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Aultmore Wind Farm Redesign

Technical Appendix 8.7: Shadow Habitats Regulations Appraisal: Screening

Vattenfall Wind Power Ltd

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Making Sustainability Happen

Revision Record

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Executive Summary

SLR Consulting Ltd. (SLR) was commissioned by Vattenfall Wind Power Ltd ('Vattenfall') to prepare a Habitat Regulations Appraisal (HRA) Screening assessment for the proposed redesign of the consented Aultmore Wind Farm at Aultmore Forest, Moray (the Site).

Projects which have the potential to affect a European/International site must be assessed in accordance with the 'Habitats Regulations'. In Scotland, this assessment is referred to as a Habitats Regulations Appraisal (HRA).

Special Protection Area (SPAs) and Special Area of Conservation (SACs) are known as 'European' sites. Ramsar sites are wetlands of 'International' importance. Due to the protection that these international and European sites receive, it is necessary to undertake a Shadow Habitats Regulations Appraisal for any project that may have a functional connectivity to these sites and their designated features.

The formal HRA must be undertaken by the competent authority, which in this case is Moray Council. This report presents the required information for Shadow HRA Screening of the formal HRA and offers provisional conclusions for consideration by the competent authority and the client to determine the need for further assessment. Appropriate Assessment (AA) is a more detailed assessment. For this project, the AA is taken forward within the Environmental Impact Assessment Report (EIAR).

There are six European sites, two of which are also international Ramsar sites, which are included within the screening assessment:

- River Spey SAC;
- Lower River Spey Spey Bay SAC;
- Moray Firth SPA;
- Moray and Nairn Coast SPA/Ramsar;
- The Tips of Corsemaul and Tom Mor SPA; and
- Loch Spynie SPA/Ramsar.

It was concluded that there was potential for likely significant effect on four of the sites with no pathway of effect for two sites. These have been addressed in the Ornithology Chapter of the EIAR¹ and Ecology and Biodiversity Chapter of the EIAR².

The information and assessment are provided to assist the Scottish Ministers in their own assessment of the 'likely significant effects' of the project and its own 'Appropriate Assessment'.

¹ Environment Impact Assessment Report: Ornithology Chapter 9. SLR (2023).

² Environment Impact Assessment Report: Ecology and Biodiversity Chapter 8. SLR (2023).

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Appendix A – Additional Sources of Designated Site Information

1.0 Introduction

1.1 Background and Purpose of this Report

SLR Consulting Ltd. (SLR) was commissioned by Vattenfall Wind Power Ltd ('Vattenfall') to prepare a Habitat Regulations Appraisal (HRA) Screening assessment for the proposed redesign of the consented Aultmore Wind Farm at Aultmore Forest, Moray (the Site). The location of the Site is shown in **Figure 1.** The proposed Aultmore Wind Farm Redesign (the proposed development) would be sited within Aultmore Forest, which sits across two hill tops, between Keith and Buckie.

This report includes information for the Competent Authority (in this case Scottish Ministers) to allow it to determine whether the proposed works are likely to have a significant effect on 'European'/Internationally important sites with regard to their conservation objectives and whether there will be an adverse effect on the integrity of any European/International site, with and without mitigation.

1.2 Description of the Project

Aultmore Wind Farm was originally granted planning permission in 2014, however, due to advances in turbine technology a redesign of the scheme has been proposed by the Client. The consented Aultmore Wind Farm consists of 13 wind turbines, one with a maximum blade tip height of 90m and the other twelve with a maximum blade tip height of 110m.

It is anticipated that the proposed development will consist of up to 16 wind turbines of up to 200m in height to blade tip and a maximum installed capacity for each turbine of 6.6MW. Whilst the main group of turbines will continue to be around Old Fir Hill, it is proposed that some of the turbines will now be located further west to create a second group of turbines around Millstone Hill.

1.2.1.1 Timeline

The construction programme is yet to be defined but is anticipated to last between 18 - 21 months. Details of the construction duration, necessary forestry works, access track/borrow pits construction and erection of wind turbines are unknown and will be dependent on consent (if successful) and appointment of a construction main works contractor among other requirements.

1.2.1.2 Pre-construction Forestry Clearance

Prior to construction works commencing, areas of existing conifer plantation would be felled to accommodate the works. Where possible, this will be undertaken in line with the existing FLS felling plan, and a with wind farm wind farm felling plan has been produced in consultation with FLS as part of the Environmental Impact Assessment (EIA) and can be found in Technical Appendix 2.2: Forestry as Figure 2.2.7.

1.2.1.3 Construction Elements

Based on preliminary feasibility work it is anticipated that the proposed development would consist of the following components:

- Up to 16 turbines with an installed capacity in excess of 50MW;
- power cables laid in trenches underground;
- meteorological mast;
- substation and control building;

- battery energy storage facility;
- new onsite access tracks with associated watercourse crossings and widening/improvement works to existing onsite access tracks;
- crane hard-standings adjacent to each turbine; and
- temporary construction compound and associated infrastructure.

1.2.1.4 Operation and Maintenance Stage

Once operational the turbines on Site will be automated. Scheduled maintenance of the wind turbines as well as monitoring on Site will be conducted sporadically during the operational phase.

1.2.1.5 Decommissioning Stage

The proposed development would be designed with an operational life of 35 years. At the end of its operational life the proposed development would then be decommissioned in accordance with a Decommissioning and Restoration Plan (DRP) which would be submitted to Moray Council (MC) for approval not later than 12 months prior to the start of decommissioning. Alternatively, a new application could be made to extend its operational life.

1.3 The Need for the Project

The proposed redesign of Aultmore Wind Farm will capitalise on more modern turbine technologies which will maximise the renewable energy capacity of the Site. In light of the climate emergence the Scottish Government have set ambitious climate change and renewable energy targets in particular by setting statutory targets through the Climate Change (Emissions Reductions Targets) (Scotland) 2019 which now commit Scotland to cut greenhouse gas emissions by 75% by 2030 before reaching net zero in 2045. With the onshore wind sector likely to play the greatest role in achieving this substantial increase in renewable energy generation in the next decade, the consultative draft of the Scottish Government's Onshore Wind Policy Statement Refresh 2021 has quantified this as requiring between 8 to 12GW of additional onshore wind generation by 2030.

1.4 General Description of the Site

The area of the Site extends to approximately 2,400 hectares (ha). The Site consists predominantly of commercial forestry and comprises one large parcel of land, with turbines proposed to be located in the eastern and western sections. The central part of the Site is separated by a small strip of non-forested land. The three highest hills found across the Site are Millstone Hill (301m above ordnance datum (AOD)) in the west, Addie Hill (272m AOD) in the centre of the Site and Old Fir Hill (262m AOD) to the east.

1.5 The Requirement for a Habitat Regulations Appraisal

There are three European sites designated for their avian features located north-west of the Site, two of which are also designated as 'Internationally' important Ramsar sites. These sites are as follows; Moray Firth Special Protection Area (SPA) 5.3km from the Site, Moray and Nairn Coast SPA & Ramsar 6.2km from the Site, and Loch Spynie SPA & Ramsar 18km from the Site. The Tips of Corsemaul and Tom Mor SPA, also designated for its avian features, is located 13km south of the Site. There are also two other European sites, River Spey Special Area of Conservation (SAC) 5.3km from site and Lower River Spey – Spey Bay SAC 6.2km from Site, designated for otters and migratory fish, and habitats, respectively.

SACs, SPAs and Ramsar sites are protected by the Conservation (Natural Habitats, &c.) Regulations 1994, as amended. These are referred to as 'the Habitats Regulations'.

Projects which have the potential to affect a European/International site must be assessed in accordance with the Habitats Regulations. In Scotland, this assessment is referred to as a Habitats Regulations Appraisal (HRA). The formal HRA must be undertaken by the competent authority, which in this case is Moray Council.

This report presents the required information for Shadow Screening of the formal HRA and offers provisional conclusions for consideration by the competent authority and the client to determine the need for further assessment (if required).

1.6 Relevant Legislation and Policy

The relevant legislation is the Conservation (Natural Habitats, &c.) Regulations 1994, as amended. Regulation 48 sets out the steps for assessing plans and projects which may affect European/International sites (in the National Network). Although this legislation derives from the EC Habitats Directive, the Regulations still apply in Scotland following the UK's exit from the EU. The Regulations have been subject to further minor technical amendments to deal with the UK's exit from the EU however the process for assessment remains largely unaltered.

Case law made prior to the UK exit from the EU also still applies and is relevant here. This includes the People over Wind Judgment which made clear that mitigation measures cannot be considered at screening step (see below for an explanation of the steps) and therefore any project requiring mitigation to avoid significant effects, or to make certain that there are no such effects, needs to be assessed under Shadow Appropriate Assessment. The need for Habitats Regulations Appraisal is re-iterated in national and local planning policies in Scotland, e.g., Policy EP 1 of the Moray Local Development Plan.

1.7 Consultation

A scoping report (SLR, 2022) was submitted to the Energy Consents Unit in November 2021. Scoping responses were received relating to non-avian ecology and nature conservation.

Additional consultation was taken with Moray Council and Forestry and Land Scotland.

Various effects were scoped out as a result of the consultation.

Further details of the nature of the response and key points can be found in Section 8.2 of EIA Report **Chapter 8: Ecology and Biodiversity** and Section 9.3 of EIA Report **Chapter 9: Ornithology**.

Consultee	Issue Raised	Response/Action Taken
NatureScot	Protected areas: NatureScot (NS) focus on avoidance of adverse effects to protected areas. Agree with list of sites provided in scoping report for assessment. Request that a Habitat Regulations Appraisal be provided to address Moray Firth Special Protection Area (SPA), Moray and Nairn Coast SPA, Tips of Corsemaul and Tom Mor SPA and Loch Spynie SPA. The proposed survey/assessment methodology deemed sufficient to inform EcIA and HRA. Note there was no request to assess sites of relevance to non-avian ecology.	Technical Appendix 8.7 : Shadow Habitats Regulations Appraisal addresses all listed protected areas with the consultation response and extends to include for Moray and Nairn Coast Ramsar and Loch Spynie Ramsar. The conclusions screen out need for further assessment at Step 3 (Assessment of Likely Significant Effects). Follow up consultation with the Senior Planning Officer (Development Management) of Moray Council, confirmed on 3rd August 2023 that Moray Council 'accept the conclusions as set out in Section 5 of the Stage 1 report'.

Table 1-1: Scoping Key Issues

Consultee	Issue Raised	Response/Action Taken
ECU	Request review of Marine Scotland's generic scoping guidelines for both onshore wind farm and overhead line development which outline how fish populations can be impacted during construction, operation and decommissioning of a wind farm development ³ . Request to identify the main watercourses and water bodies within and downstream of the proposed development area plus, at an early stage, identify and consider Special Areas of Conservation (SACs) where fish are a qualifying feature (reference to felling operations in acid sensitive areas).	A fish habitat assessment of the Site and further fish habitat assessment/ electro- fishing surveys were conducted outside of the Site (where survey conditions were suited). The results are detailed in Section 3 and in full in Technical Appendix 8.5. A fish monitoring plan has been provided for the construction and operational phases (with the need to plan and design monitoring at decommissioning stage). Fish habitat surveys covered the main watercourse and tributaries within and close to the Site, a desk-based search for protected areas with fisheries interests within 2km of the Site was undertaken. Results provided within Section 3 of Technical Appendix 8.5. Water quality is detailed in Chapter 10 Geology, Hydrology, Hydrogeology. The guidance has influenced the assessment of proposed development design and footprint with no discernible effect predicted to fish populations of the SACs (Technical Appendix 8.5 .)

1.8 Evidence of Technical Competence and Experience

The original report was prepared by Cróna McMonagle and reviewed / updated by Mike Austin. Cróna is a Senior Ecologist with SLR and Associate Member of the Chartered Institute of Ecology and Environmental Management (ACIEEM). She has worked in ecology and conservation for eight years and has undertaken surveying and reporting on numerous large scale wind farm and overhead cable route projects, focusing on ornithology.

Mike Austin is an Associate Consultant (in Ecology) with SLR Consulting. Mike is a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM) with over 30 years' professional experience within ecology and ornithology, both in conservation and consultancy. He has extensive experience in ornithology, data management, technical analysis reporting and assessment. He has been involved in a wide range of major projects requiring Environmental Impact Assessment and Habitats Regulations for infrastructure developments throughout the UK, in particular within the

³ <u>https://www.gov.scot/publications/onshore-renewables-interactions/</u>

renewables industry. Prior to joining the consultancy industry Mike worked within conservation on species recovery projects and habitat management, for RSPB and local wildlife trusts.

This updated report was prepared by Euan MacRae and Peter Wigglesworth and reviewed by Nicola Tyrrell. Euan is an Assistant Ecologist with SLR and Qualifying Member of the Chartered Institute of Ecology and Environmental Management (QCIEEM). He has worked in ecological consultancy for one year during which time he has undertaken surveying and reporting on several large-scale wind farm projects. Peter Wigglesworth is a graduate Ecologist and Natural Capital consultant with SLR. He has worked in ecological consultancy for over a year and also has experience with the conservation and public sector. During his time at SLR he has undertaken surveying, reporting, and research tasks for a variety of projects including several renewable energy projects such as windfarms.

Nicola Tyrrell is a Technical Director for SLR's Ecology and Biodiversity team and a full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). Nicola has 17 years ecological consultancy experience and has conducted complex HRA assessments for small- and large-scale projects for over 12 years.

2.0 Methodology

2.1 General Approach

The methodology used in this report is based on Regulation 48 of the Conservation (Natural Habitats, &c.) Regulations 1994, as amended, NatureScot guidance⁴ and European Commission Guidance^{5,6} on the application of the Habitats Directive. The 2021 EC guidance describes a series of steps which should be completed when carrying out the assessment and these are followed here with minor modifications. The assessment applies only to European sites (Special Protection Areas and Special Areas of Conservation) by law which is in accordance with the Moray local development plan policy EP 1. EP 12 of the local plan supports the protection of wetland habitats such as Ramsar sites. As both the Moray and Nairn Coast Ramsar and Loch Spynie Ramsar sites have the same species in their designation as the Moray and Nairn Coast SPA and the Loch Spynie SPA respectively, both Ramsar sites are not evaluated explicitly on their own except for habitats, and the conclusions with respect to the SPAs also apply to the Ramsar sites.

2.2 HRA Process

2.2.1.1 Screening

A screening assessment is required to determine whether a plan or project requires more detailed assessment. There are two principal tests:

- The first test considers whether the plan or project is needed for the management of a European site for the purpose of maintaining or restoring its conservation interest. Any such plans or projects can usually be screened out of further assessment.
- The second test considers whether the plan or project, without specific mitigation measures, would be likely to have a significant effect on any European Site. This



⁴https://www.nature.scot/professional-advice/planning-and-development/environmental-assessment/habitats-regulationsappraisal-hra(accessed February 2023)

⁵ EC (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

⁶EC (2018) Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC

requires consideration of the project on its own and in combination with other plans or projects.

A project can only be screened out of further assessment if it is certain (beyond reasonable scientific doubt) that there would be no significant effects on any European site without mitigation designed specifically to address potential impacts on the qualifying interest of such sites. The process is also used to determine which European Sites should be included in the later steps of the assessment.

Screening will be addressed in this report.

2.2.1.2 Appropriate Assessment (AA)

AA is a more detailed assessment. This essentially repeats the second test of the screening assessment but in more detail and considering mitigation measures before reaching a conclusion. At this juncture, the test is whether the project or plan will have an adverse effect on the integrity of any International / European site. This must be done in the light of the conservation objectives for the qualifying interest features. Any effect which is found to undermine the conservation objectives is considered an adverse effect on the integrity of the site, and vice versa.

AA will not be directly addressed in this report and any potential likely significant effects to the designated sites are addressed in the Ecology and Ornithology Chapters of the EIAR^{7,8}.

2.3 Initial Search Area & Source-Pathway-Receptor Model

All European and International sites within 10km of the Site were searched for, while European and International sites designated for their avian features have been detailed within 20km of the Site.

Regarding the project alone and in combination, the search area for wind farms in relation to European sites discussed in this HRA related to the specific features of the designated sites and pathways of effect; for example yet not limited to, the foraging distance of the relevant qualifying bird species. SLR also searched for wind farms within range of discernible effects hydrologically of the Moray Firth SPA for potential in-combination effects on the habitat underpinning the features as this site is.

- The Tips of Corsemaul and Tom Mor SPA Wind farms within 25km.
- Moray and Nairn Coast & Loch Spynie SPAs/Ramsar sites Wind farms within 20km.
- Moray Firth SPA Wind farms within 10km hydrologically.

Section 3.3.2 provides more detail per site and feature. This influenced the full Site search area in tune with the 'source-pathway-receptor' model. Table 2-1 contains windfarms found within foraging range and their linear distance from each site (including the other sites, not screened in for birds). Table 3-5 provides a screening of the in-combination effects for windfarms hydrologically connected to the Moray Firth SPA.

The relevant designated sites and their primary and secondary designated features are considered to be the 'receptors' in this model. The 'pathway' is the route or means through which the 'receptors' could be positively or negatively impacted by the 'source.' The 'source' is the redesign of Aultmore wind farm. If no pathway exists between the receptor and the source, then impacts on the receptor can be screened out. If a pathway does exist, then the

⁷ Environment Impact Assessment Report: Ecology and Biodiversity, Chapter 8. SLR (2023).

⁸ Environment Impact Assessment Report: Ornithology, Chapter 9. SLR (2023).

impact on the receptor site must be quantified and it must be determined whether a likely significant effect will occur on the receptor.

2.4 Meaning of Likely

For Habitats Regulations Appraisals, a 'likely' effect is one that 'may reasonably be predicted⁹' and cannot be excluded (or ruled out) without further assessment or mitigation.

2.5 Meaning of Significant

A 'significant' effect is one where the proposed development undermines the conservation objectives of one or more of the qualifying interest features.

2.6 Sources of Information

2.6.1 For the Project Alone

Baseline information was gathered through a desk-based study considering previous data, reports and survey work in the area as summarised below:

- Ecological data search was requested from North East Scotland Biological Records Centre (NESBReC) in August 2021 within 2km of the Site boundary.
- EIA Report completed by SLR Consulting in 2023, which provides baseline information for the proposed development supplemented a wider desk study area search for SPAs, SACs and Ramsar (10km for non-avian and 20km for ornithological sites).
- A wider search of sites was made following the source-pathway-effect model in instances where impacts may be beyond the EcIA search areas.

To support this shadow HRA, SLR has carried out baseline ecological surveys to inform an EIA in 2023 these include UKHab¹⁰ and NVC¹¹ habitat surveys, static bat detector surveys, protected species surveys and fish habitat surveys. SLR also carried out a year's worth of ornithological surveys on the Site, collected between March 2021 to February 2022. These include breeding and wintering flight activity surveys, breeding wader and raptor surveys, black grouse lek surveys, capercaillie and crested tit surveys, and lochan surveys. The survey area of the project included the application boundary and the appropriate buffer for each listed survey.

Additionally, there is a large amount of historical baseline data for parts of the proposed Site from the Environmental Statement (ES) and Supplementary Environmental Information (SEI) that accompanied the original planning application (ref 07/02375/EIA) for the consented Aultmore Wind Farm.

2.6.2 For the Project in Combination

The assessment of potential 'in-combination' effects on the International/European sites/features has been informed by a review of available information on operational, consented and proposed wind farms in the region. This data was accessed via the NatureScot website which was last updated in November 2022¹². The ECU website and

¹¹ https://data.jncc.gov.uk/data/a407ebfc-2859-49cf-9710-1bde9c8e28c7/JNCC-NVC-UsersHandbook-2006.pdf

⁹ EN.pdf (europa.eu)

¹⁰ The UK Habitat Classification Working Group (May 2018) The UK Habitat Classification User Manual Version 1.0.

¹² <u>https://opendata.nature.scot/search?groupIds=82db958281a04633b32a206eff228fe2</u> (accessed July 2023)

Moray Planning portal was also used to search for other relevant wind farm applications within the area.

Table 2-1: Wind Farm Pro	jects Within Foraging	Distance of the International	and European Designated Sites

Site Name &	e Name & No of Distance from (km)					Documents available			
Status	TUDITES	Proposal Site	Tips of Corsemaul and Tom Mor SPA	Loch Spynie SPA/ Ramsar	River Spey SAC	Lower River Spey – Spey Bay SAC	Moray and Nairn Coast SPA/ Ramsar	Moray Firth SPA	avallasie
Netherton of Windyhills – <i>Operational</i>	2	0.5	13.5	18.5	15.4	16.3	6.7	11.7	None available.
Lurg Hill Redesign – <i>Under</i> <i>construction</i>	3	1.1	19.9	27.4	15.4	16.3	15.4	10.8	Environmental report ¹³ and associated planning documents.
Myreton Crossroads – <i>Operational</i>	2	5.3	11.6	23.6	14.8	15.7	11.7	10.8	Environmental report ¹⁴ and associated planning documents.
Muirake – Operational	2	7.6	23.7	34.5	21.3	21.3	22.8	7.9	None available.
Edintore – <i>Extension</i>	7	8.6	5.6	26	10.5	12	15	17.7	None available.
Hill of Towie – Operational	21	9.3	5.2	21.5	3.5	7.1	11.8	16.9	None available.

¹³<u>https://publicaccess.moray.gov.uk/eplanning/files/065FBA5ABFAD3A3570CA6C3DF4E4F851/pdf/17_01198_EIA-CHAPTER_13__ECOLOGY_AND_ORNITHOLOGY-850107.pdf</u> (accessed February 2023)

¹⁴<u>https://publicaccess.moray.gov.uk/eplanning/files/C58E4237F71E0482EAF93BDA5148B215/pdf/09_00247_FUL-ECOLOGY_SURVEY_FINAL_PHASE_HABITAT_REPORT-61127.pdf</u> (accessed February 2023)

Site Name &	No of	Distance from (km)							
oluluo	Turbines	Proposal Site	Tips of Corsemaul and Tom Mor SPA	Loch Spynie SPA/ Ramsar	River Spey SAC	Lower River Spey – Spey Bay SAC	Moray and Nairn Coast SPA/ Ramsar	Moray Firth SPA	
Hill of Towie II – <i>Operational</i>	16	11.2	5.6	23.1	1.9	9.1	14.4	16.9	Environmental report ¹⁵ and associated planning documents.
Cairnborrow – Operational	5	12.1	7.1	31	10.3	17.9	32.1	23.0	None available.
Rothes III – Consented	29	19.1	16.1	18.1	4.9	11.1	16.1	16.5	Environmental report ¹⁶ and associated planning documents.
Rothes I – <i>Operational</i>	22	20.2	21.7	15.6	8.9	14.1	15.6	16.5	None available.
Rothes II – <i>Operational</i>	18	20.2	21.7	15.6	8.9	14.1	15.6	16.5	None available.
Dummie – Operational	7	21.3	15.2	43.7	20.1	29.6	31.2	29.7	Planning documents on planning portal.
Clashindarroch – Operational	18	23.6	6.5	39.4	9.5	24.4	29.5	33.1	Environmental report ¹⁷ and associated

¹⁵https://publicaccess.moray.gov.uk/eplanning/files/9F9BF89AA4E89D463A54CED32BA3B7CB/pdf/13_02057_S36-ENVIRONMENTAL_STATEMENT_VOLUME_2_MAIN_REPORT-284251.pdf (accessed February 2023)

¹⁶<u>https://publicaccess.moray.gov.uk/eplanning/files/597EFE3225E8A4F087B2E1A7FDF043AB/pdf/19_00156_S36-7_-ORNITHOLOGY-1060893.pdf</u> (accessed February 2023)

¹⁷<u>https://www.clashindarrochwindfarmextension.co.uk/file-access/Documents/Volume%201%20Written%20Statement/Chapter%209%20Ornithology/Chapter%209%20Ornithology.pdf</u> (accessed February 2023)

Site Name &	No of	of Distance from (km)						Documents available	
olulus	Turbines	Proposal Site	Tips of Corsemaul and Tom Mor SPA	Loch Spynie SPA/ Ramsar	River Spey SAC	Lower River Spey – Spey Bay SAC	Moray and Nairn Coast SPA/ Ramsar	Moray Firth SPA	
									planning documents.
Clashindarroch II – <i>Consented</i>	22	24.1	6	39.4	9.5	24.4	29.5	33.1	Environmental report ¹⁸ and associated planning documents.
Dorenell Extension – Under construction	59	24.4	7.6	34.8	0.4	21.3	27.2	37.5	Environmental report ¹⁹ and associated planning documents.
Glens of Foudland – <i>Operational</i>	20	24.3	20.1	47.9	24.2	32.9	35.7	29.6	Planning documents on planning portal.
Hill of Tillymorgan – <i>Operational</i>	3	27.9	23.9	51.9	29.3	37.9	39.7	32.8	Associated planning documents.
Paul's Hill – Operational	28	29.6	21.8	25.6	0	20.7	25.9	23.4	None available.
Paul's Hill Extension – <i>Consented</i>	7	29.6	21.8	25.6	0	20.7	25.9	23.4	Environmental report and associated planning documents.

¹⁸ <u>https://group.vattenfall.com/uk/contentassets/d15ecaca6f5d424b8bf5c8bc4f62c61d/volume-4b---appendix-8.3---hra-report.pdf</u>

¹⁹ Infinergy Dorenell Wind Farm Variation and Extension Environmental Statement Appendix 13.A Ornithology Baseline Data Report

Site Name & Status	No of Turbines	Distance from (km)							Documents available
		Proposal Site	Tips of Corsemaul and Tom Mor SPA	Loch Spynie SPA/ Ramsar	River Spey SAC	Lower River Spey – Spey Bay SAC	Moray and Nairn Coast SPA/ Ramsar	Moray Firth SPA	
Cairnmore Extension – <i>Operational</i>	5	31.8	16.8	49.5	19.5	34.3	38.8	41.7	Environmental report ²⁰ and associated planning documents.
Kildrummy – Operational	8	33.8	16.6	47.8	12.6	33.7	39.2	43.5	Planning documents on planning portal.
Findhorn extension – <i>Operational</i>	4	35.4	38.1	16.5	28.1	22.1	27.2	0.6	Planning documents on planning portal.

*Numbers in **bold** indicate that the wind farm is within foraging range of the SPA's qualifying bird species.

²⁰ <u>http://www.cairnmorehill-windfarm.co.uk/the-project/planning-application/</u> (accessed February 2023)

Confidentiality: C2 - Internal

Other Sources

- Moray and Nairn Coast SPA Citation²¹
- Moray and Nairn Coast SPA Natura 2000 Standard Data Form²²
- Conservation Objectives Moray and Nairn Coast Special Protection Area²³
- Moray and Nairn Coast Ramsar Information Sheet on Ramsar Wetlands²⁴
- Loch Spynie SPA list of qualifying interest features²⁵
- Conservation Objectives for Loch Spynie SPA²⁶
- Loch Spynie Ramsar Information Sheet on Ramsar Wetland²⁷
- Tips of Corsemaul and Tom Mor SPA²⁸
- Conservation Objectives for the Tips of Corsemaul and Tom Mor SPA²⁹.
- River Spey SAC Qualifying Interest List³⁰
- River Spey SAC Conservation Advice Package³¹
- Lower Spey Spey Bay SAC Qualifying Interest List³²
- Lower Spey Spey Bay SAC Conservation Advice Package³³

The sources of information listed above are provided in Appendix A.

- ²⁶ <u>https://apps.snh.gov.uk/sitelink-api/v1/sites/8540/documents/29</u>
- ²⁷ <u>https://jncc.gov.uk/jncc-assets/RIS/UK13043.pdf</u>

- ³⁰ <u>https://apps.snh.gov.uk/sitelink-api/v1/sites/8365/documents/22</u>
- ³¹ <u>https://apps.snh.gov.uk/sitelink-api/v1/sites/8365/documents/66</u>
- 32 https://apps.snh.gov.uk/sitelink-api/v1/sites/8311/documents/22

²¹ <u>https://sitelink.nature.scot/site/8550</u>

²² <u>https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9001625.pdf</u>

²³ https://apps.snh.gov.uk/sitelink-api/v1/sites/8550/documents/29

²⁴ <u>https://jncc.gov.uk/jncc-assets/RIS/UK13048.pdf</u>

²⁵ <u>https://sitelink.nature.scot/site/8540</u>

²⁸ <u>https://sitelink.nature.scot/site/8584</u>

²⁹ https://apps.snh.gov.uk/sitelink-api/v1/sites/8584/documents/29

³³ https://apps.snh.gov.uk/sitelink-api/v1/sites/8311/documents/66

3.0 Assessment

3.1 Screening Step One: What is the Plan or Project?

3.1.1 The Project

Sections 1.2, 1.3, and 1.4 of this shadow HRA provide detail of the project.

3.1.2 Other Projects In-combination

Please see Table 2-1, Section 2.6.2 for a full list of Wind Farm projects within foraging distance of the International and European designated sites. And please see Table 3-5, Section 3.3.6.2 for wind farms hydrologically connected to the Moray Firth SPA.

3.2 Screening Step Two: Is the Plan or Project Directly Connected with or Necessary to Site Management for Nature Conservation?

The project is not directly connected with, or necessary to the management, for the purposes of maintaining or restoring the conservation interest, of any European Site of the National Network. The project cannot therefore be screened out of further assessment on that basis.

3.3 Step Three: Is the Plan or Project (Either Alone or in Combination with Other Plans or Projects) Likely to have a Significant Effect on a European Site?

3.3.1 Characteristics and Biodiversity Baseline of Project Site

The following summarises the main sources of information, of relevance, that has been drawn on to inform the Shadow HRA Screening Report:

3.3.1.1 Habitats

The Site can currently be described as mainly comprising conifer dominated forestry, with peatland habitats in the more open non-forested areas. Two Annex I habitats occur on the Site: M15 *Trichophorum cespitosum-Erica tetralix* - wet heath and M19 *Calluna vulgaris - Eriophorum vaginatum* blanket mire. Small pockets of M19 are sparsely dotted within the Site. M15 was found to be present on wet areas of shallower peat, mainly in the western part of the Site.

All details and information on habitats to be found in the Aultmore Vegetation Survey and Habitat Mapping report – see Technical Appendix 8.2 of the Aultmore Wind Farm Redesign EIA Report³⁴.

Six classified watercourses were identified 2km from the proposed development within the SEPA (2022) Water Classification Hub; including, Burn of Aultmore (Good overall status and ecological status since 2019), Burn of Paithnick (Good overall status and ecological status since 2019), Burn of Tynet (Good overall status), Deskford Burn (Moderate overall status and ecological status), Crooksmill Burn / Haughs Burn (Moderate overall status, Bad ecological status since 2012), Buckie Burn (Poor overall status. Moderate status since 2013).

Freshwater habitats range in quality from good to poor with no high quality or moderate habitat found. The Site contains six classified watercourses across Site which are part of several different catchments. The watercourses are considered heavily modified along their length though there are no significant barriers to fish migration on Site or within 2km of the redline boundary.

³⁴ Aultmore Wind Farm Technical Appendix 8.2: Vegetation and Habitat Mapping Report, SLR (2023)

All notable habitats are denoted within the EIA Report Chapter 8: Ecology and Biodiversity Chapter ³⁵and supporting Technical Appendices³⁶.

3.3.1.2 Species

Suitable habitat for Atlantic salmon - *Salmo salar*, trout - *Salmo trutta*, eel - *Anguilla anguilla*, brook lamprey *Lampetra planeri* - and river lamprey - *Lampetra fluviatilis* was noted within watercourses on Site and downstream during the 2022 and 2023 fish habitat assessment. Only trout were evident to be present in the 2023 electro-fishing surveys. No habitat for freshwater pearl mussel was identified and deemed to be likely absent owing to likely absence of salmon on Site and immediately downstream.

Otter *Lutra lutra* was confirmed to be present on Site in 2022. International/ European sites for which these species are designated are considered to be hydrologically and potentially functionally connected to the Site in terms of their ecology.

All protected/notable/invasive species of relevance are denoted within the Environmental Impact Assessment Ecology and Biodiversity Chapter³⁷ and supporting Technical Appendices^{38; 39; 40; 41}.

3.3.2 Potential Pathways of Effect (Pressures) & Zone of Influence (Zol)

This section identifies the potential effect pathways through which the project could impact the qualifying features of the European sites. The aim is to establish if a particular potential impact is likely to have a significant impact.

3.3.2.1 Ecological Connections

There is a lack of published research on the ranging behaviour of common gulls during the breeding season. Thaxter *et al.* (2012)⁴², in a literature review of seabird ranging behaviour studies, reported a maximum foraging range of 50km and a mean of 25km for common gull. More generally speaking gulls within the UK are considered to typically forage up to 30km from their breeding grounds⁴³. Therefore, breeding common gull at the Tips of Corsemaul and Tom Mor SPA have the potential to be ecologically connected to the Site.

The foraging range of both greylag and pink-footed geese is 15-20km from their winter roost site⁴⁴. The Moray and Nairn Coast SPA/Ramsar and Loch Spynie SPA/Ramsar are both designated for their goose populations and as both sites are within 20km of the Site, they both have the potential to be ecologically connected to the Site.

Migratory fish will travel upstream for spawning. Given hydrological connectivity between the Site and the River Spey SAC (c. 10.8km riparian distance via the coastal section – not directly hydrologically linked), which is designated in part for migratory fish, there is the potential for ecological connectivity to the Site. Given the reliance of freshwater pearl mussels on salmonids for survival there is also the potential for ecological connectivity for this species; however, only trout were noted on the Site. There remains habitat potential for Atlantic salmon, trout, lamprey species and eel downstream; however,

³⁵ Environment Impact Assessment Report: Ecology and Biodiversity Chapter 8. SLR (2023).

³⁶ Aultmore Wind Farm Technical Appendix 8.6: Fish Habitat Assessment and Fully Quantitative Electrofishing Surveys Report, SLR (2023)

³⁷ Environment Impact Assessment Report: Chapter 8 - Ecology and Biodiversity. SLR (2023).

³⁸ Aultmore Wind Farm Technical Appendix 8.3: Protected Mammal Survey Report, SLR (2023)

³⁹ Aultmore Wind Farm Technical Appendix 8.3: Annex 02 Confidential Badger Report, SLR (2023)

⁴⁰ Aultmore Wind Farm Technical Appendix 8.4: Bat Survey Report, SLR (2023)

⁴¹ Aultmore Wind Farm Technical Appendix 8.6: Fish Habitat Assessment and Fully Quantitative Electrofishing Surveys Report, SLR (2023)

⁴² Thaxter, C.B, Lascelles, B., Sugar, K., Cook, A.S., Roos, S., Bolton, M., Langston, R.H.W. & Burton, N (2012). Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Area. *Biological Conservation 156*.

⁴³ Calladine, J.R, Park, K.J, Thompson, K. & Wernham, C.V. (2006). Review of Urban Gulls and their management in Scotland. BTO Scotland.

⁴⁴ SNH (2016) Assessing Connectivity with Special Protection Areas.

based on electro-fishing surveys on and off the Site, it was concluded there was no likely presence of freshwater pearl mussel or Atlantic salmon on the Site or immediately downstream. This assessment will only consider migratory/ diadromous fish, and thereby Fresh Water Pearl Mussel (FWPM), if present/ likely to be present on Site and within the freshwater network between Site and the Moray Coast (i.e., not within the marine environment of Moray Coast or beyond to other freshwater networks).

Otters have a known home range of up to 50km⁴⁵ (Chanin, 2003) and can range along water courses yet also between catchments. Given the complexity and abundance of the freshwater and marine network in the catchment, it is assumed that otters that may disperse out from the River Spey SAC (c. 10.8km distance riparian length via the Moray Coast). Otter is one designated feature of the SAC; yet it is concluded that, given the complexity of the freshwater and marine habitats, 50km of home range is readily available; given that 50km of watercourse home range could be accommodated within a 10km direct geographic buffer of Site. Thus, the favourable conservation status of otter associated with the SAC is not considered to be ecologically functionally connected to the Site.

3.3.2.2 Hydrology Connections

The following watercourses the Burn of Tynet, the Burn of Letterfourie, Tack Burn, the Burn of Aultmore, and Milk Burn are the more substantial watercourses on Site and have direct connectivity to the River Isla (a tributary of the River Deveron which empties into the Moray Firth at Banff). Watercourses on Site have a connection to the Moray Firth SPA but do not have direct hydrological connections to the River Spey SAC (connected via the Moray Firth, c. 10.8km watercourse length from Site, with all watercourses draining down to the coast); and as such, in terms of habitats and water quality they are deemed beyond the potential range of 'discernible' likely significant hydrological effects on aquatic receptors.

3.3.2.3 Migratory and Diadromous Fish

Based on the NatureScot consultation response for the Salamander project⁴⁶, advice on assessment of migratory fish in HRA Screening is:

Due to uncertainty on where migratory fish (Atlantic salmon, sea trout and sea and river lamprey) go within marine waters and connectivity back to natal rivers we consider these species should be assessed through EIA only and not through HRA...For diadromous fish species we do not have population data for any salmon or lamprey SAC on the data forms. This inability to understand connectivity to and within individual rivers to the development area, currently prohibits an informed assessment of the impact on individual site integrity. We are aware of work being led by ScotMER on diadromous fish and this is an area of research that may change conclusions on how diadromous fish are treated in both EIA and HRA going forward.

On that basis and, taken forward in other HRA Screening reports in the public domain and in production, we intend to screen out assessment of impacts on migratory and diadromous fish within the marine environment within this assessment (leaving to be assessed solely for the freshwater network in Chapter 8: Ecology and Biodiversity where relevant) for any designated sites not within the Site or within a 10km reach (watercourse length) that has a direct connectivity. In the case of this project the Site is beyond this 10km screening parameter for the River Spey SAC boundary (that is designated in part for otter, salmon and sea lamprey; located c. 10.8km riparian length from the Site, connected via the Moray Coast). Therefore migratory and diadromous fish in the marine environment will be screened out (in directly connected freshwater environment considered in the assessment).

⁴⁵ Chanin, p. (2003) Ecology of the Eurasian Otter. Lutra. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough. Available online: Ecology of the European Otter | CIEEM (Accessed June 2023

⁴⁶ https://marine.gov.scot/sites/default/files/appendix_i - consultation_representations_and_advice_5.pdf pp110-111

3.3.2.4 Potential Pathways of Effect (Pressures) & Zone of Influence

3.3.2.4.1 Direct Habitat Loss

There will be minimal losses of freshwater habitat on Site to accommodate the widening of three existing access tracks across watercourses and an additional four watercourse crossings equating to 0.01ha. Other losses are detailed in **Chapter 8: Ecology and Biodiversity** and **Chapter 9: Ornithology**.

There are no designated sites within the Site boundary and no intended direct habitat loss outside of the Site boundary so no anticipated direct effects of habitat loss to designated sites. Therefore, direct habitat loss is screened out including for fish and aquatic receptors since the Site is beyond the zone of ecological and direct hydrological connectivity/ pathways of effects (refer to Section 3.3.2.1 and 3.3.2.22).

3.3.2.4.2 Indirect Habitat Loss

Indirect habitat loss can result from an indirect impact to a receptor from a direct habitat loss on Site with the pathway of effect and screening parameter being receptor specific in that case.

There is no anticipated indirect losses of freshwater or terrestrial habitat off Site that would be ecologically/functionally connected/ accommodate features of designated sites unless they existed within 30m of the Site boundary in accordance with NatureScot guidance for peatland and carbon-rich habitats⁴⁷; within 100m for ground water dependant terrestrial ecosystems (GWDTEs) up to 1m depth and up to 250m buffer from any direct footprint below 1m; within 10km of freshwater habitat losses on Site (precautionary consideration of potential discernible effects in the absence of avoidance/mitigation measures); or indirectly impact habitat of mobile species that are designated site features where they would be within an acceptable distance for their favourable conservation status to linked to/rely upon habitat losses on Site (e.g., within 10km for otter). Indirect habitat loss is screened out including for fish and aquatic receptors that would require to migrate within the marine environment between the Site and any designated site boundaries (would not be considered significant).

3.3.2.4.3 Direct Habitat Degradation/Disturbance

In the absence of mitigation, degradation/disturbance of habitat would only occur, as a result of onsite works (e.g., loss of aquatic habitat to accommodate the widening of four existing access tracks across watercourses and an additional three watercourse crossings equating to 0.01ha of loss) where the designated habitats or mobile features are located on Site. Habitat losses are detailed in Chapter 8: Ecology and Biodiversity and Chapter 9: Ornithology^{48; 49}. Direct habitat degradation/disturbance to designated sites and features would occur only if effects occur within the Site boundary. Since none exist within the Site, direct habitat degradation is screened out, including for fish and aquatic receptors since the areas is not considered significant.

3.3.2.4.4 Indirect Habitat Degradation/Disturbance

In the absence of mitigation, indirect degradation of habitat would only occur, as a result of on Site works (e.g., loss of aquatic habitat to accommodate the widening of four existing access tracks across watercourses and an additional three watercourse crossings equating to 0.01ha of loss) where the designated features are located on Site or where the designated features would rely upon ecological functional connectivity to other designated habitats or impact to mobile features.

⁴⁷https://www.nature.scot/doc/advising-peatland-carbon-rich-soils-and-priority-peatland-habitats-development-management

⁴⁸ Environment Impact Assessment Report: Chapter 8 - Ecology and Biodiversity. SLR (2023).

⁴⁹ Environment Impact Assessment Report: Chapter 9 - Ornithology. SLR (2023).

Assessment of LSEs will consider hydrological connectivity/water quality/habitat degradation up to 10km as within the zone of 'discernible' effects on aquatic receptors including aquatic habitats in their own right in hydrological terms in the absence of avoidance and mitigation measures.

Assessment of other LSEs will consider habitats that exist within 30m of the Site boundary in accordance with NatureScot guidance for peatland and carbon-rich habitats ; within 100m for ground water dependent terrestrial ecosystems (GWDTEs) up to 1m depth and up to 250m buffer from any direct footprint below 1m; within 10km of freshwater habitat losses on Site (precautionary consideration of potential discernible effects in the absence of avoidance/mitigation measures); or indirectly impact mobile features of designated sites where they would be within an acceptable distance for their favourable conservation status to linked to/rely upon habitat losses on Site (e.g., within 10km for otter).

Indirect habitat degradation/disturbance can result from an indirect impact to a receptor from a direct habitat loss, the pathway and screening parameter will be species specific in that case.

3.3.2.4.5 Direct Mortality

Footprint of the Site plus species specific buffers to account for natural foraging and commuting distances (i.e., home ranges within acceptable geographic buffer distances of Site) to account for any normal interaction with the Site.

3.3.2.4.6 Suspended Sediments

Assessment of LSEs from suspended sediments will consider hydrological connectivity/water quality/ up to 10km as within the zone of 'discernible' effects on aquatic receptors including aquatic habitats in their own right in hydrological terms in the absence of avoidance and mitigation measures.

3.3.2.4.7 Displacement

The impact of physical displacement from an area due to the construction or physical presence or decommissioning of above ground infrastructure. There is the potential for the presence of the wind farm to displace greylag goose, pink-footed goose and common gull from important habitats supporting their SPA populations. Additionally, the presence of the wind farm could force birds to make a diversion from their most efficient flight route. For wintering geese, this could affect survival rates, while for breeding common gull this could impact on their breeding success, as prolonged flight results in increased energetic costs. Barrier effects can impact migration as well as local flight routes to and from roosting/breeding grounds to foraging areas.

Impact could occur within the Site and an associated buffer during the operational phase of the Site. Screening parameters on a species-specific basis as per Goodship and Furness (2022) for birds⁵⁰.

3.3.2.4.8 Toxic Contamination

As above a 10km screening parameter/pathway of effect for aquatic features (as for suspended sediments). In terms of terrestrial toxic contamination, a screening parameter of 2km for windblow toxic contamination will be employed in the assessment process in the absence of mitigation.

3.3.2.4.9 Impact to prey species

Impacts to the abundance of prey species which can lead to an indirect effect on health or viability of a species population. Effects screened based on the home range of the species.

⁵⁰ Goodship, N.M. and Furness, R.W. 2022. Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. A report from MacArthur Green to NatureScot

3.3.2.4.10 Invasive Non-native Species (INNS)

Footprint of the Site plus 10km buffer to account for potential pathways of effect (i.e., spread) via hydrological pathways and 5km for overland potential pathway of effect to account for potential air dispersal/vehicle/plant movements, in the absence of mitigation, as a screening parameter for HRA.

3.3.2.4.11 Barrier Effects

Footprint of the Site plus species specific buffers to account for natural foraging / commuting areas to account for any normal interaction with the Site.

3.3.2.4.12 Summary

Table 3-1 summarises pressures, potential pressures, pathways of effect and screening parameter (i.e., that defines the zone of influence) with the justification detailed above.

Potential Pressure	Project Phase*	Pressure Detail	Screening Parameter
Direct habitat loss/gain	C & D	Habitat loss/ gain associated with the presence of buried cables and above ground infrastructure. This is a permanent impact which occurs during the construction phase but is assessed during the O&M phase and is restricted to the footprint of physical structures.	Footprint of the Site only
Indirect habitat loss	C, O&M and D	The impact of construction/decommissioning activities and activities associated with the maintenance of onshore above ground infrastructure may result in direct loss of birds from important feeding and roosting areas. Impact could occur within the Site and an associated buffer and could occur throughout the lifetime.	Footprint of the Site plus a 30m buffer for carbon & peat rich habitats, and a 100m buffer for GWDTE up to 1m depth and 250m for any reliant on below 1m depth. Also species- specific e.g. Goodship and Furness (2022) for birds ⁵¹ .
Direct habitat degradation/ disturbance	C, O&M, & D	Habitat degradation associated with the installation of buried cables and above ground infrastructure. This is a potentially temporary impact which occurs during the construction phase but is assessed during the O&M phase and is restricted to the footprint of physical structures and operational areas during all phases of the project.	Footprint of the Site only
Indirect habitat degradation/ disturbance	C & D	Habitat degradation associated with the installation of buried cables and above ground infrastructure. This is a potentially temporary impact which occurs during the construction phase but is assessed during the O&M phase and is not restricted to the footprint of physical structures and operational areas during all phases of the project.	Footprint of the Site plus a 10km buffer to account for zone of influence

Table 3-1: Summary of Potential Pressures, Potential Pathways of Effect & Zone of Influence

⁵¹ Goodship, N.M. and Furness, R.W. 2022. Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species. A report from MacArthur Green to NatureScot

Potential Pressure	Project Phase*	Pressure Detail	Screening Parameter			
Direct Mortality	C, O&M, D	This pressure relates to the mortality arising from birds colliding with above ground infrastructure.	Footprint of the Site only			
Suspended sediments	C, D	This pressure relates to the deposition of sediments into watercourses during all phases of the project.	Footprint of the Site plus a 10km buffer to account for zone of influence in absence of mitigation			
Displacement	C, O&M, D	The impact of physical displacement from an area due to the construction or physical presence or decommission of above ground infrastructure. May result in effective habitat loss and reduction in species survival rates and fitness. Impact could occur within the Site and an associated buffer during the operational phase of the Site.	Species-specific; for example: Footprint of the Site and species-specific buffers based on Goodship and Furness (2022) for birds			
Toxic contamination	C, O&M and D	The impact of pollution including accidental spills and contaminant releases associated with maintenance which may lead to direct mortality of fauna e.g., birds or a reduction in prey availability.	Footprint of the Site plus a 10km buffer to account for zone of influence in absence of mitigation for freshwater, up to 2km for terrestrial for habitats directly. For species, the screening parameter is defined by the home range of the species			
Impacts to Prey	C, O&M and D	Impact of the project on abundance of prey species leading to an indirect impact on health or viability of species populations.	Defined by the home range of the species			
Invasive Non- Native Species (INNS)	C, O&M and D	INNS may be spread via hydrological/air/transport vectors and act to outcompete native habitat with impacts to native flora/fauna.	5km overland land and 10km within hydrological connectivity of Site			
Barrier Effects	C, O&M and D	Presence of the wind farm may force fauna to avoid the windfarm resulting in increased energy costs which could affect species' condition and viabilities.	Footprint of the Site plus home range of the species			
*Project phase abbreviations: C = Construction; O = Operation; and D = Decommission phase.						

3.3.3 International and European Sites of the National Network

All European sites within 10km have been detailed, while European sites designated for their avian features have been detailed within 20km (Table 3-2). Additional sites are included where the source-pathway-effect model has required their inclusion in the assessment; in this assessment, the distances remain unaltered; including for fish owing to there being no in-water works planned within the marine environment and marine effects, in the absence of mitigation posed to non-avian features, not considered to extend beyond 10km. This assessment screens out potential LSEs where there is no pathway of effect/beyond zone of influence of a pressure (e.g., a receptor being beyond potential discernible effects of hydrological connectivity between the proposed project and the hydrology of the SACs (i.e., 10km in watercourse length). Direct and indirect hydrological connectivity does exist

between the Site and the SACs yet the distance of effects can still be beyond that of 'discernible effects' of pollution events, in the absence of mitigation, in hydrological terms (e.g., via Ardmachie Burn and Burn of Tynet). It is concluded that significant dilution would result in no 'discernible' likely significant effects beyond 10km of any potential water pollution incident.

There are six European sites, two of which are also international Ramsar sites, which require further consideration. As the qualifying avian interest species for both Ramsar sites are the same as those for their corresponding SPAs, and as the habitat designations for both Ramsar sites have no direct or indirect pathway to the proposed development Site, these Ramsar sites are not discussed separately.

The six sites are:

- River Spey SAC;
- Lower River Spey Spey Bay SAC;
- Moray Firth SPA;
- Moray and Nairn Coast SPA/Ramsar;
- The Tips of Corsemaul and Tom Mor SPA; and
- Loch Spynie SPA/Ramsar.

Site Ref	Site Name	Distance From Site/Ecological and Hydrological Connectivity	Qualifying Interest / Most Recent Condition Assessment	Brief Description
UK0019811	River Spey SAC	5.21km (c. 10.8km riparian length from Site.	 As individual populations: Otter (Lutra lutra) (Favourable, maintained, 2011); Freshwater pearl mussel (FWPM) (Margaritifera margaritifera) (unfavourable, declining, 2014); Sea lamprey (Petromyzon marinus) (favourable, maintained, 2011); Atlantic salmon (Salmo salar) (unfavourable, recovering, 2011) 	Riverine system with associated habitats which extends from Fochabers in the north past Kingussie.
UK9020313	Moray Firth SPA	5.3km The Burn of Tynet, the Burn of Letterfourie, Tack Burn, the Burn of	As individual populations: • Great-northern diver (Gavia immer)	Large coastal site 1,762.18km ² off the north-east coast of Scotland. The firth is sheltered and is characterised mainly by shallow water over a sandy substrate.

Table 3-2: Protected Sites Within 20km of the Project*

Site Ref	Site Name	Distance From Site/Ecological and Hydrological Connectivity	Qualifying Interest / Most Recent Condition Assessment	Brief Description
		Aultmore, and Milk Burn have direct connectivity with the River Isla - a tributary of the River Deveron which empties into the Moray Firth at Banff, approximately 12km east of the SPA.	 (favourable, maintained, 2020); Red-throated diver (<i>Gavia stellata</i>) (favourable, maintained, 2020); Slavonian grebe (<i>Podiceps auratus</i>) (favourable, maintained, 2020); 	The species associated with the Moray Firth SPA are coastal wintering birds, and no records of which were noted during the ornithological surveys on Site ⁵² .
		The Ardmachie and Coresekell Burns are tributaries of the Burn of Tynet which drains into the SPA at Postgordon, approximately 8.4km from the Site hydrologically.	 Migratory populations: Greater scaup (Aythya marila) (unfavourable, declining, 2020); Shag (Phalacrocorax aristotelis) (favourable, maintained, 2007); Common scoter (Melanitta nigra) (favourable, maintained, 2020); Eider (Somateria mollissima) (favourable, declining, 2020); Goldeneye (Bucephala clangula) (unfavourable, declining, 2020); Long-tailed duck (Clangula hyemalis) (favourable, declining, 2020); Long-tailed duck (Clangula hyemalis) (favourable, declining, 2020); Red-breasted merganser (Mergus serrator) (favourable, maintained, 2020); Velvet scoter (Melanitta fusca) (unfavourable, declining, 2020); 	

⁵² Environment Impact Assessment Report: Technical Appendix 9.1 Bird Survey Report. SLR (2023).

UK0019978 Lower River Spey - 6.16km (10.8km Designated f Spey Bay (SAC) distance in hydrological • Alder w Image: hydrological connectivity floodplation (unfavorial) • Coastal Image: hydrological connectivity floodplation • Coastal • Image: hydrological connectivity • • Coastal • Image: hydrological connectivity • • • • Image: hydrological connectivity • <td< td=""><th>or its Coastal site designated for its habitats. oodland on ains urable, no , 2013); shingle able ug, 2013)</th></td<>	or its Coastal site designated for its habitats. oodland on ains urable, no , 2013); shingle able ug, 2013)
UK9001625/ Moray and Nairn 6.9km as crow flies As individual populations: UK13048 Site 6.9km as crow flies As individual populations: IVK13048 Site 0 Sprey (Alater to the second se	Comprises of Culbin Bars, Findhorn Bay and Spey Bay. This Ramsar site is located on the River Spey Estuary, c 10.4km away, connected to Site via the Burn of Tynet. d godwit lapponica) urable, g, 2014) opulations: ted goose hynchus) urable, g, 2014); goose nser) urable, g, 2014); wk (Tringa d d godwit lapponica) ted goose hynchus) goose hynchus) ssemblage

Site Ref	Site Name	Distance From Site/Ecological and Hydrological Connectivity	Qualifying Interest / Most Recent Condition Assessment	Brief Description
			 Red-breasted merganser (Mergus serrator) 	
			 (favourable, maintained); 	
			 Dunlin (<i>Calidris</i> <i>alpina</i>) (favourable, maintained); 	
			 Oystercatcher (Haematopus ostralegus) (favourable, maintained); 	
			 Wigeon (Anas Penelope) (favourable, maintained) 	
			Criterion 1:	
			Sand dunes	
			Vegetated shingle	
			Saltmarsh	
			 Estuarine alder woodland 	
			Criterion 2:	
			 Vascular plants: sea centaury (<i>Centaurium</i> <i>littorale</i>); dwarf eelgrasss (<i>Zostera</i> <i>noltei</i>); oysterplant (<i>Mertensia</i> <i>maritima</i>); Baltic rush (<i>Juncus</i> <i>balticus</i>). 	
			 Invertebrates: Ochthebius lenensis; Tetanocera freyi. 	
UK9002811	Tips of Corsemaul and Tom Mor SPA	13km No hydrological connectivity between the Site and this SPA.	 Migratory species: Common gull (Larus canus) (unfavourable, declining, 2015) 	This SPA consists of moorland habitat and is situated on the summits of two adjacent hills.
UK9002201/ UK 13043	Loch Spynie SPA and Ramsar site	18km No hydrological connectivity	Regularly supports an internationally important roosting population of	Loch Spynie is located in a lowland area of north-east

Site Ref	Site Name	Distance From Site/Ecological and Hydrological Connectivity	Qualifying Interest / Most Recent Condition Assessment	Brief Description
		between the Site and this SPA and Ramsar.	 greylag geese (Anser anser) (unfavourable, declining, 2014). Criterion 1: Eutrophic loch Open water transition fen Willow/alder carr Criterion 2: Slender leaved pondweed (Potamogeton filiformis): coralroot 	Scotland and consists of a eutrophic loch.
			filiformis); coralroot orchid (Corallorhiza trifida); Baltic rush (Juncus balticus); and lesser tussock sedge (Carex diandra).	
*Sites in Grey a	and Italics Screened Out	of Assessment		

3.3.3.1 River Spey SAC

River Spey (site ref UK0019811) is a riverine system with associated habitats which extends from Fochabers in the north past Kingussie (c.5.21km overland, 10.8km riparian distance from Site).

The current condition of the River Spey SAC is overall favourable with 75% of features assessed as favourable, and 25% unfavourable. Otter, salmon, fresh-water pearl mussel (FWPM) and sea lamprey will be considered in this shadow HRA with the maximum relevant zone of influence for these species, adopting a precautionary approach when considering potential for connectivity to a SAC aquatic feature is 10km. However, it is noted that effects to fish in the marine environment are screened out. The highly mobile natures of the features are considered. With otter inhabiting a home range of up to 50km (Chanin, 2003)⁵³, The site and local freshwater network are considered to support up to 50km of watercourse within a 10km, as the crow flies, radius of the site. Otter and sea lamprey populations are in a favourable condition and being maintained. Over grazing being listed as a negative pressure for otters. The maximum relevant Zol with a precautionary approach considering potential for connectivity to an SAC feature is for 10km for otter (not defined by the designated site boundary itself, rather considering the potential nature of effects combined with ecology of the features within and beyond the defined site boundaries to reflect the indicative Zol).

Fresh-water pearl mussel and salmon are listed as unfavourable with a range of pressures affecting both species both separately and through the salmon as a host species for FWPM. Potential effects for migratory fish and FWPM are screened out from assessment in the Assessment of Likely

⁵³ Chanin, p. (2003) Ecology of the Eurasian Otter. Lutra. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough. Available online: Ecology of the European Otter | CIEEM (Accessed June 2023

Significant Effects (ALSE) of this report as they are outside the screening parameters (including for direct mortality and effects to prey).

Assessment of LSEs will not consider hydrological connectivity/water quality as beyond zone of 'discernible' effects on aquatic receptors and habitat in the absence of mitigation (10km). Invasive species will also not be taken forward to the ALSE as dispersal is outside the range both for overland 5km and hydrologically 10km.

The River Spey SAC has therefore been screened out of further ALSE as there is no connectivity within discernible effects between it and the Site for any of the features.

3.3.3.2 Moray Firth SPA

Moray Firth (site ref UK9020313) is a large coastal site measuring 1,762.18km² off the north-east coast of Scotland. The firth is sheltered and is characterised mainly by shallow water over a sandy substrate. The SPA condition is unknown.

Six of the burns on Site have a direct connection to the river Isla, a tributary of the Deveron which empties into the Moray Firth. This is nevertheless beyond the zone of hydrological discernible effects. However it is also connected directly to the SPA by virtue of burns in the north of the site which connect via the Burn of Tynet, Burn of Cairnfield, and the Burn of Buckie. These are within the zone of hydrological effects (c.8.4km).

Moray Firth is screened out for direct mortality, displacement, impacts to prey, and barrier effects as there is no suitable habitat on Site for all the qualifying species and as the Site is outside foraging ranges.^{54,55}

The Moray Firth SPA is taken forward for ALSE for relevant pressures/pathways of effect.

3.3.3.3 Lower River Spey – Spey Bay SAC

Lower River Spey – Spey Bay (site ref UK0019978) is a moderately sized coastal and lower river site of 654.2ha off the north east coast of Scotland. It consists of areas of alder woodland on a floodplain and coastal shingle vegetation for which the site is designated.

Condition of both qualifying features is 'unfavourable - bad'.

The habitats noted in the designation are located to the west of the closest surface water body connected to the site with the River Spey and Moray Coast acting as a barrier.

Assessment of LSEs will not consider hydrological connectivity/water quality or INNS, as it is beyond zone of 'discernible' effects on aquatic receptors and habitat (10km). As the features are non-mobile and there is no pathway of effect for pressures the site is thus screened out from further assessment of LSEs.

Therefore the Lower River Spey – Spey Bay SAC is screened out from further ALSE as it is beyond the range of all discernible effects from the Site for all designated features.

3.3.3.4 Moray and Nairn Coast SPA/Ramsar

Moray and Nairn Coast (site ref UK9001625/ UK13048) is a large estuarine component of the Moray Basin ecosystem and measures 2.325ha in size.

Moray and Nairn Coast Ramsar has 45% favourable and 55% unfavourable condition, with geese species experiencing the same condition and pressures as outline above for the SPA.

⁵⁴ Assessing connectivity with special protection areas.pdf (nature.scot)

⁵⁵ Forrester, R.W., Andrews, I.J., McInerny, C.J., Murray, R.D., McGowan, R.Y., Zonfrillo, B., Betts, M.W., Jardine, D.C. & Grundy, D.S. (eds) 2012. *The Digital Birds of Scotland*. The Scottish Ornithologists' Club, Aberlady.

The current condition of the Moray and Nairn Coast SPA is overall favourable, with 60% of features assessed as favourable. Two qualifying species; pink-footed goose and greylag goose, are considered in this shadow HRA as both species were recorded during the 2022 ornithological surveys on Site. Pink-footed goose has a favourable condition, while the greylag goose population is declining with an unfavourable condition. The key negative pressure on both geese populations is military activities. Assessment of LSEs will not consider terrestrial and hydrological connectivity/water quality as beyond zone of 'discernible' effects predicted by connectivity on aquatic receptors and habitat (5km & 10km). Given the lack of connectivity between the Site and the SPA/Ramsar all non-mobile features will be excluded from consideration and screened out of future assessment of LSE.

As suitability/usage of the Site is restricted to two qualifying species (pink-footed goose and greylag goose) all other species features will be removed from consideration and not subject to further assessment.

The Moray and Nairn Coast SPA/Ramsar is taken forward for ALSE for relevant pressures/pathways of effect.

3.3.3.5 The Tips of Corsemaul and Tom Mor SPA

The Tips of Corsemaul and Tom Mor (site ref UK9002811) is c. 84 hectares in area and is comprised of two hill-top moorland sites, adjacent to each other. It is designated for its breeding common gull population, records of which were recorded during the flight activity surveys on Site in 2021/22. This SPA is in an unfavourable condition as since at least 2003 the breeding colonies have been in decline.

The Tips of Corsemaul and Tom Mor SPA is taken forward for ALSE for relevant pressures/pathways of effect.

3.3.3.6 Loch Spynie SPA/Ramsar

Loch Spynie (site ref UK9002201/UK 13043) is a eutrophic loch surrounded by fen, swamp and carr woodland and is 90ha in size. It is in an unfavourable condition with no change noted in its declining greylag goose population. Pressures on this population identified as being water management – pollution and natural event.

This is also reflected in the Ramsar condition assessment of the greylag goose population, though the habitats within the Ramsar site are in a favourable condition.

The habitats within the Ramsar site are outside of the zone of discernible terrestrial and hydrological effect (5km and 10km) and thus are not taken forward for ALSE.

The significant greylag population for which the site is within commuting range for the species.

The Loch Spynie SPA/Ramsar is taken forward for ALSE for relevant pressures/pathways of effect.

3.3.4 Conservation Objectives

3.3.4.1 River Spey SAC

- To ensure that the qualifying features of the River Spey SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status; and
- To ensure that the integrity of the River Spey SAC is restored by meeting objectives 2a, 2b, 2c for each qualifying feature (and 2d for freshwater pearl mussel):
 - \circ $\;$ Restore or maintain the population as a viable component of the site;
 - \circ Restore or maintain the distribution throughout the site;
 - o Restore or maintain the supporting habitats within the site and availability of food; and

• Restore or maintain the distribution and viability of freshwater pearl mussel host species and their supporting habitats.

3.3.4.2 Lower River Spey – Spey Bay SAC

- To ensure that the qualifying features of the Lower River Spey Spey Bay SAC are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status; and
- To ensure that the integrity of the Spey Bay SAC is restored in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature:
 - o 2a. The populations of qualifying features are viable components of the site;
 - 2b. The distribution of the qualifying features is maintained throughout the site by avoiding significant disturbance of the species; and
 - 2c. The supporting habitats and processes relevant to qualifying features and their prey resources are maintained, or where appropriate, restored at the Spey Bay SAC.

3.3.4.3 Moray Firth SPA

- To ensure that the qualifying features of the Moray Firth SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status; and
- 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:
 - o 2a. The populations of qualifying features are viable components of the site;
 - 2b. The distribution of the qualifying features is maintained throughout the site by avoiding significant disturbance of the species; and
 - 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.

3.3.4.4 Moray and Nairn Coast SPA/Ramsar

- To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and
- To ensure for the qualifying species that the following are maintained in the long term:
 - Population of the species as a viable component of the site;
 - Distribution of the species within site;
 - o Distribution and extent of habitats supporting the species;
 - Structure, function and supporting processes of habitats supporting the species; and
 - No significant disturbance of the species.

3.3.4.5 Loch Spynie SPA/Ramsar

- To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and
- To ensure for the qualifying species that the following are maintained in the long term:
 - Population of the species as a viable component of the site;
 - Distribution of the species within site;

- o Distribution and extent of habitats supporting the species;
- o Structure, function and supporting processes of habitats supporting the species; and
- No significant disturbance of the species.

3.3.4.6 The Tips of Corsemaul and Tom Mor SPA

- To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and
- To ensure for the qualifying species that the following are maintained in the long term:
 - o Population of the species as a viable component of the site;
 - Distribution of the species within site;
 - o Distribution and extent of habitats supporting the species;
 - o Structure, function and supporting processes of habitats supporting the species; and
 - No significant disturbance of the species.

3.3.5 Current Pressures

Table 3-3 Designated Sites, Qualifying Features and Current Negative Pressures

Site Ref	Site Name	Potential Ef	ffects on Qualifying Interest Features
UK0019811	River Spey SAC	Atlantic salmon	Risk from agricultural operations. Risk of non-native species introduction indirectly impacting salmon habitat outside SAC. Risks from water management operations changing the flow of watercourses.
		Freshwater pearl mussel	Risk of non-native species introduction indirectly impacting FWPM habitat. Risk of mortality from poor water quality. Extraction. Risk from wildlife crime in the form of illegal collection.
		Otter	Risk from overgrazing and other pressures
		Sea lamprey	No current negative pressures.
UK00119978	Lower River Spey – Spey Bay	Alder woodland on floodplains	Risk of non-native species introduction impacting integrity of habitat. Risk of natural events such as storms damaging the ecosystem.
		Coastal shingle vegetation outside the reach of waves	Risk of introduction of non-native species impacting integrity of habitat and species assemblage.
UK9020313	Moray Firth SPA	Bird assemblage	Risk from recreation/disturbance, and through game/fisheries management. Risk from plant pests and diseases. Risks due to natural events directly affecting habitat or direct mortality. Risks from climate change. Other risks.
UK9001625/ UK13048	Moray and Nairn Coast SPA and	Bird assemblage	Risks from water quality and water management. Risk from recreation/disturbance. Risks from military activities.
		Habitats	None listed.
		Vascular plants	None listed.

Site Ref	Site Name	Potential Ef	fects on Qualifying Interest Features
		Invertebrates	None listed.
UK9002811	Tips of Corsemaul and Tom Mor SPA	Common gull	No current negative pressures.
UK9002201/UK 13043	Loch Spynie SPA and Ramsar site	Greylag goose	Risks from natural events and water management.
		Eutrophic loch	Risk of pollution (air and water) from agricultural operations. Risk of introduction of invasive non-native species. Risks from water management.
		Open water transition fen	Risks from natural events.
		Wet woodland	No current negative pressures.
		Vascular plant assemblage	No current negative pressures.

3.3.6 Assessment of Likely Significant Effects

This section identifies the potential effect pathways through which the project could impact the qualifying features of the European sites. At this stage, assessment as to whether likely significant effects on the European sites can be ruled out is undertaken. This must be done in the view of the Conservation Objectives for the identified European Sites. Information appertaining to species presence and the potential indirect impacts is consulted. Specifically, the aim is to establish if a particular potential impact is likely to have a significant effect.

3.3.6.1 For the Project Alone

Table 3-4 provides a summary of the ALSE for the project alone.

Designated Site & Closest Distance to the Project (km)	Qualifying Feature(s)	Potential Pressures on Qualifying Interest Features	Potential Pathway(s) of Effect Detail / Project Phase	Screening Parameter	Justification	Determination of LSE
n/a	n/a	Direct habitat loss/gain	Habitat loss/gain associated with the presence of buried cables and above ground infrastructure. This is a permanent impact which occurs primarily during the construction (and can occur in the other two phases) but is assessed during the O&M phase and is restricted to the footprint of physical structures.	Site footprint only	No designated sites within the Site boundary.	No LSE.
n/a	n/a	Indirect habitat loss	Indirect habitat loss can result from an indirect impact to a receptor from a direct habitat loss on Site with the pathway of effect and screening parameter being receptor	Within 30m of the site boundary for peatland and carbon-rich habitats ; within 100m for ground water dependant terrestrial ecosystems (GWDTEs) up to 1m depth and	Designated habitats are outside of the range of pathways of effects. No designated	No LSE.

Table 3-4: Summary of Assessment of Likely Significant Effects

Designated Site & Closest Distance to the Project (km)	Qualifying Feature(s)	Potential Pressures on Qualifying Interest Features	Potential Pathway(s) of Effect Detail / Project Phase	Screening Parameter	Justification	Determination of LSE
			specific in that case. As above it is an effect that primarily occurs during the construction phase but is assessed during the O phase. However it is not restricted to the footprint of physical structures.	up to 250m buffer from any direct footprint below 1m; within 10km of freshwater habitat losses on Site; or indirectly impact habitat of mobile species (designated features) where they would be within an acceptable distance for their favourable conservation status to linked to/rely upon habitat losses on Site (e.g., within 10km for otter).	features within range of screening parameters of pressure.	
n/a	n/a	Direct habitat degradation / disturbance	Habitat degradation through impacts from all phases on the project leading to reductions in the quality or condition of species/habitats. This is most likely during the construction phase but can occur during all phases.	Site footprint only.	No designated sites within the Site boundary.	No LSE.
Moray Firth SPA	Bird assemblage	Indirect habitat degradation / disturbance	This relates to changes in in air quality or hydrological quality and/or flows during construction or decommissioning of the site in turn affecting the composition of plant communities present within and beyond designated sites or where indirect effects to habitat associated with designated features within	Site footprint and up to 10km for discernible hydrological effects in absence of mitigation. 2.5km buffer for terrestrial potential effects (e.g., considering effects of air quality in absence of mitigation).	Designated sites and features not in footprint of the site plus 2.5km buffer for potential air quality effects. However, within 10km for discernible hydrological	Potential LSE.

Designated Site & Closest Distance to the Project (km)	Qualifying Feature(s)	Potential Pressures on Qualifying Interest Features	Potential Pathway(s) of Effect Detail / Project Phase	Screening Parameter	Justification	Determination of LSE
			screening parameters would be likely.		effects in absence of mitigation.	
Moray and Nairn Coast SPA and Ramsar, 6.9km as the crow flies, 10.4km hydrologically	Pink footed goose; greylag goose	Direct mortality and disturbance via collision with wind farm	Any collision with or disturbance to airborne birds. Potentially during any phase but most likely during O&M when the turbines are running.	Footprint of the site plus a relevant buffer based on home range of features. I.e. 25km common gull; and 20km geese.	Predicted collision risk is potentially low for common gull ⁵⁶ and moderate for geese species ⁵⁷ , yet further assessment required to determine likelihood of significant effects. (Further information pertinent to	Potential LSE.
Tips of Corsemaul and Tom Mor SPA, 13km, no hydrological connectivity	Common gull					Potential LSE.
Loch Spynie SPA & Ramsar, 18km, no hydrological connectivity	Greylag				determination below.)	Potential LSE.

⁵⁶ Hotker, H., Thomsen, K.M. & H. Jeromin (2006). Impacts on biodiversity of exploitation of renewable energy sources: the example of birds and bats – facts, gaps in knowledge, demands for further research, and ornithological guidelines for the development of renewable energy exploitation. Michael-Otto Institut im NABU, Bergenhausen.

⁵⁷ Langston, R.H.W. (2010). Offshore wind farms and birds: Round 3 zones, extensions to Round 1 and Round 2 sites and Scottish Territorial Waters. RSPB Research Report No. 39. RSPB, Sandy, UK.

Designated Site & Closest Distance to the Project (km)	Qualifying Feature(s)	Potential Pressures on Qualifying Interest Features	Potential Pathway(s) of Effect Detail / Project Phase	Screening Parameter	Justification	Determination of LSE
Moray Firth SPA	Bird assemblage	Suspended sediments	Any effects of suspended sediments through watercourses. Potentially during any project phase but most likely during C or D.	Footprint of the site plus 10km buffer (to account for Zone of Influence) as defined by hydrological professional judgement on the discernible effects of water quality in absence of mitigation.	There will three in channel watercourse crossings. Indirect effects on bird assemblage possible as within 10km screening parameter.	Potential LSE.
Moray and Nairn Coast SPA and Ramsar, 6.9km as the crow flies, 10.4km hydrologically	Pink footed goose; greylag goose	Displacement	The impact of physical displacement from an area due to the physical presence of above ground infrastructure primarily during the operational phase of the development may result in effective habitat loss and reduction in species survival rates and fitness.	Footprint of the site and species-specific buffers based on Goodship and Furness (2022). I.e. 25km common gull; and 20km geese.	There are minimal opportunities within onsite habitat for foraging. There are also minimal opportunities for breeding gulls.	No LSE. (LSEs already screened out. It is of note that the assessment undertaken to inform Chapter 9: Ornithology of the EIAR ⁵⁸ further evidenced that target species features were not present on site, only noted in passage.)

⁵⁸ Environment Impact Assessment Report: Ornithology Chapter 9. SLR (2023)

Designated Site & Closest Distance to the Project (km)	Qualifying Feature(s)	Potential Pressures on Qualifying Interest Features	Potential Pathway(s) of Effect Detail / Project Phase	Screening Parameter	Justification	Determination of LSE
Tips of Corsemaul and Tom Mor SPA, 13km, no hydrological connectivity	Common gull					No LSE. (As above.)
Loch Spynie SPA & Ramsar, 18km, no hydrological connectivity	Greylag					No LSE. (As above.)
Moray Firth SPA, 6.1km, 8.4km hydrologically	Bird assemblage	Toxic Contamination	This relates to reduced water or sediment quality from, for example, spillages or mobilisation of contaminated sediments. This may occur in any stage of the project.	Footprint of the site plus 5km terrestrial buffer and 10km buffer (to account for ZoI) as defined by hydrological professional judgement on the discernible effects of water quality in absence of mitigation.	There will three in channel watercourse crossings. Indirect effects on bird assemblage possible as within 10km screening parameter.	Potential LSE.
Tips of Corsemaul and Tom Mor SPA, 13km, no hydrological connectivity	Common gull	Impacts to prey species	Relating to any effects that reduce the availability of prey. This may occur in any stage of the project.	5km terrestrial and 10km for freshwater/ features. Footprint of the site plus various buffers (to account for Zone of Influence on each feature home/foraging range, i.e. 25km for common gull.).	Common gull is a generalist feeder with a wide range of suitable prey/food. There are minimal opportunities within onsite	No LSE. (LSEs already screened out. It is of note that the assessment undertaken to inform Chapter 9: Ornithology of



Designated Site & Closest Distance to the Project (km)	Qualifying Feature(s)	Potential Pressures on Qualifying Interest Features	Potential Pathway(s) of Effect Detail / Project Phase	Screening Parameter	Justification	Determination of LSE
					habitat for foraging. There are also minimal opportunities for breeding gulls.	the EIAR ⁵⁹ further evidenced that target species features were not present on site, only noted in passage.)
Moray Firth SPA, 8.4km hydrologically	Bird assemblage	Invasive Non- Native Species (INNS)	INNS may be spread via hydrological/air/transport vectors and act to outcompete native habitat with impacts to native flora/fauna. This may occur in any stage of the project.	Footprint of the site plus buffer (5km terrestrial, 10km hydrological) (to account for Zone of Influence of spread via airborne pathways and vehicle/plant movements, in the absence of mitigation).	There will three in channel watercourse crossings. Indirect effects on bird assemblage possible as within 10km screening parameter.	Potential LSE.
Moray and Nairn Coast SPA & Ramsar, 6.9km, 10.4km hydrologically	Pink footed goose; greylag goose	Direct disturbance via barrier to movement	This relates to severance or disturbance of hydrological commuting routes and/or flight paths due to a physical barrier. This may occur in any stage of the project.	Footprint of the site plus home range of the species (as per above).	Relevant to ornithological features only. Further surveys required to assess movement of target species on and in passage of site. (Further information pertinent to	Potential LSE
Tips of Corsemaul & Tom Mor SPA, 13km,	Common gull					Potential LSE

⁵⁹ Environment Impact Assessment Report: Ornithology Chapter 9. SLR (2023)

Designated Site & Closest Distance to the Project (km)	Qualifying Feature(s)	Potential Pressures on Qualifying Interest Features	Potential Pathway(s) of Effect Detail / Project Phase	Screening Parameter	Justification	Determination of LSE
no hydrological connectivity					determination below.)	
Loch Spynie SPA & Ramsar, 18km, no hydrological connectivity	Greylag goose					Potential LSE

3.3.6.2 Additional Information Supporting ALSE

Direct Mortality:

Common gulls have been recorded as collision victims at a number of wind farms in the UK and elsewhere in Europe (Hotker *et al.* 2006)⁶⁰. However, most records relate to wind farms located along the coast or in lowland agricultural settings, with high daily transit rates. Langston (2010)⁶¹ identified common gull as being at low risk of collision with turbines. Geese, including greylag and pink-footed geese, are known to be vulnerable to collision as they are large-bodied birds with a high wing loading which reduces their manoeuvrability. Typical flight behaviour is in groups and can occur in low light conditions. The cumulative effect of these factors results in both goose species being at moderate risk of collision with turbines (Langston,2010).

Barrier Effects:

There is the potential for the presence of the wind farm to displace greylag goose, pinkfooted goose and common gull from important habitats supporting their SPA populations. Additionally, the presence of the wind farm could force birds to make a diversion from their most efficient flight route. For wintering geese, this could affect survival rates, while for breeding common gull this could impact on their breeding success, as prolonged flight results in increased energetic costs. Barrier effects can impact migration as well as local flight routes to and from roosting/breeding grounds to foraging areas.

(Hotker et al. 2006) indicated a disturbance area of up to 373m from wind farms for geese while other studies have found a displacement of 30-600m for geese at onshore wind farms. Preliminary data outlined by (Rees 2012), has suggested that the erection of wind farms may result in fewer geese returning to these areas after installation causing long term displacement. The Site is located within an area of conifer woodland with few open patches. This habitat structure is not favoured by foraging geese as they need open habitat, nor is it favoured by common gull.

For the Project in Combination

Table 3-5 below summarizes the data gathered on proposed and approved windfarm projects which are within 25km of the Tips of Corsemaul and Tom Mor SPA, and 20km from the Moray and Nairn Coast SPA, and Loch Spynie SPA and the Moray Firth SPA. The other sites (River Spey SAC and Lower River Spey – Spey Bay SAC) are outside of range of discernible effects for all pressures and thus screened out of in-combination assessment.

We have considered all elements of the project that have been screened out for the project alone, (apart from where there is no potential pathway of effect from the Site to the protected areas,) in-combination with other projects within range of the protected sites to potentially affect the designated features. In this consideration we have determined that there are no potential LSEs from effects screened out from the project alone.

Table 3-5, below, summarizes, as a screening assessment, effects screened in for the project alone. Nineteen windfarm projects were identified within 25km of the Tips of Corsemaul and Tom Mor SPA. Common gull was not taken into consideration for each project, though for the projects where common gull was considered the impact on common

⁶¹ Langston, R.H.W. (2010). Offshore wind farms and birds: Round 3 zones, extensions to Round 1 and Round 2 sites and Scottish Territorial Waters. RSPB Research Report No. 39. RSPB, Sandy, UK.



⁶⁰ Hotker, H., Thomsen, K.M. & H. Jeromin (2006). Impacts on biodiversity of exploitation of renewable energy sources: the example of birds and bats – facts, gaps in knowledge, demands for further research, and ornithological guidelines for the development of renewable energy exploitation. Michael-Otto Institut im NABU, Bergenhausen.

gulls was accessed as having a very low or negligible impact on the population. Seven windfarms were identified within 10km hydrologically of the Moray Firth SPA.

Nine windfarm projects were identified within 20km of the Moray and Nairn Coast SPA and four wind farm projects were identified within 20km of Loch Spynie SPA. A collision risk assessment was carried out for one project with an annual collision rate of 4.51 for pink-footed goose and a 3.83 annual collision rate for greylag goose. These rates were considered to be of low magnitude and not significant.

Should construction of the project and one or more of the other proposed developments currently in application or scoping happen at the same time, then any direct or indirect effects of indirect habitat degradation/disturbance, direct mortality, suspended sediments, toxic contamination, invasive non-native species (INNS), or barrier effects/displacement could be exacerbated. In addition, any of the currently operational wind farms within the area could, in theory, in combination with the project exacerbate these issues.

Site Name & Status	Relevant Designated Site	Summary of assessment on relevant qualifying species
Clashindarroch - Operational	Tips of Corsemaul and Tom Mor SPA.	Common gull - Total of 4,792 common gull flights recorded over three years, - 99% were at collision risk height. However, only c. 0.7% were at risk from the proposed wind farm.
		Predicted annual collision rate for common gull ranging from one every 7.5 months (95 % avoidance) to one every 3.1 years (99 % avoidance).
		Conclusion - unlikely to affect breeding populations at the SPA.
Clashindarroch II – <i>Consented</i>	Tips of Corsemaul and Tom Mor SPA.	Common gull - 2017 data - predicted annual collision rate for common gull of 0.005, equating to one collision every c. 200 years.
		Combined data of four years of survey at Clashindarroch and Clashindarroch II – predicted annual collision rate for common gull of 0.33.
		Conclusion - risk of collision mortality is negligible.
Edintore - Operational	Tips of Corsemaul and Tom Mor SPA Moray and Nairn Coast SPA/Ramsar.	No data available.
Edintore Extension - <i>Application</i>	Tips of Corsemaul and Tom Mor SPA Moray and Nairn Coast SPA/Ramsar.	No data available.
Hill of Towie - Operational	Tips of Corsemaul and Tom Mor SPA Moray and Nairn Coast SPA/Ramsar.	No data available.
Hill of Towie II - Operational	Tips of Corsemaul and Tom Mor SPA Moray	Common Gull - Ten flightlines of two to five individuals recorded and a flock of 70 birds in 2011. The Site was assigned a High Local value for this species. Common

Table 3-5: Summary of Data Collated from Nearby Wind Farms



Site Name & Status	Relevant Designated Site	Summary of assessment on relevant qualifying species
	and Nairn Coast SPA/Ramsar.	gull was not included in the collision risk assessment as the Site was not considered to be an important area for the species in terms of breeding or as a flight corridor. Pink-footed Geese – A total of 425 birds were recorded, with a total of 1050 seconds spent at collision risk. Site accessed as being high local value. Birds may displace around the wind farm rather than fly over/through, but the impact of this would not be large. Greylag Geese – A total of 3 birds were recorded outwith the collision risk height. Site accessed as being moderate local value. Birds may displace around the farm rather than fly over/through, but the impact of this would not be large.
Dorenell Extension – <i>Under</i> <i>construction</i>	Tips of Corsemaul and Tom Mor SPA.	Common gull not included in the assessment.
Kildrummy – Operational	Tips of Corsemaul and Tom Mor SPA.	Common gull not included in the assessment.
Glens of Foudland – <i>Operational</i>	Tips of Corsemaul and Tom Mor SPA.	Common gull did not breed within the survey area. A low number of flightlines were recorded and gulls were recorded foraging in fields to the south of the Site during winter and early spring. Common gull was not included in the collision risk assessment.
Hill of Tillymoran – <i>Operational</i>	Tips of Corsemaul and Tom Mor SPA.	No adverse impacts on common gull were envisaged.
Cairnmore Extension - <i>Operational</i>	Tips of Corsemaul and Tom Mor SPA.	Common gull activity in the south of the Site attributed to birds flying to and from the SPA. No significant movement of common gulls within the study area. Collision risk assessment estimated an annual collision risk of 0.079 birds. The development was considered to have a negligible impact on common gull populations from the SPA.
Dummuie – Operational	Tips of Corsemaul and Tom Mor SPA.	No information available
Rothes III – Consented	Tips of Corsemaul and Tom Mor SPA, Moray and Nairn Coast SPA/Ramsar, and Loch	Common gull was not included in the assessment. Pink-footed geese – 747 individuals recorded flying within collision risk height. Annual mortality rate of 4.51 was calculated.
	Spyrile SF Arranisa	Greylag geese - 476 individuals recorded flying within collision risk height. Annual mortality rate of 3.83 was calculated.
		For both geese species collision risk was considered to be of low magnitude and not significant.
Rothes I – Operational	Tips of Corsemaul and Tom Mor SPA, Moray and Nairn Coast SPA/Ramsar,	No adverse impacts were predicted (based on information in Rothes III ES). It is therefore assumed that there is no potential for significant effects.

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Site Name & Status	Relevant Designated Site	Summary of assessment on relevant qualifying species
	Loch Spynie SPA/Ramsar	
Rothes II – Operational	Tips of Corsemaul and Tom Mor SPA, Moray and Nairn Coast SPA/Ramsar, Loch Spynie SPA/Ramsar	No adverse impacts were predicted (based on information in Rothes III ES). It is therefore assumed that there is no potential for significant effects.
Paul's Hill – Operational	Tips of Corsemaul and Tom Mor SPA.	No data available.
Paul's Hill Extension - <i>Application</i>	Tips of Corsemaul and Tom Mor SPA.	Common gull was not included in assessment.
Findhorn extension – <i>Operational</i>	Loch Spynie SPA/Ramsar, Moray Firth SPA	No objections raised after consultation as no significant impact was expected due to small scale of project. No data available for Moray Firth SPA.
Lurg Hill – <i>Application</i>	Tips of Corsemaul and Tom Mor SPA, Moray and Nairn Coast SPA/Ramsar	Common gull not assessed. Greylag and pink-footed geese recorded intermittently flying over Site, not within collision height. No significant effect on bird populations from collision mortality or on wintering birds from habitat loss.
Myreton Crossroads – Operational	Tips of Corsemaul and Tom Mor SPA, Moray and Nairn Coast SPA/Ramsar	Impact on birds scoped out at the consultation period as the works were considered only minor impacts on the environment.
Netherton Windyhills – <i>Operational</i>	Tips of Corsemaul and Tom Mor SPA, Moray and Nairn Coast SPA/Ramsar, Loch Spynie SPA	No EIA undertaken.
Cairnborrow - Operational	Tips of Corsemaul and Tom Mor SPA	No data available.
Muirake - Operational	Tips of Corsemaul and Tom Mor SPA	No data available.
Boyndie - <i>Operational</i>	Moray Firth SPA	No data available.
Hill of Nigg - Application	Moray Firth SPA	No data available.
Navidale – <i>Approved</i>	Moray Firth SPA	No data available.
Navidale Community Turbines – <i>Approved</i>	Moray Firth SPA	No data available.
Achork – Scoping	Moray Firth SPA	No data available.



Site Name & Status	Relevant Designated Site	Summary of assessment on relevant qualifying species
West Garty 2 – Application	Moray Firth SPA	No data available.

4.0 Shadow HRA Screening: Conclusions and Recommendations

This appraisal has focused on the potential for the proposal to affect the River Spey SAC; Moray Firth SPA; Lower River Spey – Spey Bay SAC; Moray and Nairn Coast SPA and Ramsar site; Tips of Corsemaul and Tom Mor SPA; and Loch Spynie SPA and Ramsar site. The potential pressures and pathways of effect have been considered in view of all the aforementioned designated site's conservation objectives.

In conclusion, taking into consideration the findings of this shadow screening assessment, the Aultmore Wind Farm redesign, alone or in combination with current plans and projects, may result in an adverse effect on the integrity of specific designated sites and their features in the absence of mitigation.

No pathways to the River Spey SAC, or Lower Spey Bay SAC were identified. The remaining designated sites had potential for LSEs in the absence of mitigation.

Potential LSEs have been identified for the Moray Firth SPA regarding featured bird assemblage and habitat underpinning those features. Potential LSEs may result from the following four pressures: indirect habitat degradation/disturbance; suspended sediment; toxic contamination; and INNS. The Moray and Nairn Coast SPA and Ramsar site; Tips of Corsemaul and Tom Mor SPA; and Loch Spynie SPA and Ramsar site may have potential LSEs in relation to common gull and geese species. Potential LSEs may result from the following two pressures: direct mortality and barrier to movement.

In-combination effects that have been screened in for further assessment may also be relevant for the sites and features listed within the assessment (i.e., potential LSEs screened in for further assessment for the project alone).

The HRA test is whether the project will have an adverse effect on the integrity of any International/ European sites their qualifying interest features detailed and in the light of the conservation objectives and current pressures identified within this screening assessment. Further, more detailed assessment for the project alone and in-combination with other projects is provided within Chapter 8: Ecology and Biodiversity and Chapter 9: Ornithology with due regard to full details of project plans made available alongside the requirement for avoidance and mitigation measures, to address LSEs, prior to reaching a conclusion.

It was concluded within the shadow Screening assessment that there was potential for likely significant effect on four of the sites that have potential to undermine the conservation objectives, with no pathway of effect for two sites. These have been addressed in the Ornithology Chapter of the EIAR⁶² and Ecology and Biodiversity Chapter of the EIAR⁶³. In conclusion, no effect was found to undermine the conservation objectives that is considered an adverse effect on the integrity of the site, and vice versa.

⁶³ Environment Impact Assessment Report: Ecology and Biodiversity Chapter 8. SLR (2023).



⁶² Environment Impact Assessment Report: Ornithology Chapter 9. SLR (2023).

The information and assessment are provided to assist the Scottish Ministers in their own assessment of the 'likely significant effects' of the project and its own 'Appropriate Assessment'.





Figure 01. Site Location

Aultmore Wind Farm Redesign

Technical Appendix 8.7: Shadow Habitats Regulations Appraisal: Screening

Vattenfall Wind Power Ltd

SLR Project No.: 404.V03640.00016

20 December 2023





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Figure 02. Designated Site Maps

Aultmore Wind Farm Redesign

Technical Appendix 8.7: Shadow Habitats Regulations Appraisal: Screening

Vattenfall Wind Power Ltd

SLR Project No.: 404.V03640.00016

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Appendix A: Additional Sources of Designated Site Information

- Moray and Nairn Coast SPA Citation
- Moray and Nairn Coast SPA Natura 2000 Standard Data Form
- Conservation Objectives Moray and Nairn Coast Special Protection Area
- Moray and Nairn Coast Ramsar Information Sheet on Ramsar Wetlands
- Loch Spynie SPA list of qualifying interest features
- Conservation Objectives for Loch Spynie SPA
- Loch Spynie Ramsar Information Sheet on Ramsar Wetland
- Tips of Corsemaul and Tom Mor SPA
- Conservation Objectives for the Tips of Corsemaul and Tom Mor SPA
- River Spey SAC Qualifying Interest List
- River Spey SAC Conservation Advice Package
- Lower Spey Spey Bay SAC Qualifying Interest List
- Lower Spey Spey Bay SAC Conservation Advice Package

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