles)

Parameter	Maximum design parameter		
	Wind turbines	OSP Option 1[6]	OSP Option 2[7]
Maximum number of monopile foundations	95	4	4
Maximum pile diameter (m)	16	16	16
Maximum TP diameter (m)	13	13	13
Maximum pile penetration depth (m)	64	64	64
Maximum pile length (m)	150	167.50	167.50
Maximum seabed footprint per pile (m^2)	201	201	201
Maximum total seabed footprint for Morven South (m^2)	16,788 [8]	804.20	804.20
Maximum hammer energy (kJ)	6,600	6,600	6,600

[6] It should be noted that monopile foundations will only be used for the HVAC collector substations included in OSP Option 1

[7] It should be noted that monopile foundations will only be used for the HVAC collector substations included in OSP Option 2

[8] Note: this value is based on 95 monopiles with 15m diameter

Foundation Option 2: piled jacket foundations (wind turbines and High Voltage Alternating Current/ High Voltage Direct Current Offshore Substation Platforms)

4.2.3.5 Piled jacket foundations are steel lattice structures (comprising steel tubular members and welded joints) which support wind turbines or OSPs and are secured to the seabed by pin piles. The steel tubular pin piles are typically narrower than monopiles and will most likely be piled by hydraulic hammers, vibration installation, or drilled into the seabed. The TP and foundation structure are fabricated as an integrated part of the jacket. Morven South may use either six-legged (for OSPs only), four-legged or three-legged piled jacket foundations. An example of a pin piled jacket is shown in Figure 4.6.

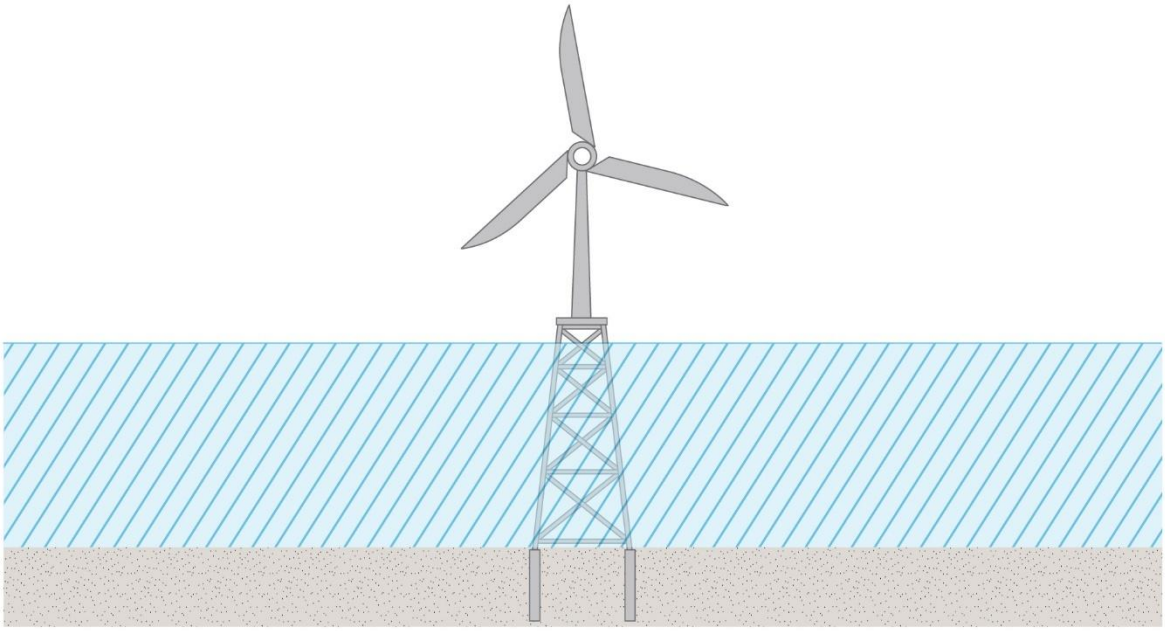

Figure 4.6: Schematic of a typical pin pile jacket foundation (not to scale)

4.2.3.6 The piled jacket foundations will be transported to site by sea. Once at site, the jacket foundation will be lifted by the installation vessel using a crane and lowered towards the seabed in a controlled manner. The hollow steel pin piles are typically driven or drilled into the seabed, relying on the frictional and end bearing properties of the seabed for support. The maximum design parameters for jacket foundations with pin piles for wind turbines and for OSPs are provided in Table 4.5 and Table 4.6, respectively.

Table 4.5: Maximum design parameters for foundation option 2 (jacket foundations with pin piles) - wind turbines

Parameter	Maximum design parameter
Maximum number of jacket foundations	95
Maximum number of legs per foundation	4
Maximum leg diameter (m)	5
Maximum number of pin piles per leg	1
Maximum pin pile diameter (m)	5.3
Maximum embedment depth (below seabed) (m)	83
Maximum pile length (m)	93

Parameter	Maximum design parameter
Maximum hammer energy (kJ)	4,500
Maximum seabed footprint per foundation (m^2)	66
Maximum seabed footprint for Morven South (m^2)	4,086 [9]
Maximum separation of adjacent legs at seabed level (m)	64
Maximum separation of adjacent legs at LAT (m)	54

Table 4.6: Maximum design parameters for foundation Option 2 (jacket foundations with pin piles) – Offshore Substation Platforms

Parameter	Maximum design parameter			
	OSP Option 1		OSP Option 2	
	HVAC	HVDC	HVAC	Bridge-linked HVDC
Maximum number of OSP jacket foundations	4	1	4	2
Maximum number of legs per foundation	6	6	6	6
Maximum leg diameter (m)	5	5.3	5	5.3
Maximum number of pin piles per leg	4	4	4	4
Maximum pin pile diameter (m)	4.5	5	4.5	5
Maximum pile penetration depth (m)	65	80	65	80
Maximum pile length (m)	90	105	90	105
Maximum dimensions of mud mats per jacket foundation (m^2)	576	576	576	576
Maximum hammer energy (kJ)	4,000	4,000	4,000	4,000
Maximum seabed footprint per foundation (m^2)	703	733	703	733
Maximum seabed footprint for Morven South (m^2)	2,813	733	2,813	1,467
Maximum separation of adjacent legs at seabed level (m)	60	160	60	160
Maximum separation of adjacent legs at LAT (m)	50	135	50	135

[9] Note: this value is based on 95 jacket foundations with 3.7m diameter pin piles.

Foundation Option 3: suction bucket jacket foundations (wind turbines and High Voltage Alternating Current/ High Voltage Direct Current Offshore Substation Platforms)

4.2.3.7 Jacket foundations with suction buckets are steel lattice structures (comprising tubular steel members and welded joints) fixed to the seabed by suction buckets installed below each leg of the jacket structure. The suction buckets are typically hollow steel cylinders, capped at the upper end and do not require a hammer or drill for installation (see example schematic in Figure 4.7).

4.2.3.8 The maximum design parameters are provided in Table 4.7 and Table 4.8. Wind turbines could have three or four legged jackets whereas OSPs could have three, four or six legged jackets.

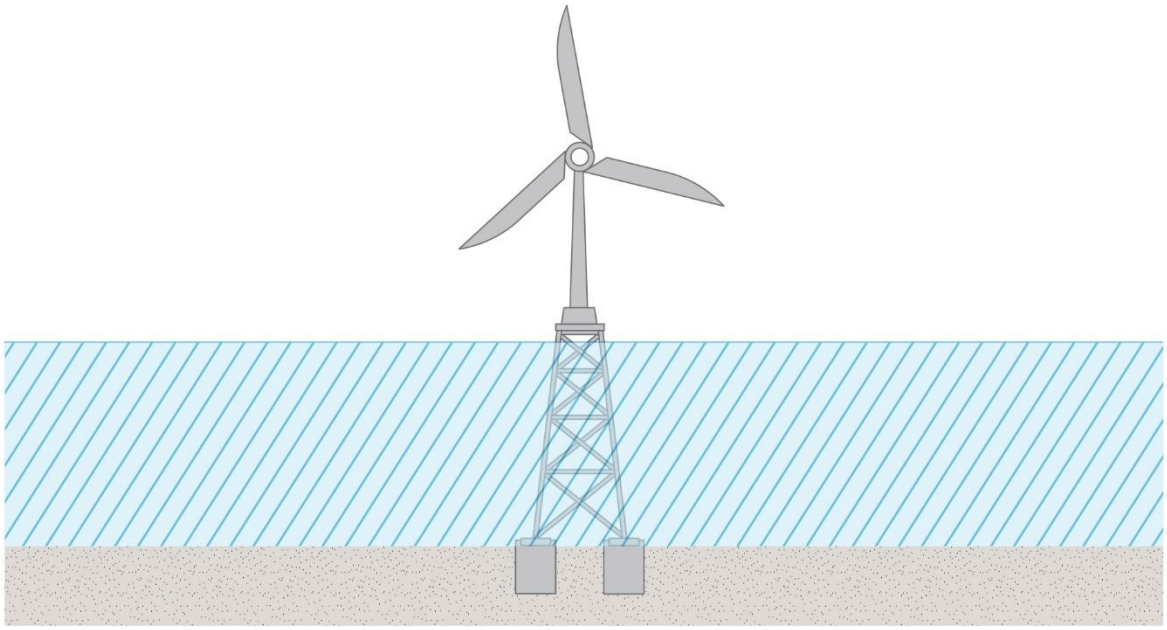

Figure 4.7: Schematic of a typical suction bucket jacket foundation (wind turbines) (not to scale)

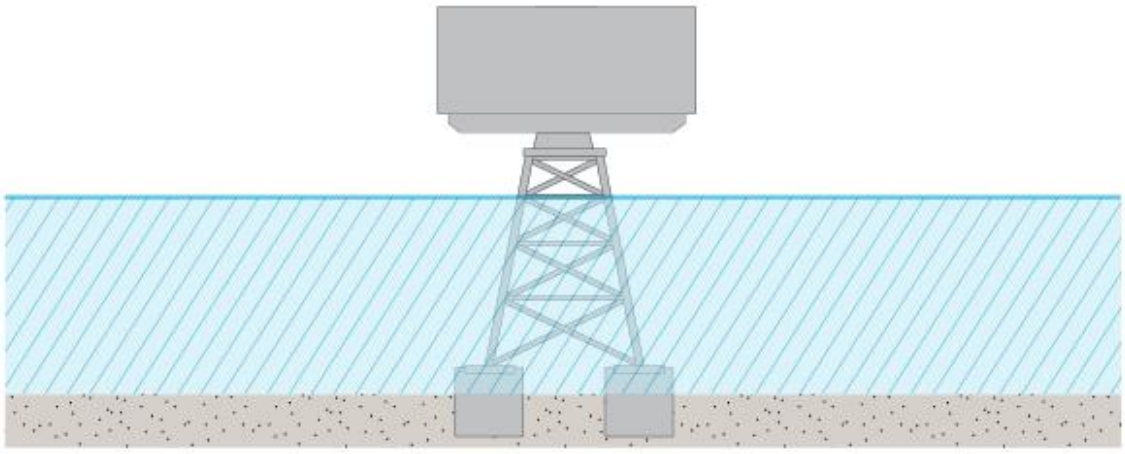

Figure 4.8: Schematic of a typical suction bucket jacket foundation (Offshore Substation Platform) (not to scale)

Table 4.7: Maximum design parameters for foundation Option 3 (jacket foundations with suction buckets) – wind turbines

Parameter	Maximum design parameter
Maximum number of jacket foundations	95
Maximum number of legs per jacket with suction bucket	4
Maximum leg diameter (m)	5
Maximum seabed footprint per foundation (m^2)	1,018
Maximum seabed footprint for Morven South (m^2)	59,037
Maximum diameter of suction bucket (m)	20
Maximum expected penetration depth (m)	23
Maximum separation of adjacent legs at seabed level (m)	40
Maximum separation of adjacent legs at LAT (m)	40

Table 4.8: Maximum design parameters for foundation Option 3 (jacket foundations with suction buckets) – Offshore Substation Platforms

Parameter	Maximum design parameter			
	OSP Option 1		OSP Option 2	
	HVAC	HVDC	HVAC	Bridge-Linked HVDC
Maximum number of jacket foundations	4	1	4	2
Maximum number of legs per jacket with suction bucket	6	6	6	6
Maximum leg diameter (m)	5	5.3	5	5.3
Maximum seabed footprint per foundation (m^2)	1,527	1,527	1,527	1,527
Maximum seabed footprint for Morven South (m^2)	6,107	1,527	6,107	3,054
Maximum diameter of suction bucket (m)	20	20	20	20
Maximum expected penetration depth (m)	25	25	25	25
Maximum separation of adjacent legs at seabed level (m)	60	160	60	160
Maximum separation of adjacent legs at LAT (m)	50	135	50	135

Foundation Option 4: gravity base foundations (High Voltage Alternating Current/ High Voltage Direct Current Offshore Substation Platforms)

4.2.3.9 Gravity base foundations are generally made of concrete with steel reinforcements, or steel alone, and consist of a base, a conical structure and a smaller cylindrical top (generally called the shaft) which can be made of steel and connected to the lower concrete conical structure. This shape provides support and stability to the wind turbine or OSP. Note, HVDC converter substations will not be developed via a gravity base with conical caisson and instead may be developed with gravity foundations built around a rectangular support structure.

4.2.3.10 For large OSPs such as the HVDC converter substations, gravity base foundations may be ballast weighted and built around a rectangular support structure with up to six legs (see example schematic in Figure 4.9). This eliminates the requirement for drilling or piling, unless ground reinforcements with piles or suction buckets are required to stabilise the seabed. In case of the latter, the numbers and dimensions of piles or suction buckets will not exceed the values given for piled jacket foundations or suction bucket jacket foundations. The seabed is dredged and primed with bedding material (e.g. crushed rock) to stabilise the foundation prior to installation, with excavated material disposed of on site within the Morven South Boundary.

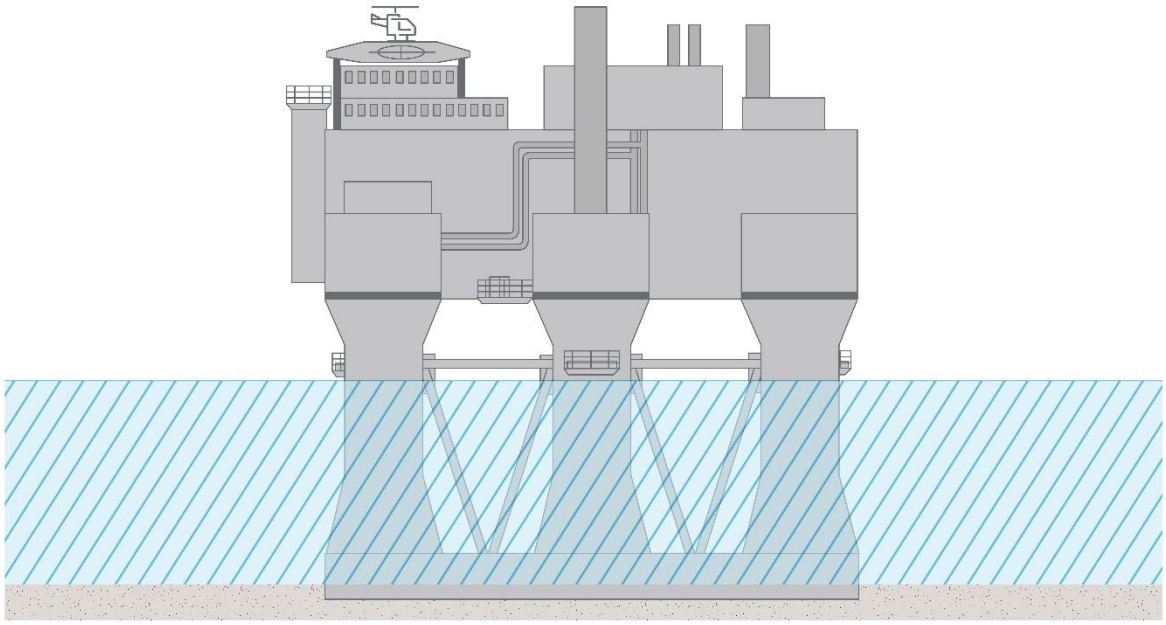

Figure 4.9: Schematic of a typical rectangular gravity base foundation with six legs (not to scale)

4.2.3.11 The maximum design parameters for gravity base foundations for OSPs is provided in Table 4.9.

Table 4.9: Maximum design parameters for foundation Option 4 (gravity base foundations)

Parameter	Maximum design parameter			
	OSP Option 1		OSP Option 2	
	HVAC	HVDC	HVAC	Bridge-Linked HVDC
Maximum number of gravity base foundations	4	1	4	2
Foundation shape	Conical	Rectangular	Conical	Rectangular
Maximum diameter/size (width x length) of gravity base foundation at seabed (m)	67	195 W x 255 L	67	195 W x 255 L
Maximum diameter/size (width x length) of gravity base foundation at sea surface (m)	17	180 W x 240 L	17	180 W x 240 L
Maximum caisson diameter (m)	51	N/A	51	N/A
Maximum foundation penetration depth (m)	10	10	10	10
Maximum seabed footprint per foundation (m^2)	3,526	49,725	3,526	49,725
Maximum seabed footprint for Morven South (m^2)	14,103	49,725	14,103	99,450

Parameter	Maximum design parameter			
	OSP Option 1		OSP Option 2	
	HVAC	HVDC	HVAC	Bridge-Linked HVDC
Maximum total height below sea surface (m)	75	75	75	75

4.2.4 Subsea cables

Inter-array cables

4.2.4.1 Inter-array cables will carry electrical current produced by the wind turbines to the OSPs. Several wind turbines are typically grouped on the same cable 'string' to connect the wind turbines to an OSP, with multiple cable 'strings' connecting back to each OSP.

4.2.4.2 The maximum design parameters for inter-array cables are presented in Table 4.10 below.

Table 4.10: Maximum design parameters for inter-array cables

Parameter	Maximum design parameter
Maximum external cable diameter (mm)	260
Maximum total length of cable (km)	420
Maximum voltage (kV)	132
Cable installation methodology	Prelay plough, plough, trenching, cutting and jetting.
Cable burial technique	Jet trenching, mechanical trenching, dredging, ploughing, controlled flow excavation, rock cutting, backfilling or other burial techniques.
Minimum cable burial depth (m)	0.5
Target cable burial depth (m)	1
Maximum cable burial depth (m)	3
Maximum width of cable trench (m)	3
Maximum width of seabed affected by installation per cable (m)	20
Total area of seabed disturbance for inter-array cables (km^2)	8.40

Interconnector cables

4.2.4.3 Interconnector cables will be required to connect the OSPs to each other in order to provide redundancy in the case of failures within the electrical transmission system.

4.2.4.4 Interconnector cables will be installed by the same methods proposed for inter-array cables in Section 4.2.4.

4.2.4.5 The maximum design parameters for the interconnector cables are presented in Table 4.11.

Table 4.11: Maximum design parameters for interconnector cables

Parameter	Maximum design parameter
HVAC/HVDC	HVAC
Maximum voltage (kV)	275
Maximum number of cables	10
Maximum total cable length (km)	264
Maximum external cable diameter (mm)	322
Cable installation methodology	Prelay plough, plough, trenching, cutting and jetting.
Cable burial technique	Jet trenching, mechanical trenching, dredging, ploughing, controlled flow excavation, rock cutting, backfilling or other burial techniques.
Minimum cable burial depth (m)	0.5
Target cable burial depth (m)	1
Maximum cable burial depth (m)	3
Maximum width of cable trench (m)	3
Maximum width of seabed affected by installation per cable (m)	20
Total area of seabed disturbance for inter-array cables (km^2)	5.28

External cable protection

4.2.4.6 The inter-array and interconnector cables will be buried where possible. Where minimum burial depth is not achievable, for example where crossing pre-existing cables, pipelines or exposed bedrock, external cable protection will be employed (such as rock or concrete mattresses), providing a hard protective layer to restrict movement and prevent exposure of cables over the lifetime of Morven South.

4.2.4.7 The maximum design parameters for external cable protection are presented in Table 4.12.

Table 4.12: Maximum design parameters for external cable protection

Parameter	Maximum design parameter	
	Inter-array cables	Interconnector cables
Type	Concrete mattresses, rock placement, rock bags, grout bags, cement bags, sandbags, articulated pipes, cast iron shells, bend restrictors/stiffeners, cable protection systems, frond mats.	
Maximum height of cable protection (m)	3	3
Maximum width of cable protection (m)	10	10
Maximum percentage of cable length which may require cable protection (%)	10	10
Maximum length of cables which may require cable protection (m)	42,000	26,400

Parameter	Maximum design parameter	
	Inter-array cables	Interconnector cables
Maximum total cable protection footprint area (m^2)	420,000	264,000
Maximum total cable protection volume (m^3)	1,260,000	792,000

Cable crossings

4.2.4.8 Up to five cable crossings may be installed across Morven South using one or more of the methods listed in Table 4.13.

Table 4.13: Maximum design parameters for cable crossings

Parameter	Maximum design parameter	
	Inter-array cables	Interconnector cables
Maximum number of crossings	5	5
Crossing material/method	Concrete mattresses, rock placement, rock bags, grout bags, cement bags, sandbags.	
Maximum height of crossing (m)	4	4
Maximum width of crossing (m)	36	36
Maximum length of each crossing (m)	80	80
Maximum length of crossings across Morven South	400	400
Maximum area of protection material per crossing (m^2)	2,880	2,880
Maximum total area of crossing protection across Morven South (m^2)	14,400	14,400
Maximum volume of protection material per crossing (m^3)	11,520	11,520
Maximum volume of crossing protection across Morven South (m^3)	57,600	57,600

4.3 Site preparation activities

4.3.1.1 Several site preparation activities may be required in the Morven South Boundary. Site preparatory works are assumed to begin prior to the first activities within the Morven South Boundary and continue as required throughout construction. As such, site preparation activities may happen at any point during the construction phase (see Section 4.4.7).

4.3.1.2 An overview of these activities is provided below.

4.3.2 Pre-construction site investigation surveys

4.3.2.1 A number of pre-construction site investigation surveys may be undertaken to inform detailed project design work and to identify in detail:

- seabed conditions and morphology;
- presence/absence of any potential obstructions or hazards.

4.3.2.2 Pre-construction site investigation surveys are likely to include geophysical and geotechnical surveys which would be conducted within, and in the vicinity of, the footprint of the foundations for

wind turbines and OSPs and along the inter-array and interconnector cable routes. Geophysical survey works may be carried out to provide more detail on potential for Unexploded Ordinance (UXO) and associated requirement for clearance, bedform and boulder mapping, bathymetry, topographical overview of the seabed and an indication of subsoil-layers. Geotechnical surveys would be conducted at specific locations within the Morven South Boundary.

4.3.2.3 Geophysical surveys are likely to include techniques as follows:

- Side Scan Sonar (SSS);
- Sub-bottom Profiling (SBP);
- Multibeam Echo-Sounder (MBES);
- Single Beam Echo-Sounder (SBES);
- high-density magnetometer (MAG) and/or Gradiometer surveys;
- Ultra High Resolution Seismic (UHRS) 2D and/or 3D.

4.3.2.4 Geotechnical Investigations are likely to include techniques as follows:

- Boreholes;
- Cone Penetration Tests (CPTs); - (Seabed and downhole techniques);
- Seismic Cone Penetration Tests (SCPTs) - (Seabed and downhole techniques);
- Downhole Geophysical Logging and in situ testing (e.g. High pressure dilatometer or Pressuremeter);
- Vibrocores.

4.3.2.5 To assist in the design development and selection of foundation options, there may also be the performance of seabed trials of potential foundation options, for example a suction bucket trial. The purpose of this would be to trial potential foundation solutions to test trial installation and capacity to identify in-situ conditions to inform foundation selection.

4.3.3 Unexploded Ordnance clearance

4.3.3.1 It is possible that UXO may be encountered during the construction or installation of offshore infrastructure. This poses a potential health and safety risk where it coincides with the planned location of infrastructure and associated vessel activity, and therefore it is necessary to survey for and carefully manage clearance of UXO.

4.3.3.2 In order to identify UXO, detailed surveys of the location where infrastructure will be located are required. This work cannot be conducted before a consent application is submitted because the detailed design work needed to confirm the location of infrastructure is reliant upon the pre-construction site investigation surveys outlined in Section 4.3.2. In addition, the survey for identification of potential UXO must be undertaken within approximately one year ahead of the start of construction as UXO surveys are only valid for one year due to the potential for hydrodynamics to uncover UXO that may not be detected in pre-application surveys.

4.3.3.3 The following methodologies and order in which steps will be taken are considered for UXO avoidance/clearance:

- Step 1 - avoid/microsite or leave in situ;
- Step 2 - relocation of UXO to avoid detonation;
- Step 3 - low order clearance method (e.g. deflagration);
- Step 4 - high order clearance method (e.g. detonation, with associated mitigation measures).

4.3.3.4 Given the health and safety risks posed by UXOs, the Applicant aims to avoid UXOs through micrositing or relocating them where feasible. If avoidance methods are not viable, a specialist contractor will clear UXOs before further site preparation and construction commence. The preferred clearance method involves using a low order technique (subsonic combustion) with a single donor charge of 0.25kg net explosive quantity for each clearance event. The maximum parameters for UXO clearance are provided in Table 4.14. As detailed in paragraph 4.3.3.3, high order clearance methods

may be utilised if avoidance, relocation and low order techniques were not viable. High order techniques would be utilised as a last resort, as per the UXO Clearance Joint Position Statement (UK Government, 2025).

4.3.3.5 Detailed design work is necessary to confirm planned infrastructure locations before conducting any UXO surveys. Based on a desk-based study (Ordtek, 2022) and experiences from other offshore wind farms in the region, such as the Seagreen 1 Offshore Wind Farm, the Applicant estimates that up to 15 UXOs may require clearance.

Table 4.14: Maximum unexploded ordnance parameters across Morven South

Parameter	Maximum design parameter
Maximum weight (munition; explosive + casing) expected to be encountered (kg)	986
Maximum charge weight (modelled explosive mass) (kg equivalent TNT)	554
Maximum realistic number of UXO to be cleared	15
Maximum duration of UXO clearance activities (days)	15
Maximum number of detonation activities occurring in 24hrs	1

4.3.4 Boulder clearance

4.3.4.1 Boulder clearance is commonly required during offshore wind farm site preparation. A boulder is typically defined as being over 200mm in diameter/length. Boulder clearance may be required along the inter-array cable and interconnector cable routes but may also be required in the vicinity of the wind turbine and OSP foundations. Boulder clearance is required to reduce the risk of shallow cable burial resulting in the need for further cable burial works and/or cable protection, as well minimising risk of damage to cables during installation. Boulders would pose the risk of damage and exposure to the cable as well as an obstruction risk to the foundation and cable installation equipment. Therefore, boulders may be moved to the side of the construction area within the Morven South Boundary. All boulders will remain in the marine environment, likely within the Morven South Boundary. Boulders may be cleared using a boulder grab and/or plough, however, the methodology to be used will be informed by the pre-construction geophysical and geotechnical surveys.

4.3.4.2 Table 4.15 provides the maximum design parameters for boulder clearance in the Morven South Boundary. With respect to inter-array and interconnector cables, boulder clearance will occur within the footprint of cable installation activities therefore the footprint is not presented to prevent double counting of the seabed footprint parameters. The total area of seabed disturbance for inter-array and interconnector cables (i.e. footprint in which boulder clearance will occur) is presented previously in Table 4.10 and Table 4.11, respectively.

Table 4.15: Maximum design parameters for boulder clearance in the Morven South Boundary

Parameter	Maximum design parameter
Maximum width of boulder clearance along inter-array and interconnector cables (m) (per cable)	20
Maximum proportion of inter-array and interconnector cables requiring boulder clearance (%)	100

Parameter	Maximum design parameter
Maximum total area of boulder clearance for wind turbines and OSPs (m^2)	4,803,300

4.3.5 Sandwave clearance

4.3.5.1 In some areas within the Morven South Boundary, existing sandwaves and similar bedforms may need to be removed prior to the installation of cables. This is carried out mainly for two reasons:

- Many of the cable installation tools require a relatively flat seabed surface in order to work effectively. Installing cables on a slope over a certain angle, or where the installation tool is working on a camber, may reduce the ability to meet target burial depths.
- Cables must be installed to a depth where it may be expected to stay buried for the duration of the Morven South operational lifetime. Sandwaves are generally mobile in nature therefore the cable must be buried beneath the level where natural sandwave movement could result in the cable becoming un-covered. Sometimes this can only be achieved by removing the mobile sediments before installation takes place.

4.3.5.2 Sandwave clearance may take place throughout the construction phase (see Section 4.4.7). If required, sandwave clearance will be completed in areas within the Morven South Boundary along the inter-array cable and interconnector cable routes. Seabed features clearance will involve removal of the peaks of the seabed features by dredging, with material replaced in the troughs, thereby levelling the seabed. A specialist dredging vessel may be required to complete the seabed features clearance.

4.3.5.3 Site specific geophysical and bathymetry data from the Morven South Boundary were utilised to identify sandwaves, revealing that up to 15% of inter-array cables and up to 15% of interconnector cables may require sandwave clearance. Additionally, based on the preliminary site investigation data, it was determined that up to 80% of foundation locations may require sandwave clearance. UXO and boulder clearance may also be necessary, as discussed in Section 4.3.4.

4.3.5.4 Sandwave clearance methods may involve pre-installation ploughing, which smooths out sandwaves by redistributing sediment from the crests into nearby troughs to create a level seabed. Other methods for consideration would include Controlled Flow Excavation or jet trenching. Large-scale dredging is not expected to be necessary within the Morven South Boundary.

4.3.5.5 The maximum design parameters for sandwave clearance in the Morven South Boundary is summarised in Table 4.16. The final values required for sandwave clearance will be confirmed following completion of a detailed geophysical survey campaign ahead of construction to inform detailed design.

4.3.5.6 Similar to boulder clearance and as noted in paragraph 4.3.4.2, sandwave clearance will occur within the footprint of cable installation activities therefore the footprint is not presented to prevent double counting of the seabed footprint parameters.

Table 4.16: Maximum design parameters for sandwave clearance in the Morven South Boundary

Parameter	Maximum design parameter
Inter-array and interconnector cables	
Maximum sandwave clearance width along inter-array and interconnector cables (m)	20

Parameter	Maximum design parameter
Maximum proportion of inter-array and interconnector cables requiring sandwave clearance (%)	15
Maximum sandwave clearance volume for inter-array and interconnector cables collectively (m^3)	9,849,600
Wind turbine and OSP foundations	
Maximum total area of sandwave clearance for wind turbine foundations (for scour protection) (m^2)	4,423,300
Maximum total volume of sandwave clearance for wind turbine foundations (including scour protection) (m^3)	13,269,900

4.3.6 Removal of disused and out of service cables

4.3.6.1 If the final location of Morven South infrastructure crosses any out of service cables, these will be removed where feasible. Any cable removal will be undertaken in consultation with the asset owner and in accordance with the International Cable Protection Committee (ICPC) guidelines (2011). Where feasible, cables will be retrieved to a vessel deck, where one end will be cut, the cable will be pulled past the crossing point, and then cut again before being pulled to the surface where it will be removed from site by the vessel. Up to 5km of disused/out of service cables are expected to be removed within the Morven South Boundary.

4.4 Construction phase

4.4.1.1 The construction of Morven South is estimated to occur over a duration of up to five years. Table 4.17 provides an indication of the expected major construction activities provided as a stepped series of activities. It should be noted that these activities may not run consecutively one after another throughout the construction phase of Morven South, rather, different activities may occur concurrently in different areas of the Morven South Boundary (e.g. foundation installation (step 3) may commence in the western portion of the Morven South Boundary, whilst OSP installation is ongoing in the eastern portion of the Morven South Boundary). Further details of construction phase activities will be provided in a Construction Method Statement which will be developed post-consent.

Table 4.17: Indicative construction activities for Morven South

Activity	Description
Step 1 - Pre-construction surveys (see Section 4.3.2)	Geotechnical and geophysical surveys, boulder and UXO surveys.
Step 2 - Seabed preparation activities (see Sections 4.3.3 to 4.3.6)	Seabed preparation activities (e.g. rock picking, sandwave levelling and clearance (pre-lay plough/dredging), pre-lay grapnel run, UXO clearance, and removal of third party or out of service cables) to aid installation of wind turbine and OSP foundations, inter-array cables and interconnector cables.
Step 3 - Foundations installation (see Section 4.4.2)	Installation of wind turbine and OSP foundations.
Step 4 - OSP installation and commissioning (see Section 4.4.3)	Installation of OSPs and associated equipment required for this infrastructure, including commissioning.

Activity	Description
Step 5 - Interconnector cables installation (Section 4.4.4)	Installation of interconnector cables, connecting OSPs.
Step 6 - Inter-array cables installation (Section 4.4.4)	Installation of inter-array cables, connecting wind turbines to other wind turbines or to OSPs.
Step 7 - Wind turbine installation and commissioning (Section 4.4.5)	Installation of the wind turbines onto the previously installed wind turbine foundations, including commissioning.
Step 8 - Post-construction as-built surveys	Surveys to document what has been constructed.

4.4.2 Foundations installation

Installation of monopile foundations (foundation Option 1)

4.4.2.1 Depending on soil conditions and monopile size, monopile foundations are most likely to be piled by hydraulic hammers or blue piling hammer. In areas of rough seabed, drilling may aid the piling process, with drilling spoil disposed of at the drill site. The installation will be carried out from jack-up or floating vessels/barges with the required equipment.

4.4.2.2 Up to two monopiles may be installed in a 24-hour period, assuming concurrent piling operations. A "soft start" procedure will be employed whereby the hammer strikes will commence at 15% of the maximum hammer energy up to 100% of the maximum hammer energy (if required). Concurrent piling may involve the piling for wind turbine monopile foundations and/or HVAC OSP monopile foundations, but no more than two concurrent piling events will occur at any one time. The maximum design parameters for monopile foundations is shown in Table 4.18 and an illustrative monopile foundation is shown above in Figure 4.4.

Table 4.18: Maximum design parameters for foundation Option 1 piling characteristics (wind turbines and High Voltage Alternating Current Offshore Substation Platforms)

Parameter	Maximum design parameter for wind turbines	Maximum design parameter for HVAC OSPs
Maximum number of piles requiring piling	95	4
Maximum hammer energy (kJ)	6,600	
Soft Start Energy (% of Maximum Hammer Energy)	15	
Duration		
Maximum soft start duration (minutes)	20	
Maximum duration of piling (per pile) (hours)	24	
Minimum number of piles installed over 24 hours	1	
Maximum total number of days when piling may occur over construction phase	95	4
Concurrent piling		
Maximum number of concurrent piling events	2	

Parameter	Maximum design parameter for wind turbines	Maximum design parameter for HVAC OSPs
Minimum distance between concurrent piling events (m)	1,000	
Maximum distance between concurrent piling events (km)	27.65	

4.4.2.3 Pile driving is unsuitable in areas where hard ground is encountered. In these instances, drilling may be required, which initially involves the installation of a sacrificial caisson to support surficial soils during the drilling activities. The pile would then be lowered into the drilled bore and grouted in place. The voids (annuli) between the pile and the rock, and between the pile and the caisson are filled with inert grout, which is pumped from a vessel into the bottom of the drilled hole. Control measures and monitoring would be in place during this process to ensure minimal spillage to the marine environment. Drilling characteristics are presented in Table 4.19.

4.4.2.4 Drilling activities will result in release of seabed material (drill arisings) which will be deposited adjacent to each drilled foundation location within the Morven North Boundary.

Table 4.19: Maximum design parameters for foundation Option 1 drilling characteristics (wind turbines and Offshore Substation Platforms)

Parameter	Maximum design parameter for wind turbines	Maximum design parameter for OSPs
Maximum number of piles requiring drilling over Morven South	48	4
Maximum proportion (%) of all piles requiring drilling over Morven South	50	100
Minimum drilling rate (m/hour)	0.2	0.2
Maximum drilling rate (m/hour)	1.5	1.5
Maximum drilling depth (per pile) (m)	64	64
Maximum drilling duration (per pile) (hours)	320	320
Maximum drilling duration for Morven South (days)	594	54
Maximum volume of drill arisings per pile (m^3)	14,358[10]	14,357
Maximum volume of drill arisings for Morven South (m^3)	565,937[11]	57,428
Maximum number of concurrent drilling events	3	2

[10] Note that this value is based on a pile diameter of up to 16m drilled to a depth of up to 64m.

[11] Note that this value is based upon a scenario where up to 95 monopile foundations are installed with pile diameter of up to 15m, of which 50% require drilling to a depth of up to 60m.

Installation of piled jacket foundations (foundation Option 2)

4.4.2.5 Pin piles are driven and/or drilled into the seabed relying on the frictional and end bearing properties of the seabed for support. Up to two vessels may be piling simultaneously, with concurrent piling being undertaken at a minimum distance of 1km between locations, and maximum distance of 27.65km. Concurrent piling may involve the piling for wind turbine jacket foundations and/or OSP jacket foundations, but no more than two concurrent piling events will occur at any one time. If hard ground is encountered, drilling will be required. The piling and drilling characteristics for pin piled jacket foundations are presented below in Table 4.20 to

4.4.2.6 Table 4.23 for wind turbines and OSP Options 1 and 2.

Table 4.20: Maximum design parameters for foundation Option 2 piling characteristics (wind turbines)

Parameter	Maximum design parameter for wind turbines
Maximum number of piles requiring piling	380
Maximum hammer energy (kJ)	4,500
Soft Start Energy (% of Maximum Hammer Energy)	15
Duration	
Maximum soft start duration (minutes)	20
Maximum duration of piling (per pile) (hours)	9
Minimum average number of piles installed over 24 hours	2
Average number of piles installed over 24 hours	4
Maximum number of days when piling may occur	95
Concurrent piling	
Maximum number of concurrent piling events	2
Minimum distance between concurrent piling events (m)	1,000
Maximum distance between concurrent piling events (km)	27.65

Table 4.21: Maximum design parameters for foundation Option 2 piling characteristics (Offshore Substation Platforms)

Parameter	Maximum design parameter			
	OSP Option 1		OSP Option 2	
	HVAC	HVDC	HVAC	Bridge-Linked HVDC
Maximum number of piles requiring piling	95	24	95	48
Maximum hammer energy (kJ)	4,000		4,000	
Soft Start Energy (% of Maximum Hammer Energy)	15		15	

Parameter	Maximum design parameter			
	OSP Option 1		OSP Option 2	
	HVAC	HVDC	HVAC	Bridge-Linked HVDC
Duration				
Maximum soft start duration (minutes)	20		20	
Maximum duration of piling (per pile) (hours)	9		9	
Minimum average number of piles installed over 24 hours	2		2	
Average number of piles installed over 24 hours	4		4	
Maximum number of days when piling may occur	24	6	24	12
Concurrent piling				
Maximum number of concurrent piling events	2		2	
Minimum distance between concurrent piling events (m)	1,000		1,000	
Maximum distance between concurrent piling events (km)	27.65		27.65	

Table 4.22: Maximum design parameters for foundation Option 2 drilling characteristics (wind turbines)

Parameter	Maximum design parameter
Maximum number of piles requiring drilling over Morven South	190
Maximum proportion (%) of all piles requiring drilling over Morven South	50
Minimum drilling rate (m/hour)	0.39
Maximum drilling rate (m/hour)	1.6
Maximum drilling depth (per pile) (m)	83
Maximum drilling duration (per pile) (hours)	190.24
Maximum drilling duration for Morven South (days)	1,437
Maximum volume of drill arisings per pile (m^3)	2,178
Maximum volume of drill arisings for Morven South (m^3)	189,448
Maximum number of concurrent drilling events	3

Table 4.23: Maximum design parameters for foundation Option 2 drilling characteristics (Offshore Substation Platforms)

Parameter	Maximum design parameter			
	OSP Option 1		OSP Option 2	
	HVAC	HVDC	HVAC	Bridge-Linked HVDC
Maximum number of piles requiring drilling over Morven South	95	24	95	48
Maximum proportion (%) of all piles requiring drilling over Morven South	100	100	100	100
Minimum drilling rate (m/hour)	0.41	0.39	0.41	0.39
Maximum drilling rate (m/hour)	1.54	1.45	1.54	1.45
Maximum drilling depth (per pile) (m)	65	80	65	80
Maximum drilling duration (per pile) (hours)	190.24	246.15	190.24	246.15
Maximum drilling duration for Morven South (days)	761	247	761	493
Maximum volume of drill arisings per pile (m^3)	1,266	1,888	1,266	1,888
Maximum volume of drill arisings for Morven South (m^3)	121,558	45,306	121,558	90,611
Maximum number of concurrent drilling events	3	3	3	3

Installation of suction bucket jacket foundations (foundation Option 3)

4.4.2.7 The installation of a suction bucket jacket foundation will likely follow the steps set out below:

- At the installation site, the jacket foundations would be lowered by crane to the seabed.
- Water is pumped out of the bucket to suction it to the seabed.
- Once the bucket has penetrated the seabed to the expected depth of 25m, the pump is turned off.
- A thin layer of grout is then injected under the top side of the bucket to fill the void and ensure contact between the soil within the bucket, and the top of the bucket itself.

4.4.2.8 The TP and foundation structure is fabricated as an integrated part of the jacket structure and are not installed separately offshore. It should be noted that piling and drilling techniques are not required for installation of suction bucket jacket foundations, therefore, parameters have not been provided for these.

Installation of gravity base foundations (foundation Option 4 – Offshore Substation Platforms only)

4.4.2.9 Gravity base foundations can be either transported by a vessel or barge to site or self-floated and pulled by tugs. Lowering at location will be supported by self-flooding of the gravity base foundation with seawater, for some designs assisted by a suitable crane from a heavy lift vessel to the seabed.

4.4.2.10 After the gravity base foundation is installed, it will be ballasted with a suitable material such as gravel, rock, crushed concrete, aggregate, high density rocks (such as olivine or iron ore), or dredged sand (from site preparation works) before the TP is installed.

4.4.2.11 It should be noted that piling and drilling techniques are not required for installation of gravity base foundations, therefore, parameters have not been provided for these.

4.4.3 Offshore Substation Platform topside installation and commissioning

4.4.3.1 The OSP topsides will be transported to Morven South via vessel from the fabrication yard or pre-assembly harbour, following installation of foundations for OSPs. It is assumed that the OSP topsides will be transported by the installation vessel or on a barge towed by a tug. Once on site, the OSP topside will be rigged up, seafastening cut, lifted and installed onto the foundation. The topside and foundation will then be welded or bolted together. Rigging, welding and bolting equipment will be available on board the installation vessel.

4.4.4 Inter-array and interconnector cable installation

4.4.4.1 Installation (or lay) of inter-array cables and interconnector cables will be undertaken using a cable lay vessel, using various equipment such as a carousel or reels, tensioners and cable lay spread. Inter-array cables and interconnector cables are typically surface laid prior to cable burial or installation of external cable protection post lay. Cable lay and cable burial can also be performed simultaneously.

4.4.4.2 Possible installation methods for inter-array and interconnector cables include ploughing, trenching and jetting whereby the seabed is opened and the cable laid within the trench (see Table 4.10 and Table 4.11 for all potential installation methods proposed as part of the PDE). The installation method will be defined post-consent with a detailed Cable Plan incorporating a Cable Burial Risk Assessment, which will take into account environmental and human considerations that could affect cable burial such as trawling and vessel anchors. The installation method chosen may be any or a combination of the techniques outlined in Table 4.10 and Table 4.11.

4.4.4.3 The inter-array cables will be buried where possible and protected with a hard protective layer (such as rock or concrete mattresses) where minimum burial depth is not achievable. Section 4.2.4 outlines external cable protection which may be employed and cable crossings which may be required.

4.4.5 Offshore wind turbines installation and commissioning

4.4.5.1 Wind turbines are typically installed using the following process:

- Step 1: Wind turbine components collected from a port in the UK, Europe or elsewhere and loaded onto barges or dedicated transport vessels at port and transported to the array area. Generally, blades, nacelles, and towers for a number of wind turbines are loaded separately onto the vessel.
- Step 2: Wind turbine components will be installed onto the existing foundations by an installation vessel. Each wind turbine will be assembled on site. The exact methodology for the assembly is dependent on the wind turbine type and installation contractor and will be defined in the pre-construction phase. Jack-Up Vessels (JUVs) are often used to ensure a stable platform for installing the wind turbine components.

4.4.5.2 Following installation, commissioning activities will then take place.

4.4.6 Installation vessel and helicopters

4.4.6.1 The details of vessel and helicopter movements with numbers of trips required for the construction phase are presented in Table 4.24. A number of vessel types will be used during the construction phase including Heavy Lift Vessels, Cable Lay Vessels, JUVs and support vessels. Support vessels are typically smaller than the main installation vessels and may comprise tugs, guard vessels, anchor handling vessels, or similar. These vessels will primarily shadow the same movements as the installation vessels they are supporting.

Table 4.24: Maximum design parameters for vessel and helicopter requirements during the construction phase

Vessel type	Maximum number of vessels on site at any one time	Maximum number of return trips over the construction period
Installation and support vessels	15	488
Tug/anchor handler	8	416
Cable lay installation and support vessels	4	162
Guard vessels	2	172
Survey vessels	2	156
Seabed preparation vessels	3	50
Crew Transfer Vessels (CTVs)	6	1,460
Scour protection installation vessels	1	156
Helicopters	2	1,826
Total	43	4,886
Total (excluding helicopters)	41	3,060

4.4.7 Construction programme

4.4.7.1 A high-level indicative construction programme is presented in Table 4.25. The programme illustrates the likely window in which the construction of the major project components will occur. Note, for the purposes of assessment, where required a date of 2033 has been assumed as an indicative date for the commencement of construction, with the construction window being up to five years. The final construction commencement date and construction duration will become clearer as the project continues to mature, with confirmation of key factors such as agreement of grid connection dates, project financing/route to market etc.

Table 4.25: Indicative construction programme for Morven South

Activity (Time in brackets is time taken for completion, green colouring denotes window)	Year 1 construction				Year 2 construction				Year 3 construction				Year 4 construction				Year 5 construction			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Pre-construction UXO and boulder identification and removal (16 months)																				
Foundation installation - piles (12 months)																				
Foundation installation - jackets (18 months)																				
Foundation installation - scour protection (9 months)																				
Inter-array and interconnector cables - seabed preparation (15 months)																				
Inter-array and interconnector cables - installation and test (12 months)																				
Inter-array cables and interconnector - cable protection (6 months)																				
Wind turbine installation and commissioning (21 months)																				
Topside installation and commissioning (18 months)																				

4.5 Operations and maintenance phase

4.5.1.1 The overall O&M strategy will be confirmed once the final design and technical specifications of Morven South are known. Note, for the purposes of assessment, where required an indicative date for the commencement of O&M activities has been assumed as 2038. This is consistent with current assumptions around construction commencement in 2033 with a duration of up to five years. This is considered a realistic assumption at this stage, however depending on the final construction dates, duration and sequencing of the Morven Programme, this date may differ.

4.5.1.2 Throughout the lifetime of Morven South, routine and non-routine O&M works will be undertaken. Routine maintenance activities may include inspections, removal of marine growth build up, minor repairs, cleaning activities, and the replacement of consumables and corrosion protection systems. Non-routine major maintenance activities may include but are not limited to component exchanges and replacement of infrastructure and equipment (e.g. wind turbine blades, gearboxes and interconnector and inter-array cables), scour protection and cable protection replenishment or replacement, cable reburial and cable repair activities, painting and other coating works, replacement of access ladders, and geophysical surveys.

4.5.1.3 Table 4.26 provides a list of O&M activities planned for Morven South.

Table 4.26: Maximum design parameters: operation and maintenance activities

Maximum design parameters	Description
Foundations (wind turbines and OSPs)	
Routine inspections	Inspections of foundations, including TPs and ancillary structures (e.g. J-tubes, scour protection), above and below sea level.
Geophysical surveys	Geophysical survey of seabed and assets which may include: • MBES; • SSS; • SBES; • SBP; • UHRS; • magnetometers and gradiometers; • It is possible that these surveys could be performed with Unmanned Survey Vessels (USVs)
Repairs and replacements of navigational equipment	Repair and replacement of electrical equipment such as lighting, fog horns, navigation lights and transponders.
Removal of marine growth	Removal of marine growth from foundations, transition pieces, or access ladders.
Replacement of corrosion protection anodes	Removal and replacement of anodes required for corrosion protection.
Painting	Application of paint or other coatings to protect the foundations from corrosion (internal or external), including surface preparation.
Replacement of access ladders and boat landings	Removal and replacement of ancillary structures (e.g. access ladders and boat landings).
Modifications to or replacement of J-tubes	Modifications to or replacement of J-tubes during foundation maintenance or repair works.

Maximum design parameters	Description
Wind turbines	
Routine inspections	Inspections within the wind turbine or on the exterior of the wind turbine, (e.g. blade inspections).
Replacement of consumables	Replacement of consumables within the wind turbine (e.g. filters, oils, lubricants).
Minor repairs and replacements within the wind turbine	Minor repairs and replacements (like-for-like) within the turbine (e.g. motors, pumps, small electric equipment, circuit breakers, fuses).
Major component replacement	Replacement of blades, gearboxes, transformers or generators.
Painting or other coatings	Paint or other coatings applied (internal/external). Coatings on the blades and minor paint repairs to tower and nacelle.
OSPs	
Routine inspections	Inspections within the OSP or on the exterior of the OSP.
Replacement of consumables and minor components.	Replacement of consumables (e.g. oils, lubricants) and minor components within the OSP.
Major component replacement	Replacement of transformers, switchgear etc.
Painting or other coatings	Paint or other coatings applied (internal/external).
Inter-array and interconnector cables	
Routine inspections	Inspections of the cable and any cable protection, including at their entry into J-tubes on offshore structures.
Geophysical surveys	Survey of seabed and assets: • Vessel with SSS; • MBES; • SBP; • MAG; • no seabed interaction and subsea remotely operated vehicle with Service Operation Vessel (SOV). It is possible that these surveys could be performed with USVs.
Inter-array and interconnector cable repair	Repair and replacement of inter array and interconnector cable sections or whole inter array/interconnector cable.
Inter-array or interconnector cable reburial, mattressing and placement of rock bags	Reburial of exposed inter array and interconnector cable sections.
Modifications to or replacement of J-tubes	Modifications to or replacement of J-tubes (e.g. during inter array/interconnector cable repair works).

4.5.2 Operation and maintenance vessels

4.5.2.1 The general O&M strategy may rely on CTVs, service operation vessels, supply vessels, cable and remedial protection vessels, plus helicopters for the operations and maintenance services that will be performed at Morven South. The likely maximum number of O&M vessels on site at any one time, and per year, are presented in Table 4.27.

Table 4.27: Maximum design parameters for vessels and helicopters required during operation and maintenance phase

Parameter	Maximum number of vessels or helicopters on site at any one time	Maximum number of return trips per year
CTVs	8	219
Jack-up vessels	2	13
Cable repair vessels	2	3
SOVs and other vessels	3	59
USVs	4	60
Helicopters	2	1,660
Total	21	2,013
Total (excluding helicopters)	19	353

4.6 Decommissioning phase

4.6.1.1 Under Section 105 of the Energy Act 2004 (as amended), developers of offshore renewable energy projects are required to prepare a decommissioning programme for approval by Scottish Ministers. A Section 105 notice is issued to developers by the regulator after consent or marine licence has been issued for the given development. Developers are then required to submit a detailed plan for the decommissioning works, including anticipated costs and financial securities. The plan will consider industry practice, guidance and legislation relating to decommissioning at that time. The plan will be consulted on with relevant stakeholders and will be made publicly available. MD-LOT will further consult on the plan, the costs and financial securities prior to seeking ministerial approval. The decommissioning plan and programme will be updated during Morven South's lifespan to take account of changing practice and new technologies.

4.6.1.2 At the end of the operational lifetime of Morven South, it is currently anticipated that all structures above the seabed or ground level (with the exception of monopiles/pin-piles (depending on foundation option chosen for wind turbines and OSPs), scour protection and cable protection) will be completely removed where this be feasible and practicable. Monopiles/pin-piles, scour protection and cable protection are either expected to remain fully or partly in situ depending on the most up to date legislation and guidance, best practice, and consideration of environmental conditions and sensitivities at the time of decommissioning.

4.6.1.3 The decommissioning sequence will generally be the reverse of the construction sequence and involve similar types and numbers of vessels and equipment. The Crown Estate Scotland Option Lease Agreement for Morven South requires decommissioning at the end of its lifetime.

4.6.2 Wind turbines and Offshore Substation Platforms

4.6.2.1 Wind turbines would be removed by reversing the methods used to install them, as described in Section 4.4.5.

4.6.2.2 OSPs may be decommissioned using the following procedure, which is the reverse of the installation method:

- assess the structural integrity and the weight of the topside;
- empty all tanks, remove all liquid and hazardous materials;
- terminate cable connections between the topside and the foundations;
- cut the steel connections between the topside and the foundation;

- lift the topside off the substructure and place on a barge/transport vessel for transportation to onshore;
- complete decommissioning onshore. Demobilise used equipment, recycle and dispose of all components.

4.6.3 Foundations

4.6.3.1 If Foundation Options 1 or 2 are selected, these would likely be cut below the seabed level and the foundation will be removed in a single lift including the transition piece. This means they would not create a hazard for fishing or shipping. The portion of the monopile/pin-pile foundation below seabed level will be left in situ to reduce seabed disruption, however, this will be reviewed throughout the lifetime of Morven South. Suction bucket foundations can be removed in entirety using the overpressure to release them from the seabed, reversing the method of installation. Jackets will be fully removed from site.

4.6.3.2 As the decommissioning programme will be updated during the lifespan of Morven South, it may be decided, closer to the time of decommissioning, that removal will result in greater environmental impacts than leaving components in situ. The Applicant's position is that scour protection will preferably be left in situ, but removal has been assessed as the MDS.

4.6.3.3 In the case of gravity base foundations which may be selected as an option for the OSPs only, it is expected that following removal of the topsides and ballast, the foundation may be removed using a single lift from the transition piece. With this method, the suction at seabed may cause the base slab to detach from the foundation. In this case, the foundation should be cut above the base slab before removal, this would leave the base slab on the seabed. It is also possible that, depending on the weight of the foundation, it may be re-floated using buoyancy tanks and towed back to shore. In either case, this should be in reverse of the installation procedure.

4.6.4 Inter-array cables and interconnector cables

4.6.4.1 It is proposed that cables will be removed where possible and appropriate to do so. This approach will be reviewed at the time of decommissioning following the most up to date and best available guidance. There is potential that where cables are buried, these may be cut and left in situ. Therefore, for the purpose of the RIAA, each SAC or SPA assessment has assessed the scenario deemed to be most adverse with respect to the qualifying feature, meaning that the most adverse scenario may be cable removal or to leave in situ. The Applicant's position is that cable protection (including cable ducting, rock dumping, etc) will preferably be left in situ, however removal has been assessed as the MDS.

4.7 Repowering

4.7.1.1 In sectors where non-renewable resources like oil and gas are being extracted, it is standard practice to remove all structures from the seabed during offshore decommissioning. However, for offshore renewable energy projects, repowering may be considered as an alternative, especially since the demand for the generated power will likely persist at the time of decommissioning.

4.7.1.2 Morven South is expected to have an operational lifespan of 35 years, during which regular upkeep and maintenance will be necessary, as detailed in Section 4.5. Near the end of its design life, repowering Morven South might be appropriate, particularly if new technology becomes available. This could involve reconstructing and replacing wind turbines and/or foundations with those of different specifications or designs. If the new specifications and designs fall outside the parameters of the MDS or if the impacts associated with construction, operation, maintenance, and/or decommissioning exceed those considered in the RIAA, additional consent(s) and potentially a RIAA may be required for repowering. Consequently, this falls outside the scope of the current RIAA.

5 Likely Significant Effects[2] re-screening

5.1.1.1 This Morven South RIAA has revisited the conclusions of the Morven Site HRA Screening Report and a re-screening exercise has been undertaken. The re-screening exercise has re-applied the exact same methodology presented in the Morven Site HRA Screening Report to confirm potential connectivity between the Zone of Influence (ZoI) for Morven South and European sites. The outcome of this LSE[2] re-screening was provided to NatureScot on 30 July 2025. The re-screening exercise in Section 5 has been informed by NatureScot's response received 19 August 2025 and further pre-application consultation between the Applicant and NatureScot in September and October 2025, including a meeting on 23 October 2025. Both the Morven Site HRA Screening Report and this Morven South RIAA Part 1 should be read together in order to fully understand and interpret the Stage 1 screening for LSE[2]. This has been undertaken for the following topic receptor groups:

- benthic and subtidal ecology;
- fish and shellfish ecology;
- marine mammals;
- offshore ornithology.

5.1.1.2 The re-screening exercise for all receptor groups has acknowledged and taken account of:

- The advice provided via the Morven Site Scoping Opinion (received November 2023; MD-LOT, 2023) regarding the Stage 1 Screening Report.
- Information from site specific surveys (including telemetry data), modelling and/or data analysis that was not available when the Morven Site HRA Screening Report was submitted in July 2023.
- Guidance and advice issued after July 2023 by MD-LOT or NatureScot and/or consultation feedback received in addition to that set out in the Morven Site Scoping Opinion (assumed to remain valid for Morven North and Morven South; MD-LOT, 2023).

5.1.1.3 Table 5.1 provides a summary of the re-screening exercise, summarising the European sites, qualifying features and potential impacts for which LSE[2] has been identified as a result of Morven South alone and/or in-combination with other plans or projects. The table excludes all features that have been screened out as no LSE[2] has been identified. A justification for the re-screening has been provided, highlighting where conclusions of the LSE[2] screening have changed during the re-screening process. These sites and features have been taken forward for consideration in the RIAA Part 2 and RIAA Part 3.

5.1.1.4 The Applicant notes that the advice received by NatureScot in respect to Annex II diadromous fish was to assess these species through EIA only and not HRA. However, the Applicant does not think the uncertainty in their migration routes and connectivity, or a lack of population data, are reasons to screen all diadromous fish out, or that this rationale would be compliant with the Habitat Regulations. In addition, the Applicant is aware of the ongoing research on diadromous fish (such as the ScotMER project "Diadromous Fish in the Context of Offshore Wind – Review of Current Knowledge & Future Research"; Scottish Government, 2024), which may change the conclusions on how diadromous fish are treated in HRA going forward. As such, the Applicant has retained an assessment of diadromous fish in the RIAA Part 2.

5.1.1.5 Following the re-screening exercise, 10 SACs and 21 SPAs have been taken forward for consideration in the RIAA Part 2 and RIAA Part 3. There was no change to the SACs screened in for further assessment within the Morven Site HRA Screening Report for Morven South. All onshore SACs were screened out at the initial Stage 1 LSE[2] Screening due to there being no potential LSE[2] from the Morven Site on onshore SACs, this consideration has been maintained in the application for Morven South. As such, there are no onshore SACs considered in the Morven South RIAA Part 2.

5.1.1.6 For SPAs, the re-screening exercise has discounted the potential for LSE[2] for the following qualifying features for Morven South:

- the herring gull (*Larus argentatus*) qualifying feature of the Buchan Ness to Collieston Coast SPA;
- the kittiwake qualifying feature of the Calf of Eday SPA;
- the kittiwake qualifying feature of the Fair Isle SPA;
- the puffin (*Fratercula arctica*) qualifying feature of the Hoy SPA;
- the kittiwake qualifying feature of the Marwick Head SPA;
- the kittiwake qualifying feature of the Rousay SPA;
- the kittiwake and razorbill (*Alca torda*) qualifying features of the St Kilda SPA;
- the razorbill qualifying feature of the Troup, Pennan and Lion's Head SPA.

5.1.1.7 In the Morven Site Scoping Opinion (MD-Lot, 2023), MD-LOT requested that NatureScot's advice in relation to HRA screening be followed. This has led to the following changes in the screening conclusions reached in the Morven Site HRA Screening Report:

- In the Morven Site HRA Screening Report, the Applicant used the vulnerability scores presented in Wade *et al.,* (2016) to inform the identification of LSE[2]. For "Changes in prey availability due to temporary habitat loss/disturbance" (which was termed "Indirect temporary habitat loss/ disturbance" but updated to align with NatureScot advice as part of the Morven Site Scoping Opinion) the Applicant identified LSE[2] where a species had a habitat flexibility of low. As no species had a habitat flexibility of low, the impact was effectively screened out of consideration. In order to apply NatureScot's advice the Applicant has identified LSE[2] for all features where the vulnerability score for habitat flexibility in Wade *et al.* (2016) is moderate or low. This therefore identifies LSE2 for changes in prey availability due to temporary habitat loss/disturbance for kittiwake, guillemot, razorbill and puffin at those SPAs identified in Table 5.1.
- In the Morven Site HRA Screening Report, the Applicant used information from Wakefield *et al.,* (2013) to conclude that the only breeding colony of gannet that may be impacted by Morven South in the breeding season was the Forth Islands SPA. Wakefield *et al.* (2013) uses tracking data from multiple gannet colonies in the UK to demonstrate that gannets exhibit segregation in relation to the foraging areas utilised by birds from different breeding colonies. Whilst Wakefield *et al.,* (2013) includes data from the majority of colonies for which connectivity was identified with Morven South, it does not include tracking data from Hermaness, Saxa Vord and Valla Field SPA and Noss SPA. Whilst the overarching conclusion of Wakefield *et al.* (2013) are considered applicable to all colonies, the Applicant has followed NatureScot's advice and has assumed connectivity between gannet from these SPAs and Morven Southin the breeding season. It should be noted that NatureScot stated that the Sule Skerry and Sule Stack SPA was not included in Wakefield *et al.,* (2013). The Applicant, however, considers that this is incorrect as Sule Skerry was included in Wakefield *et al.* (2013) and therefore the conclusion of no LSE[2] for this SPA has been maintained.

5.1.1.8 Following advice from NatureScot (11 July 2025) displacement has been added for fulmar at all SPAs for which LSE[2] was concluded. Following pre-application consultation with NatureScot in October 2025 (please see the Morven South RIAA Part 3 for details of this consultation), the way in which the post-breeding and non-breeding biologically defined minimum population scales (BDMPS) areas are defined has been updated. This has resulted in LSE[2] being identified for a number of additional SPAs for guillemot in these seasons only. These SPAs are the Troup, Pennan and Lion's Heads SPA, the Forth Islands SPA and the St Abb's Head to Fast Castle SPA .In addition, to the re-screening exercise for SPAs, the Applicant has identified a number of qualifying features for SPAs already screened in for assessment for which assessments are also required. These relate to additional features of the Outer Firth of Forth and St Andrew's Bay Complex SPA and breeding seabird assemblage features at a number of SPAs. These are included in Table 5.1 and the reason for their inclusion explained.

5.1.1.9 The re-screening exercise has also considered changes to methodologies that were originally applied within the Morven Site HRA Screening Report which have subsequently been updated in the intervening period between the submission of the Morven Site HRA Screening Report and the production of this RIAA. Specifically, this refers to the methodology applied for

collision risk modelling for migratory birds. Appendix A provides a validation of the screening approach applied for migratory waterbirds applying the updated methodology for calculating collision risk estimates and updating the analysis for Morven South alone instead of the whole Morven site. The Morven Site HRA Screening Report concluded no LSE[2] for all migratory waterbird species and this conclusion remains valid based on the validation exercise undertaken in Appendix A.

5.1.1.10 No European sites were considered for LSE[2] with Annex I habitats (offshore and coastal) listed as qualifying features, as all European sites with Annex I habitat qualifying features are located outside of the ZoI (defined as a precautionary 20km buffer from Morven South for indirect effects on Annex I habitats, see Paragraph 4.2.1.6 of the Morven Site HRA Screening Report). This outcome is the same as for that previously concluded within Section 4.2 of the Morven Site HRA Screening Report.

5.1.1.11 The Annex II species European otter (*Lutra lutra*), primarily forages in coastal areas within 80m of the shoreline (Kruuk *et al.,* 2006). Due to the distance between Morven South and the coast of Aberdeenshire (86.0km; see Section 1.1) there is no connectivity between Morven South and this species. Therefore, no European sites were considered for LSE[2] with Annex II European otter listed as qualifying features, as per Paragraph 4.4.1.4 of the Morven Site HRA Screening Report.

5.1.1.12 With respect to Annex II diadromous fish species, LSE[2] could not be discounted for the following five SACs (as set out above, reduced from five in the Morven Site HRA Screening Report):

- River Dee SAC;
- River South Esk SAC;
- River Tweed SAC;
- River Tay SAC;
- River Teith SAC.

5.1.1.13 All five of these SACs have been progressed to the Morven South RIAA with respect to the following impacts:

- underwater sound impacting fish and shellfish receptors (alone and in-combination);
- Electromagnetic Fields (EMF) from subsea electrical cabling (alone and in-combination).

5.1.1.14 Further details on the five SACs and the impacts considered during the Stage 1 screening for thee Morven Site, and consequently Morven South, for Annex II diadromous fish are presented within Section 5.1.2 and Tables 5.2 and 5.3 of the Morven Site HRA Screening Report and summarised in Table 5.1 of this RIAA Part 1.

5.1.1.15 With respect to Annex II marine mammals, LSE[2] could not be discounted for the following five SACs:

- Berwickshire and North Northumberland Coast SAC;
- Isle of May SAC;
- Firth of Tay and Eden Estuary SAC;
- Southern North Sea SAC;
- Moray Firth SAC.

5.1.1.16 All five of these SACs have been progressed to the Morven South RIAA with respect to the following impacts:

- underwater sound from piling;
- underwater sound from clearance of Unexploded Ordinance (UXO) clearance;
- underwater sound from pre-construction site investigation surveys;
- underwater sound from vessel use and other (non-piling) sound-producing activities.

5.1.1.17 Further details on the five SACs and the impacts considered during the Stage 1 screening for the Morven Site, and consequently Morven South for Annex II marine mammals are presented within Section 5.1.3 and Tables 5.5 and 5.6 of the Morven Site HRA Screening Report. During the re-screening process and to align with the underwater sound impacts assessed in the EIA, injury has been screened in along with disturbance to marine mammals from pre-construction site investigation surveys and from vessel use and other (non-piling) sound-producing activities. Furthermore, injury and disturbance to marine mammals from site investigation surveys has been assessed for both the construction phase and operation and maintenance phase (only the construction phase was originally screened in in Morven Site HRA Screening Report). The changes to impacts for which potential LSE[2] was considered are summarised in Table 5.1 of this RIAA Part 1.

5.1.1.18 The potential in-combination impacts listed in Table 5.1 have also been updated from the Morven Site HRA Screening Report due to the refinement of the in-combination screening in line with the Cumulative Effects Assessment carried out for marine mammals in Volume 2, Chapter 10: Marine Mammals, of the EIA Report. The re-screening of in-combination effects for marine mammals was agreed through consultation with NatureScot (please see Morven South RIAA Part 2 for details of this consultation).

5.1.1.19 With respect to offshore ornithology, LSE[2] could not be discounted for the following 21 SPAs:

- Buchan Ness to Collieston Coast SPA;
- Copinsay SPA;
- Coquet Island SPA;
- East Caithness Cliffs SPA;
- Fair Isle SPA;
- Farne Islands SPA;
- Fetlar SPA;
- Flamborough and Filey Coast SPA;
- Forth Islands SPA;
- Foula SPA;
- Fowlsheugh SPA;
- Hermaness, Saxa Vord and Valla Field SPA;
- Hoy SPA;
- North Caithness Cliffs SPA;
- Northumberland Marine SPA;
- Noss SPA;
- Outer Firth of Forth and St Andrews Bay Complex SPA;
- St Abb`s Head to Fast Castle SPA;
- St Kilda SPA;
- Troup, Pennan and Lion's Heads SPA;
- West Westray SPA.

5.1.1.20 These SPAs have been progressed to the Morven South RIAA with the following impacts applying to the relevant ornithology features as set out in Table 5.1:

- direct temporary habitat loss/disturbance (alone and in-combination);
- collision (alone and in-combination);
- displacement (alone and in-combination);
- barrier effects (alone and in-combination);
- attraction to light (alone and in-combination).

5.1.1.21 Further details on the SPAs and the impacts considered during the Stage 1 screening for the Morven Site, and consequently Morven South for ornithological features, are presented within Section 5.1.4 and Tables 5.9 and 5.16 of the Morven Site HRA Screening Report and summarised in Table 5.1 of this RIAA Part 1.

5.1.1.22 The conclusions of the re-screening exercise have been presented in Table 5.1 for Morven South and identify only the following:

- the European site(s) and the qualifying features for which LSE[2] is identified;
- the potential impact associated with the LSE[2] identified;
- the relevant Project phase(s) associated with the LSE[2] identified;
- a brief justification against the outcome of the Morven Site HRA Screening Report.

Table 5.1: Summary of the European sites and relevant qualifying features for which Likely Significant Effects[2] have been identified and further assessment in the Morven South Report to Inform Appropriate Assessment is required

✓= LSE[2] during project phase, C = construction, O = operations and maintenance, D = decommissioning ✓* = non-breeding seasons only, shaded cells denote a change from the Morven Site Habitats Regulations Appraisal Screening Report, ✗= LSE[2] no longer screened in during project phase as a result of re-screening.

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
River Dee SAC	93.6	Atlantic salmon (*Salmo Salmar)* Freshwater pearl mussel (*Margaritifera margaritifera)*	Underwater sound impacting fish and shellfish receptors (alone)	✓			No change to the conclusions of the Morven Site HRA Screening Report. This site is located within the ZoI defined for fish and shellfish receptors (defined as a precautionary buffer of 100km from Morven South, but screening in all SAC rivers flowing into the Firth of Forth), so has been **screened in** for further assessment in the Morven South RIAA.
			Underwater sound impacting fish and shellfish receptors (in-combination)	✓			
			EMF from subsea electrical cabling (alone)		✓		
			EMF from subsea electrical cabling (in-combination)		✓		
River South Esk SAC	101.1	Atlantic salmon Freshwater pearl mussel	Underwater sound impacting fish and shellfish receptors (alone)	✓			Although this site is now located outside of the ZoI defined for fish and shellfish receptors (defined as a precautionary buffer of 100km from Morven South, but screening in all SAC rivers flowing into the Firth of Forth), based on expert judgement and in order to undertake a precautionary assessment there is no change to the conclusions of the Morven Site HRA Screening Report. Therefore, this site has been **screened in** for further assessment in the Morven South RIAA.
			Underwater sound impacting fish and shellfish receptors (in-combination)	✓			
			EMF from subsea electrical cabling (alone)		✓		
			EMF from subsea electrical cabling (in-combination)		✓		
River Tweed SAC	113.2	Atlantic salmon	Underwater sound impacting fish and shellfish receptors (alone)	✓			No change to the conclusions of the Morven Site HRA Screening Report. This site is located within the ZoI defined for fish and shellfish receptors (defined as a precautionary buffer of 100km from Morven South, but screening in all SAC rivers flowing into the Firth of
			Underwater sound impacting fish and shellfish receptors (in-combination)	✓			
			EMF from subsea electrical cabling (alone)		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			EMF from subsea electrical cabling (in-combination)		✓		Forth), so has been **screened in** for further assessment in the Morven South RIAA.
River Tay SAC	149.7	Atlantic salmon	Underwater sound impacting fish and shellfish receptors (alone)	✓			No change to the conclusions of the Morven Site HRA Screening Report. This site is located within the ZoI defined for fish and shellfish receptors (defined as a precautionary buffer of 100km from Morven South, but screening in all SAC rivers flowing into the Firth of Forth), so has been **screened in** for further assessment in the Morven South RIAA.
			Underwater sound impacting fish and shellfish receptors (in-combination)	✓			
			EMF from subsea electrical cabling (alone)		✓		
			EMF from subsea electrical cabling (in-combination)		✓		
River Teith SAC	215.0	Atlantic salmon	Underwater sound impacting fish and shellfish receptors (alone)	✓			No change to the conclusions of the Morven Site HRA Screening Report. This site is located within the ZoI defined for fish and shellfish receptors (defined as a precautionary buffer of 100km from Morven South, but screening in all SAC rivers flowing into the Firth of Forth), so has been **screened in** for further assessment in the Morven South RIAA.
			Underwater sound impacting fish and shellfish receptors (in-combination)	✓			
			EMF from subsea electrical cabling (alone)		✓		
			EMF from subsea electrical cabling (in-combination)		✓		
Berwickshire and North Northumberland Coast SAC	97.2	Grey seal (*Halichoerus grypus)*	Injury and disturbance from underwater sound generated from piling (alone)	✓			No change to the inclusion of this site from the Morven Site HRA Screening Report. This site is located within the ZoI defined for marine mammal receptors (defined for grey seal to be wide-ranging and include all sites with grey seal as a qualifying feature located within the East Scotland Seal Management Unit (MU)). In addition, grey seal haul-out count and telemetry data in relation to Morven South has been produced (see Volume 3, Annex 10.4: Marine Mammals Shared Seal Telemetry and Haul-out Data Study Technical Report, of the EIA Report) and shows connectivity between the
			Injury and disturbance from underwater sound generated from piling (in-combination)	✓			
			Injury and disturbance from underwater sound generation from UXO clearance (alone)	✓			
			Injury and disturbance from underwater sound generation from UXO clearance (in-combination)	×			

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Injury and disturbance to marine mammals from site investigation surveys activities (alone)	✓	✓		Berwickshire and North Northumberland Coast SAC and Morven South. However, injury to marine mammals from pre-construction site investigation surveys and vessel use and other (non-piling) sound-producing activities will be assessed in the Morven South RIAA, while in-combination injury and disturbance from underwater sound generation during UXO clearance and disturbance during site investigation-surveys have been screened out in line with Volume 2, Chapter 10: Marine Mammals, of the EIA Report. Therefore, this SAC has been **screened in** for further assessment in the Morven South RIAA.
			Disturbance to marine mammals from site investigation surveys (in-combination)	×			
			Injury and disturbance to marine mammals from vessel use and other (non-piling) sound-producing activities (alone)	✓	✓	✓	
			Injury and disturbance to marine mammals from vessel use and other (non-piling) sound-producing activities (in-combination)	✓	✓	×	
Isle of May SAC	108.6	Grey seal	Injury and disturbance from underwater sound generated from piling (alone)	✓			No change to the inclusion of this site from the Morven Site HRA Screening Report. This site is located within the ZoI defined for marine mammal receptors (defined for grey seal to be wide-ranging and include all sites with grey seal as a qualifying feature located within the East Scotland Seal MU). In addition, grey seal haul-out count and telemetry data in relation to Morven South has been produced (see Volume 3, Annex 10.4: Marine Mammals Shared Seal Telemetry and Haul-out Data Study Technical Report, of the EIA Report) and shows connectivity between the Isle of May SAC and Morven South. However, injury to marine mammals from pre-construction site investigation surveys and vessel use and other (non-piling) sound-producing activities will be assessed in the Morven South RIAA, while in-combination injury and disturbance from underwater sound generation during UXO clearance and
			Injury and disturbance from underwater sound generated from piling (in-combination)	✓			
			Injury and disturbance from underwater sound generation from UXO clearance (alone)	✓			
			Injury and disturbance from underwater sound generation from UXO clearance (in-combination)	×			
			Injury and disturbance to marine mammals from site investigation surveys activities (alone)	✓	✓		
			Disturbance to marine mammals from site investigation surveys (in-combination)	×			

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Injury and disturbance to marine mammals from vessel use and other (non-piling) sound-producing activities (alone)	✓	✓	✓	disturbance during site investigation-surveys have been screened out in line with Volume 2, Chapter 10: Marine Mammals, of the EIA Report. Therefore, this SAC has been **screened in** for further assessment in the Morven South RIAA.
			Injury and disturbance to marine mammals from vessel use and other (non-piling) sound-producing activities (in-combination)	✓	✓	×	
Firth of Tay and Eden Estuary SAC	109.3	Harbour seal (*Phoca vitulina*)	Injury and disturbance from underwater sound generated from piling (alone)	✓			No change to the inclusion of this site from the Morven Site HRA Screening Report. This site is located within the ZoI defined for marine mammal receptors (defined for harbour seal to be wide-ranging and include all sites with harbour seal as a qualifying feature located within the East Scotland Seal MU). In addition, harbour seal haul-out count and telemetry data in relation to Morven South has been produced (see Volume 3, Annex 10.4: Marine Mammals Shared Seal Telemetry and Haul-out Data Study Technical Report, of the EIA Report) and shows connectivity between the Firth of Tay and Eden Estuary SAC and Morven South. However, injury to marine mammals from pre-construction site investigation surveys and vessel use and other (non-piling) sound-producing activities will be assessed in the Morven South RIAA, while in-combination injury and disturbance from underwater sound generation during UXO clearance and disturbance during site investigation-surveys have been screened out in line with Volume 2, Chapter 10: Marine Mammals, of the EIA Report. Therefore, this SAC has been **screened in** for further assessment in the Morven South RIAA.
			Injury and disturbance from underwater sound generated from piling (in-combination)	✓			
			Injury and disturbance from underwater sound generation from UXO clearance (alone)	✓			
			Injury and disturbance from underwater sound generation from UXO clearance (in-combination)	×			
			Injury and disturbance to marine mammals from site investigation surveys activities (alone)	✓	✓		
			Disturbance to marine mammals from site investigation surveys (in-combination)	×			
			Injury and disturbance to marine mammals from vessel use and other (non-piling) sound-producing activities (alone)	✓	✓	✓	
			Injury and disturbance to marine mammals from vessel use and other (non-piling) sound-producing activities (in-combination)	✓	✓	×	

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
Southern North Sea SAC	135.1	Harbour porpoise (*Phocoena phocoena)*	Injury and disturbance from underwater sound generated from piling (alone)	✓			No change to the inclusion of this site from the Morven Site HRA Screening Report. This site is located within the ZoI defined for marine mammal receptors (defined for harbour porpoise to be wide-ranging and include all sites with harbour porpoise as a qualifying feature located within the North Sea Management Unit, with the exclusion of transboundary sites due to the distance of the site from Morven South), so has been **screened in** for further assessment in the Morven South RIAA. This screening conclusion is in line with the advice received from Natural England included in the Morven Site Scoping Opinion (MD-LOT, 2023; see Chapter 2.1: RIAA Part 2: SAC Assessments for further detail). However, injury to marine mammals from pre-construction site investigation surveys and vessel use and other (non-piling) sound-producing activities will be assessed in the Morven South RIAA, while in-combination injury and disturbance from underwater sound generation during UXO clearance and disturbance during site investigation-surveys have been screened out in line with Volume 2, Chapter 10: Marine Mammals, of the EIA Report.
			Injury and disturbance from underwater sound generated from piling (in-combination)	✓			
			Injury and disturbance from underwater sound generation from UXO clearance (alone)	✓			
			Injury and disturbance from underwater sound generation from UXO clearance (in-combination)	×			
			Injury and disturbance to marine mammals from site investigation surveys (alone)	✓	✓		
			Disturbance to marine mammals from site investigation surveys (in-combination)	×			
			Injury and disturbance to marine mammals from vessel use and other (non-piling) sound-producing activities (alone)	✓	✓	✓	
			Injury and disturbance to marine mammals from vessel use and other (non-piling) sound-producing activities (in-combination)	✓	✓	×	
Moray Firth SAC	215.8	Bottlenose dolphin *(Tursiops truncatus)*	Injury and disturbance from underwater sound generated from piling (alone)	✓			No change to the inclusion of this site from the Morven Site HRA Screening Report. This site is located within the ZoI defined for marine mammal receptors (defined for bottlenose dolphin to be wide-ranging and include all sites with bottlenose dolphin as a qualifying feature
			Injury and disturbance from underwater sound generated from piling (in-combination)	×			

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Injury and disturbance from underwater sound generation from UXO clearance (alone)	✓			located within the Greater North Sea Management Unit), so has been **screened in** for further assessment in the Morven South RIAA. This screening conclusion is in line with the advice received from NatureScot included in the Morven Site Scoping Opinion (MD-LOT, 2023; see Chapter 2.1: RIAA Part 2: SAC Assessments for further detail). However, injury to marine mammals from site investigation surveys and vessel use and other (non-piling) sound-producing activities will be assessed in the Morven South RIAA, while in-combination injury and disturbance from underwater sound generation during piling and UXO clearance and disturbance during site investigation-surveys have been screened out in line with Volume 2, Chapter 10: Marine Mammals, of the EIA Report.
			Injury and disturbance from underwater sound generation from UXO clearance (in-combination)	×			
			Injury and disturbance to marine mammals from site investigation surveys activities (alone)	✓	✓		
			Disturbance to marine mammals from site investigation surveys (in-combination)	×			
			Injury and disturbance to marine mammals from vessel use and other (non-piling) sound-producing activities (alone)	✓	✓	✓	
			Injury and disturbance to marine mammals from vessel use and other (non-piling) sound-producing activities (in-combination)	✓	✓	×	
Buchan Ness to Collieston Coast SPA	103	Herring gull (*Larus argentatus)*	Collision		×		Morven South is beyond the foraging range of this qualifying feature of the SPA and therefore no LSE[2] is concluded. The population of the feature at the SPA does not represent more than 1% of the relevant BDMPS populations and therefore no LSE[2] is also concluded for the non-breeding season. Therefore, this qualifying feature has been **screened out of** further assessment in the Morven South RIAA.

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
		Kittiwake (*Rissa tridactyla*)	Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
			Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
		Guillemot (*Uria aalge)* (non-breeding seasons only)	Direct temporary habitat loss/disturbance	✓*	✓*	✓*	Morven South is beyond the foraging range of this qualifying feature of the SPA and therefore no LSE[2] is concluded in the breeding season. Due to an update in the way in which the BDMPS area for the post-breeding and non-breeding seasons is defined there is now considered to be connectivity between Morven South and guillemot from this SPA in the post-breeding and non-breeding seasons only. This SPA has therefore been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓*		
			Barrier effects		✓*		
			Changes in prey availability due to temporary habitat loss/disturbance	✓*	✓*	✓*	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for guillemot following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
		Breeding seabird assemblage	Direct temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	
			Collision		✓		
			Displacement		✓		
			Barrier effects		✓		
Calf of Eday SPA	307	Kittiwake	Collision		×		Morven South is beyond the foraging range of this qualifying feature of the SPA and therefore no LSE[2] is concluded. The population of the feature at the SPA does not represent more than 1% of the relevant BDMPS populations and therefore no LSE[2] is also concluded for the non-breeding season. Therefore, this qualifying feature has been **screened out** of further assessment in the Morven South RIAA.
			Displacement		×		
			Barrier effects		×		
Copinsay SPA	271	Kittiwake	Collision		✓		5.1.1.23 There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Breeding seabird assemblage	Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	LSE^2 has been identified for components of the breeding seabird assemblage and therefore LSE^2 is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Collision		✓		
			Displacement		✓		
			Barrier effects		✓		
Coquet Island SPA	132	Fulmar (*Fulmarus glacialis*)	Attraction to light	✓	✓	✓	5.1.1.24 There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		There is connectivity between Morven South and this qualifying feature of the SPA. Displacement is added as an impact pathway for fulmar following advice from NatureScot (11 July 2025). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
		Kittiwake	Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Puffin (*Fratercula arctica)*	Direct temporary habitat loss/disturbance	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for puffin following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Breeding seabird assemblage	Direct temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Collision		✓		components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Attraction to light	✓	✓	✓	
East Caithness Cliffs SPA	234	Kittiwake	Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Fulmar	Attraction to light	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		There is connectivity between Morven South and this qualifying feature of the SPA. Displacement is added as an impact pathway for fulmar following advice from NatureScot (11 July 2025). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
		Razorbill (*Alca torda*) (non-breeding seasons only)	Direct temporary habitat loss/disturbance	✓*	✓*	✓*	There is still connectivity between Morven South and this qualifying feature of the SPA in non-breeding seasons only. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓*		
			Barrier effects		✓*		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for razorbill following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Breeding seabird assemblage	Direct temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	
			Collision		✓		
			Displacement		✓		
			Barrier effects		✓		
			Attraction to light	✓	✓	✓	
Fair Isle SPA	318	Fulmar	Attraction to light	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Displacement		✓		There is connectivity between Morven South and this qualifying feature of the SPA. Displacement is added as an impact pathway for fulmar following advice from NatureScot (11 July 2025). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Gannet (*Morus bassanus*) (non-breeding seasons only)	Collision		✓*		There is still connectivity between Morven South and this qualifying feature of the SPA in non-breeding seasons only. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓*		
			Barrier effects		✓*		
		Kittiwake	Collision		×		Morven South is beyond the foraging range of this qualifying feature of the SPA and therefore no LSE[2] is concluded. The population of the feature at the SPA does not represent more than 1% of the relevant BDMPS populations and therefore no LSE[2] is also concluded for the non-breeding season. Therefore, this qualifying feature has been **screened out of** further assessment in the Morven South RIAA.
			Displacement		×		
			Barrier effects		×		
		Puffin (non-breeding seasons only)	Direct temporary habitat loss/disturbance	✓*	✓*	✓*	There is still connectivity between Morven South and this qualifying feature of the SPA in non-breeding seasons only. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓*		
			Barrier effects		✓*		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Changes in prey availability due to temporary habitat loss/disturbance	✓*	✓*	✓*	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for puffin following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Breeding seabird assemblage	Direct temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	
			Collision		✓		
			Displacement		✓		
			Barrier effects		✓		
			Attraction to light	✓	✓	✓	
Farne Islands SPA	103	Kittiwake	Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
		Puffin	Direct temporary habitat loss/disturbance	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for puffin following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Breeding seabird assemblage	Direct temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	
			Collision		✓		
			Displacement		✓		
			Barrier effects		✓		
Fetlar SPA	432	Fulmar	Attraction to light	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Displacement		✓		There is connectivity between Morven South and this qualifying feature of the SPA. Displacement is added as an impact pathway for fulmar following advice from NatureScot (11 July 2025). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Breeding seabird assemblage	Displacement		✓		LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Attraction to light	✓	✓	✓	
Flamborough and Filey Coast SPA	243	Gannet (non-breeding seasons only)	Collision		✓*		There is still connectivity between Morven South and this qualifying feature of the SPA in non-breeding seasons only. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓*		
			Barrier effects		✓*		
		Kittiwake	Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Puffin	Direct temporary habitat loss/disturbance	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for puffin following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Fulmar	Attraction to light	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Displacement		✓		There is connectivity between Morven South and this qualifying feature of the SPA. Displacement is added as an impact pathway for fulmar following advice from NatureScot (11 July 2025). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Razorbill (non-breeding seasons)	Direct temporary habitat loss/disturbance	✓*	✓*	✓*	There is still connectivity between Morven South and this qualifying feature of the SPA in non-breeding seasons only. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓*	✓*	✓*	
			Displacement		✓*		
			Barrier effects		✓*		
		Breeding seabird assemblage	Direct temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Collision		✓		
			Displacement		✓		
			Barrier effects		✓		
			Attraction to light	✓	✓	✓	
Forth Islands SPA	106	Gannet	Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
		Kittiwake	Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There
			Displacement		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Barrier effects		✓		is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Guillemot (non-breeding seasons only)	Direct temporary habitat loss/disturbance	✓*	✓*	✓*	Due to an update in the way in which the BDMPS area for the post-breeding and non-breeding seasons is defined there is now considered to be connectivity between Morven South and guillemot from this SPA in the post-breeding and non-breeding seasons only. This SPA has therefore been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓*		
			Barrier effects		✓*		
			Changes in prey availability due to temporary habitat loss/disturbance	✓*	✓*	✓*	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for guillemot following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Razorbill	Direct temporary habitat loss/disturbance	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There
			Displacement		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Barrier effects		✓		is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for razorbill following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Puffin	Direct temporary habitat loss/disturbance	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for puffin following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Breeding seabird assemblage	Direct temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	
			Collision		✓		
			Displacement		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Barrier effects		✓		**screened in** for further assessment in the Morven South RIAA.
Foula SPA	389	Fulmar	Attraction to light	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		There is connectivity between Morven South and this qualifying feature of the SPA. Displacement is added as an impact pathway for fulmar following advice from NatureScot (11 July 2025). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Puffin (non-breeding seasons only)	Direct temporary habitat loss/disturbance	✓*	✓*	✓*	There is still connectivity between Morven South and this qualifying feature of the SPA in non-breeding seasons only. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓*		
			Barrier effects		✓*		
			Changes in prey availability due to temporary habitat loss/disturbance	✓*	✓*	✓*	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for puffin following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
			Direct temporary habitat loss/disturbance	✓	✓	✓	

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
		Breeding seabird assemblage	Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Attraction to light	✓	✓	✓	
Fowlsheugh SPA	84	Herring gull	Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
		Kittiwake	Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Guillemot	Direct temporary habitat loss/disturbance	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There
			Displacement		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Barrier effects		✓		is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for guillemot following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Razorbill	Direct temporary habitat loss/disturbance	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for razorbill following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Breeding seabird assemblage	Direct temporary habitat loss/disturbance	✓	✓	✓	LSE^2 has been identified for components of the breeding seabird assemblage and therefore LSE^2 is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	
			Collision		✓		
			Displacement		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Barrier effects		✓		**screened in** for further assessment in the Morven South RIAA.
Hermaness, Saxa Vord and Valla Field SPA	425	Fulmar	Attraction to light	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		There is connectivity between Morven South and this qualifying feature of the SPA. Displacement is added as an impact pathway for fulmar following advice from NatureScot (11 July 2025). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Gannet	Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in non-breeding seasons. In addition, following advice in the Morven Site Scoping Opinion (MD-LOT, 2023)., connectivity has also been identified in the breeding season. This qualifying feature of the SPA has therefore been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
		Puffin (non-breeding seasons only)	Direct temporary habitat loss/disturbance	✓*	✓*	✓*	There is still connectivity between Morven South and this qualifying feature of the SPA in non-breeding seasons only. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓*		
			Barrier effects		✓*		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for puffin following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Breeding seabird assemblage	Direct temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	
			Collision		✓		
			Displacement		✓		
			Barrier effects		✓		
			Attraction to light	✓	✓	✓	
Hoy SPA	278	Fulmar	Attraction to light	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		There is connectivity between Morven South and this qualifying feature of the SPA. Displacement is added as an impact pathway for fulmar following advice from NatureScot (11 July 2025). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Kittiwake	Collision		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Displacement		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Puffin	Direct temporary habitat loss/disturbance	×	×	×	Morven South is beyond the foraging range of this qualifying feature of the SPA and therefore no LSE[2] is concluded. The population of the feature at the SPA does not represent more than 1% of the relevant BDMPS populations and therefore no LSE[2] is also concluded for the non-breeding season. Therefore, this qualifying feature has been **screened out of** further assessment in the Morven South RIAA.
			Displacement		×		
			Barrier effects		×		
		Breeding seabird assemblage	Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Collision		✓		
			Displacement		✓		
			Barrier effects		✓		
			Attraction to light	✓	✓	✓	
	312	Kittiwake	Collision		×		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
Marwick Head SPA			Displacement		×		Morven South is beyond the foraging range of this qualifying feature of the SPA and therefore no LSE[2] is concluded. The population of the feature at the SPA does not represent more than 1% of the relevant BDMPS populations and therefore no LSE[2] is also concluded for the non-breeding season. Therefore, this qualifying feature has been **screened out of** further assessment in the Morven South RIAA.
			Barrier effects		×		
North Caithness Cliffs SPA	253	Fulmar	Attraction to light	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		There is connectivity between Morven South and this qualifying feature of the SPA. Displacement is added as an impact pathway for fulmar following advice from NatureScot (11 July 2025). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Kittiwake	Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Puffin	Direct temporary habitat loss/disturbance	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Breeding seabird assemblage	Direct temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	
			Collision		✓		
			Displacement		✓		
			Barrier effects		✓		
			Attraction to light	✓	✓	✓	

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
Northumberland Marine SPA	93	Fulmar	Attraction to light	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		There is connectivity between Morven South and this qualifying feature of the SPA. Displacement is added as an impact pathway for fulmar following advice from NatureScot (11 July 2025). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Kittiwake	Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Puffin	Direct temporary habitat loss/disturbance	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for puffin following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Razorbill	Direct temporary habitat loss/disturbance	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for razorbill following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Breeding seabird assemblage	Direct temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	
			Collision		✓		
			Displacement		✓		
			Barrier effects		✓		
			Attraction to light	✓	✓	✓	

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
Noss SPA	385	Fulmar	Attraction to light	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		There is connectivity between Morven South and this qualifying feature of the SPA. Displacement is added as an impact pathway for fulmar following advice from NatureScot (11 July 2025). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Gannet	Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in non-breeding seasons. In addition, following advice in the Morven Site Scoping Opinion (MD-LOT, 2023)., connectivity has also been identified in the breeding season. This qualifying feature of the SPA has therefore been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
		Breeding seabird assemblage	Collision		✓		LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Attraction to light	✓	✓	✓	
Outer Firth of Forth and St	66	Kittiwake	Collision		✓		The Outer Firth of Forth and St Andrews Bay Complex SPA is designated to protect seas areas used by
			Displacement		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
Andrews Bay Complex SPA			Barrier effects		✓		breeding seabirds from adjacent breeding colonies. LSE has been identified for kittiwake from the Forth Islands SPA which is adjacent to the Outer Firth of Forth and St Andrews Bay Complex SPA and therefore LSE[2] is also identified for the Outer Firth of Forth and St Andrews Bay Complex SPA. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Herring gull (non-breeding seasons only)	Collision		✓*		There is still connectivity between Morven South and this qualifying feature of the SPA in non-breeding seasons only. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
		Guillemot	Direct temporary habitat loss/disturbance	✓	✓	✓	The location of ports to be used to support the construction of Morven South has not been determined prior to application. However, the use of a port or ports located within the Outer Firth of Forth and St Andrews Bay Complex SPA cannot be ruled out. LSE has therefore been identified for features of the Outer Firth of Forth and St Andrews Bay Complex SPA on a precautionary basis and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Displacement		✓		Due to an update in the way in which the BDMPS area for the post-breeding and non-breeding seasons is defined there is now considered to be connectivity between Morven South and guillemot from those SPAs adjacent to and within the Outer Firth of Forth and St Andrews Bay Complex SPA. This SPA has therefore been **screened in** for further assessment in the Morven South RIAA.
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven Southand this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for guillemot following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Razorbill	Direct temporary habitat loss/disturbance	✓	✓	✓	The Outer Firth of Forth and St Andrews Bay Complex SPA is designated to protect seas areas used by
			Displacement		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Barrier effects		✓		breeding seabirds from adjacent breeding colonies. LSE[2] has been identified for razorbill from the Forth Islands SPA which is adjacent to the Outer Firth of Forth and St Andrews Bay Complex SPA and therefore LSE is also identified for the Outer Firth of Forth and St Andrews Bay Complex SPA. In addition, the location of ports to be used to support the construction of Morven South has not been determined prior to application. However, the use of a port or ports located within the Outer Firth of Forth and St Andrews Bay Complex SPA cannot be ruled out. LSE has therefore been identified for features of the Outer Firth of Forth and St Andrews Bay Complex SPA on a precautionary basis and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven Southand this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for razorbill following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Puffin	Direct temporary habitat loss/disturbance	✓	✓	✓	The Outer Firth of Forth and St Andrews Bay Complex SPA is designated to protect seas areas used by
			Displacement		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Barrier effects		✓		breeding seabirds from adjacent breeding colonies. LSE[2] has been identified for puffin from the Forth Islands SPA which is adjacent to the Outer Firth of Forth and St Andrews Bay Complex SPA and therefore LSE is also identified for the Outer Firth of Forth and St Andrews Bay Complex SPA. In addition, the location of ports to be used to support the construction of Morven South has not been determined prior to application. However, the use of a port or ports located within the Outer Firth of Forth and St Andrews Bay Complex SPA cannot be ruled out. LSE has therefore been identified for features of the Outer Firth of Forth and St Andrews Bay Complex SPA on a precautionary basis and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for puffin following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Gannet	Collision		✓		The Outer Firth of Forth and St Andrews Bay Complex SPA is designated to protect seas areas used by
			Displacement		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Barrier effects		✓		breeding seabirds from adjacent breeding colonies. LSE[2] has been identified for gannet from the Forth Islands SPA which is adjacent to the Outer Firth of Forth and St Andrews Bay Complex SPA and therefore LSE[2] is also identified for the Outer Firth of Forth and St Andrews Bay Complex SPA. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
		Breeding seabird assemblage	Direct temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	
			Collision		✓		
			Displacement		✓		
			Barrier effects		✓		
		Red-throated diver	Direct temporary habitat loss/disturbance	✓	✓	✓	The location of ports to be used to support the construction of Morven South has not been determined prior to application. However, the use of a port or ports located within the Outer Firth of Forth and St Andrews Bay Complex SPA cannot be ruled out. LSE has therefore been identified for features of the Outer Firth of Forth and St Andrews Bay Complex SPA on a precautionary basis and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
		Slavonian grebe					
		Eider					
		Shag					
		Long-tailed duck					
		Common scoter					
		Velvet scoter					
		Goldeneye					

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
		Red-breasted merganser					
		Non-breeding waterfowl assemblage					
Rousay SPA	308	Kittiwake	Collision		×		Morven South is beyond the foraging range of this qualifying feature of the SPA and therefore no LSE[2] is concluded. The population of the feature at the SPA does not represent more than 1% of the relevant BDMPS populations and therefore no LSE[2] is also concluded for the non-breeding season. Therefore, this qualifying feature has been **screened out** of further assessment in the Morven South RIAA.
			Displacement		×		
			Barrier effects		×		
St Abb`s Head to Fast Castle SPA	103	Kittiwake	Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
			Direct temporary habitat loss/disturbance	✓*	✓*	✓*	Due to an update in the way in which the BDMPS area for the post-breeding and non-breeding seasons is
			Displacement		✓*		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
		Guillemot (non-breeding seasons only)	Barrier effects		✓*		defined there is now considered to be connectivity between Morven South and guillemot from this SPA in the post-breeding and non-breeding seasons only. This SPA has therefore been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓*	✓*	✓*	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for guillemot following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Razorbill	Direct temporary habitat loss/disturbance	✓	✓	✓	There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for razorbill following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Breeding seabird assemblage	Direct temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore,
			Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	
			Collision		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Displacement		✓		these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Barrier effects		✓		
St Kilda SPA	473	Gannet (non-breeding seasons only)	Collision		✓*		There is still connectivity between Morven South and this qualifying feature of the SPA in non-breeding seasons only. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓*		
			Barrier effects		✓*		
		Kittiwakel	Collision		×		An LSE[2] for this qualifying feature was erroneously identified in Morven Site HRA Screening Report. Morven South is beyond the foraging range of this qualifying feature of the SPA and therefore no LSE[2] is concluded. The population of the feature at the SPA does not represent more than 1% of the relevant BDMPS populations and therefore no LSE[2] is also concluded for the non-breeding season. Therefore, this qualifying feature has been **screened out of** further assessment in the Morven South RIAA.
			Displacement		×		
			Barrier effects		×		
		Razorbill	Direct temporary habitat loss/disturbance	×	×	×	An LSE[2] for this qualifying feature was erroneously identified in Morven Site HRA Screening Report. Morven South is beyond the foraging range of this qualifying feature of the SPA and therefore no LSE[2] is concluded. The population of the feature at the SPA does not represent more than 1% of the relevant BDMPS populations and therefore no LSE[2] is also concluded for the non-breeding season. Therefore, this qualifying feature has been **screened out of** further assessment in the Morven South RIAA.
			Displacement		×		
			Barrier effects		×		
			Collision		✓		LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is
			Displacement		✓		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
		Breeding seabird assemblage	Barrier effects		✓		identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
Troup, Pennan and Lion's Heads SPA	143	Kittiwake	Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
			Collision		✓		There is still connectivity between Morven South and this qualifying feature of the SPA in all seasons. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature of the SPA has been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓		
			Barrier effects		✓		
		Guillemot (non-breeding seasons only)	Direct temporary habitat loss/disturbance	✓*	✓*	✓*	Due to an update in the way in which the BDMPS area for the post-breeding and non-breeding seasons is defined there is now considered to be connectivity between Morven South and guillemot from this SPA in the post-breeding and non-breeding seasons only. This SPA has therefore been **screened in** for further assessment in the Morven South RIAA.
			Displacement		✓*		
			Barrier effects		✓*		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
			Changes in prey availability due to temporary habitat loss/disturbance	✓*	✓*	✓*	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for guillemot following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Razorbill	Direct temporary habitat loss/disturbance	×	×	×	Morven South is beyond the foraging range of this qualifying feature of the SPA and therefore no LSE[2] is concluded. The population of the feature at the SPA does not represent more than 1% of the relevant BDMPS populations and therefore no LSE[2] is also concluded for the non-breeding season. Therefore, this qualifying feature has been **screened out of** further assessment in the Morven South RIAA.
			Displacement		×		
			Barrier effects		×		
		Breeding seabird assemblage	Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Collision		✓		
			Displacement		✓		
			Barrier effects		✓		
West Westray SPA	318		Collision		✓*		Morven South is beyond the foraging range of this qualifying feature of the SPA and therefore no LSE[2] is
			Displacement		✓*		

European site	Distance to Morven South (km)	Relevant qualifying features	Impact	Project phase			Re-screening justification
				C	O	D	
		Kittiwake (non-breeding season)	Barrier effects		✓*		concluded in the breeding season. The contribution of the kittiwake population to the post- and pre-breeding season BDMPS populations is greater than 1% and therefore there remains a LSE[2] for the kittiwake feature of the West Westray SPA. There is therefore no change to the conclusions of the Morven Site HRA Screening Report and this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
			Changes in prey availability due to temporary habitat loss/disturbance	✓*	✓*	✓*	There is connectivity between Morven South and this qualifying feature of the SPA. Changes in prey availability due to temporary habitat loss/disturbance is added as an impact pathway for kittiwake following advice within the Morven Site Scoping Opinion (MD-LOT, 2023). Therefore, this impact for this qualifying feature has been **screened in** for further assessment in the Morven South RIAA.
		Breeding seabird assemblage	Changes in prey availability due to temporary habitat loss/disturbance	✓	✓	✓	LSE[2] has been identified for components of the breeding seabird assemblage and therefore LSE[2] is identified for the assemblage and impacts on relevant components will be considered in relation to the conservation objectives of the assemblage. Therefore, these impacts for this qualifying feature have been **screened in** for further assessment in the Morven South RIAA.
			Collision		✓		
			Displacement		✓		
			Barrier effects		✓		

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Appendix A Migratory Collision Risk Modelling Validation

A.1 Introduction

6.1.1.1 The Chapter 1: Morven Option Lease Agreement Site: Habitat Regulations Appraisal (HRA) Stage 1 Screening Report (hereafter referred to as 'Morven Site HRA Screening Report') was completed in July 2023. It included screening conclusions that incorporated consideration of collision risk modelling for migratory waterbirds. Since the completion of the Morven Site HRA Screening Report, the approach to calculating collision estimates for migratory waterbirds has changed. As such, this appendix, has revisited the conclusions of the Morven Site HRA Screening Report in relation to migratory waterbirds, and a re-screening exercise has been undertaken to validate the previous screening conclusions.

6.1.1.2 This Appendix to the Morven South RIAA Part 1: Introduction presents the conclusions of this re-screening exercise. It determines whether the screening of migratory waterbirds using the updated collision risk modelling approach described in Volume 3: Chapter 11.3: Offshore Ornithology Collision Risk Modelling Report: Migratory, of the EIA Report (hereafter, 'the Morven South mCRM Report') changes the conclusions of the Morven Site HRA Screening Report. For the purposes of the analysis in Volume 3: Chapter 11.3: Offshore Ornithology Collision Risk Modelling Report: Migratory, of the EIA Report, the term migratory waterbirds refers to species of ducks, geese, waders and terrestrial birds that are features of United Kingdom (UK) Special Protection Areas (SPAs) and therefore primarily incorporates true waterbirds in addition to a small number of terrestrial birds.

A.2 Methodology

6.1.1.3 The original collision risk estimates in the Morven Site HRA Screening Report were derived using the Excel workbook associated with the Strategic Ornithological Support Services (SOSS) Migration Assessment Tool (MAT) (Wright *et al*., 2012). The results table in the SOSSMAT Excel workbook was populated using biogeographic population sizes from Woodward *et al*. (2020) or Wright *et al*. (2012). The population correction factor was estimated based on the proportion of the migratory corridor in Wright *et al*. (2012) that overlaps with the region of the Morven Option Lease Agreement Site (hereafter 'Morven Site'), alongside expert judgement relating to the migratory behaviour of each species informed by other relevant literary sources. Collision risk models were developed for each species using the Band (2012) Excel workbook. Conclusions were then made about Likely Significant Effect (LSE^2), with an LSE^2 identified for any species for which the impact represented more than 1% of the baseline mortality of the relevant biogeographic population. Baseline mortality rates were derived from survival rates for each species obtained from British Trust for Ornithology (BTO) BirdFacts (BTO, 2025).

6.1.1.4 The Morven South mCRM Report presents updated collision risk estimates for a reduced project size compared to the original assessment and utilises an updated approach for calculating collision risk estimates. The updated approach used the stochastic migratory collision risk model (mCRM) Shiny app developed by HiDef Aerial Surveying for Marine Scotland Science (HiDef, 2022). The mCRM tool includes pre-populated inputs for all the migratory waterbird species. Where pre-populated inputs did not match the values included in Woodward *et al*. (2023), they were updated to align with the values in Woodward *et al*. (2023). This includes biogeographic population numbers which were derived from Woodward *et al.* (2023) for this updated approach.

6.1.1.5 In this re-screening exercise, following the approach taken in the Morven Site HRA Screening Report, the collision risk estimates calculated using the mCRM are compared to the 1% threshold of baseline mortality for the relevant biogeographic population used in the updated mCRM approach. Biogeographic populations are taken from Woodward *et al.* (2023), in line with the updated mCRM approach. An LSE^2 is identified for any species for which the impact represents more than 1% of the baseline mortality of the relevant biogeographic population.

6.1.1.6 To further illustrate the negligible nature of the impact and to support the conclusions of no LSE reached in the Morven Site HRA Screening Report in relation to collision risk on migratory waterbirds associated with Morven South, the predicted collision risk estimates are also considered in relation to the percentage point increase in baseline mortality of the biogeographic population. Where this falls below a 0.02 percentage point increase then it is considered appropriate to conclude no LSE.

A.3 Comparison of Likely Significant Effects[2] conclusions

6.1.1.7 Table A. 1 presents the results of the re-screening exercise. It includes the LSE[2] conclusions of the Morven Site HRA Screening Report, and the LSE[2] conclusions of the re-screening exercise using updated collision risk estimates.

Table A.1: Comparison of the Likely Significant Effect[2] conclusions in the Morven Site Habitats Regulations Appraisal Screening Report and Likely Significant Effect[2] conclusions using updated collision risk estimates for Morven South, for each migratory species

Species	LSE[2] conclusion in the Morven Site HRA Screening Report (Y/N)	Updated collision risk estimate as predicted for Morven South[12]	Biogeographic population	Percentage increase in baseline mortality (%)	Increase in mortality rate (percentage point change)	LSE[2] conclusion with updated collision risk estimates for Morven South (Y/N)
Svalbard light-bellied brent goose	N	0.018	13,400	<0.01	<0.001	N
Svalbard barnacle goose	N	0.184	43,500	<0.01	<0.001	N
Taiga bean goose	N	0.004	970	<0.01	<0.001	N
Pink-footed goose	N	0	510,000	0	<0.001	N
Whooper swan	N	0.782	39,990	0.01	0.002	N
Shelduck	N	1.785	77,500	0.02	0.002	N
Shoveler	N	0.753	22,960	0.01	0.003	N
Gadwall	N	N/A	N/A	N/A	N/A	N/A
Wigeon	N	14.490	544,000	0.01	0.003	N
Mallard	N	36.681	823,600	0.01	0.004	N
Pintail	N	0.570	20,942	0.01	0.003	N
Teal	N	N/A	N/A	N/A	N/A	N/A
Pochard	N	N/A	N/A	N/A	N/A	N/A
Tufted duck	N	3.978	155,000	0.01	0.003	N
Scaup	N	0.126	7,000	0.01	0.002	N

[12] Updated collision risk estimate as predicted for Morven South alone in the Morven South mCRM Report.

Species	LSE[2] conclusion in the Morven Site HRA Screening Report (Y/N)	Updated collision risk estimate as predicted for Morven South[12]	Biogeographic population	Percentage increase in baseline mortality (%)	Increase in mortality rate (percentage point change)	LSE[2] conclusion with updated collision risk estimates for Morven South (Y/N)
Eider	N/A	1.186	133,400	0.01	0.001	N
Velvet scoter	N/A	0.180	4,510	0.02	0.004	N
Common scoter	N/A	3.652	146,700	0.01	0.002	N
Long-tailed duck	N/A	0.448	12,800	0.01	0.004	N
Goldeneye	N	0.830	30,000	0.01	0.003	N
Goosander	N	0.964	17,420	0.03	0.006	N
Red-breasted merganser	N	0.338	15,840	0.01	0.002	N
Nightjar	N/A	0.116	7,700	0.01	0.002	N
Corncrake	N	0.016	1,696	<0.01	0.001	N
Spotted crake	N/A	0.004	251	0.01	0.002	N
Great crested grebe	N	0.003	1,380	<0.01	<0.001	N
Slavonian grebe	N	0.014	1,614	<0.01	0.001	N
Oystercatcher	N	1.272	620,389	<0.01	<0.001	N
Lapwing	N	6.740	3,942,500	<0.01	<0.001	N
Golden plover	N	3.772	3,267,600	<0.01	<0.001	N
Grey plover	N	0.200	124,000	<0.01	<0.001	N
Ringed plover	N	0.226	241,920	<0.01	<0.001	N
Dotterel	N/A	0	390	0	<0.001	N
Whimbrel	N	0.782	624,000	<0.01	<0.001	N
Curlew	N	0.342	141,100	<0.01	<0.001	N
Bar-tailed godwit	N	1.160	680,000	<0.01	<0.001	N

Species	LSE[2] conclusion in the Morven Site HRA Screening Report (Y/N)	Updated collision risk estimate as predicted for Morven South[12]	Biogeographic population	Percentage increase in baseline mortality (%)	Increase in mortality rate (percentage point change)	LSE[2] conclusion with updated collision risk estimates for Morven South (Y/N)
Turnstone	N	0.444	260,000	<0.01	<0.001	N
Knot	N	0.504	360,000	<0.01	<0.001	N
Ruff	N	0.004	3,100	<0.01	<0.001	N
Sanderling	N	0.294	200,000	<0.01	<0.001	N
Dunlin	N	3.010	2,025,777	<0.01	<0.001	N
Purple sandpiper	N	0.064	33,521	<0.01	<0.001	N
Snipe	N	4.995	2,331,000	<0.01	<0.001	N
Redshank	N	0.368	230,000	<0.01	<0.001	N
Wood sandpiper	N/A	0	54	0	<0.001	N
Greenshank	N	0.002	1,080	<0.01	<0.001	N
Red-throated diver	N/A	0.144	40,697	<0.01	<0.001	N
Black-throated diver	N/A	0.006	1,883	<0.01	<0.001	N
Great northern diver	N/A	0.020	11,000	<0.01	<0.001	N
Bittern	N/A	0.006	714	<0.01	0.001	N
Osprey	N/A	0.004	665	<0.01	0.001	N
Marsh harrier	N/A	0.014	2,576	<0.01	0.001	N
Hen harrier	N	0.024	2,176	0.01	0.001	N
Short-eared owl	N	0.160	14,880	<0.01	0.001	N
Merlin	N	0.104	8,256	<0.01	0.001	N

A.4 Conclusion

6.1.1.8 The results in Table A. 1 show that, for all the migratory species assessed in both the Morven Site HRA Screening Report and the Morven South mCRM report, the LSE[2] conclusion has remained unchanged after re-screening using updated collision risk estimates. There are a small number of migratory species which were not originally assessed in the Morven Site HRA Screening Report, but have subsequently been assessed using the updated approach of the Morven South mCRM report; none of these species have had an LSE[2] identified during re-screening. Therefore, there are no changes to the HRA screening conclusions after re-screening using the updated collision risk approach.

6.1.1.9 It should be noted that for three species, gadwall, teal and pochard, the mCRM does not identify connectivity between the migratory corridors of these species and Morven South. A conclusion of no LSE[2] is maintained for these species either on the basis of an impact representing less than a 1% increase in the baseline mortality of the biogeographic population (as concluded in the Morven Site HRA Screening Report) or on the basis of no connectivity based on the use of the mCRM.

A.5 References

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