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Application Document 10

Proposed Development (Onshore) Habitat Regulations Appraisal
Stage 1 Screening Report

Caledonia Offshore Wind Farm Ltd

5th Floor Atria One, 144 Morrison Street, Edinburgh, EH3 8EX

Application Document 10 Proposed Development (Onshore) Habitat Regulations Appraisal Stage 1 Screening Report

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This document contains the following existing report: 'Habitat Regulations Appraisal Stage 1 Screening Report' as prepared by Arup and submitted to Aberdeenshire Council in August 2024. For the purpose of Consent Application, the document has been retitled to: 'Application Document 10 Proposed Development (Onshore) Habitat Regulations Appraisal Stage 1 Screening Report', alongside the addition of a new front cover.



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Habitat Regulations Appraisal

Stage 1 Screening Report

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5th Floor Atria One, 144 Morrison Street, Edinburgh, EH3 8EX

Caledonia Offshore Wind Farm

Habitat Regulations Appraisal Stage 1 Screening Report

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Acronyms and Abbreviations

AC	Aberdeenshire Council
AIS	Air Insulated Switchgear
BTO	British Trust for Ornithology
CEMP	Construction Environmental Management Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
COs	Conservation Objectives
CT	Current Transformers
CTMP	Construction Traffic Management Plan
EIAR	Environmental Impact Assessment Report
GIS	Gas Insulated Switchgear
GW	Gigawatt
HDD	Horizontal Directional Drill
HRA	Habitat Regulation Appraisal
IAQM	Institute of Air Quality Management
kV	kilovolt
LSE	Likely significant effects
NESBReC	North East Scotland Biological Records Centre
OnTI	Onshore transmission infrastructure
OWF	Offshore Wind Farm
QI	Qualifying Interests
RIAA	Report to Inform Appropriate Assessment
RLB	Red line boundary
RSPB	Royal Society for the Protection of Birds

SAC	Special Areas of Conservation
SCI	Special Conservation Interests
SPA	Special Protection Areas
VT	Voltage Transformer
ZoI	Zone of Influence

Executive summary

This document has been prepared by Ove Arup and Partners Limited. (Arup) on behalf of Caledonia Offshore Wind Farm Ltd. in connection with a planning application for the Caledonia Offshore Wind Farm (OWF).

The Proposed Development is the Onshore Transmission Infrastructure (OnTI) for the Caledonia OWF. The Caledonia OWF Project OnTI comprises underground cables from a Landfall Site on the Aberdeenshire coast to a new Onshore Substation Site in the proximity of New Deer.

This Habitats Regulations Appraisal (HRA) will cover the onshore construction, operation and decommissioning work from the Landfall Site to the Onshore Substation Site and the effects these may have on European designated sites.

This report comprises of the Stage 1 ('Screening') of a HRA, created to inform the 'competent authority', Aberdeenshire Council (AC), regarding the potential for likely significant effects (LSE) of the Proposed Development (Onshore) on European designated sites, as required under Regulation 48 (1) of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) (hereafter referred to as the 'Habitats Regulations')¹. This report has been prepared in accordance with the Habitats Regulations.

Seven European designated sites are present within the Zone of Influence (ZoI) of the Proposed Development (Onshore), comprising three Special Protection Areas (SPAs), three Special Areas of Conservation (SACs) and one Ramsar site. The SPAs (the Moray Firth; the Troupe, Pennan and Lion's Head; and the Ythan estuary, Sands of Forvie, and Meikle Loch SPAs) support numerous protected bird species, containing migratory, non-breeding, and breeding populations of national and European importance. The SACs (The Sands of Forvie; Reidside Moss; and Turclossie Moss SACs) support priority habitats of geological and environmental importance. The Ramsar site (Ythan Estuary and Meikle Loch) also supports breeding and non-breeding bird populations, and is notable for its large assemblage of individual waterbirds present on site.

Consultation with the competent authority (AC) ruled out the potential for air quality impacts from the Proposed Development (Onshore) and therefore these are not considered within this report.

None of the European designated sites fall directly within the red line boundary (RLB) of the Proposed Development (Onshore) which, combined with the distances between the RLB and the European designated sites, allows for the screening out of direct effects resulting from construction of the OnTI.

Functionally linked land for the qualifying features of the Moray Firth SPA exists adjacent to the Proposed Development (Onshore). There exists the potential for unintentional disturbance/destruction to these supporting habitats for the Moray Firth SPA. In addition, the presence of the hydrological link between the Proposed Development (Onshore) and this SPA

¹ The Conservation (Natural Habitats, &c.) Regulations 1994. Available at [The Conservation \(Natural Habitats, &c.\) Regulations 1994 \(legislation.gov.uk\)](https://www.legislation.gov.uk). Accessed on 18th July 2023.

via the North Sea introduces the potential for indirect effects through the unintentional/accidental release of sediment and/or pollutants during construction. As a result of these potentially LSE on the qualifying features as a result of construction, the Moray Firth SPA has been screened in for further assessment.

The remainder of the European designated sites have been screened out of further assessment.

1 Introduction

1.1 Overview

- 1.1.1.1 This document has been prepared by Ove Arup and Partners Limited. (Arup) on behalf of Caledonia Offshore Wind Farms Ltd. in connection with a planning application for the Caledonia Offshore Wind Farm (OWF).
- 1.1.1.2 The Proposed Development (Onshore) is the Onshore Transmission Infrastructure (OnTI) for the Caledonia Offshore Wind Farm (OWF). The Caledonia OWF Project OnTI comprises underground cables from a Landfall Site on the Aberdeenshire coast to two new co-located Onshore Substations in the proximity of New Deer. For the purposes of this report, the OnTI boundary will hereafter be referred to as the 'Proposed Development (Onshore)'. Where discussed separately, there area within which the underground Onshore Export Cable Circuits will be situated will be referred to as the 'Onshore Export Cable Corridor' and the substations as the 'Onshore Substations'.
- 1.1.1.3 This Habitats Regulations Appraisal (HRA) covers the proposed onshore construction and operation work from the Landfall Site to the Onshore Substations and the effects these may have on European designated sites. All impacts related to the construction, operation and decommissioning of the offshore components of the Caledonia OWF are detailed within the Offshore Report to Inform Appropriate Assessment (RIAA). The RIAA will be provided as part of the Proposed Development (Offshore) Application.

1.2 Report Aim

- 1.2.1.1 This report comprises Stage 1 ('Screening') of a HRA, created to inform the 'competent authority', Aberdeenshire Council (AC), regarding the potential for likely significant effects (LSE) of the Proposed Development (Onshore) on European designated sites, as required under Regulation 48 (1) of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland) (hereafter referred to as the 'Habitats Regulations')². This report has been prepared in accordance with the Habitats Regulations.

² The Conservation (Natural Habitats, &c.) Regulations 1994. Available at [The Conservation \(Natural Habitats, &c.\) Regulations 1994 \(legislation.gov.uk\)](https://www.legislation.gov.uk). Accessed on 18th July 2023.

2 Project Overview

2.1 Project Description

2.1.1.1 The Caledonia OWF comprises the construction of an offshore wind farm in the Moray Firth, off the northeast coast of Scotland.

2.1.1.2 The Caledonia OWF OnTI comprises underground cables from a Landfall Site on the Aberdeenshire coast to a new Onshore Substation Site in the proximity of the existing New Deer Substation.

2.1.1.3 The 2GW Caledonia OWF consists of the following Onshore Transmission Infrastructure:

- up to four offshore export cables, with a nominal voltage of up to 275kV;
- Landfall Site with up to four transition joint bays (to interface the Offshore Export Cables and Onshore Export Cable Circuits);
- an Onshore Substation Site with two co-located substations;
- up to four Onshore Export Cable Circuits with a nominal voltage of up to 275kV between the Landfall Site and Onshore Substation Site;
- up to four Onshore Grid Connection Cable Circuits with a nominal voltage of up to 400kV, from the Onshore Substation Site to the Grid Connection Point; and
- The delivery of the project may be phased to align with the availability of grid capacity.

2.1.1.4 At the time of drafting this document the Proposed Development (Onshore) was at an early design stage and included a proposed landfall location, a proposed Onshore Export Cable Corridor of approximately 500m in width, and three potential Onshore Substation Sites. Refer to the Onshore Export Cable Corridor illustrated in Appendix A for the Proposed Development (Onshore) boundary considered.

2.1.1.5 The Proposed Development (Onshore) boundary has been refined and now identifies the proposed landfall location, a Onshore Export Cable Corridor within which the Onshore Export Cable Circuit infrastructure will be located of approximately 100m-300m width and one Onshore Substation Site. This refined boundary will be the Proposed Development (Onshore) planning application red line boundary (RLB) and the boundary considered within the Environmental Impact Assessment Report (EIAR) and supporting studies which accompany the planning application.

2.2 Offshore Export Cables and Landfall Site

2.2.1.1 The Landfall Site, to the west of the town of Whitehills at Stake Ness, is the location of the interface point where the Offshore Export Cable and the Onshore Export

Cable Circuits join. This process is undertaken via a Horizontal Directional Drill (HDD), where a duct is drilled from the onshore HDD compound out to the exit point on the seabed beyond Mean Low Water Spring (MLWS), through which the shore end of the export cable can then be pulled. The entirety of the Onshore Export Cable Circuit will be buried from the landfall site onwards. The exact location of this point is yet to be decided. Landfall sites were screened as part of a desk study, considering factors such as:

- suitability of ground conditions for trenching methods;
- access for cabling vehicles/barges;
- access to onshore area and availability of space for transition joint bays;
- access to shoreline/intertidal area; and
- environmental constraints including natural heritage, the water environment, land use and planning.

2.2.1.2 Proposed Development Offshore Export Cables carrying electricity from the offshore turbines are expected to be 330mm diameter cables (maximum number of four), installed in trenches 1m deep along the seabed. Transition joint bays (the location where the Offshore Export Cable meets the Onshore Export Cable Circuits) will be required at the Landfall Site. These bays will be installed by a trenchless technique (e.g., HDD). There will be one transition joint for each cable, up to a maximum of four, installed inland from the shore at the Landfall Site. The construction of the infrastructure at the Landfall Site may be phased in response to grid connection availability.

2.3 Onshore Export Cable Circuits

2.3.1.1 Up to four Onshore Export Cable Circuits will be run from the Landfall Site to the Onshore Substations, each consisting of three core cables and a total diameter of 350mm. These will be interred underground using trenching techniques. However, in sensitive areas, other methods may be used to limit disturbances and/or to address site-specific constraints (e.g., crossing a watercourse).

2.3.1.2 The Proposed Development (Onshore) route runs for approximately 33km inland to an Onshore Substation Site in the proximity of New Deer. This will require installing the cable underneath major road routes, such as the A947, the A97, the A947, and the B9170, which will lead to local disruption during construction. The proposed Onshore Export Cable Corridor will also cut through many agricultural fields, used for a variety of purposes (arable, poultry, livestock etc.). The construction of the Onshore Export Cable Circuits may be phased in response to grid connection availability.

2.4 Onshore Substation Site

2.4.1.1 The Onshore Substation Site will be located in the proximity of the existing New Deer Substation and will house two co-located substations. The expected

footprint of is approximately 250m x 360m, up to 15m high with an additional construction area of 250m x 120m. The construction of the Onshore Substation infrastructure may be phased in response to grid connection availability.

2.4.1.2 The layout and composition of the Onshore Substation infrastructure is expected to include:

- access road and main entrance;
- substation internal road and car park;
- control building including office facilities and any required amenities;
- security fencing;
- incoming 220/275 kilovolt (kV) cable (incomings, poles, Current Transformers (CT)s, Voltage Transformer (VT)s);
- 220/275 kV Shunt Reactors;
- 220/275 kV Circuit Breakers and busbars (Air Insulated Switchgear (AIS)/Gas Insulated Switchgear (GIS));
- 220/275 kV Cable system;
- 220/275 kV Harmonic Filters;
- Supergrid Transformers (SGT)s;
- 33kV Circuit Breakers and busbars (AIS/GIS);
- 33kV Cable system;
- Mechanically Switched Reactors (MSR)s/Static Synchronous Compensators (STATCOM)s/Static VAR Compensators (SVC)s;
- SVC building;
- 400kV Circuit Breakers and busbars (AIS/GIS);
- 400kV Cable system;
- 400 kV Harmonic Filters;
- GIS building(s);
- low voltage system;
- control and protection system;
- water retention pond, and
- landscaping areas.

2.4.1.3 Up to four Onshore Grid Connection Cable Circuits will connect the Onshore Substations to the Grid Connection Point, each 350mm in diameter with three core cables, to allow interface with the National Grid energy circuits. These cables will be buried in the same manner as the other onshore cables- mainly with trenching, but will use other techniques (e.g., HDD) dependant on site conditions and local restrictions.

2.5 Construction

2.5.1.1 The Onshore construction strategy has yet to be finalised, however this HRA Screening considers the worst-case for ecology. This is considered to be an initial two-year construction period, with a potential five year gap before an additional two year construction period. Until the final Onshore Export Cable Corridor for the Proposed Development (Onshore) is finalised, precise information on the construction process will not be available. General construction activities are listed below, with the order being indicative only as some activities may be carried out in parallel:

- establishing construction compounds;
- enabling works, including potential road widening and alterations to bellmouths;
- HDD works;
- cable trenching and duct installation;
- cable trench backfilling;
- joint bay excavation and installation;
- cable pulling and jointing/terminating;
- reinstatement of joint bays;
- substation civil and building works;
- substation equipment installation and mechanical and electrical completion;
- testing and commissioning;
- substation landscaping works, and
- reinstatement of construction compounds.

2.5.1.2 Temporary construction compounds will be required at the Landfall Site, along the Onshore Export Cable Corridor, and at the Onshore Substation Site to allow construction to be carried out safely. The exact number and location of these compounds will be confirmed at a later date.

2.5.1.3 The Onshore Export Cable Corridor has been identified following desk study, with consideration of environmental and technical constraints. The Onshore Export Cable Corridor will be further refined prior to planning application submission.

2.6 Operation

2.6.1.1 Upon completion of works, the OnTI will be operated by a third party. There will be no permanent staff assigned, with maintenance visits expected to be the only onsite presence of staff necessary. Subterranean infrastructure will be interred with protections to be maintenance-free, requiring only routine non-intrusive monitoring. Faults occurring with subterranean infrastructure, excavations and, if necessary, replacements will be targeted by monitoring and testing.

- 2.6.1.2 The Onshore Substations will be visited every two weeks by service engineers for routine inspection. This is expected to include standard maintenance activities unless damage or faults are discovered.

2.7 Decommissioning

- 2.7.1.1 Decommissioning processes will begin when the operational lifespan of the Proposed Development (Onshore) is reached. Above ground equipment at the Onshore Substation Site will be cleared from the site. It is anticipated that subterranean cabling and the substation foundations will be left *in-situ*. The environmental effects of decommissioning in this manner are considered lower than by breaking up and removing infrastructure. A decommissioning plan will be drawn up near the end of the OnTI lifespan, to take into account changes in legislation between the beginning and end of the lifespan of the structures.

2.8 Key Assumptions

2.8.1.1 The key assumptions that have been made in this report regarding the Proposed Development (Onshore) are as follows:

- Construction for the Proposed Development (Onshore) is expected to begin in 2027, with offshore construction beginning in 2028, and the first power being generated in 2030. These dates are not final but estimates, as shifting of timescales may be necessary depending on real world events.
 - The exact decommissioning date has yet to be confirmed however, is expected to be decades after first delivery of electricity.
 - All works, including the laying of cabling and pipes associated with the Proposed Development (Onshore), will fall within the RLB of the Proposed Development (Onshore) (as shown in Appendix A).
 - There will be no piling required for construction unless no other options are available.
 - An Outline Construction Environmental Management Plan (CEMP) will support the Proposed Development (Onshore) planning application, which will then be added to and consolidated into a full CEMP at a later date.
 - The CEMP will be a live document, with measures monitored during the construction phase to ensure their suitability and effectiveness.
 - The CEMP will be put in place for the duration of the works. This will include ecology specific measures, such as, but not limited to:
 - Restrictions and targets for specific work activities to limit noise and vibration;
 - Buffers surrounding sensitive habitats where construction activities are occurring; and
 - Working methodologies such as covering open excavations or providing ramps to stop mammals becoming trapped and biosecurity measures to reduce the spread of invasive non-native species (INNS).
 - Where the assessment identifies that an aspect of the Proposed Development (Onshore) is likely to give rise to significant environmental effects, secondary mitigation measures, above and beyond any embedded mitigation or design changes, will be incorporated into the assessment process to avoid or reduce significant effects.
 - Onshore cable circuits will be buried using techniques which will minimise disturbance to sensitive areas (i.e., river crossings).
 - A Construction Traffic Management Plan (CTMP) will be drafted to cover site traffic movements for the duration of construction and decommissioning works.
 - A CEMP will cover air quality and dust controls for the duration of construction and decommissioning works.

- During its operational phase, it is considered unlikely that the Proposed Development (Onshore) will impact local air quality due to a low number of vehicle trips associated with maintenance and monitoring of structures. Dust is not expected to be created after culmination of construction works.
- Dust and air quality legislation and best practices may change by the time decommissioning works commence, therefore decommissioning strategies have not been created yet.
- Core construction working hours will be discussed and confirmed with stakeholders prior to the construction phase of the Proposed Development (Onshore). There is the potential for some disruption from site lighting during night working.

3 The Habitats Regulations Appraisal Process

3.1 Overview

3.1.1.1 Figure 1 provides an overview of the HRA process for projects with the potential to affect European designated sites.

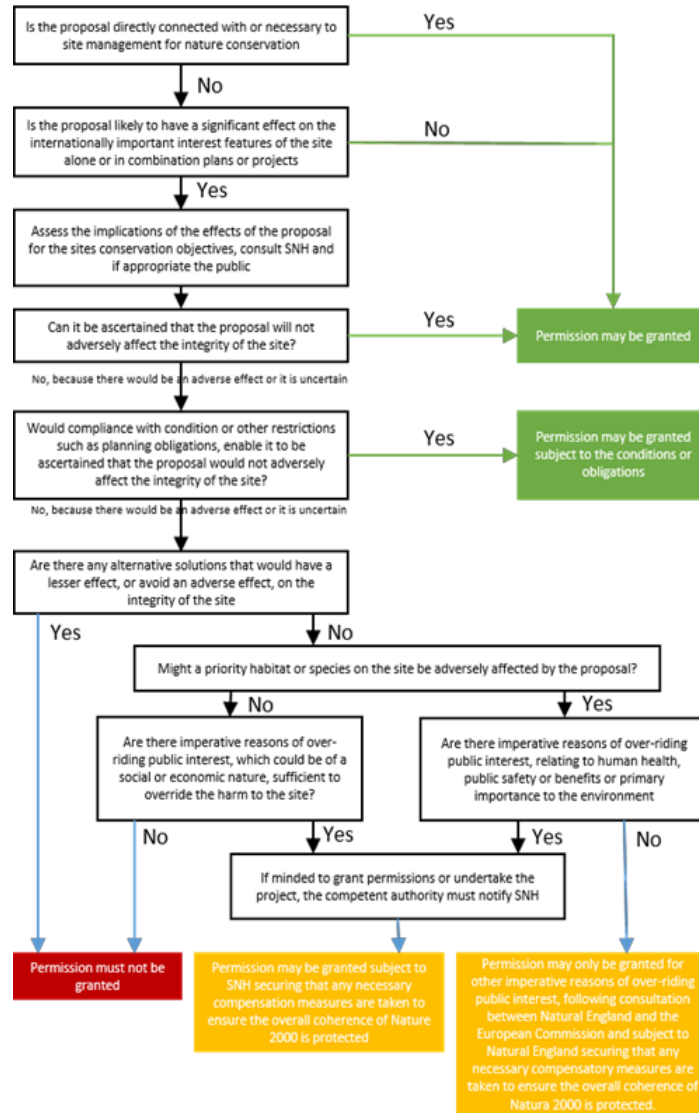


Figure 1: Flowchart of the Habitats Regulation Appraisal process³.

³ Tyldesley, D., and Chapman ,C., (2013) *The Habitats Regulations Assessment Handbook*, April 2021 edition UK:DTA Publications Limited.

- 3.1.1.2 Regulation 48 of the Habitats Regulations requires a competent authority to make an 'appropriate assessment' of the implications of a project for that site in view of its conservation objectives, before deciding to undertake or give consent for a project which (a) is likely to have a significant effect on a European site in Great Britain (either alone or in combination with other plans or projects), and (b) is not directly connected with or necessary to the management of that site. In light of the conclusions of the assessment, the competent authority may proceed with or consent to project only after having ascertained that it would not adversely affect the integrity of the designated site.
- 3.1.1.3 All projects should identify any such possible effects early in the project making process and then either alter the project to avoid them or introduce mitigation measures to the point where no adverse effects occur. The competent authority is to agree to the project only after having ascertained that it would not adversely affect the integrity of the site concerned and, if appropriate, having obtained the opinion of the general public.
- 3.1.1.4 The assessment of a project under the Habitats Regulations can be split into several sections as shown in Figure 1. Each stage determines whether the next stage in the process is required. There are effectively four stages to the assessment, comprising:
- **Stage 1 - Screening:** This is the assessment of the likelihood of a project having a significant effect on a European site or its features. This is the trigger for the need for an Appropriate Assessment as set out in Regulation 61(1). This is the stage considered in this report.
 - **Stage 2 - Appropriate Assessment:** This is the detailed consideration of the potential effects of the project in relation to the conservation objectives for the designated site to determine if there is likely to be an adverse effect on the integrity of the site (i.e. an effect that would compromise the site meeting its conservation objectives). Providing it can be demonstrated that with appropriate mitigation measures the project would not give rise to an adverse effect on the integrity of a designated site, the project can proceed.
 - **Stage 3 - Consideration of Alternatives:** Where it is demonstrated that the project could give rise to an adverse effect on the integrity of a designated site, or there is uncertainty, the assessment would need to consider if there were any other alternatives to the project that would not give rise to adverse effects on the integrity of the designated site.
 - **Stage 4 – Imperative Reasons of Overriding Public Interest:** If there are no alternatives, Stage 4 would then consider if there are any imperative reasons of overriding public interest, and whether there were any compensatory measures that might be required.

3.2 Definitions

3.2.1 European Designated Sites

- 3.2.1.1 European sites, or sites of national importance as defined under The Conservation (National Habitats, &c.) Regulations 1994 (as amended) comprise those designated as Special Areas of Conservation (SACs), candidate SACs (cSACs), Special Protection Areas (SPAs) and proposed SPAs (pSPAs). In addition, Ramsar sites, designated under the Ramsar Convention, are subject to the HRA process.
- 3.2.1.2 Following the exit of the United Kingdom from the European Union, these sites are referred to as Sites of National Importance⁴ but for the purposes of this report, shall be referred to as European designated sites.
- 3.2.1.3 SACs are selected for the conservation of Annex I⁵ habitats (including priority types which are in danger of disappearance) and Annex II⁶ species (other than birds).
- 3.2.1.4 SPAs are selected for the conservation of Annex I birds and all migratory birds and their habitats.
- 3.2.1.5 The Annex habitats and species, for which each site is selected, are termed the Qualifying Interests (QI) for SACs and termed Special Conservation Interests (SCI) for SPAs of each site.
- 3.2.1.6 Ramsar sites are wetlands of international importance.

3.2.2 Conservation Objective

- 3.2.2.1 Conservation Objectives (COs) for the European designated sites are defined for the relevant QIs and the qualifying features. In its most general sense, a CO is the specification of the overall target for the species and/or habitat types for which a site is designated in order for it to contribute to maintaining or reaching favourable conservation status.

⁴ Per The Conservation (Natural Habitats, &c) (EU Exit)(Scotland)(Amendment) Regulations 2019 Part 2, 5. 2A, 1(e), sites of Community importance designated by the Member States in relation to the United Kingdom have been redefined as 'Sites of National Importance designated under any of the retained transposing regulations'.

⁵ Annex I habitats are habitats whose conservation requires the designation of Special Areas of Conservation

⁶ Annex II species are animal and plant species whose conservation requires the designation of Special Areas of Conservation

3.2.3 Zone of Influence

3.2.3.1 A ZoI within any assessment of projects considers the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities. This is determined for this assessment using the Source-Pathway-Receptor (SPR) model.

3.2.4 Source-Pathway-Receptor Model

3.2.4.1 The SPR model is used to assess where a potential effect may result by examining the source, its pathway and the receptor. These can be defined as follows:

- **Source:** The origin of a potential effect which may include characteristics of a project that have the potential to result in effects e.g. direct impacts such as loss of habitat.
- **Pathway:** How the potential effect may reach the receptor. These are identifiable links between the project and European sites e.g. direct pathways such as physical proximity or hydrological connections; and indirect pathways such as disturbance to migrating species.
- **Receptor:** The European site network and respective QIs/qualifying features. The potential sources and pathways of a potential effect may be dependent on the ecological condition and specific sensitivities of a receptor e.g. freshwater pearl mussel is sensitive to siltation in water.

3.2.4.2 European designated sites are only at risk from significant effects where a SPR link exists between a Proposed Development and a European designated site(s). This can take the form of a direct impact (e.g., where the Proposed Development site and/or associated construction works are located within the boundary of the European designated site(s)), or an indirect impact where impacts occur outside the boundary of the European designated site(s) and result in affecting the ecological receptors within (e.g., impacts to water quality which can affect riparian habitats at a distance from the impact source). Consideration is therefore given to the SPR linkage and associated risks between the Proposed Development (Onshore) and European designated sites.

3.2.4.3 The identification of risk does not automatically mean that an effect will occur, nor that it will be significant. The identification of these risks means that there is a possibility of environmental or ecological damage occurring. The level and significance of the effect depends upon the nature of the consequence, likelihood of the risk and characteristics of the receptor.

3.2.4.4 If there is a theoretical pathway between the works and a European designated site, it is considered that the ZoI should encompass those sites for which there is a pathway with the Proposed Development (Onshore).

3.2.5 Precautionary Principle

- 3.2.5.1 The precautionary principle is applied for the purposes of screening to ensure that consideration and pre-emptive action is undertaken where there is a lack of scientific evidence.

4 Methodology

4.1 Relevant Guidance

4.1.1.1 This report has been prepared with regard to the following guidance documents which have assisted in determining whether impacts are likely to be significant:

- The Habitat Regulations Assessment Handbook³;
- Environmental Protection Agency (2022) Guidelines on the Information to be Contained in Environmental Impact Statements; and
- Chartered Institute of Ecology and Environmental Management (CIEEM) (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland, Terrestrial, Freshwater, Coastal and Marine (Version 1.1 - Updated September 2019).

4.2 Data Sources

4.2.1.1 The ecological data reviewed to inform this document comprises:

- British Trust for Ornithology (BTO)⁷ including Wetland Bird Survey data (WeBS)⁸;
- NatureScot SiteLink⁹;
- NBN Atlas¹⁰;
- North East Scotland Biological Records Centre (NESBReC)¹¹;and
- Caledonia Offshore Wind Farm Ltd. Onshore EIA Scoping Report, Chapter 7 Terrestrial Ecology and Biodiversity¹².

4.2.1.2 The ecological data was supplemented with wintering bird surveys undertaken by Arup between October 2022 and March 2023 and extended Phase 1 habitat assessments completed during spring and summer 2023.

⁷ British Trust for Ornithology Data Reports. Available at <https://www.bto.org/our-science/data/data-reports>. Accessed on 20th July 2023.

⁸ British Trust for Ornithology Wetland Bird Survey. Available at <https://bto.org/our-science/projects/wetland-bird-survey/data>. Accessed on 20th July 2023.

⁹NatureScot homepage. Available at [NatureScot](https://www.naturescot.gov.uk/). Accessed on 20th July 2023.

¹⁰National Biodiversity Network Atlas Homepage. Available at <https://nbnatlas.org/>. Accessed on 20th July 2023.

¹¹North East Scotland Biological Records Centre - Data requests. Available at [Commercial Users - NESBReC](https://www.nesbrec.org/). Accessed on 20th July 2023.

¹² Caledonia Offshore Wind Farm Ltd. Onshore EIA Scoping Report, Chapter 7 Terrestrial Ecology and Biodiversity. Available at <https://www.caledoniaoffshorewind.com/the-project/public-engagement/>

4.3 Methodology

4.3.1.1 In line with relevant guidance and case law, this Stage 1 HRA Screening assessment consists of the following steps, which are iterative in nature:

- **Impact Prediction:** Identify the aspects of the Proposed Development (Onshore) likely to affect the COs of European designated sites within the ZoI.
- **Assessment of Effects:** The aspects of the Proposed Development (Onshore) likely to have an effect are assessed as to whether they are likely to result in adverse effects on the integrity of European designated sites. This requires understanding of the relevant QIs/the qualifying features and associated COs.

4.3.2 Zone of Influence

4.3.2.1 To understand the potential implications for European designated sites, it is necessary to identify those sites that are located in proximity to the Proposed Development (Onshore), or that are connected via an impact pathway. The ZoI is established using the SPR framework and takes into consideration the scale of the Proposed Development (Onshore) and the timing, nature and duration of its construction, operation and decommissioning works.

4.3.2.2 Based on the proposed construction, operation and decommissioning methodology detailed in Section 2, all European designated sites that are considered in regard to the SPR framework have been screened in for consideration.

4.3.2.3 As detailed further in Section 5.3.2, air quality impacts were scoped out of consideration. Therefore the main source and pathway for potential impacts is considered to be construction related pollution on European designated sites in close proximity to the RLB, and European designated sites that may have a hydrological connection to the Proposed Development (Onshore). European designated sites that may have a connection to the River Deveron and/or River Ythan catchments have been considered in this assessment due to the potential for a hydrological connection.

4.3.2.4 Using NatureScot's Sitelink mapping programme⁹, three SACs, three SPAs and one Ramsar site were identified within the ZoI (Appendix A). These European designated sites are expanded upon in Section 6.

4.3.2.5 Once these European designated sites and the pathway for an effect had been identified, the pathway was investigated further through a desk study review of available ecological data, and ecological survey where relevant.

5 Ecological Baseline

5.1 Desk Study

5.1.1.1 Utilising the SPR approach, three SPAs, three SAC's and one Ramsar site were identified within the ZoI of the Proposed Development (Onshore). These European designated sites and their QIs are summarised in Table 1. Further details on these European designated sites and their QIs are provided in Appendix B.

Table 1 List of designated sites within the Ecological ZoI.

Site Name and NatureScot site code	Designation	Distance from Proposed Development (km)	Reason for Designation	Total Site Area (ha)
Reidside Moss (8351)	SAC	5.75	Active raised bogs (priority habitat); and Degraded raised bogs still capable of natural regeneration.	86.75
Moray Firth (10490)	SPA	5.97	<u>Special Conservation Interests (non-breeding):</u> Common scoter (<i>Melanitta nigra</i>) Eider (<i>Somateria mollissima</i>) Goldeneye (<i>Bucephala clangula</i>) Great northern diver (<i>Gavia immer</i>) Long-tailed duck (<i>Clangula hyemalis</i>) Red-breasted merganser (<i>Mergus serrator</i>) Red-throated diver (<i>Gavia stellata</i>) Scaup (<i>Aythya marila</i>) Shag (<i>Phalacrocorax aristotelis</i>) Slavonian grebe (<i>Podiceps auritus</i>) Velvet scoter (<i>Melanitta fusca</i>) <u>Special Conservation Interests (breeding):</u> Shag.	176,218.12
Turclossie Moss (8402)	SAC	12.60	Active raised bogs (priority habitat); and Degraded raised bogs still capable of natural regeneration.	61.98
Troup, Pennan, and Lion's Heads (8587)	SPA	13.88	<u>Special Conservation Interests (breeding):</u> Fulmar (<i>Fulmarus glacialis</i>)	3,365.2

			<p>Guillemot (<i>Uria aalge</i>)</p> <p>Herring gull (<i>Larus argentatus</i>)</p> <p>Kittiwake (<i>Rissa tridactyla</i>)</p> <p>Razorbill (<i>Alca torda</i>)</p> <p>Seabird assemblage</p>	
Ythan Estuary and Meikle Loch (8460)	Ramsar	20.65	<p>Qualifies under Ramsar criterion 5-regularly supports 20,000 or more waterbirds.</p> <p>Qualifies under Ramsar criterion 6-supports 1% or more of a population of a qualifying waterbird species:</p> <p>Sandwich tern (<i>Sterna sandvicensis</i>)</p> <p>Pink-footed goose (<i>Anser brachyrhynchus</i>)</p>	313.67
Ythan Estuary, Sands of Forvie and Meikle Loch (8592)	SPA	20.65	<p><u>Special Conservation Interests (non-breeding)</u></p> <p>Eider;</p> <p>Lapwing (<i>Vanellus vanellus</i>);</p> <p>Pink footed goose;</p> <p>Redshank (<i>Tringa totanus</i>);and</p> <p>Waterfowl assemblage;</p> <p><u>Special Conservation Interests (breeding):</u></p> <p>Common tern (<i>Sterna hirundo</i>);</p> <p>Little tern (<i>Sterna albifrons</i>); and</p> <p>Sandwich tern</p>	7,062.03
Sands of Forvie (8373)	SAC	24.60	<p>Decalcified fixed dunes with <i>Empetrum nigrum</i> (priority habitat);</p> <p>Embryonic shifting dunes;</p> <p>Humid dune slacks; and</p> <p>Shifting dunes along shoreline with <i>Ammophila arenaria</i> ("white dunes").</p>	735.48

5.2 Field Surveys

5.2.1 Phase 1 Habitat Surveys

5.2.1.1 Phase 1 habitat surveys have been completed along the Proposed Development (Onshore) Cable Corridor. The full results of these surveys will be detailed in the EIAR. A total of 37 Phase 1 habitat types were recorded within the survey area,

including broadleaved and coniferous woodlands, scrub, grasslands, small areas of standing water, coastal habitats, arable fields, buildings and areas of hardstanding.

- 5.2.1.2 The phase 1 survey area comprised of the 500m wide Onshore Export Cable Corridor and two potential landfall locations. Wherever land access allowed, phase 1 habitat data was collected for habitats adjacent too but out with the RLB. In some areas, data was collected upwards of 500m from the RLB.
- 5.2.1.3 The habitats within the Proposed Development (Onshore) RLB are dominated by arable and grassland habitats with arable making up over 60% and grassland over 25% of the habitats recorded.

5.2.2 Wintering Bird Surveys

- 5.2.2.1 Wintering bird surveys were conducted from November 2022 to March 2023. These surveys were focused on the potential landfall locations of the offshore export cables. The wintering bird surveys initially covered ten potential landfall locations with 20 vantage points. Throughout the season this was narrowed down to seven landfall locations with 16 vantage point locations. At the time of writing this report, one Landfall Site (Landfall 6) had been selected for the Proposed Development (Onshore).
- 5.2.2.2 The qualifying features of the SPA sites and the designating features of the Ramsar sites that have been considered in this screening assessment were considered during the wintering bird surveys. The results of the 2022/2023 wintering bird survey in relation to the relevant European designated sites (Table 1) are presented in Appendix C.
- 5.2.2.3 In summary, the total species counts at the Landfall Site were as follows: European shag (18), common eider (14), redshank (13) and long tailed duck (11), red-throated diver (6), red-breasted merganser (4), common scoter (3) and great northern diver (1).
- 5.2.2.4 No observations were made for the following species: Slavonian grebe, common goldeneye, velvet scoter, greater scaup, sandwich tern, common tern, little tern, pink-footed goose or lapwing.
- 5.2.2.5 All species identified, excluding redshank, are qualifying features of the Moray Firth SPA.

5.3 Consultation

- 5.3.1.1 The Ocean Winds Onshore Scoping Report was sent to statutory consultees for comment. Aberdeenshire Council and NatureScot were consulted on survey methodologies and the scope of environmental surveys where standing advice is not present, or where methods may deviate from standing advice, including on which species may be scoped out of the survey effort.

5.3.1.2 Additional consultation will also be sought with relevant stakeholders regarding specific species (e.g., RSPB and birds), species records and distribution.

5.3.2 Air Quality Impacts

5.3.2.1 Consultation was undertaken with Aberdeenshire Council and their Environmental Health Officer regarding the scope of the air quality assessment. It was outlined that the Institute of Air Quality Management (IAQM) guidance¹³ states that a dust risk assessment is required when there is a human receptor within 350m, or an ecological receptor within 50m of the boundary of construction activities.

5.3.2.2 Due to the scale and type of construction activities, as well as the distance from residential properties and designated ecological receptors, the potential for impacts was deemed to be negligible. It was therefore agreed that further assessment of air quality impacts on ecological and human receptors was not required and would not be included within the EIAR.

¹³ Holman et al (2014). IAQM Guidance on the assessment of dust from demolition and construction V1.1. Available at: <http://www.iaqm.co.uk/text/guidance/construction-dust-2014.pdf>

6 Checking for the Likelihood of a Significant Effect

6.1 Overview

- 6.1.1.1 This Screening assessment considers whether the Proposed Development (Onshore) is directly connected with, or necessary to, the management of the European designated sites listed in Table 1 for nature conservation. It also checks whether the Proposed Development (Onshore) will have an effect on those European designated sites, and if that effect could be significant. The list of COs for each of the European designated sites considered can be found in Appendix D.
- 6.1.1.2 Each European designated site is considered in turn in Sections 6.2 to 6.8.

6.2 Reidside Moss SAC

- 6.2.1.1 Reidside Moss SAC is located approximately 5.75km west of the Proposed Development (Onshore).
- 6.2.1.2 No hydrological link exists between the Proposed Development (Onshore) and the SAC, and the potential pathway for aerial emissions can be ruled out due to the distance between the sites. Construction related effects, such as light pollution, sound, aerial emissions and the accidental/unintentional release of pollutants is anticipated to be localised to the construction area and be attenuated over the distance between the SAC and the Proposed Development (Onshore).
- 6.2.1.3 Operational activities will be minimal and isolated to the Substation Site and localised areas along the route.
- 6.2.1.4 As a result, no pathways for effect have been established between the Proposed Development (Onshore) and the SAC.
- 6.2.1.5 Due to the distance between the Proposed Development (Onshore) and the SAC, and in consideration of the QIs of the SAC, it is not anticipated that any direct or indirect impacts upon the SAC shall occur as a result of the Proposed Development (Onshore), during construction or operation.
- 6.2.1.6 Therefore, in consideration of the construction and operation information, the COs of the SAC and the lack of pathways for effects, Reidside Moss SAC can be screened out of further assessment.**

6.3 Moray Firth SPA

6.3.1.1 The Moray Firth SPA is located approximately 5.97km west of the Proposed Development (Onshore).

6.3.1.2 No construction will take place within the SPA boundary.

6.3.1.3 A hydrological connection is present between the Proposed Development (Onshore) and the SPA via the North Sea. There exists the potential for the accidental/unintentional release of silt, debris, and other pollutants during construction into the North Sea which could be dispersed into the Firth of Moray via coastal currents.

6.3.1.4 There is also the potential for loss and/or disturbance to the functionally linked habitat¹⁴ located adjacent to the Proposed Development (Onshore) during construction. These habitats have the potential to be used by the qualifying features of the Moray Firth SPA for foraging, commuting and/or roosting.

6.3.1.5 Indirect effects which have the potential to occur during construction of the Proposed Development (Onshore) include:

- potential disturbance, damage, or destruction of foraging habitat used by the qualifying features supported by the SPA;
- potential disturbance, damage, or destruction of suitable roosting sites used by the qualifying features supported by the SPA;
- the disturbance, damage, or destruction of breeding sites of the qualifying features located within the SPA;
- potential disturbance, damage, or destruction of commuting or migratory features and habitats used by the qualifying features; and
- potential for death of the qualifying features by construction related pollutants (e.g., accidental chemical spill).

6.3.1.6 Therefore, due the potential for LSE to occur upon qualifying features of the SPA, the Moray Firth SPA is screened in for further assessment.

¹⁴ Functionally linked land' (FLL) is a term often used to describe areas of land or sea occurring outside a designated site which is considered to be critical to, or necessary for, the ecological or behavioural functions in a relevant season of a qualifying feature for which a Special Areas of Conservation (SAC)/ Special Protection Area (SPA)/ Ramsar site has been designated. These habitats are frequently used by SPA species and supports the functionality and integrity of the designated sites for these features.

6.4 Turclossie Moss SAC

- 6.4.1.1 Turclossie Moss SAC is located approximately 12.60km east of the Proposed Development (Onshore).
- 6.4.1.2 No hydrological link exists between the Proposed Development (Onshore) and the SAC, and the potential pathway for aerial emissions can be ruled out due to the distance between the sites. Construction related effects, such as light pollution, sound, aerial emissions and the accidental/unintentional release of pollutants is anticipated to be attenuated over the distance between the Proposed Development (Onshore) and the SAC.
- 6.4.1.3 Operational activities will be minimal and isolated to the Substation Site and localised areas along the route.
- 6.4.1.4 The SAC is located adjacent to a section of the A98 road, with 240m of the SAC lying adjacent to the road and the remainder of the SAC sitting south of the A98.
- 6.4.1.5 There is the potential that a limited number of construction vehicles could utilise the A98 road however, as outlined in Section 5.3.2, due to the scale and type of construction activities, the potential for air quality impacts was deemed to be negligible. It is therefore considered that there are no potential impacts upon the SAC from construction of the Proposed Development (Onshore).
- 6.4.1.6 As a result, no pathways for effect have been established between the Proposed Development (Onshore) and the SAC.
- 6.4.1.7 **Therefore, in consideration of the construction information, the lack of a viable pathways for effect and the distance between the Proposed Development (Onshore) and this SAC, Turclossie Moss SAC is screened out of further assessment.**

6.5 Troup, Pennan, and Lion’s Heads SPA

- 6.5.1.1 Troup, Pennan, and Lion’s Heads SPA is located 13.88km east of the Proposed Development (Onshore).
- 6.5.1.2 The potential for direct effects on the habitats and the qualifying features from the construction (i.e. from dust, pollutants, noise and/or light) is considered to be unlikely as it will be attenuated over the 14.8km distance.
- 6.5.1.3 The qualifying features of the SPA are seabird species, known to forage over the North Sea and roost within sea cliffs. Due to the scale and type of construction activities, and use of HDD at the coastline, any impacts from dust, pollutants noise and/or light are likely to be isolated to the land immediately adjacent to the Proposed Development (Onshore). Due to the distance of the Troup, Pennan, and Lion’s Heads SPA and lack of suitable habitat present for these species it is considered to be highly unlikely that the Proposed Development (Onshore) would effect qualifying features of Troup, Pennan and Lion’s Head SPA.

6.5.1.4 Therefore, in consideration of the construction and operation information, the lack of a viable pathways for effect and the distance between this European designated site and the Proposed Development (Onshore), Troup, Pennan and Lion’s Head SPA is screened out of further assessment.

6.6 Ythan Estuary and Meikle Loch Ramsar

6.6.1.1 The Ythan Estuary and Meikle Loch Ramsar site has been considered due to the presence of a hydrological connection to the Proposed Development (Onshore).

6.6.1.2 This Ramsar site is indirectly connected to the Proposed Development (Onshore) due to its position on the River Ythan which runs through the ZoI of the Proposed Development (Onshore). A network of small tributaries also supports this hydrological connection.

6.6.1.3 However, due to the distance between this Ramsar site and the Proposed Development (Onshore) (20.65km) it is anticipated that the accidental release of any silt and pollutants would be dispersed through the network of tributaries and attenuated before reaching this Ramsar site.

6.6.1.4 Meikle Loch is not connected to the River Ythan, nor is it connected to any river confluences around the Proposed Development (Onshore).

6.6.1.5 Therefore, in consideration of the construction and operation information, the lack of a viable pathways for effect and the distance between this European designated site and the Proposed Development (Onshore), Ythan Estuary and Meikle Loch Ramsar can be screened out of any further assessment.

6.7 Ythan Estuary, Sands of Forvie and Meikle Loch SPA

6.7.1.1 The Ythan Estuary, Sands of Forvie and Meikle Loch SPA is located approximately 20.65km to the southeast of the Proposed Development (Onshore) at its closest point, making direct effects from construction unlikely.

6.7.1.2 A weak hydrological connection exists between the Proposed Development (Onshore) and the SPA via the River Ythan. A network of small tributaries also supports this hydrological connection.

6.7.1.3 However, due to the distance between the SPA and the Proposed Development (Onshore) (20.65km) it is anticipated that the accidental release of any silt and pollutants would be dispersed through the network of tributaries and attenuated before reaching this SPA.

6.7.1.4 Therefore, in consideration of the construction and operation information, the lack of a viable pathway for effect and the distance between this European designated site and the Proposed Development (Onshore), the Ythan Estuary, Sands of Forvie and Meikle Loch SPA is screened out of further assessment.

6.8 Sands of Forvie SAC

6.8.1.1 The Sands of Forvie SAC is located approximately 24.60km from the Proposed Development (Onshore).

6.8.1.2 A weak hydrological connection exists between the Proposed Development (Onshore) and the SAC site via the River Ythan. A network of small tributaries also supports this hydrological connection

6.8.1.3 However, due to the distance between the SAC site and the Proposed Development (Onshore) (24.60km), it is anticipated that the accidental release of any silt and pollutants would be dispersed through the network of tributaries and attenuated before reaching this SAC.

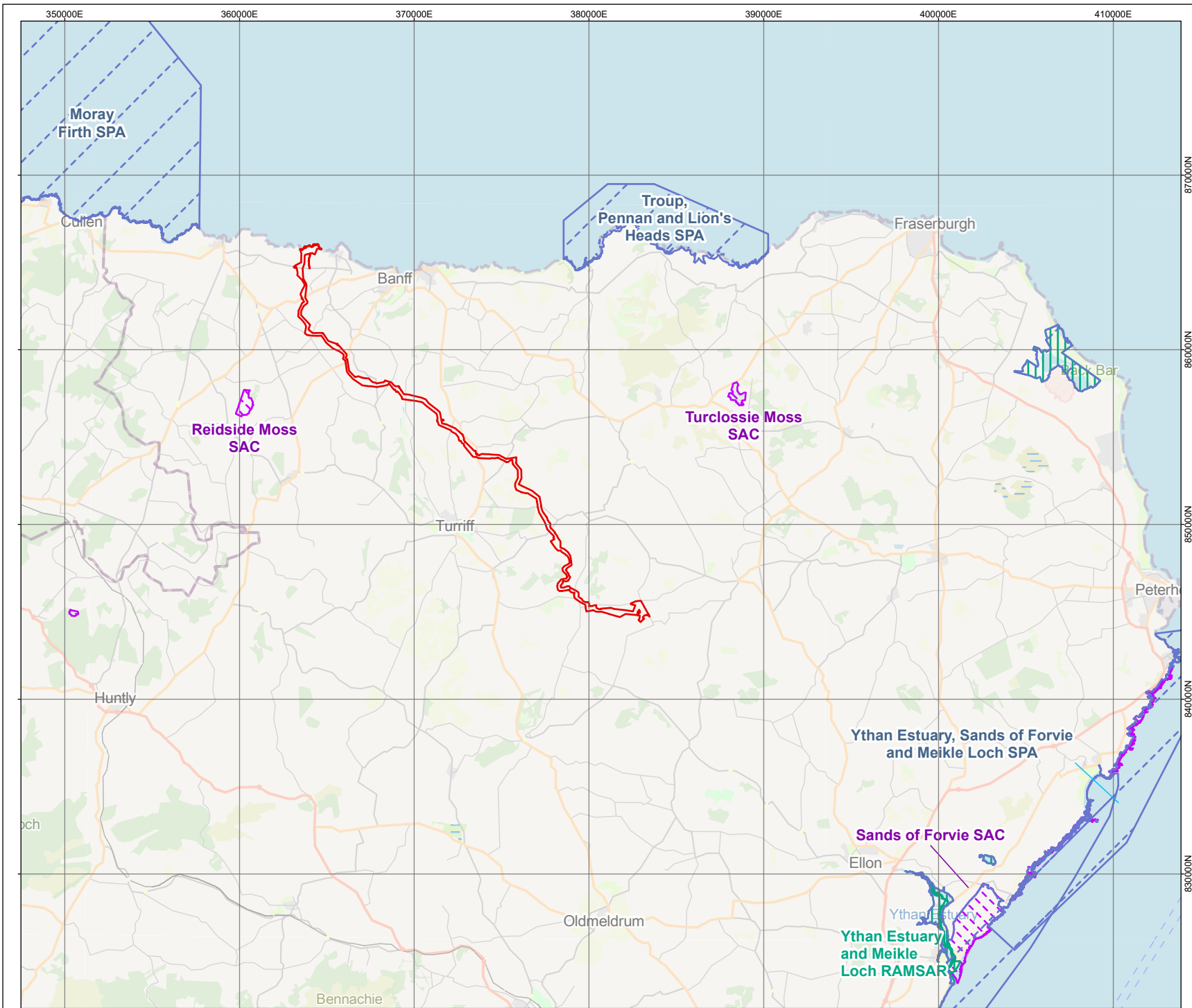
6.8.1.4 Therefore, in consideration of the construction and operation information, the lack of a viable pathway for effect and the distance between this European designated site and the Proposed Development (Onshore), the Sands of Forvie SAC is screened out of further assessment.

7 Conclusions

- 7.1.1.1 Desk studies, technical assessment and detailed environmental analyses of the Proposed Development (Onshore) are on-going to finalise the Onshore Export Cable Corridor. Nevertheless, sufficient information on the likely location and construction and operation of the Proposed Development (Onshore) is available at the time of writing to determine the potential for LSE on European designated sites.
- 7.1.1.2 Seven designated sites are present within the ZoI of the Proposed Development (Onshore): three SPAs, three SACs and one Ramsar site.
- 7.1.1.3 The SPAs (the Moray Firth; the Troupe, Pennan and Lion’s Head; the Ythan estuary, Sands of Forvie, and Meikle Loch) support numerous protected bird species, containing migratory, non-breeding, and breeding populations of national and European importance.
- 7.1.1.4 The SACs (The Sands of Forvie; Reidside Moss; and Turclossie Moss) support priority habitats of geological and environmental importance.
- 7.1.1.5 The Ramsar site (Ythan Estuary and Meikle Loch) also supports breeding and non-breeding bird populations, and is notable for its large assemblage of individual waterbirds present on site.
- 7.1.1.6 None of the European designated sites are located within the RLB of the Proposed Development (Onshore) which, combined with the distances between the RLB and the European designated sites, allows for the screening out of direct effects resulting from construction activities.
- 7.1.1.7 Functionally linked land for the qualifying features of the Moray Firth SPA exists adjacent to the Proposed Development (Onshore). There is the potential for unintentional disturbance/destruction to these supporting habitats for the Moray Firth SPA. In addition, the presence of the hydrological link between the Proposed Development (Onshore) and the SPA via the North Sea introduces the potential for indirect effects through the unintentional/accidental release of sediment and/or pollutants during construction. As a result of these potential indirect effects on the qualifying features from construction of the Proposed Development (Onshore), the Moray Firth SPA has been screened in for further assessment.
- 7.1.1.8 The Troupe, Pennan and Lion’s Head SPA, Ythan Estuary and Meikle Loch Ramsar, Ythan Estuary, Sands of Forvie and Meikle Loch SPA and Sands of Forvie SAC share hydrological connections with the Proposed Development (Onshore). Further investigation has demonstrated that this pathway would not result in the potential for LSE due to the distance between the Proposed Development (Onshore) and the attenuation factor of any accidental/unintentional release of sediment or pollutants into hydrologically linked watercourses. Therefore, these European designated sites have been screened out of further assessment.
- 7.1.1.9 These conclusions remain true in accordance with the key assumptions made in Section 2.8. Should these assumptions become invalid, this Stage 1 Screening may need to be amended in light of the new information.

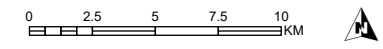
Appendix A

Proposed Development (Onshore) and European Designated Sites under Consideration



- Onshore Transmission Infrastructure Red Line Boundary
- SPA - Special Protection Area
- SAC - Special Area of Conservation
- RAMSAR Site

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REV	DATE	DOC STATUS	ORIGIN	REVIEW	APP
02	24/27/2024	For Review	CW	NM	GS
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GENERIC PARAMETERS OSGB36 / British National Grid (EPSG:27700)	
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Figure 1: European Designated Sites Under Consideration

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	REV N/A

Appendix B

European Designated Sites Under Consideration

There are seven European designated sites within the ZoI of the Proposed Development (Onshore): three SPAs, three SACs, and one Ramsar site. These are summarised in Table 1, with further detail within Sections 6.2 to 6.8.

Moray Firth SPA

The Moray Firth SPA covers 176,218.12ha of the Moray Firth area, incorporating most of the coastline from the River Beaully to Portsoy. It also covers parts of the Lower River Spey - Spey Bay SAC and Moray and Nairn Coast Ramsar sites.

The site qualifies under Article 4.1 by supporting non-breeding populations of the following Annex 1 species:

- great northern diver (*Gavia immer*, mean peak of 5.8% UK pop.);
- red-throated diver (*Gavia stellata*, mean peak of 1.9% UK pop.); and
- Slavonian grebe (*Podiceps auratus*, mean peak of 3.9% UK pop.).

The site also qualifies under Article 4.2 by supporting migratory populations of European importance of the following waterbirds:

- greater scaup (*Aythya marila*, mean annual peak of 17.9% UK pop.);
- common eider (*Somateria mollissima*, mean annual peak of 2.9% UK pop.);
- long-tailed duck (*Clangula hyemalis*, mean annual peak of 45.5% UK pop.);
- common scoter (*Melanitta nigra*, mean annual peak of 5.5% UK pop.);
- velvet scoter (*Melanitta fusca*, mean annual peak of 59.5% UK pop.);
- common goldeneye (*Bucephala clangula*, mean annual peak of 4.5% UK pop.);
- red-breasted merganser (*Mergus serrator*, mean annual peak of 1.8% UK pop.); and
- European shag (*Phalacrocorax aristotelis*, mean annual peak of 5.9% UK pop.).

As the SPA is within the ZoI surrounding the Proposed Development and is 5.97km from the Landfall Site, there is potential for impacts on Qualifying Features of the SPA. Therefore, the SPA has been included in this report for consideration.

Troup, Pennan and Lion's Heads SPA

The Troup, Pennan, and Lion's Heads SPA is an area of coastline and marine habitat covering an area of 3,367.21 hectares. It qualifies as an SPA under Article 4.2 by regularly supporting over 20,000 individual breeding seabirds. Furthermore, it qualifies under Article 4.2 by supporting internationally important populations of migratory species:

- black-legged kittiwake (*Rissa tridactyla*, 6% of UK pop., 1% of total subspecies *R.t.tridactyla* pop.), and
- common guillemot (*Uria aalge*, 4% total UK pop., 1% total pop. Of subspecies *U. a. aalge* and *U. a. albionis*).

The site also regularly supports other migratory species:

- Northern fulmar (*Fulmarus glacialis*- 4,400 pairs);

- herring gull (*Larus argentatus*- 4,200 pairs, 2% of UK breeding pop.); and
- razorbill (*Alca torda*- 4,800 individuals).

The SPA is being considered within this report.

Sands of Forvie SAC

The Sands of Forvie SAC is a 735.48ha site containing the following qualifying features:

- decalcified fixed dunes with *Empetrum nigrum* (priority habitat);
- embryonic shifting dunes;
- humid dune slacks; and
- shifting dunes along shoreline with *Ammophila arenaria* ("white dunes").

All of these features were graded as 'Favourable Maintained', with only the embryonic shifting dunes and the decalcified fixed dunes having recorded pressures (invasive species and recreation/human disturbance respectively). As this site is connected to the river Ythan, which is hydrologically connected to catchments within the ZoI of the Proposed Development, it has been added for consideration.

The area of this SAC is also partly shared by the Ythan estuary, Sands of Forvie and Meikle Loch SPA and the Ythan estuary and Meikle Loch Ramsar site, both of which include bird species of note within the area.

Ythan Estuary and Meikle Loch Ramsar

The Ythan estuary and Meikle Loch Ramsar covers 313.67ha of estuarine and freshwater habitat. It qualifies under Ramsar Criterion 2 for supporting the following species:

- common tern (*Sterna hirundo*, up to 2% UK pop.); and
- little tern (*Sternula albifrons*, up to 2% UK pop.).

It also qualifies under Ramsar Criterion 4 and supports the following waterbird species at critical life stages:

- eider (*Somateria mollissima*, 2% UK pop.);
- redshank (*Tringa totanus*, 1% UK pop.); and
- greater than 2000 individual lapwing (*Vanellus vanellus*, 0.2% UK pop.).

The site also qualifies under Ramsar Criterion 5 as it regularly supports 20,000 or more waterbirds.

Finally, it qualifies under Ramsar Criterion 6 for supporting 1% or more of a population of the following waterbird species:

- sandwich tern (*Sterna sandvicensis*, 2% Western biogeographic region pop.); and
- pink-footed goose (*Anser brachyrhynchus*, 9% of Greenland/Iceland/UK biogeographic population).

The designation of this Ramsar site is also underpinned by the Ythan Estuary, Sands of Forvie and Meikle Loch SPA, which covers additional bird features of the Ramsar site. It also shares part of its area with the Sands of Forvie SAC, which covers designated environmental features.

Given that a large portion of the Ramsar site encompasses the River Ythan, which runs through the ZoI considered for the Proposed Development, it has been included for consideration in this report.

Ythan Estuary, Sands of Forvie and Meikle Loch SPA

The Ythan estuary, Sands of Forvie and Meikle Loch SPA is a 7,062.03ha stretch of marine, estuarine, and coastal habitat. It qualifies under Article 4.1 by regularly supporting Annex 1 species:

- sandwich tern (up to 7% UK population);
- common tern (up to 2% UK pop.); and
- little tern (up to 2% UK pop.).

The SPA also qualifies under Article 4.2, for regularly supporting migratory species of European importance:

- pink-footed goose (*Anser brachyrhynchus*, mean of 9% of Greenland/Iceland/UK biogeographic pop.).

The SPA further qualifies under Article 4.2 by regularly supporting in excess of 20,000 mean individual waterfowl within its area.

The SPA shares part of its area with the Sands of Forvie SAC, and the Ythan estuary and Meikle Loch Ramsar site underpinning the qualifying features in the area with additional protections.

This European site is being considered in this report due to its connection to the ZoI via the River Ythan, which flows into the North Sea through the SPA.

Reidside Moss SAC

Reidside Moss SAC is an 86.75ha area of bogs and wetland located within the ZoI of the Proposed Development. The SAC contains the following qualifying features:

- active raised bogs (priority habitat); and
- degraded raised bogs still capable of natural regeneration.

Recent assessments of the site have graded both features as 'Unfavourable Recovering' due to pressures from invasive species. There are no management schemes in place for either of these features.

Due to the SAC being located within the ZoI of the Proposed Development, it has been considered within this report.

Turclossie Moss SAC

Turclossie Moss SAC covers 61.98ha, containing the following qualifying features:

- active raised bogs (priority habitat); and
- degraded raised bog.

Recent assessments have graded the active raised bog feature as 'Unfavourable No change' due to the pressures of invasive species and water management practices. A management plan is in place for this feature which should, in time, raise its condition to 'Favourable'.

The degraded raised bog feature has been graded as 'Unfavourable Declining' due to invasive species and water management practises. There is no management plan in place for this feature.

Turclossie Moss SAC falls within the ZoI for the Proposed Development, and therefore is included in this report.

Conservation Objectives

The conservation objectives for the designated sites listed above are:

1. To avoid the deterioration of the qualifying features of the areas and/or the disturbance of qualifying species within the designated sites, thus maintaining the integrity of the sites; and
2. To ensure for the qualifying species that the following are maintained in the long term:
 - population of the species as a viable component of the site;
 - distribution of the population within the site;
 - distribution and extent of the habitats supporting the species;
 - structure, function, and supporting processes of habitats supporting the species; and
 - no significant disturbance of the species.

Appendix C

Wintering Bird Survey Results

Species of Qualifying Interest (Non-Breeding Population)	European Designated Sites and their Qualifying Species							Species Recorded during WBS (Y/N)	Number of Species Recorded Per Date	Date	Total Number of Species Recorded
	Moray Firth SPA	Troup, Pennan, and Lion's Heads SPA	Ythan Estuary, Sands of Forvie and Meikle Loch SPA	Reidside Moss SAC	Turclossie Moss SAC	Sands of Forvie SAC	Ythan Estuary and Meikle Loch Ramsar				
Great northern diver (<i>Gavia immer</i>).	<input checked="" type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	N/A	N/A	N/A	<input type="checkbox"/>	Y	1	01.02.2023	1
Red-throated diver (<i>Gavia stellata</i>).	<input checked="" type="checkbox"/>	N/A	<input type="checkbox"/>	N/A	N/A	N/A	<input type="checkbox"/>	Y	2	23.11.2022	6
									2	01.02.2023	
									1	22.02.2023	
									1	22.03.2023	
Slavonian grebe (<i>Podiceps auratus</i>).	<input checked="" type="checkbox"/>	N/A	<input type="checkbox"/>	N/A	N/A	N/A	<input type="checkbox"/>	N	0	N/A	0
Common eider (<i>Somateria mollissima</i>).	<input type="checkbox"/>	N/A	<input checked="" type="checkbox"/>	N/A	N/A	N/A	<input checked="" type="checkbox"/>	Y	3	23.11.2022	14
									1	13.12.2022	
									2	01.02.2023	
									7	22.02.2023	
									1	22/03/2023	
Common goldeneye	<input checked="" type="checkbox"/>	N/A	<input type="checkbox"/>	N/A	N/A	N/A	<input type="checkbox"/>	N	0	N/A	0

Species of Qualifying Interest (Non-Breeding Population)	European Designated Sites and their Qualifying Species							Species Recorded during WBS (Y/N)	Number of Species Recorded Per Date	Date	Total Number of Species Recorded
	Moray Firth SPA	Troup, Pennan, and Lion's Heads SPA	Ythan Estuary, Sands of Forvie and Meikle Loch SPA	Reidside Moss SAC	Turclossie Moss SAC	Sands of Forvie SAC	Ythan Estuary and Meikle Loch Ramsar				
<i>(Bucephala clangula)</i> .											
Common scoter (<i>Melanitta nigra</i>).	☒	N/A	☐	N/A	N/A	N/A	☐	Y	3	23.11.2022	3
Velvet scoter (<i>Melanitta fusca</i>).	☒	N/A	☐	N/A	N/A	N/A	☐	N	0	N/A	0
European shag (<i>Phalacrocorax aristotelis</i>)	☒	N/A	☐	N/A	N/A	N/A	☐	Y	2	23.11.2022	18
									1	13.12.202	
									4	01.02.2023	
									6	22.02.2023	
									5	22.03.2023	
Greater scaup (<i>Aythya marila</i>)	☒	N/A	☐	N/A	N/A	N/A	☐	N	0	N/A	0
Long-tailed duck (<i>Clangula hyemalis</i>)	☒	N/A	☐	N/A	N/A	N/A	☐	Y	4	23.11.2022	11
									1	01.02.2023	

Species of Qualifying Interest (Non-Breeding Population)	European Designated Sites and their Qualifying Species							Species Recorded during WBS (Y/N)	Number of Species Recorded Per Date	Date	Total Number of Species Recorded
	Moray Firth SPA	Troup, Pennan, and Lion's Heads SPA	Ythan Estuary, Sands of Forvie and Meikle Loch SPA	Reidside Moss SAC	Turclossie Moss SAC	Sands of Forvie SAC	Ythan Estuary and Meikle Loch Ramsar				
									6	22.02.2023	
Red-breasted merganser (<i>Mergus serrator</i>)	☒	N/A	☐	N/A	N/A	N/A	☐	Y	2	13.12.2022	4
									2	01.02.2023	
Sandwich tern (<i>Sterna sandvicensis</i>)	☐	N/A	☒	N/A	N/A	N/A	☒	N	0	N/A	0
Common tern (<i>Sterna hirundo</i>)	☐	N/A	☒	N/A	N/A	N/A	☒	N	0	N/A	0
Little tern (<i>Sterna albifrons</i>)	☐	N/A	☒	N/A	N/A	N/A	☒	N	0	N/A	0
Pink-footed goose (<i>Anser brachyrhynchus</i>)	☐	N/A	☒	N/A	N/A	N/A	☒	N	0	N/A	0
Lapwing (<i>Vanellus vanellus</i>)	☐	N/A	☒	N/A	N/A	N/A	☒	N	0	N/A	0
Redshank (<i>Tringa tetanus</i>)	☐	N/A	☒	N/A	N/A	N/A	☒	Y	13	01.02.2023	13

Appendix D

Conservation Objectives

Table 2: Conservation Objectives of European Designated Sites

Site Code	Site Name	Conservation Objectives
(8351)	Reidside Moss SAC	<p>1. To ensure that the qualifying features of Reidside Moss SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status.</p> <p>2. To ensure that the integrity of Reidside Moss SAC is restored by meeting objectives 2a, 2b and 2c.</p> <p>2a. Restore the extent and distribution of the habitat within the site.</p> <p>2b. Restore the structure, function and supporting processes of the habitat.</p> <p>2c. Restore the distribution and viability of typical species of the habitat.</p>
(10490)	Moray Firth SPA	<p>1. Ensure that the qualifying features of the Moray Firth SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status;</p> <p>2. To ensure that the integrity of the Moray Firth SPA is restored in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature;</p> <p>2a. The populations of qualifying features are viable components of the site;</p> <p>2b. The distribution of the qualifying features is maintained throughout the site by avoiding significant disturbance of the species; and</p> <p>2c. The supporting habitats and processes relevant to qualifying features and their prey resources are maintained, or where appropriate restored, at the Moray Firth SPA.</p>
(8402)	Turclossie Moss SAC	<p>1. To ensure that the qualifying features of Turclossie Moss SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status.</p> <p>2. To ensure that the integrity of Turclossie Moss SAC is restored by meeting objectives 2a, 2b and 2c.</p> <p>2a. Maintain the extent and distribution of the habitat within the site.</p> <p>2b. Restore the structure, function and supporting processes of the habitat.</p> <p>2c. Restore the distribution and viability of typical species of the habitat.</p>

Site Code	Site Name	Conservation Objectives
(8587)	Troup, Pennan, and Lion's Heads SPA	Not available
(8460)	Ythan Estuary and Meikle Loch Ramsar	N/A
(8592)	Ythan Estuary, Sands of Forvie and Meikle Loch SPA	<p>1. To ensure that the qualifying features of Ythan Estuary, Sands of Forvie and Meikle Loch SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status.</p> <p>2. To ensure that the integrity of Ythan Estuary, Sands of Forvie and Meikle Loch SPA is restored in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature:</p> <p>2a. The populations of the qualifying features are viable components of the site.</p> <p>2b. The distributions of the qualifying features throughout the site are maintained by avoiding significant disturbance of the species.</p> <p>2c. The supporting habitats and processes relevant to the qualifying features and their prey/food resources are maintained, or where appropriate, restored.</p>
(8373)	Sands of Forvie SAC	<p>1. To ensure that the qualifying features of Sands of Forvie SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status.</p> <p>2. To ensure that the integrity of Sands of Forvie SAC is maintained by meeting objectives 2a, 2b and 2c for each qualifying feature.</p> <p>For shifting dunes</p> <p>2a. Maintain the extent and distribution of shifting dunes within the site.</p> <p>2b. Maintain the structure, function and supporting processes of the shifting dunes.</p> <p>2c. Maintain the distribution and viability of typical species of the shifting dunes habitat.</p> <p>For shifting dunes with marram</p> <p>2a. Maintain the extent and distribution of shifting dunes with marram within the site.</p> <p>2b. Maintain the structure, function and supporting processes of shifting dunes with marram.</p> <p>2c. Maintain the distribution and viability of typical species of shifting dunes with marram.</p> <p>For lime-deficient dune heathland with crowberry</p>

Site Code	Site Name	Conservation Objectives
		<p>2a. Maintain the extent and distribution of the lime-deficient dune heathland with crowberry habitat within the site.</p> <p>2b. Maintain the structure, function and supporting processes of the lime-deficient dune heathland with crowberry habitat.</p> <p>2c. Maintain the distribution and viability of typical species of the lime-deficient dune heathland with crowberry habitat.</p> <p>For humid dune slacks</p> <p>2a. Maintain the extent and distribution of the humid dune slacks habitat within the site.</p> <p>2b. Maintain the structure, function and supporting processes of the humid dune slacks habitat.</p> <p>2c. Maintain the distribution and viability of typical species of the humid dune slacks habitat</p>

Appendix E

Statement of Authority

F■■■■ M■■■■ (BSc, MSc, MCIEEM, CEnv) has reviewed and approved this report as a competent expert. F■■■■ is an Associate Director at Arup, leading the Ecology team for Arup's North and North West Yorkshire Region with over 23 years' experience carrying out Ecological Impact Assessments (EcIA) and over 15 years of undertaking HRAs. He is an experienced leader of technical projects, including Nationally Significant Infrastructure Projects (NSIPs), and has provided expertise internationally. F■■■■ is a member of the Scottish Chartered Institute of Ecology and Environmental Management (CIEEM) Committee and is a Chartered Environmentalist.

N■■■■ M■■■■ (MSc, MSc, MCIEEM) has authored this report. N■■■■ is a Senior Ecologist at Arup and has over 8 years of professional experience working on large multidisciplinary marine and terrestrial projects in Scotland, North East of England, and Northern Ireland. N■■■■'s expert ecological grounding has formed the solid foundations for her to deliver complex ecological assessments, including EcIAs, HRAs and Biodiversity Net Gain Assessments.

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