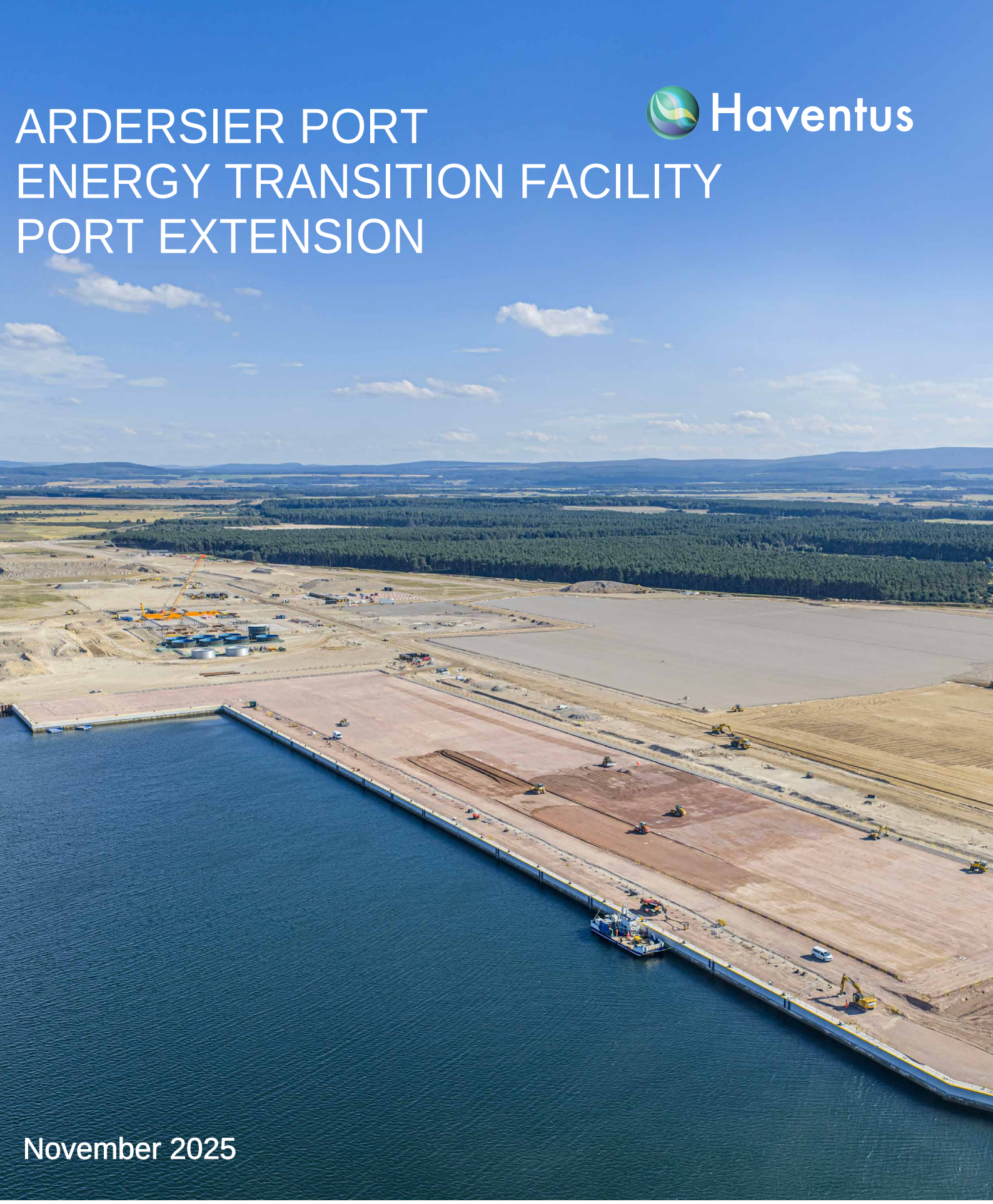
ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus



November 2025

Appendix 13.1 Legislation, Policy and guidance

Ardersier Port Extension

784-B069769

Appendix 13.1 Legislation, policy and guidance

Haventus

September 2025

Document prepared on behalf of Tetra Tech Limited. Registered in England number: 01959704

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1.1 LEGISLATION, POLICY AND GUIDANCE

Birds Directive

The EC Directive on the Conservation of Wild Birds (791409/EEC) or 'Birds Directive' was introduced to achieve favourable conservation status of all wild bird species across their distribution range. In this context, the most important provision is the identification and classification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex 1 of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance.

Wildlife & Countryside Act 1981 (as amended)

This is the principal mechanism for the legislative protection of wildlife in the UK. This legislation is the chief means by which the 'Bern Convention' and the Birds Directive are implemented in the UK. Since it was first introduced, the Act has been amended several times.

The Act makes it an offence to (with exception to species listed in Schedule 2) intentionally:

- kill, injure, or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use; or
- take or destroy an egg of any wild bird.

Or to intentionally do the following to a wild bird listed in Schedule 1:

- disturbs any wild bird while it is building a nest or is in, on or near a nest containing eggs or young; or
- disturbs dependent young of such a bird.

In addition, the Act makes it an offence (subject to exceptions) to:

- intentionally or recklessly kill, injure or take any wild animal listed on Schedule 5;
- interfere with places used for shelter or protection, or intentionally disturbing animals occupying such places; and
- The Act also prohibits certain methods of killing, injuring, or taking wild animals.

Finally, the Act also makes it an offence (subject to exceptions) to: intentionally pick, uproot or destroy any wild plant listed in Schedule 8, or any seed or spore attached to any such wild plant; unless an authorised person, intentionally uproot any wild plant not included in Schedule 8; or sell, offer or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.

Following all amendments to the Act, Schedule 5 'Animals which are Protected' contains a total of 154 species of animal, including several mammals, reptiles, amphibians, fish and invertebrates. Schedule 8 'Plants which are Protected' of the Act, contains 185 species, including higher plants, bryophytes and

fungi and lichens. A comprehensive and up-to-date list of these species can be obtained from the JNCC website.

Part 14 of the Act makes unlawful to plant or otherwise cause to grow any plant in the wild outwith its native range.

It is recommended that plant material of invasive non-native species is disposed of as bio-hazardous waste, and these plants should not be used in planting schemes.

Birds of Conservation Concern

This is a review of the status of all birds occurring regularly in the United Kingdom. It is regularly updated and is prepared by leading bird conservation organisations, including the British Trust for Ornithology (BTO), Joint Nature Conservation Committee (JNCC) and The Royal Society for the Protection of Birds (RSPB).

The latest report was produced in 2021 (Eaton *et al*, 2021) and identified 70 red list species, 103 amber species, and 72 green species. The criteria are complex, but generally:

Red list species are those that have shown a decline of the breeding population, non-breeding population or breeding range of more than 50% in the last 25 years.

Amber list species are those that have shown a decline of the breeding population, non-breeding population or breeding range of between 25% and 50% in the last 25 years. Species that have a UK breeding population of less than 300 or a non-breeding population of less than 900 individuals are also included, together with those whose 50% of the population is localised in 10 sites or fewer and those whose 20% of the European population is found in the UK.

Green list species are all regularly occurring species that do not qualify under any of the red or amber criteria are green listed.

Global IUCN Red List

The International Union for Conservation of Nature (IUCN) Threatened Species was devised to provide a list of those species that are most at risk of becoming extinct globally. It provides taxonomic, conservation status and distribution information about threatened taxa around the globe.

The system catalogues threatened species into groups of varying levels of threat, which are: Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CE), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), Not Evaluated (NE). Criteria for designation into each of the categories is complex, and consider several principles.

Local Biodiversity Action Plan (LBAP)

- LBAPs identify habitat and species conservation priorities at the local level, often including Habitat Action Plans (HAPs) and Species Action Plans (SAPs) for key bird species.
- These plans guide and inform local decision-making for ornithological conservation

National Planning Framework

- NPF4 is the top tier of planning policy in Scotland.
- Policy 1 gives significant weight to the nature crisis, ensuring biodiversity is prioritised in all plans and decisions.
- Policy 4 protects and enhances natural heritage, including ornithological interests.
- Policy 3 requires development to secure positive effects for biodiversity, including birds, by conserving, restoring, and enhancing habitats and nature networks.
- Adverse impacts on the natural environment, including cumulative impacts on bird populations and habitats, must be minimised.
- Development proposals must demonstrate conservation, restoration, and enhancement of biodiversity, including ornithological interests.

See here for full details: https://www.gov.scot/publications/national-planning-framework-4/

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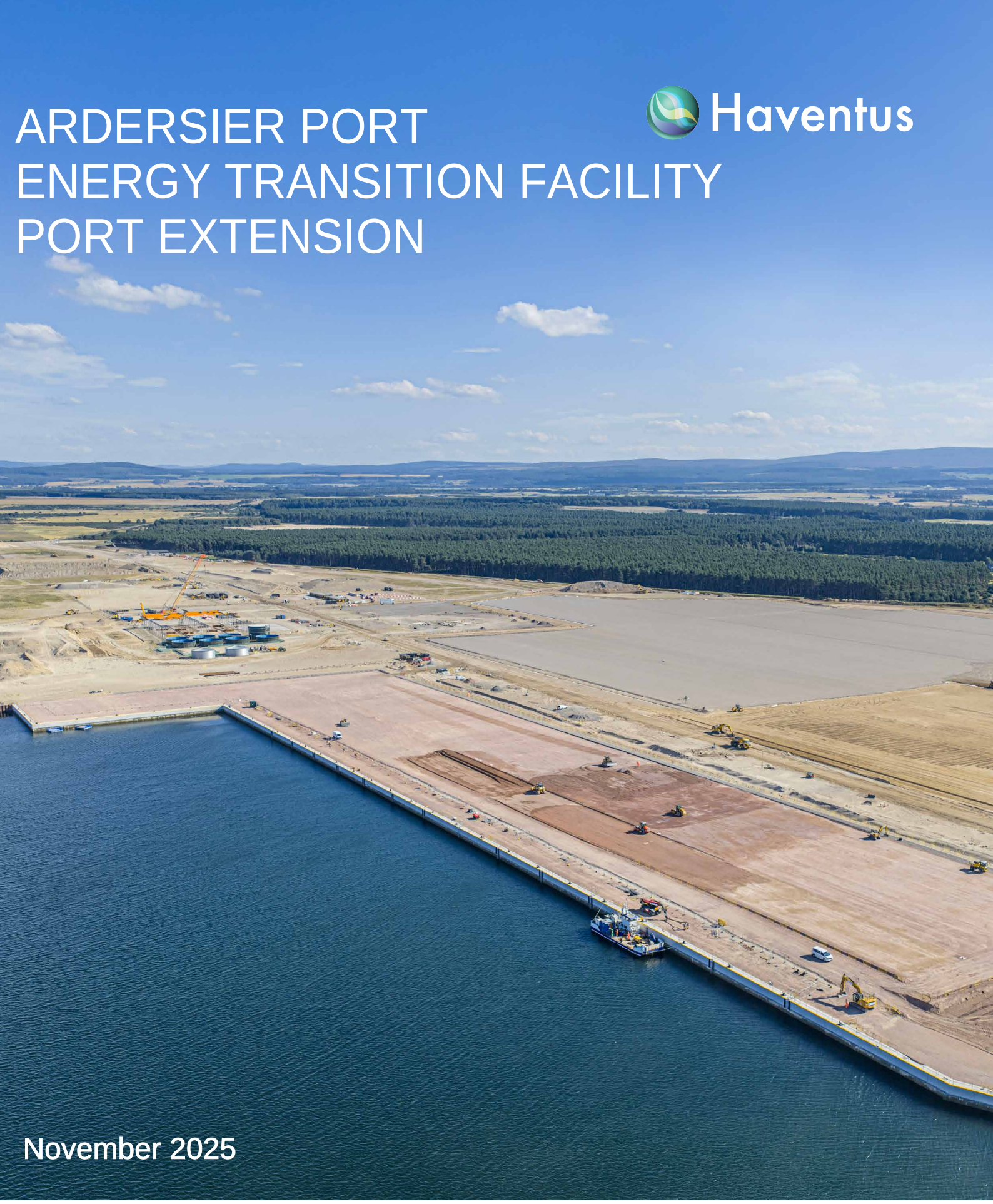

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Appendix 13.2 Methodology

Ardersier Port Extension

784-B069769

Appendix 13.2: Methodology

Haventus

September 2025

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1.1 ECOLOGICAL IMPACT ASSESSMENT METHODOLOGY

This appendix provides a summary of the assessment methodology.

1.1.1 Guidance

The EcIA follows the Chartered Institute of Ecology and Environmental Management (CIEEM)[1] 2024 guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine Version 1.3. The assessment integrates both desk-based and field survey data to identify and evaluate the likely significant ecological effects of the proposed Ardersier Port Extension.

1.1.2 Site terminology

For the purposes of this EcIA chapter, the term “site” refers specifically to the terrestrial extension land proposed for development as part of the Ardersier Port Extension. This area comprises woodland and gorse scrub habitats and differs significantly from the consented port footprint assessed in the 2018 EIA, which was limited to previously developed (brownfield) land.

The inclusion of semi-natural habitats introduces new ecological considerations and has informed the updated assessment of potential impacts and mitigation requirements. In addition to the terrestrial site, this chapter also considers potential impacts on marine ecology associated with the proposed additional dredging area, hereafter referred to as the “dredged channel.” A full description of both the site and its context is provided in Chapter 3 (Project Description) of the EIAR.

1.1.3 Zone of influence

The Zone of Influence (ZoI) was defined to assess direct and indirect ecological effects beyond the site boundary. Desk studies included data from National Biodiversity Network (NBN) Gateway, Multi-Agency Geographic Information for the Countryside (MAGIC), and aerial imagery, with search radii tailored to the important ecological features.

- 10km for sites of International Importance (e.g. Special Protection Area (SPA), Ramsar sites);
- 2km for sites of National or Regional Importance (e.g. Sites of Special Scientific Interest (SSSI), protected or otherwise notable species and non-statutory designated sites of County Importance (e.g. Local Wildlife Sites (LWS)); and
- 2km for biological records.

1.1.4 Importance

The importance of ornithological features was determined using a schedule of geographic criteria (Table 1), considering factors such as the quality or extent of designated sites and habitats, species or habitat rarity, degree of threat across their range, and rate of decline.

[1] Chartered Institute of Ecology and Environmental Management (CIEEM). (2024). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Version 1.3. Winchester: CIEEM.

Value was assessed based on conservation significance, contribution to conservation objectives, and potential for restoration if degraded. Where relevant, cultural or economic value was also considered, supported by available evidence.

Sensitivity was defined as the feature's susceptibility to environmental change.

Features were considered important where they exhibited characteristics such as naturalness, rarity, irreplaceability, or high habitat diversity. This includes:

- Rare or declining species.
- Endemic or locally distinct populations.
- Large or concentrated populations of threatened species.
- Habitats with strong connectivity or typical bird assemblages.
- Additional considerations included feature size, seasonal presence, role in ecosystem function, and species at the edge of their range, particularly those vulnerable to climate change.

Table 1. Level of Importance

Level of Importance	Sites	Habitats	Species
International	Designated, candidate or proposed Special Areas of Conservation, Special Protection Areas and Ramsar sites; UNESCO (Ecological) World Heritage Sites; UNESCO Biosphere Reserves; Biogenetic Reserves.	A viable area of habitat included in Annex I of the EC Habitats Directive; a habitat area that is critical for a part of the life cycle of an internationally important species.	A European Protected Species; an IUCN Red Data Book species that is globally Vulnerable, Endangered or Critically Endangered; a Category A internationally important bryophyte assemblage[2].
National (UK)	Sites of Special Scientific Interest/Areas of Special Scientific Interest; National Nature Reserves; Nature Conservation Review Sites; Marine Conservation Zones (UK offshore).	An area of habitat fulfilling the criteria for designation as an SSSI/ASSI or MCZ; a habitat area that is critical for a part of the life cycle of a nationally important species.	Schedule 1 bird species (Wildlife and Countryside Act 1981), due to their special legal protection, are considered of National (UK) importance where present or potentially affected. An IUCN Red Data Book species that is Vulnerable, Endangered or Critically Endangered in the UK; a

[2] Averis, A.B.G, Genney, D.R, Hodgetts, N.G, Rothero, G.P. & Bainbridge, I.P. 2012. *Bryological assessment for hydroelectric schemes in the west highlands* – 2nd edition. Scottish Natural Heritage Commissioned Report No. 449b

Level of Importance	Sites	Habitats	Species
			species that is Rare in the UK (<15 10km grid squares); any species protected under national (UK) legislation where there is the potential for a breach of the legislation; a species that is Vulnerable, Endangered or Critically Endangered in The Vascular Plant Red Data List for Great Britain[3].
National (England, Scotland, Wales, Northern Ireland)	National Parks (Scotland); Marine Protected Areas (Scotland offshore); Marine Consultation Areas (Scotland).	Habitats of principal importance for biodiversity in the relevant countries.	Species of principal importance for biodiversity in the relevant countries, including; SBL Priority Species and PMFs (Scotland).
Regional	Regional (Scotland).		A species that is Nationally Scarce in the UK (present in 16-100 10km grid squares); a species that is included in the Regional LBAP; an assemblage of regionally scarce species.
County / Metropolitan	Royal Society for the Protection of Birds Sites; Local Wildlife Sites (Scotland).		A species that is included in the County LBAP; an assemblage of species that are scarce at the county level.
Local			Species as defined by Local Authority lists (if available).
Site			Common and widespread species not covered above.
Negligible			

[3] Cheffings, C.M. & Farrell, L. (eds), Dines, T.D., Jones, R.A., Leach, S.J., McKean, D.R., Pearman, D.A., Preston, C.D., Rumsey, F.J., Taylor, I. (2005) The Vascular Plant Red Data List for Great Britain. Species Status No. 7. JNCC, Peterborough. Available at: https://hub.jncc.gov.uk/assets/cc1e96f8-b105-4dd0-bd87-4a4f60449907

Level of Importance	Sites	Habitats	Species
Negative			An Invasive Non-Native Species (INNS) as defined by the GB Non-Native Species Secretariat (NNSS) and supported by the GB Invasive Non-native Species Strategy (2015); legally controlled species under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended by the relevant country legislation).

1.1.5 Significance Matrix

The significance of ecological effects has been assessed in accordance with CIEEM EcIA guidance (2018; updated 2023), which recommends considering both the importance of the ecological feature and the magnitude of the predicted impact. The matrix below provides a structured approach to assist professional judgment, supported by clear definitions for transparency.

Definitions

Importance (Value of Ecological Feature):

- International: Critical for global biodiversity (e.g., Ramsar site, SAC of global relevance).
- National: Key to maintaining UK biodiversity (e.g., SSSI, nationally rare species).
- Regional: Important within a region or county (e.g., Local Biodiversity Action Plan priority habitat).
- County: Important within a single county or administrative area.
- Local: Contributes to local ecological networks or green infrastructure.

Magnitude of Impact:

- Major: Permanent or long-term loss or severe degradation of feature integrity.
- Moderate: Partial loss or significant alteration, reversible only in the long term.
- Minor: Small-scale, short-term, or reversible change with limited effect on integrity.
- Negligible: No measurable effect on structure, function, or viability.

Significance of Effect:

- Significant: Likely to influence decision-making or require mitigation/compensation.
- Not Significant: No material influence on decision-making; minor or negligible effect.

Table 2. Significance Matrix

Importance	Major	Moderate	Minor	Negligible
International	Very High (Significant)	High (Significant)	Moderate (May be Significant)	Negligible
National	High (Significant)	Moderate (Significant)	Low (Not Significant)	Negligible
Regional	Moderate (Significant)	Low–Moderate	Low	Negligible
County	Low–Moderate	Low	Negligible	Negligible
Local	Low	Negligible	Negligible	Negligible
Site	Negligible	Negligible	Negligible	Negligible

1.1.6 Assessment Methods

Establishing the Baseline

Baseline ecological conditions were established through a combination of desk study and field surveys, following current best practice and published guidance. The baseline describes the ornithological features present within the zone of influence in the absence of the proposed development, taking into account recent trends, management activities, and other relevant projects. Where appropriate, future baseline conditions were predicted based on available evidence and professional judgement.

All surveys were undertaken by suitably qualified and experienced ornithologist, using standard methodologies appropriate to the habitats and species present. Limitations to data collection, such as seasonal constraints or access restrictions, are clearly identified and their implications for the assessment are discussed.

Identification and Evaluation of Important Ecological Features

Ecological features (habitats, species, and ecosystems) were identified and evaluated for their importance using criteria set out in the CIEEM Guidelines. Importance was assigned within a defined geographical context (international, national, regional, or local), considering factors such as conservation status, rarity, legal protection, and functional role in the landscape. Only those features considered important and potentially affected by the project were taken forward for detailed assessment.

Impact Assessment

The likely impacts of the proposed development on important ornithological features were identified and characterised for all relevant project phases (construction, operation, decommissioning). Impacts were described with reference to:

- Nature of impact: positive or negative
- Extent: spatial area affected
- Magnitude: size or intensity of change
- Duration: short-term, long-term, permanent, or temporary
- Frequency and timing: how often and when impacts occur
- Reversibility: whether effects are reversible or irreversible
- Assessment considered both direct and indirect impacts, as well as cumulative effects arising from other relevant projects or activities.

Mitigation, Compensation, and Enhancement

A sequential approach was adopted to avoid, mitigate, and compensate for negative ornithological impacts, in line with the mitigation hierarchy. Where appropriate, opportunities for ornithological enhancement and biodiversity net gain were identified. The likely effectiveness of proposed measures was evaluated based on current evidence and professional judgement.

Assessment of Residual Effects and Significance

Following the implementation of mitigation and compensation measures, residual effects were assessed for each important ornithological feature. The significance of these effects was determined with reference to the conservation objectives for the feature and the relevant geographical scale. The assessment followed the definitions and approach set out in the CIEEM Guidelines, applying the precautionary principle where uncertainty remained.

Assessment of Cumulative Impacts

Cumulative impacts were assessed by considering the combined effects of the proposed development in conjunction with other relevant projects and activities within the defined zone of influence. This included projects that are consented, under construction, or reasonably foreseeable, as identified through consultation with statutory bodies, review of planning applications, and desk-based data sources. The assessment considered additive and synergistic effects, particularly where ecological features may already be exposed to background levels of threat or pressure. Cumulative impacts were characterised in terms of their nature, extent, magnitude, duration, frequency, and reversibility, consistent with the approach used for direct and indirect impacts. Where appropriate, cumulative effects were evaluated at the relevant geographical scale and with reference to conservation objectives for important ecological features.

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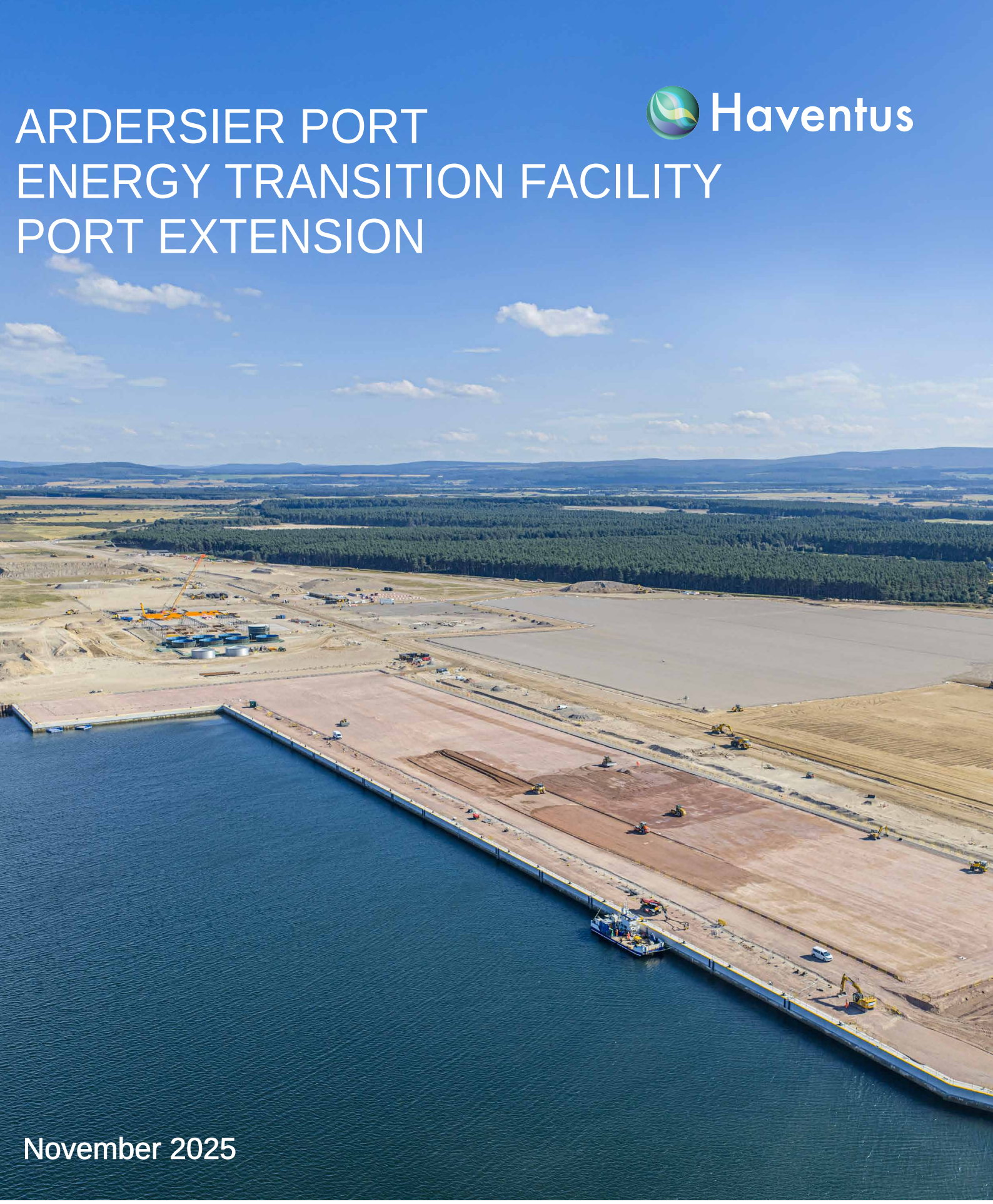

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Appendix 13.3 Desk Study

Ardersier Port Extension

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Appendix 13.3: Desk Study

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1.0 DESK STUDY - ORNITHOLOGY

1.1 DESIGNATED SITES

Internationally designated sites of ornithological interest located within 10km of both the terrestrial site 'the site' and the 'dredge channel' are summarised in Table 1. Additionally, nationally designated sites and local non-statutory sites within 2km of the site are included. Sites designated solely for ornithological features, which would not be subject to direct or indirect impacts only from dredging activities, have been excluded from the Dredged Channel desk study to ensure relevance and focus in the assessment.

Table 1. Statutory and non-statutory designated sites identified during the desk study.

Site Name	Designation	Distance and direction from site	Reasons for designation	Geographic importance[1]
Inner Moray Firth	SPA	c.20m north of the site c.50m north of the Dredged Channel	Qualifying Interest: Inner Moray Firth SPA qualifies under Article 4.1 by regularly supporting populations of European importance of the Annex 1 species: osprey Pandion haliaetus forage throughout the SPA (2008 to 2012, up to 25 territories within feeding range, 12.5% of the GB population, with 4 pairs breeding within the site, 4% of the GB population); common tern Sterna hirundo (310 pairs, 2% of the GB population) and bar-tailed godwit Limosa lapponica (1992/93 to 1996/97 a winter peak mean of 1,090 individuals, 2% of the GB population). The Inner Moray Firth SPA further qualifies under Article 4.2 by regularly supporting populations of European importance of the migratory species (1992/93 to 1996/97 winter peak means): greylag goose Anser anser (2,651 individuals, 3% of the Iceland/UK/Ireland biogeographic population); red-breasted merganser Mergus serrator (1,184 individuals, 1% of the NW &	International

[1] Geographic importance refers to the conservation value of ecological features assessed at scales ranging from international to site level, based on legal designations, rarity, and ecological significance.

Site Name	Designation	Distance and direction from site	Reasons for designation	Geographic importance[1]
			Central Europe biogeographic population), and redshank Tringa totanus (1,621 individuals, 1% of the Eastern Atlantic biogeographic population). • Inner Moray Firth SPA also qualifies under Article 4.2 by regularly supporting in excess of 20,000 individual waterfowl. Between 1992/93 to 1996/97 a winter peak mean of 26,800 individual waterfowl comprising 16,800 wildfowl and 10,000 waders including nationally important populations of the following species: scaup Aythya marila (118 individuals, 1% of the GB population); curlew Numenius arquata (1,262 individuals, 1% of the GB population); goosander Mergus merganser (325 individuals, 4% of the GB population); goldeneye Bucephala clangula (218 individuals, 1% of the GB population); teal A. crecca (2,066 individuals, 1% of the GB population); wigeon Anas penelope (7,310 individuals, 3% of the GB population); cormorant Phalacrocorax carbo (409 individuals, 3% of the GB population); redshank (1,621 individuals, 1% of the GB population); red-breasted merganser (1,184 individuals, 12% of the GB population); greylag goose (2,651 individuals, 3% of the GB population) and bar-tailed godwit (1,090 individuals). In the five-year period 1991/92 to 1995/96, a winter peak mean of 33,148 individual waterfowl was recorded with the assemblage additionally including a nationally important population, greater than 2,000 individuals, of oystercatcher Haematopus ostralegus (3,063 individuals, 0.9% of the GB population).	
Inner Moray Firth	Ramsar	c.20m north of the site	Inner Moray Firth Ramsar Site qualifies under Ramsar Criterion 1 by virtue of it containing a variety of wetland types:	International

Site Name	Designation	Distance and direction from site	Reasons for designation	Geographic importance[1]
		c.50m north of the Dredged Channel	• Intertidal mudflats and sandflats supporting areas of saltmarsh are exceptionally well represented throughout the Inner Moray Firth. On the Beauly Firth a large area of saltmarsh covers the mudflats and sandflats. The bays at Munlochy, Longman and Castle Stuart are particularly dominated by extensive mudflats. Of specific importance are the large and dense eelgrass beds. • At Whiteness Head, there are sand dunes and a shingle bar. The shingle bar encloses a building intertidal system including, sandflats and associated saltmarsh. Sand dunes and further extensive areas of sandflats, lie to the southwest of the bar. Inner Moray Firth Ramsar Site also qualifies under Ramsar Criterion 2 by supporting: • Osprey Pandion haliaetus forage throughout the Ramsar Site (2008 to 2012, up to 25 territories within feeding range, 12.5% of the GB population, with 4 pairs breeding within the site, 4% of the GB population), and • Common tern Sterna hirundo (310 pairs, 2% of the GB population). Inner Moray Firth Ramsar Site further qualifies under Ramsar Criterion 5 by regularly supporting waterbirds in numbers of 20,000 individuals or more. In the five-year period 1992/93 to 1996/97, a winter peak mean of 26,800 individual waterbirds was recorded, comprising 16,800 wildfowl and 10,000 waders. The site also qualifies under Ramsar Criterion 4 by supporting the following waterbird species at a critical stage in their life cycles: • Scaup Aythya marila (118 individuals, 1% of the GB population). • Curlew Numenius arquata (1,262 individuals, 1% of the GB population)	

Site Name	Designation	Distance and direction from site	Reasons for designation	Geographic importance[1]
			• Goosander Mergus merganser (325 individuals, 4% of the GB population). • Goldeneye Bucephala clangula (218 individuals, 1% of the GB population). • Teal A. crecca (2,066 individuals, 1% of the GB population). • Wigeon Anas penelope (7,310 individuals, 3% of the GB population), and • Cormorant Phalacrocorax carbo (409 individuals, 3% of the GB population). • In the five-year period 1991/92 to 1995/96, a winter peak mean of 33,148 individual waterbirds was recorded with the assemblage additionally including a nationally important population, greater than 2,000 individuals, of: • Oystercatcher Haematopus ostralegus (3,063 individuals, 0.9% of the GB population). Bar-tailed godwit, greylag goose, red-breasted merganser and redshank are also components of the waterbird assemblage. Inner Moray Firth Ramsar site qualifies under Ramsar Criterion 6 by regularly supporting 1% or more of the individuals in a population of waterbirds (1992/93 to 1996/97, winter peak means): • Bar-tailed godwit Limosa lapponica (1,090 individuals, 1% of the Western European biogeographic population). • Greylag goose Anser anser (2,651 individuals, 3% of the Iceland/UK/Ireland biogeographic population). • Red-breasted merganser Mergus serrator (1,184 individuals, 1% of the NW & Central Europe biogeographic population), and	

Site Name	Designation	Distance and direction from site	Reasons for designation	Geographic importance[1]
			Redshank Tringa totanus (1,621 individuals, 1% of the Eastern Atlantic biogeographic population).	
Moray Firth	SPA	c.730m from the site c.250m northwest of the Dredged Channel	Qualifying Interest: The Moray Firth Special Protection Area (SPA) qualifies under Article 4.1 by regularly supporting a non-breeding population of European importance of the following Annex 1 species: great northern diver Gavia immer (a mean peak annual non-breeding population of 144 individuals (5.8% of the Great Britain population) for the years 2001/02-2006/07), red throated diver Gavia stellata (a mean peak annual non-breeding population of 324 individuals (1.9% of the Great Britain population) for the years 2001/02-2006/07) and Slavonian grebe Podiceps auritus (a mean peak annual non-breeding population of 43 individuals (3.9% of the Great Britain population) for the years 2001/02-2005/06). The site further qualifies under Article 4.2 by regularly supporting populations of European importance of the following migratory species: greater scaup Aythya marila (a mean peak annual non-breeding population of 930 individuals (17.9% of the Great Britain population) for the years 2001/02 to 2005/06), common eider Somateria mollissima (a mean peak annual non-breeding population of 1,733 individuals (2.9% of the Great Britain population) for the years of 2001/02 to 2006/07), long-tailed duck Clangula hyemalis (a mean peak annual non breeding population of 5,001 individuals (45.5% of the Great Britain population) for the years of 2001/02 to 2005/6), common scoter Melanitta nigra (a mean peak annual non-breeding population of 5,479 individuals (5.5% of the	International

Site Name	Designation	Distance and direction from site	Reasons for designation	Geographic importance[1]
			Great Britain population) for the years 2001/02 to 2005/06), velvet scoter Melanitta fusca (a mean peak annual non-breeding population of 1,488 individuals (59.5% of the Great Britain population) for the years 2001/02 to 2005/06), common goldeneye Bucephala clangula (a mean peak annual non-breeding population of 907 individuals (4.5% of the Great Britain population) for the years 2001/02 to 2005/06), red breasted merganser Mergus serrator (a mean peak annual non-breeding population of 151 individuals (1.8% of the Great Britain population) for the years of 2001/02 to 2005/06) and European shag Phalacrocorax aristotelis (at least 6,462 individuals during the non-breeding season (3.2% of the biogeographic population and 5.9% of the Great Britain population) and 5,494 individuals during the breeding season ((2.7% of the biogeographic population & 10.2% of the Great Britain population) for the years 1980-2006).	
Moray and Nairn Coast	SPA	c. 8.2km east from the site	Qualifying Interest N.B All figures relate to numbers at the time of classification except where amended by the 2001 SPA Review (osprey, dunlin, oystercatcher, wigeon) and/or subsequent surveys (foraging osprey): Moray and Nairn Coast SPA qualifies under Article 4.1 by regularly supporting populations of European importance of the Annex 1 species: osprey Pandion haliaetus forage throughout the SPA (2008 to 2012, five year mean of up to 9 territories within feeding range, 4.5% of the GB population and 7 pairs breeding within the site, 7% of the GB population) and bar-tailed godwit Limosa lapponica (five year winter peak mean 1989/90 to 1993/94 of 899 individuals, 2% of the GB	International

Site Name	Designation	Distance and direction from site	Reasons for designation	Geographic importance[1]
			population). Moray and Nairn Coast SPA further qualifies under Article 4.2 by regularly supporting populations of European importance of the migratory species: pink-footed goose Anser brachyrhynchus (1988/89 to 1992/93, winter peak mean of 7,538 individuals, 4% of the Eastern Greenland/Iceland/UK biogeographic population); greylag goose Anser anser (1988/89 to 1992/93, winter peak mean of 3,023 individuals, 3% of the Iceland/UK/Ireland biogeographic population) and redshank Tringa totanus (1989/90 to 1993/94, winter peak mean of 1,690 individuals, 1% of the Eastern Atlantic biogeographic population). Moray and Nairn Coast SPA also qualifies under Article 4.2 by regularly supporting in excess of 20,000 individual waterfowl. In the five-year period 1989/90 to 1993/94, a winter peak mean of 24,000 individual waterfowl was recorded comprising 14,500 wildfowl and 9,500 waders including nationally important populations of the following species: bar-tailed godwit (899 individuals); pink-footed goose (7,538 individuals, 4% of the GB population); greylag goose (3,023 individuals, 3% of the GB population); redshank (1,690 individuals, 2% of the GB population); red-breasted merganser Mergus serrator (102 individuals, 1% of the GB population). A winter peak mean of 20,250 individual waterfowl was recorded, including nationally important populations in the five year period 1991/92 to 1995/96, greater than 2,000 individuals of the following species: dunlin Calidris alpina alpina(2,689 individuals, 0.5% of the GB population); oystercatcher Haematopus ostralegus (2,171 individuals, 0.6% of the GB population); and wigeon Anas penelope (2,600 individuals, 0.9% of the GB population).	

Site Name	Designation	Distance and direction from site	Reasons for designation	Geographic importance[1]
Moray and Nairn Coast	Ramsar	c. 8.2km east from the site	The Moray and Nairn Coast Ramsar site qualifies under Ramsar Criterion 1 by virtue of it containing a variety of wetland types: • Sand dunes, at Culbin. • Recently deposited and more stable vegetated shingle (with a diverse flora including dune grassland and herb-rich heath), forms extensive bars at Culbin with additional beaches and a smaller bar at Spey Bay. Culbin Bar lies offshore and is 7km long. • Large intertidal mudflats (with sizable eelgrass beds) and sandflats support saltmarsh, at Culbin, Findhorn Bay and Spey Bay. All are relatively unaffected by reclamation or industrial development. • On the more stable river shingles at Spey Bay and the Lower River Spey, estuarine alder woodland (dominated by alder with areas of willow and mixed stands of alder/ash), considered to be among the best natural examples of this habitat in Britain. The Moray and Nairn Coast Ramsar site qualifies under Ramsar Criterion 2 by supporting: Vascular plants: • The nationally scarce sea centaury Centaurium littorale particularly associated with the saltmarsh habitat. • The vulnerable dwarf eelgrass Zostera noltei on the saltmarsh of the intertidal mudflats. • On the shingle two nationally scarce plants oysterplant Mertensia maritima and in damp slacks within the shingle Baltic rush Juncus balticus.	International

Site Name	Designation	Distance and direction from site	Reasons for designation	Geographic importance[1]
			Invertebrates: • Ochthebius lenensis, a water beetle, found near freshwater and brackish waterbodies within the intertidal mudflats, saltmarsh and estuarine alder woodland, and • Tetanocera freyi, a snail killing fly, on the saltmarshes. The plant species are all associated with the specified Ramsar habitats and are protected and managed as part of them. The Moray and Nairn Coast Ramsar site also qualifies under Ramsar Criterion 2 by supporting: • Osprey Pandion haliaetus, which forage throughout the Ramsar site (2008 to 2012, five year mean of up to 9 territories within feeding range, 4.5% of the GB population and 7 pairs breeding within the site, 7% of the GB population) • Bar-tailed godwit Limosa lapponica (1989/90 to 1993/94, five year winter peak mean of 899 individuals, 2% of the GB population). The Moray and Nairn Coast Ramsar site further qualifies under Ramsar Criterion 5 by regularly supporting waterbirds in numbers of 20,000 individuals or more. In the five-year period 1989/90 to 1993/94 a winter peak mean of 24,000 individual waterbirds was recorded comprising 14,500 wildfowl and 9,500 waders. The site also qualifies under Ramsar Criterion 4 by supporting the following waterbird species at a critical stage in their life cycles: • Red-breasted merganser Mergus serrator (102 individuals, 1% of the GB population). A winter peak mean of 20,250 individual waterbirds was recorded, including nationally important populations in the five year	

Site Name	Designation	Distance and direction from site	Reasons for designation	Geographic importance[1]
			period 1991/92 to 1995/96, greater than 2,000 individuals of the following species: • Dunlin Calidris alpina alpina (2,689 individuals, 0.5% of the GB population). • Oystercatcher Haematopus ostralegus (2,171 individuals, 0.6% of the GB population). • Wigeon Anas penelope (2,600 individuals, 0.9% of the GB population). Bar-tailed godwit, pink-footed goose, greylag goose and redshank are also components of the waterbird assemblage. The Moray and Nairn Coast Ramsar site also qualifies under Ramsar Criterion 6 by regularly supporting 1% or more of the individuals in a population of waterbirds: • Pink-footed goose Anser brachyrhynchus (1988/89 to 1992/93, winter peak mean of 7,538 individuals, 4% of the Eastern Greenland/Iceland/UK biogeographic population). • Greylag goose Anser anser (1988/89 to 1992/93, winter peak mean of 3,023 individuals, 3% of the Iceland/UK/Ireland biogeographic population). • Redshank Tringa totanus (1989/90 to 1993/94, winter peak mean of 1,690 individuals, 1% of the Eastern Atlantic biogeographic population).	
Cromarty Firth	SPA	c. 8.6km north from the site	Qualifying Interest N.B All figures relate to numbers at the time of classification except where amended by the 2001 SPA Review (osprey, dunlin) and/or subsequent surveys (foraging osprey and oystercatcher): Cromarty Firth SPA qualifies under Article 4.1 by regularly supporting populations of European importance of the Annex 1 species: osprey Pandion haliaetus forage throughout the SPA (2008 to 2012, five year mean of up to 25 territories within	International

Site Name	Designation	Distance and direction from site	Reasons for designation	Geographic importance[1]
			feeding range, 12.5% of the GB population, with 1 pair breeding within the site, 1% of the GB population); common tern Sterna hirundo (1989 to 1993 mean of 294 pairs; 2% of the GB population); whooper swan Cygnus cygnus (1992/93 to 1996/97 winter peak mean of 64 individuals, 1% of the GB population) and bartailed godwit Limosa lapponica (1,355 wintering individuals, 3% of the GB population). Cromarty Firth SPA further qualifies under Article 4.2 by regularly supporting a population of European importance of the migratory species: greylag goose Anser anser (1992/93 to 1996/97 winter peak mean of 1,782 individuals; 2% of the Iceland/UK/Ireland biogeographic population). Cromarty Firth SPA also qualifies under Article 4.2 by regularly supporting in excess of 20,000 individual waterfowl. In the five-year period 1992/93 to 1996/97, a winter peak mean of 30,200 individual waterfowl was recorded, comprising 14,800 wildfowl and 15,400 waders including nationally important populations of the following species: redshank Tringa totanus (1,149 individuals, 1% of the GB population); curlew Numenius arquata (1,313 individuals, 1% of the GB population); knot Calidris canutus (4,312 individuals, 1% of the GB population); red-breasted merganser Mergus serrator (204 individuals, 2% of the GB population); scaup Aythya marila (295 individuals, 3% of the GB population); pintail Anas acuta (319 individuals, 1% of the GB population); wigeon Anas penelope (9,204 individuals, 3% of the GB population); greylag goose (1,782 individuals, 2% of the GB population); bar-tailed godwit (1,355 individuals) and whooper swan (64 individuals). In the five-year period 1991/92 to 1995/96, a winter peak mean of 34,847 individual waterfowl was recorded with the assemblage additionally including nationally important populations greater than 2,000 individuals of: dunlin Calidris alpina alpina	

Site Name	Designation	Distance and direction from site	Reasons for designation	Geographic importance[1]
Loch Flemington	SPA	c. 4.7km south from the site	Loch Flemington SPA is a small, shallow eutrophic loch 8 km southwest of Nairn. The undisturbed aquatic plant community includes diverse submerged and emergent vegetation, and sedge fen. The boundary of the SPA generally follows a line 20m from the shore of Loch Flemington, within the Kildrummie Kames SSSI. The site is of special nature conservation and scientific importance within the European Community because it supports a nationally important population of breeding Slavonian grebe Podiceps auritus. Within the EC this species breeds only in Britain, Sweden and Finland, and because of its rarity it is listed as requiring special conservation measures under Article 4.1 of The Wild Birds Directive. From 1991 to 1995 an average of 6 pairs of Slavonian grebe bred within the Loch Flemington SPA, representing 10% of the GB breeding population. During this period the average productivity of the site was 0.7 chicks per pair, well above the average productivity for the British population. In Britain, Slavonian grebes only breed in Scotland where breeding was first recorded in 1909, since when the population has risen slowly to its current level of around 60 pairs (1992-1995 mean population). The grebes remain on the loch during the breeding season, nesting in the sedge beds and feeding in the open water. Recent research has shown that the breeding success of the grebes may be adversely affected by disturbance and the Loch Flemington SPA includes a small area of the land fringing the loch.	International
Whiteness Head	SSSI	c.20m northeast and c.250 northwest of the site	Site of Special Scientific Interest (SSSI) notified natural features: Geological • Geomorphology: Coastal geomorphology of Scotland Biological	National

Site Name	Designation	Distance and direction from site	Reasons for designation	Geographic importance[1]
		c.50m north of the Dredged Channel	• Birds: Bar-tailed godwit Limosa lapponica issue, non-breeding • Birds: Knot Calidris canutus, non-breeding • Intertidal marine habitats: Sandflats • Coastlands: Saltmarsh • Coastlands: Sand dunes • Coastlands: Shingle	
Rosemarkie and Shandwhich Coast	SSSI	c.5.6km west of the site	Notified natural features: Geological: • Structural and metamorphic geology: Moine • Stratigraphy: Callovian • Palaeontology: Mesozoic Palaeobotany Biological: • Coastlands: Maritime cliff • Coastlands: Sand dune • Woodlands: Upland birch woodland • Vascular plants: Purple mountain milk-vetch (Oxytropis halleri) Birds: Breeding Cormorant	National
Longman and Castle Stuart Bays	SSSI	c.7.3km southwest of the site	Notified natural features: Biological • Coastlands: Eelgrass beds • Coastlands: Mudflat • Coastlands: Saltmarsh • Birds: Cormorant Phalacrocorax carbo • Birds: Goldeneye Bucephala clangula • Birds: Red-breasted merganser Mergus serrator • Birds: Redshank Tringa totanus	National

Site Name	Designation	Distance and direction from site	Reasons for designation	Geographic importance[1]
			Birds: Wigeon Anas penelope	

1.2 SCHEDULE 1 BIRDS

Table 2 Results of the NBN data search for protected birds within 5km of site.

Species	Scientific name	Schedule 1[2]	Importance
Barn Owl	*Tyto alba*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Bearded Tit	*Panurus biarmicus*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Bittern	*Botaurus stellaris*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Black Grouse	*Lyrurus tetrix*	No	National (UK) importance: Red-listed species of conservation concern.
Black Redstart	*Phoenicurus ochruros*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).

[2] Schedule 1 species are birds protected under the Wildlife and Countryside Act 1981 from disturbance during nesting, with additional safeguards for their nests and dependent young.

Species	Scientific name	Schedule 1[2]	Importance
Black-tailed Godwit	*Limosa limosa*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Black-throated Diver	*Gavia arctica*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Brambling	*Fringilla montifringilla*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Capercaillie	*Tetrao urogallus*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Common Scoter	*Melanitta nigra*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Crested Tit	*Lophophanes cristatus*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Crossbill	*Loxia curvirostra*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Fieldfare	*Turdus pilaris*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).

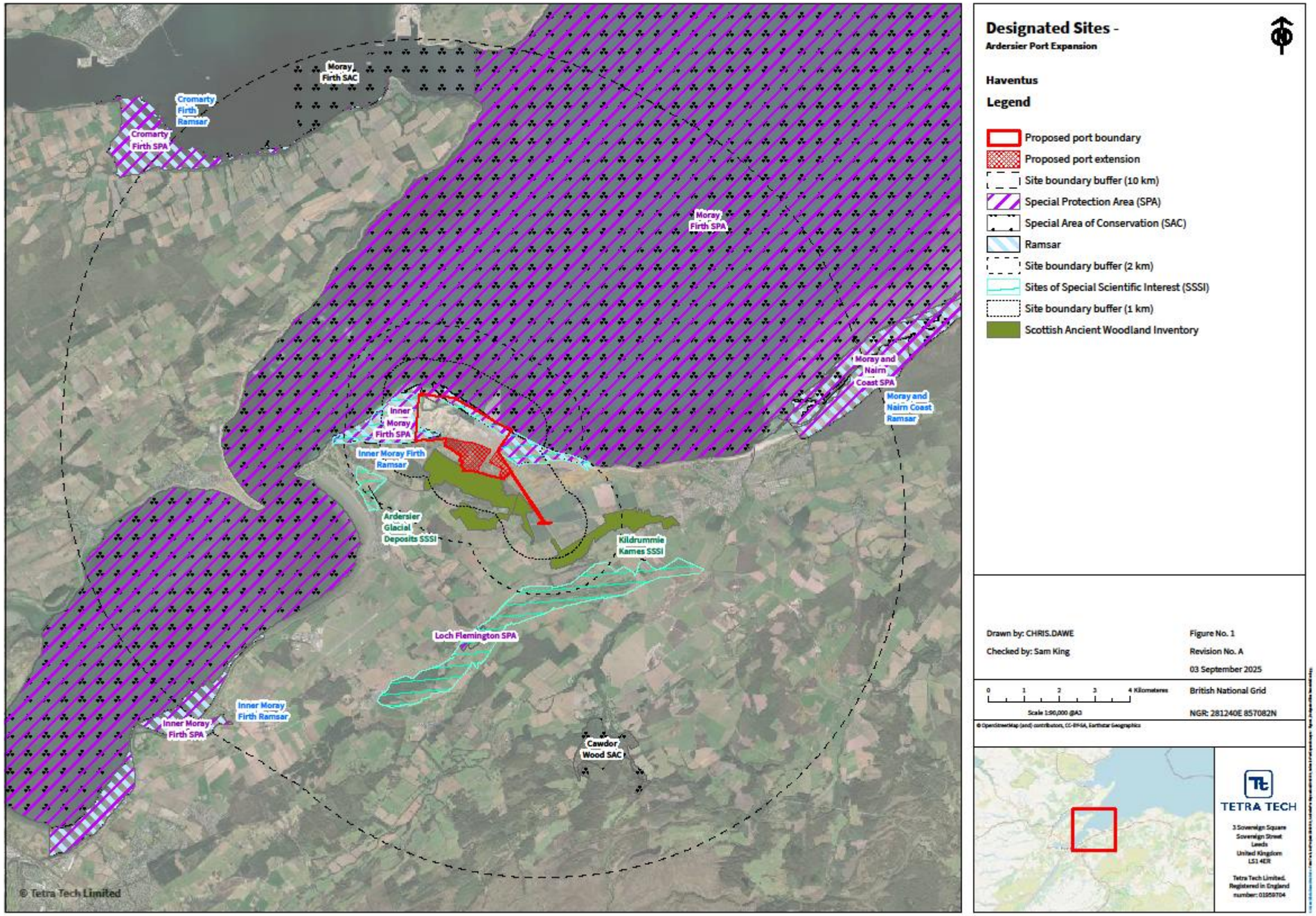
Species	Scientific name	Schedule 1[2]	Importance
Garganey	*Spatula querquedula*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Goldeneye	*Bucephala clangula*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Great Northern Diver	*Gavia immer*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Greenland White-fronted Goose	*Anser albifrons flavirostris*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Greenshank	*Tringa nebularia*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Kingfisher	*Alcedo atthis*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Leach's Petrel	*Hydrobates leucorhous*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Little Gull	*Hydrocoloeus minutus*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).

Species	Scientific name	Schedule 1[2]	Importance
Little Tern	*Sternula albifrons*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Long-tailed Duck	*Clangula hyemalis*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Mediterranean Gull	*Ichthyaetus melanocephalus*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Merlin	*Falco columbarius*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Peregrine	*Falco peregrinus*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Pintail	*Anas acuta*	No	National (UK) importance: Amber-listed species of conservation concern.
Quail	*Coturnix coturnix*	No	National (UK) importance: UKBAP Priority Species.
Red-throated Diver	*Gavia stellata*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Ruff	*Calidris pugnax*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).

Species	Scientific name	Schedule 1[2]	Importance
Scaup	*Aythya marila*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Slavonian Grebe	*Podiceps auritus*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Snow Bunting	*Plectrophenax nivalis*	No	National (UK) importance: Amber-listed species of conservation concern.
Velvet Scoter	*Melanitta fusca*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Whimbrel	*Numenius phaeopus*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).
Whooper Swan	*Cygnus cygnus*	Yes	National (UK) importance: Species protected under national (UK) legislation (Schedule 1, Wildlife and Countryside Act 1981).

2.0 FIGURE

Figure 1 Statutory Designated Sites



Designated Sites -
Ardersier Port Expansion

Haventus

Legend

- Proposed port boundary
- Proposed port extension
- Site boundary buffer (10 km)
- Special Protection Area (SPA)
- Special Area of Conservation (SAC)
- Ramsar
- Site boundary buffer (2 km)
- Sites of Special Scientific Interest (SSSI)
- Site boundary buffer (1 km)
- Scottish Ancient Woodland Inventory

Drawn by: CHRIS.DAWE
Checked by: Sam King

Figure No. 1
Revision No. A
03 September 2025

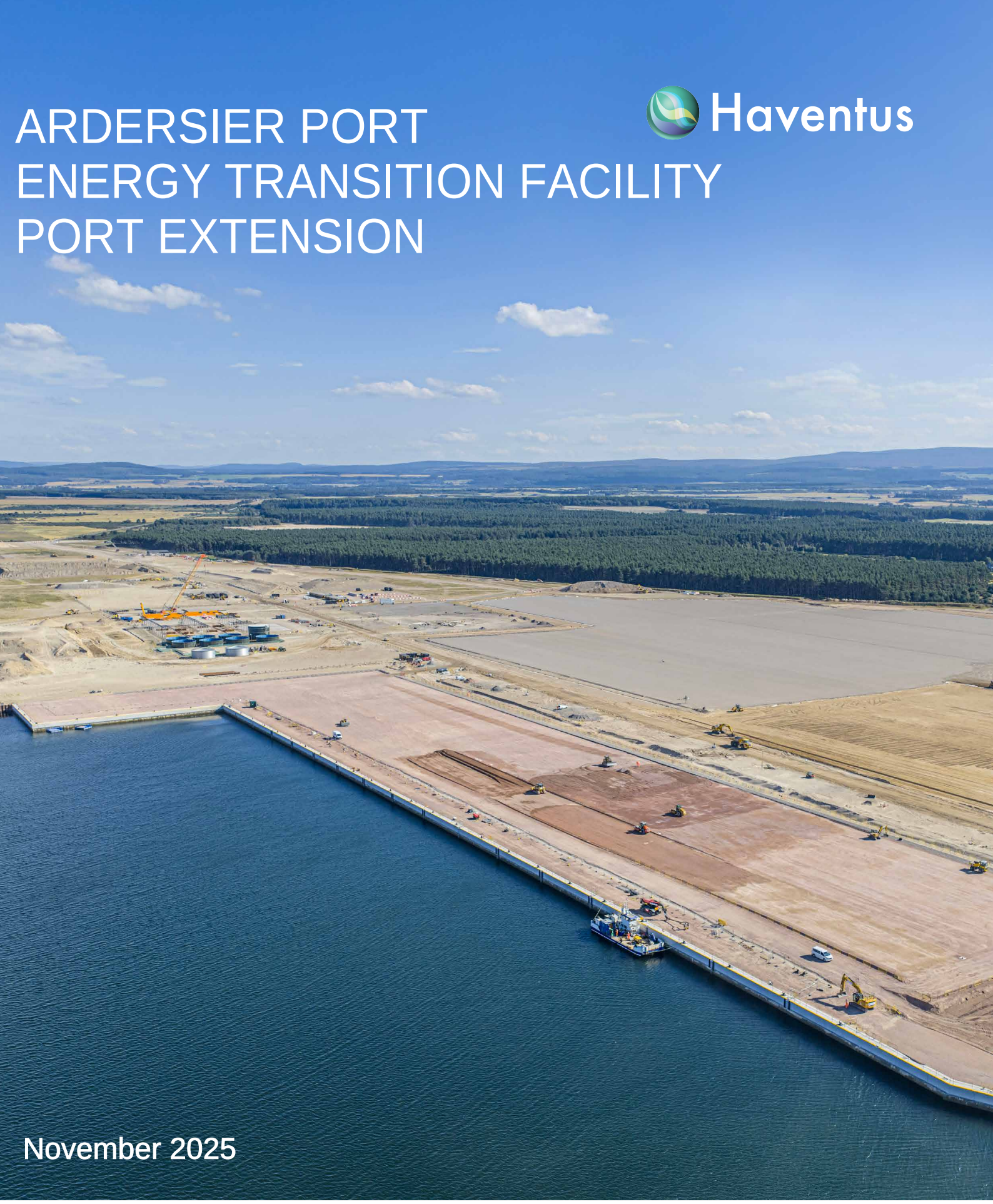
0 1 2 3 4 Kilometers
Scale 1:90,000 @A3

British National Grid
NGR: 281240E 857082N

TETRA TECH
3 Sovereign Square
Sovereign Street
Leeds
United Kingdom
LS1 4ER
Tetra Tech Limited.
Registered in England
number: 01959704

ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus



November 2025

Appendix 13.4 Mitigation

Ardersier Port Extension

784-B069769

Appendix 13.4: Mitigation

Haventus

September 2025

Document prepared on behalf of Tetra Tech Limited. Registered in England number: 01959704

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DOCUMENT CONTROL

Document:	Appendix 13.4: Mitigation
Project:	Ardersier Port Extension
Client:	Haventus
Project Number:	784-B069769

Revision:	V1.0	**Prepared by:**	Sam King [Redacted] **Senior Ecologist**
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Revision:		**Prepared by:**	
Status:		**Approved By:**	
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TABLE OF CONTENTS

1.0 MITIGATION - ORNITHOLOGY

1.1 EMBEDED MITIGATION

This section sets out the mitigation hierarchy and enhancement measures required to avoid, reduce, or compensate for significant adverse effects on ornithological receptors identified in Section 1.5 of Chapter 13 (Ornithology). The approach follows CIEEM (2024)[1] best practice, with embedded, additional, and compensatory measures designed to address the specific sensitivities of SPA/SSSI/Ramsar waders, breeding birds, raptors, and pinewood specialists. Any effects which cannot be mitigated or reduced are referred to as residual effects in Chapter 13 (Ornithology) Section 1.7.

A 3 m high earth bund has been constructed along the consented boundary to provide a physical barrier between construction activities and adjacent intertidal habitats. This bund functions as an embedded avoidance measure to reduce visual and acoustic disturbance to the statutory designated sites' wader assemblages during both construction and operation. The proposed extension works will remain within the existing bunded zone, ensuring the effectiveness of this mitigation feature is maintained throughout the project lifecycle.

In addition to the existing 3 m bund, a further 2 m bund is proposed along the eastern boundary to provide additional visual screening and reduce potential disturbance to waders. The location and design of this bund will be confirmed in consultation with the project team and statutory consultees. Consideration is being given to strategic placement to further reduce line-of-sight impacts and maintain the effectiveness of this embedded mitigation feature.

The design of the proposed development has incorporated a range of embedded mitigation measures to avoid or minimise ornithological effects from the outset.

These measures apply across SPA/SSSI/Ramsar waders, onsite breeding birds, raptors/Schedule 1 and pinewood specialists unless receptor-specific text states otherwise (see Chapter 13 (Ornithology) Section 1.6 and Tables 13.5–13.6):

- Bund screening and visual/noise screening at sensitive interfaces;
- ECoW-verified setback buffers at mapped roosts/shoreline and adaptive scheduling to avoid peak high-tide windows and severe cold snaps;
- Directional, shielded and curfewed lighting to minimise spill to intertidal and retained woodland;
- Disciplined access/traffic controls along shore-adjacent corridors;
- SEPA GPP-aligned drainage, turbidity and pollution controls (CEMP); and
- Vessel-management protocol for assembly & tow-out (slow, predictable transits on agreed routes; avoid peak periods where practicable; on-water observation with adaptive response) as secured in Appendix 13.9.
- Retention of Key Habitats: Where feasible, retention of woodland edges, scrub, and buffer zones adjacent to intertidal habitats to maintain habitat connectivity and reduce edge effects, illustrated in Figure Woodland Buffer in Chapter 3 (Project Description).

[1] Chartered Institute of Ecology and Environmental Management (CIEEM). (2024). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. Version 1.3. Winchester: CIEEM.

- Timing of Works: Where feasible and if required, programme clearance and construction activities outside the main breeding season for birds (March–August) and outside peak high-tide roost periods for waders, wherever practicable.

1.2 CONSTRUCTION PHASE MITIGATION

The species mitigation plans for sensitive ornithological receptors should include, but are not limited to, the following measures.

For SPA/SSSI/Ramsar Waders:

- **Noise and Visual Screening:** Where physical screening is not feasible, implement an activity schedule to minimise disturbance. Noisy works such as piling, dredging, and heavy vehicle movements will be programmed to avoid peak periods of sensitivity, including the wader breeding season.
- Prior to works near intertidal margins, the ECoW will confirm roost/foraging locations and set no-go/setback buffers, refining adaptively based on monitoring. Noisy works such as piling and heavy vehicle movements will be scheduled to avoid peak high-tide periods and severe cold snaps, applying adaptive scheduling rather than blanket seasonal shut-downs. Traffic discipline will be enforced near intertidal margins, with defined access routes and speed limits to minimise repeated disturbance.
- **Sediment and Pollution Control:** Implement robust silt fencing, bunding, and spill response protocols to prevent sediment plumes and pollution from reaching intertidal habitats, in accordance with SEPA Guidance for Pollution Prevention (GPP)[2] and the CEMP Pollution Prevention Plan.

Water-quality (turbidity/sedimentation) controls:

- **Implement a CEMP and HMP covering**: silt fencing, settlement/attenuation measures, cofferdams where appropriate, secondary containment, and designated refuelling/maintenance zones away from water.
- **Spill prevention & response**: on-plant spill kits, trained operatives, and stop-work triggers in adverse weather.
- **Drainage isolation/booms as required**; turbidity/visual monitoring during sensitive near-shore activities where an ornithological pathway exists.
- **The construction drainage design** (e.g., two-stage cut-off drains, staged platforming, permeable paving/infiltration, inlet screening) are relied upon to prevent off-site sediment delivery to SPA supporting habitats.

Construction pollution risk (fuels, oils, concrete/cement washings, silt-laden runoff)**:**

- Secure storage of fuels/chemicals; bunded tanks (≥110%); designated refuelling areas with drip-trays and interception.
- Concrete management: controlled washout areas; capture and correct disposal of cementitious waters and sediments.
- Wheel-wash / housekeeping: clean internal/local haul routes; manage stockpiles; maintain spill logs; ECoW oversight with authority to enforce stop-works.

[2] Scottish Environment Protection Agency (SEPA). *Guidance for Pollution Prevention (GPPs)*. Available at: https://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series-gpps/

- Pollution control will follow SEPA GPP practice for storage, refuelling, concrete washout and spill response; these measures interrupt source–pathway–receptor links to supporting intertidal habitats.

Noise & visual disturbance controls for SPA/Ramsar waders:

Embedded measures include the existing ~3 m bund along the consented boundary and an additional ~2 m bund on the eastern boundary to improve visual/acoustic screening to adjacent roosts, plus ECoW-verified roost buffers and adaptive scheduling to avoid peak high-tide windows and severe cold snaps wherever practicable.

- Programme high-disturbance tasks (e.g., piling, concentrated HGV runs) to avoid peak high-tide windows and severe cold snaps, wherever practicable.
- ECoW-verified setback buffers to mapped high-tide roosts, with daily checks during shore-proximal works.
- Directional, shielded lighting with dimming/curfew regimes to minimise spill toward intertidal areas. Lighting performance and commissioning may include:
    - Prepare a site Lighting Plan (CEMP annex) showing fittings, optics, tilt, CCT and expected horizontal illuminance to sensitive edges;
    - Pre-commissioning design check and post-commissioning field verification (lux mapping) along the shore-facing boundary and at mapped roost margins;
    - Select low-spill optics and warm-white sources to reduce blue-light content;
    - Use dimming/curfew and switching hierarchies to maintain the minimum safe lighting needed for the task;
    - Record aiming/focus settings at handover and add to the Mitigation Log; correct exceedances with shielding/re-aiming before works proceed.
- Contingency quiet-roost measures (e.g., supratidal scrape/berm) if monitoring evidences sustained displacement pressure.

These measures are secured through the Outline CEMD → CEMP and the Habitat Management Plan.

Assembly & tow-out vessel-management protocol

- Timing of tow-out and near-shore operations to avoid peak periods for SPA qualifying features, where practicable.
- Tow-out will be conducted at low speeds (~3–4 knots), using agreed transit routes to minimise residence time in near-shore SPA waters, and avoiding peak non-breeding periods where practicable. Operational protocols will limit the use and speed of RIBs and implement on-water observation with adaptive responses if notable bird displacement is detected.

For Onsite Breeding Birds:

- **Pre-Works Checks:** During the nesting bird season (typically March to August), a qualified ecologist will carry out pre-works nesting bird checks within 48 hours of any vegetation clearance. If active nests are found, works must cease within a minimum 10–50 m buffer (species-specific, following NatureScot guidance) until fledging is complete, as per NatureScot and Goodship & Furness (2022)[3].
- **Dissuasion (if required):** Where early clearance is not possible, use non-lethal dissuasion (e.g. strimming, bird scarers) before the breeding season to discourage nesting in areas scheduled for disturbance.

[3] Goodship, N.M. & Furness, R.W. (2022). *Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species*. NatureScot Research Report 1283.

- Apply lighting controls adjacent to retained habitats during the breeding season to avoid unnecessary light spill.

For Raptors and Pinewood Specialists:

- **Nest Protection:** Identify and map all active raptor and Schedule 1 nests prior to works. Implement species-specific exclusion zones. Works requiring disturbance licence will be supervised by a specialist ornithologist.
- **Schedule of Felling:** Schedule felling in areas of woodland with known or potential raptor nests outside the core bird breeding season (typically March–August), applying species-specific evidence and licence conditions where timing outside this window is required. If active raptor nests are identified, establish a suitable species-specific buffer within which no felling or disturbance will take place until the breeding season has concluded.
- **Licensing:** Where disturbance to Schedule 1 birds (including raptors and pinewood specialists) cannot be avoided through timing and exclusion zones, works will proceed only under a NatureScot Schedule 1 disturbance licence, with supervision by a specialist ornithologist.
- **Toolbox Talks:** All site personnel will receive ornithology toolbox talks, including legal obligations and nest reporting protocols.

Note: Where seasonal constraints and exclusion zones cannot be fully implemented, a suitably qualified ornithologist will be present on site to advise and implement additional mitigation measures as required, ensuring compliance with legal protections and project commitments.

1.3 OPERATIONAL PHASE MITIGATION

- **Directional Lighting**: Install downward-facing, shielded lighting to minimise light spill onto adjacent intertidal and woodland habitats, maintaining dark corridors for nocturnal and crepuscular species. The lighting strategy will be developed in accordance with the Lighting Plan appendix and will inform the final design.
- **Vessel operations** (operational tow-out protocol): Maintain the tow-out vessel-management protocol for episodic operational movements: slow speeds (~3–4 knots) on agreed routes, timing to avoid peak periods for SPA qualifying features where practicable, and on-water observation with adaptive response if notable displacement is detected.
- **Habitat Management**: Manage the retained buffer habitat to support key species by retaining mature conifers for crossbill, create standing deadwood for crested tit, and consider specific habitat needs for woodcock.
- **Access Control**: Prohibit access to sensitive retained habitat areas (e.g., roosts, retained woodland) for all site personnel. These areas will be clearly demarcated with fencing and signage, and no entry will be permitted except by authorised ecological staff for monitoring purposes.

1.4 MONITORING AND ADAPTIVE MANAGEMENT

Post-Construction Monitoring:

- Post-Construction Monitoring: Monitoring of wader roosts, breeding bird territories, and raptor nest sites will be undertaken in accordance with the Habitat Management Plan (HMP) and reviewed annually as part of the HMP review process. Results will be assessed by a qualified ornithologist and reported to NatureScot and The Highland Council (THC).
- Habitat Establishment Monitoring: Monitoring of habitat establishment and the use of artificial nest sites will be carried out as set out in the HMP and reviewed annually in line with the HMP review process.

Trigger Points for Action:

- If monitoring identifies significant on-site declines in key bird populations or failure of compensatory habitats to establish, additional measures (e.g., further habitat creation, enhanced exclusion zones) will be implemented in consultation with statutory agencies. These actions will be guided by and incorporated into the Habitat Management Plan (HMP), which will be reviewed annually in consultation with statutory consultees

Monitoring outputs will be reported annually to NatureScot and The Highland Council (THC). During early construction in shore-adjacent areas, the ECoW will keep short notes during periodic checks for the first fortnight, then weekly unless triggers are reached (e.g., repeated flushes at mapped roosts; adverse-weather constraint breaches). A weekly dashboard to the PMT will record compliance and any adaptive refinements agreed with the Site Manager. Roost-use spot counts at agreed high tides (≥2 per week in peak winter months) within the nearest supratidal cells; trigger = ≥25% sustained reduction versus pre-construction baseline over two consecutive weeks → enact temporary quiet-roost (scrape/berm) and reschedule high-noise tasks away from peak tides. At the end of each near-shore construction phase, the ECoW will issue a short close-out memorandum summarising observed responses, any trigger activations and the adaptive refinements agreed with the Site Manager; the memo will be filed within the CEMP Mitigation Log.

The Habitat Management Plan (HMP) will be reviewed annually in consultation with statutory consultees, and adaptive management measures will be implemented as required.

Hydrodynamic / coastal-process commitments

The competent authority can ascertain no AEoI for the Inner Moray Firth SPA/Ramsar subject to:

- Final coastal-process/hydrodynamic assessment demonstrating no material change to inundation regime, intertidal morphology or supporting processes in SPA-adjacent areas; and
- securing dredge/armour parameters, post-dredge monitoring, and corrective actions via enforceable consent conditions.

Where model outputs indicate material changes (e.g., increased tidal velocities, altered inundation frequency) within SPA-adjacent intertidal areas, design will be refined and the AA updated to ensure the assessed HRA envelope is not exceeded. These commitments will be implemented through a Dredge/Coastal Processes Management Plan (DCMP), including pre-dredge verification, post-dredge monitoring, reporting and corrective action protocols aligned to consent conditions.

1.5 SUMMARY OF MITIGATION AND ENHANCEMENT MEASURES

A range of targeted mitigation and enhancement measures will minimise effects on key ornithological receptors. For SPA/SSSI/Ramsar waders, exclusion zones and visual/acoustic screening will reduce disturbance at sensitive roosts, while robust sediment and pollution controls will safeguard intertidal habitats.

Prior to vegetation clearance, ecologists will conduct nesting bird checks and apply species-specific buffers. Toolbox talks will ensure all site personnel understand legal obligations and reporting protocols.

For raptors and pinewood specialists, active nests will be mapped and protected using appropriate exclusion zones. Woodland felling will be scheduled outside the breeding season where practicable. Where seasonal constraints or exclusion zones cannot be fully applied, a qualified ornithologist will be present on site to advise and implement supplementary mitigation measures, ensuring legal compliance and alignment with project commitments.

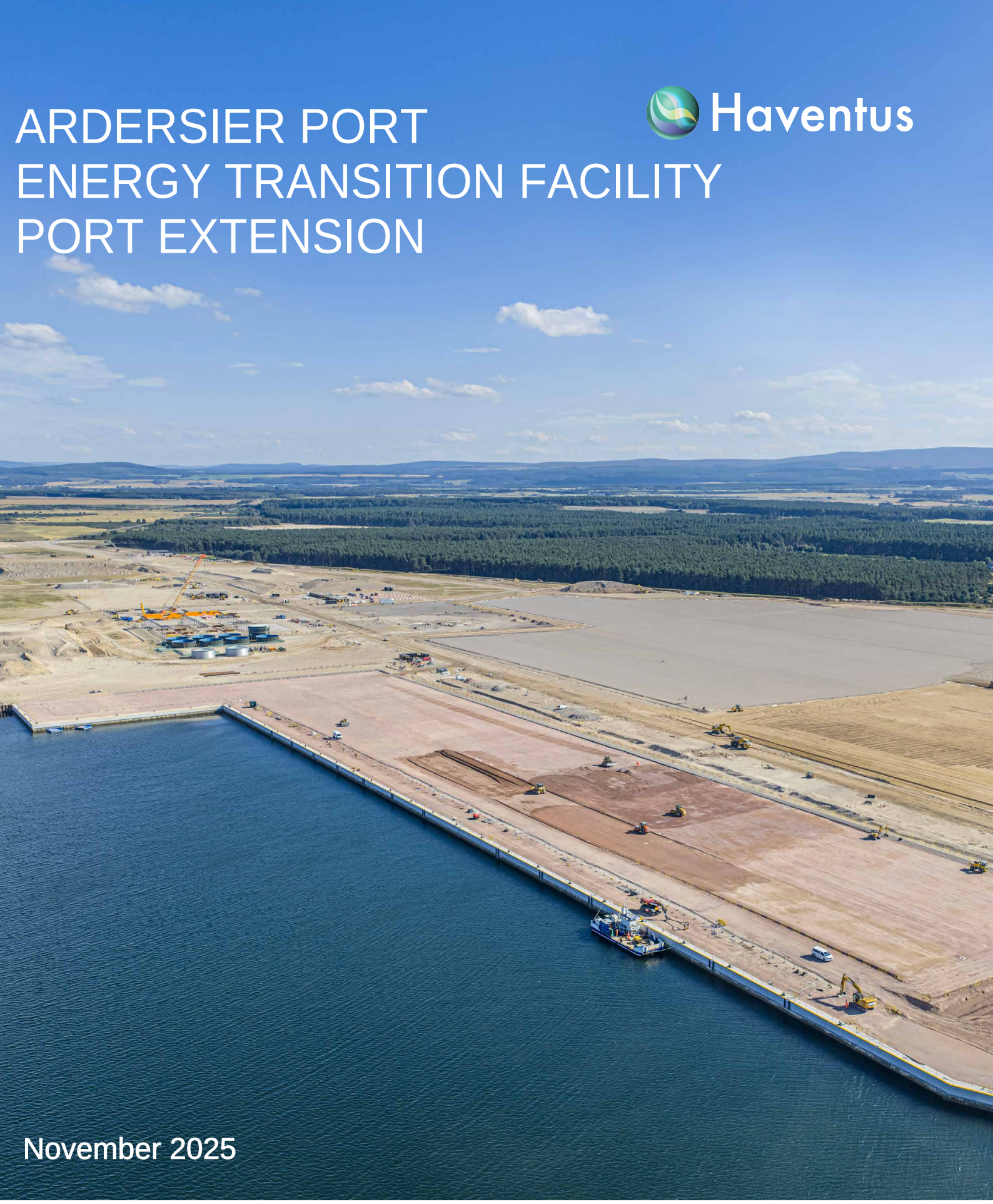
Operational effects will be reduced through directional lighting, and noise management.

Where confirmed nest sites loss is unavoidable, compensatory artificial nest sites for key species will be provided, in agreement with NatureScot. Post-construction, annual monitoring of key bird populations and habitats will be undertaken in line with the annual review of the HMP. If mitigation proves ineffective, adaptive measures will be implemented in consultation with statutory agencies.

A detailed schedule of mitigation, compensation, and management measures is provided in Table 7 of Chapter 13 (Ornithology), specifying actions, licensing, responsible persons, and timing for each receptor. This schedule should be used as a reference throughout pre-construction, construction, and operational phases, and must be read in conjunction with the CEMP and HMP.

ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus



November 2025

Appendix 13.5 Pinewood Bird Survey Report

Haventus Ardersier Port

Pinewood Bird Survey

MARCH 2025 FOR HAVENTUS

Highland Ecology and Development Limited, Office 1, Mayfield Building, Dingwall, IV15 9ST. Tel 01381 610313, E mail: admin@hedltd.com Web: www.hedltd.com

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Document prepared by:

Mhairi Duncan BSc (Hons)

Ecologist and Environmental Advisor

[Redacted]

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Contents

1.0 Introduction

Highland Ecology and Development Limited (herein referred to as HED Ltd) were commissioned by Haventus to carry out pinewood bird surveys (PBS) on approximately 45ha of commercial woodland surrounding the port of Ardersier, centred at NH 80870 57354 (Figure 1).

This survey follows on from breeding bird surveys carried out by HED Ltd in the 2024 as part of a preliminary ecological appraisal ahead of the proposed port expansion. The following report outlines the pinewood bird species inhabiting the woodland for breeding and wintering purposes to identify any ornithological constraints associated with the proposed works.

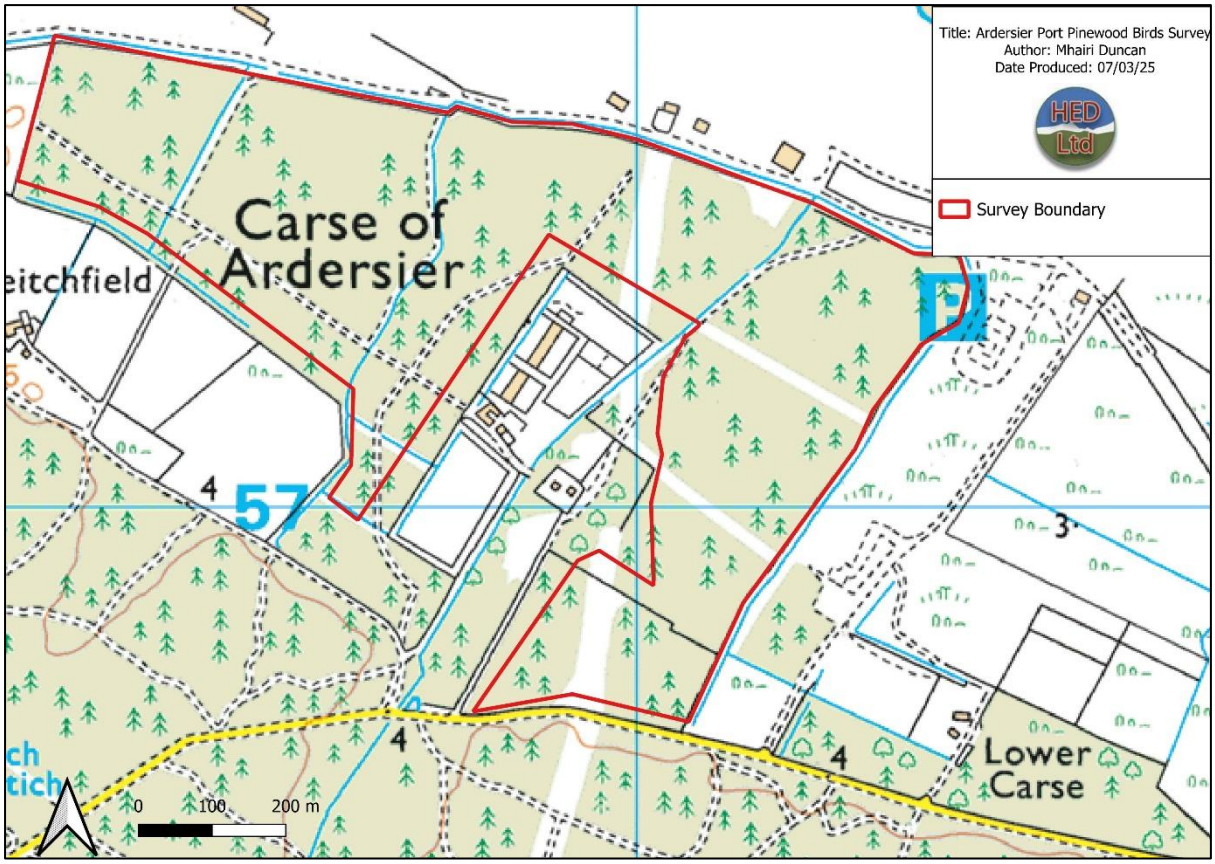

Figure 1: Pinewood Bird Survey Area

2.0 Methodology

2.1 Pinewood Bird Survey

The PBS was undertaken by an experienced and qualified ecologist from HED Ltd following an adapted methodology as described by Gilbert et al (1998) and British Trust for Ornithology (BTO) / Joint Nature Conservancy Council (JNCC) Common Bird Census (CBC). The surveys were carried out over three visits between November and March with at least one month between each visit, all visits occurred during favourable weather conditions. Triangular transects were walked at an ambling pace between the hours of 09:00 and 13:00 ensuring sufficient coverage of the survey area. Equipment utilised included binoculars, range finder, maps, field sheets, mobile applications, and writing implements.

Data on the predicted breeding status of birds which breed early in the year was gathered as well as data on non-breeding priority species such as those listed under Schedule 1 of the Wildlife and Countryside Act (WCA) 1981, Highland Biodiversity Action Plan (BAP) 2021-2026, and Red/Amber listed birds on the Birds of Conservation Concern report (BoCC) 2021.

Factors indicative of breeding or territory holding are:

- Bird observed displaying or singing;
- Nests, eggs, or young observed;
- Adults repeatedly alarm-calling when approached;
- Distraction behaviours displayed when approached;
- Territories disputed observed; or
- A pair of birds are observed together in suitable habitat.

Data was gathered using recording sheets, and sightings were geo-referenced in the field using the mobile application *Avenza Maps* and later displayed on one final map using mapping software *QGIS (version 3.36.1).*

2.3 Survey Limitations

Ecological surveys are limited by several factors that affect the presence of flora and fauna (weather, climate, animal behaviour, etc). Evidence of Schedule 1 protected species is not always found during a survey, this does not confirm that species are absent from an area or will not be present in the future.

The unavoidable proximity to active construction during the surveys interfered with audible detectability of some songs and calls produced by birds to an extent. This was managed by recording bird sounds using a mobile and later analysing them in finer detail.

3.0 Results

3.1 Pinewood Bird Survey

A total of twenty species were recorded across the three surveys, two of which were listed under Schedule 1 of the WCA 1981. Three species were listed as amber, one was listed as red on the BoCC 2021, and zero priority species under the Highland BAP were recorded. Survey results are quantified in Table 1 below.

Breeding behaviours observed included prominent singing by males in distinct locations, males and females spotted in pairs within suitable habitat, and alarm calls made by birds when approached. All birds observed displaying these behaviours are typically reported to lay their eggs from mid-February (wren) to April (coal tit).

Species diversity remained consistent across the dense woodland, with typical species such as coal tit and chaffinch being the most abundant. Small peaks in diversity occurred at scrub-rich rides associated with ditches and powerline wayleaves where wren and bullfinches were observed defending territories and pairing up. Three suspected crested tit breeding territories were recorded in central and western areas of the woodland (Figure 2). A single flight call from a common crossbill was recorded however no observations were made of the sex or age of the bird to confirm breeding status, nonetheless the woodland did provide favourable nesting habitat.

Corvids were recorded on three occasions. One of which was the flight call of a raven, a species which has been historically reported nesting in the vicinity. While no observations of nesting were made during this survey, it is likely that the species will nest here in early March through to July, deduced by the presence of large, abandoned nests typical of corvids and/or raptors.

Table 1: Results from Pinewood Bird Survey

Common Name	Latin Name	Schedule 1	Conservation Status	Total Count		
				Survey 1	Survey 2	Survey 3
Blue Tit	*Cyanistes caeruleus*					2
Bullfinch*	*Pyrrhula pyrrhula*		Amber		2	
Carrion Crow	*Corvus corone*			2		
Chaffinch*	*Fringilla coelebs*				2	5
Coal Tit*	*Periparus ater*			2	10	10
Common Crossbill	*Loxia curvirostra*	Yes				1
Crested Tit*	*Lophophanes cristatus*	Yes			2	2
Dunnock*	*Prunella modularis*		Amber	4		
Goldcrest*	*Regulus regulus*				3	1
Goldfinch	*Carduelis carduelis*					4
Great Spotted Woodpecker	*Dendrocopos major*				1	
Great Tit	*Parus major*			1	2	1
Hooded Crow	*Corvus cornix*					3
Jackdaw	*Coloeus monedula*					1
Long-tailed Tit	*Aegithalos caudatus*			1		
Raven	*Corvus corax*				1	
Robin	*Erithacus rubecula*					1
Siskin	*Spinus spinus*					1
Eurasian Treecreeper	*Certhia familiaris*				1	2
Woodcock	*Scolopax rusticola*		Red	3		1
Wren*	*Troglodytes troglodytes*		Amber	1	4	2

* Evidence of breeding behaviour

4.0 Conclusion and Recommendations

This survey provides a baseline record for a range of pinewood species including rare ground nesting specialists (woodcock), keystone species (great spotted woodpecker) and Schedule 1 protected species (crested tit, common crossbill). The site offers suitable habitat to support birds for nesting and wintering purposes. It is advised that the proposed programme of works is designed in line with the standard mitigation hierarchy whereby avoidance, mitigation and compensatory provisions are set in place to manage any impact on the conservation status of the bird species recorded.

The following actions should be implemented as part of a site-specific breeding bird protection plan by the client and contractors.

- Any vegetation stripping/felling and ground-breaking works must be carried out following a pre-works check by the onsite EnvCoW no more than 48hrs ahead of works. An Eco-permit should be issued documenting any provisions in place for works to proceed.

- Where appropriate, employ dissuasion techniques to discourage birds from nesting in an area of land programmed for clearance. Dissuasion techniques may include bird scarers, vegetation strimming, or decoy hawks. The use of deterrents does not replace the need for pre-works checks unless advised by an EnvCoW.

- If a nesting bird and/or active nest is encountered during works, all works within the immediate vicinity must cease and a supervisor / EnvCoW informed. An appropriate exclusion zone must be implemented as instructed by the onsite EnvCoW. If the EnvCoW is not on site then an emergency exclusion zone of 50m or the maximum disturbance buffer for Schedule 1 species as advised by NatureScot (Ruddock., 2007) must be implemented.

- Only the EnvCoW may amend exclusion zones following risk assessment based on the construction activities, local topography, provision of screening, species specific disturbance tolerances etc.

- The exclusion zone must remain in place until the EnvCoW has confirmed the nest is no longer in use, at this stage the EnvCoW may remove the nest (unless the nest belongs to a species listed under Schedule A1 of the WCA 1981).

- A landscaping plan should be produced incorporating locally sourced native shrub and tree species into its planting regimes to compensate for the loss of favourable habitat.

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Appendix 1: Survey Maps

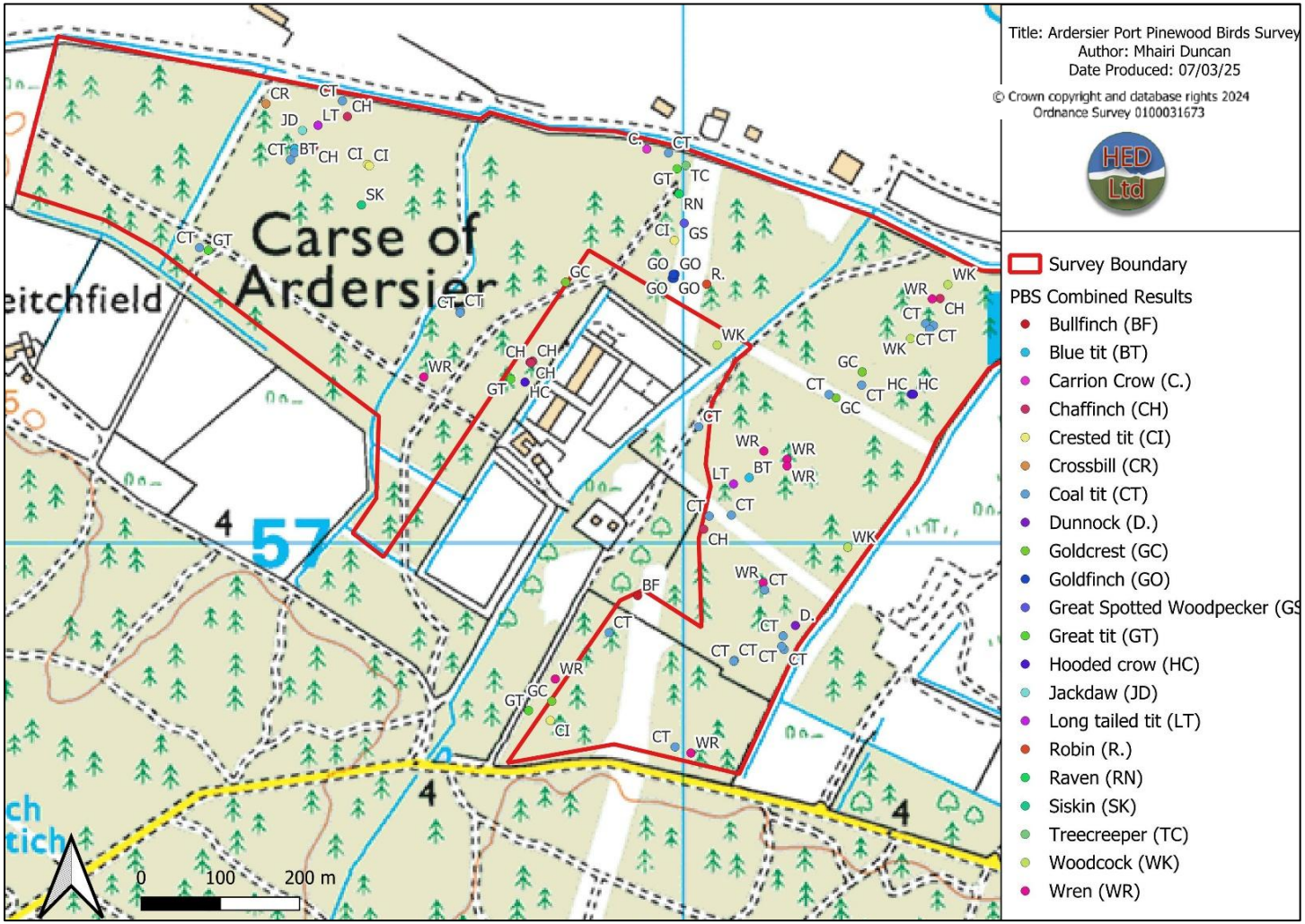


Figure 2: Combined Records from PBS

Appendix 2: Breeding Birds Legislation

Legislative Protection

For any wild bird species, it is an offence to intentionally or recklessly:

- kill, injure, or take a bird.
- take, damage, destroy or interfere with a nest of any bird while it is in use or being built.
- obstruct or prevent any bird from using its nest.
- take or destroy an egg of any bird.

For any wild bird species listed on Schedule 1, it is an offence to disturb:

- any bird while it is building a nest.
- any bird while is in, on, or near a nest containing eggs or young.
- any bird while lekking.
- the dependent young of any bird.

Further protection is given to birds listed under schedule 1A and A1 all year round.

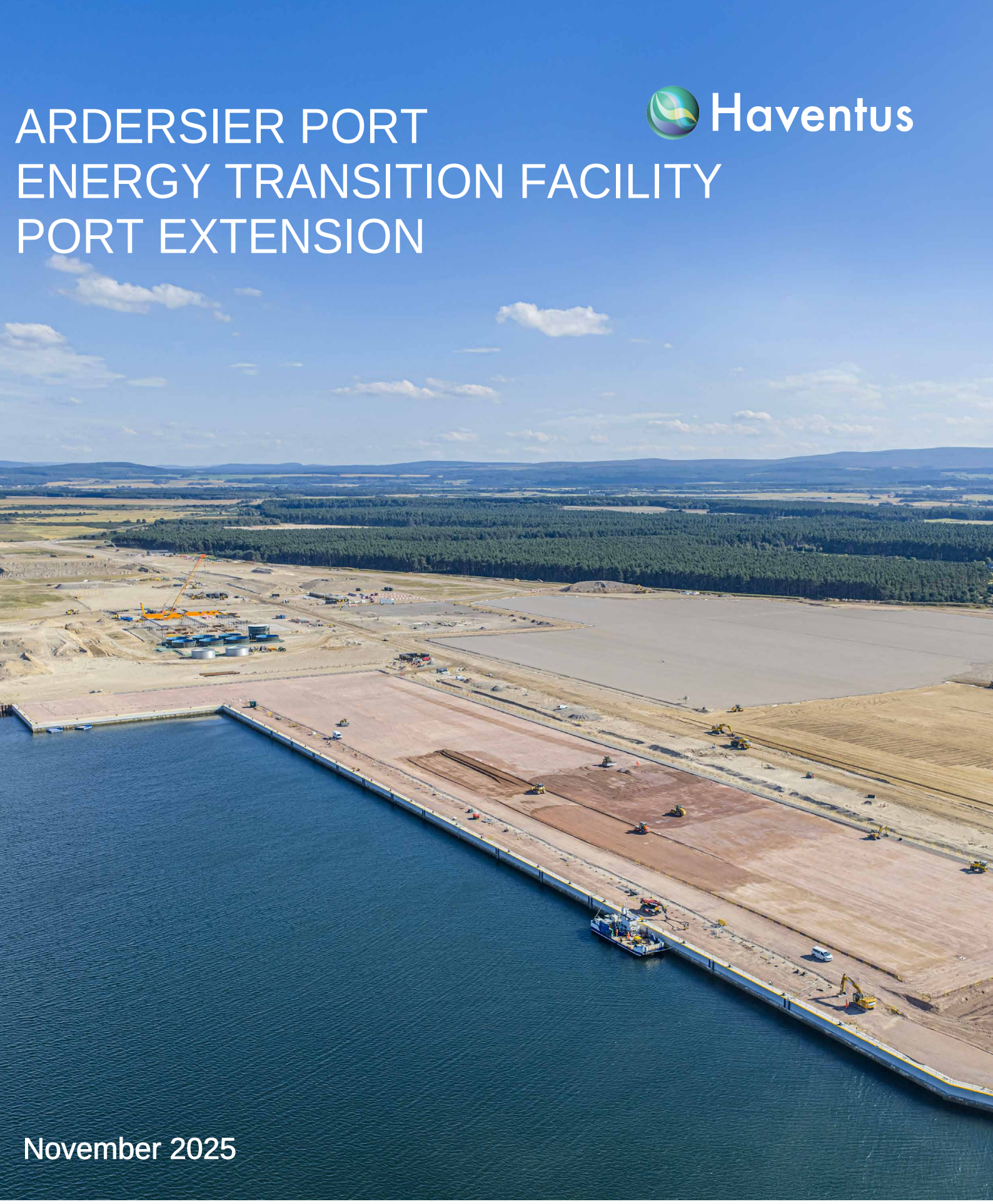
For any wild bird species listed on Schedule 1A, it is an offence to intentionally or recklessly harass any bird. For any wild bird species listed on Schedule A1, it is an offence to intentionally or recklessly take, damage, destroy or interfere at any time with a nest habitually used by any bird.

It is also an offence to:

- possess or control a living or dead wild bird
- possess or control an egg of a wild bird (or any such derivatives)
- knowingly cause or permit any of the above acts to be carried out.

ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus



November 2025

Appendix 13.6 Breeding Birds

Haventus Ardersier Port

Technical Appendix: Breeding Birds

JULY 2025 FOR HAVENTUS

Highland Ecology and Development Limited, Office 1, Mayfield Building, Dingwall, IV15 9ST. Tel 01381 610313, E mail: admin@hedltd.com Web: www.hedltd.com

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Document prepared by:

Mhairi Duncan BSc (Hons)

[Redacted]

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Contents

1.0 Background

This Technical Appendix (TA) was commissioned by Haventus in respect of proposals for the expansion of the Ardersier Port redevelopment area. Breeding bird surveys (BBS) were carried out on approximately 166ha of habitats, including saltmarsh, dunes, pine and deciduous woodland, gorse scrub, grassland and a lagoon, surrounding the port of Ardersier, centred at NH 80870 57354 (Figure 1). The purpose of this BBS was to provide baseline data to inform a comprehensive assessment of the predicted impact on breeding birds during the construction and operation phases of the port facility. The survey findings are provided within this document along with industry-approved guidance on licensing requirements, recommended mitigation and compensation initiatives.

2.0 Methodology

2.1 Breeding Bird Survey

The BBS was undertaken by an experienced and qualified ecologist from HED Ltd following an adapted methodology as described by British Trust for Ornithology (BTO) / Joint Nature Conservancy Council (JNCC) / Royal Society for the Protection of Birds (RSPB) Breeding Bird Survey (Stanbury et al., 2021). The surveys were carried out over 8 visits between April and June (inclusive), all visits occurred during favourable weather conditions (light winds, full to moderate sun and no rain). Surveys commenced 1 hour after sunrise and, where possible, 2no. 1 km transect routes were walked through each distinct habitat parcel, with at least 500m between each transect route. Where this method was not possible due to habitat parcel size, a shorter transect route was walked with observation points occurring at 200m intervals. Data was collected using the mobile application *Avenza Maps* and later mapped digitally using QGIS (*version 3.28.2*).

2.2 Limitations

Ecological surveys are limited by several factors that affect the presence of flora and fauna (weather, climate, animal behaviour, etc). Evidence of protected species and/or invasive species is not always found during a survey; this does not confirm that species are absent from an area or will not be present in the future. During the April surveys, a section of the spit to the east of the survey area was inaccessible due to dredging works, this area is noted in Figure 1 below. As this area was captured within the June surveys, it is not anticipated that the loss of data will significantly affect the results of the overall survey.

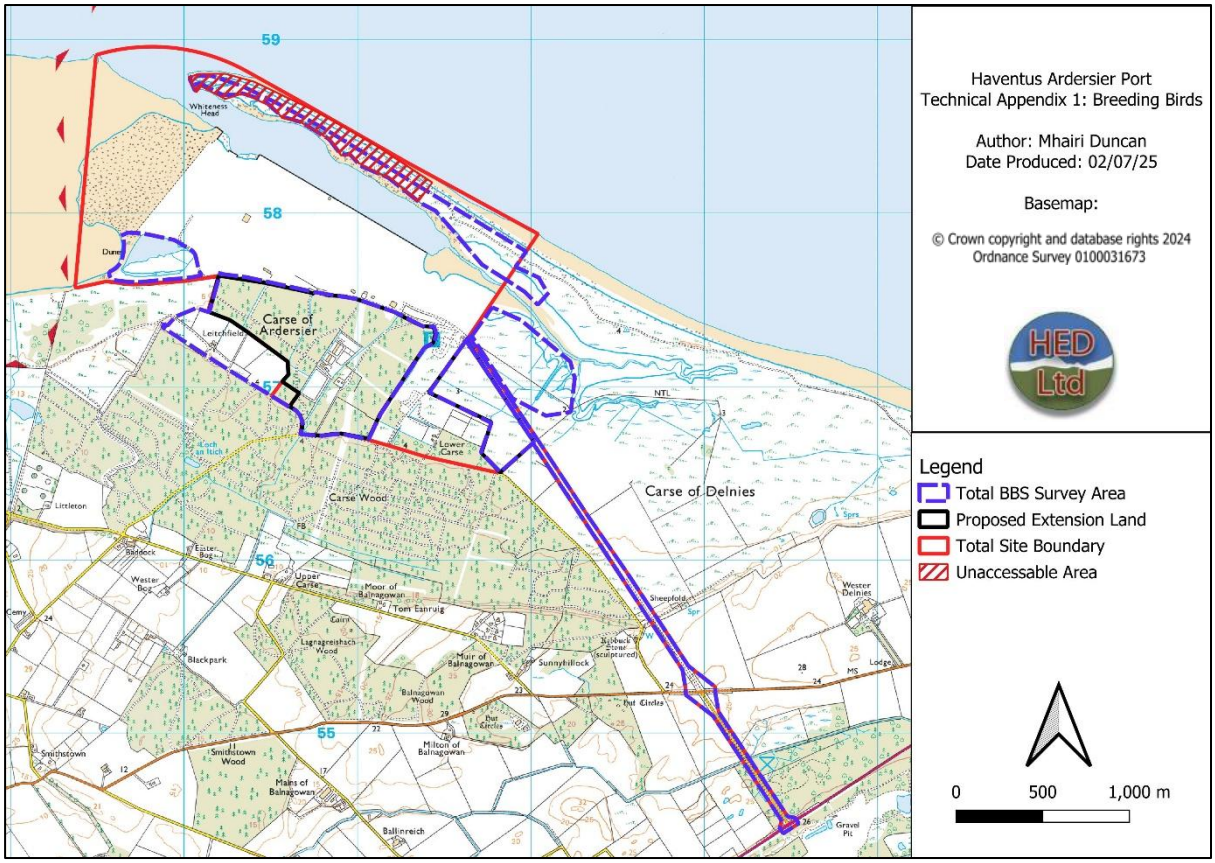

Figure 1: Whiteness Head Access Restrictions During April BBS.

3.0 Results

The results from the breeding bird transect are provided in Table 1 below. A total of 333 birds were recorded within the expansion area across the entire survey period, accounting for 42 species. None of the species recorded are listed under Schedule 1 of the Wildlife and Countryside Act (WCA., 1981), however 10 species are categorised as Amber or Red under the Birds of Conservation Concern 5 report by Stanbury et al., 2021, 3 of which are also included within the UK Biodiversity Action Plan by the Biodiversity Reporting and Information Group (BRIG.,2017).

The scrubland to the Southeast offered favourable perching, foraging and nesting habitat for a diversity of species, with an abundance of passerines recorded in this area. The Scots Pine plantation offered favourable nesting habitat for corvids and raptors, with a number of historic nests and several plucks noted throughout the survey area indicating raptor territories present within the woodland. The species recorded are suspected to be breeding based on typical breeding behaviours observed such as singing (by males), territorial displaying/fighting, alarm calling, pairing-up, nest building and provisioning. A summary of the findings from each round of surveys is provided in Table 1 and 2 below, findings are also illustrated in Figures 2 and 3.

Table 1:BBS Results April 2025

Species	**Schedule 1 (WCA., 1981)**	**Conservation Status (BoCC., 2021)**	**UK BAP (BRIG., 2007)**
Blackbird (*Turdus merula)*	N	Green	-
Blue Tit (*Cyanistes caeruleus)*	N	Green	-
Buzzard (*Buteo buteo)*	N	Green	-
Carrion Crow (*Corvus corone)*	N	Green	-
Chaffinch (*Fringilla coelebs)*	N	Green	-
Chiffchaff (*Phylloscopus collybita)*	N	Green	-
Coal Tit (*Periparus ater)*	N	Green	-
Dunnock (*Prunella modularis)*	N	Amber	-
Goldcrest (*Regulus regulus)*	N	Green	-
Goldfinch (*Carduelis carduelis)*	N	Green	-
Great Tit (*Parus major)*	N	Green	-
Long-tailed Tit (*Aegithalos caudatus)*	N	Green	-
Pheasant (*Phasianus colchicus)*	N	Green	-
Redpoll (*Acanthis flammea)*	N	Red	-
Robin (*Erithacus rubecula)*	N	Green	-
Siskin (*Spinus spinus)*	N	Green	-
Skylark (*Alauda arvensis)*	N	Red	S1 UKBAP
Song Thrush (*Turdus philomelos)*	N	Red	S1 UKBAP
Treecreeper (*Certhia familiaris)*	N	Green	-
Willow Warbler (*Phylloscopus trochilus)*	N	Amber	-
Woodpigeon (*Columba palumbus)*	N	Amber	-
Wren (*Troglodytes troglodytes)*	N	Amber	-
Yellowhammer (*Emberiza citronella)*	N	Red	S1 UKBAP

Table 2:BBS Results June 2025

Species	**Schedule 1 (WCA., 1981)**	**Conservation Status (BoCC., 2021)**	**UK BAP (BRIG., 2007)**
Blackbird (*Turdus merula)*	N	Green	-
Blue Tit (*Cyanistes caeruleus)*	N	Green	-
Carrion crow (*Corvus corone*	N	Green	-
Chaffinch (*Fringilla coelebs)*	N	Green	-
Chiffchaff (*Phylloscopus collybita)*	N	Green	-
Coal Tit (*Periparus ater)*	N	Green	-
Dunnock (*Prunella modularis)*	N	Amber	-
Goldcrest (*Regulus regulus)*	N	Green	-
Goldfinch (*Carduelis carduelis)*	N	Green	-
House Martin (*Delichon urbicum)*	N	Red	-
Long-tailed Tit (*Aegithalos caudatus)*	N	Green	-
Robin (*Erithacus rubecula)*	N	Green	-
Rook (*Corvus frugilegus)*	N	Amber	-
Siskin (*Spinus spinus)*	N	Green	-
Treecreeper (*Certhia familiaris)*	N	Green	-
Willow Warbler (*Phylloscopus trochilus)*	N	Amber	-
Woodpigeon (*Columba palumbus)*	N	Amber	-
Wren (*Troglodytes troglodytes)*	N	Amber	-
Yellowhammer (*Emberiza citronella)*	N	Red	S1 UKBAP

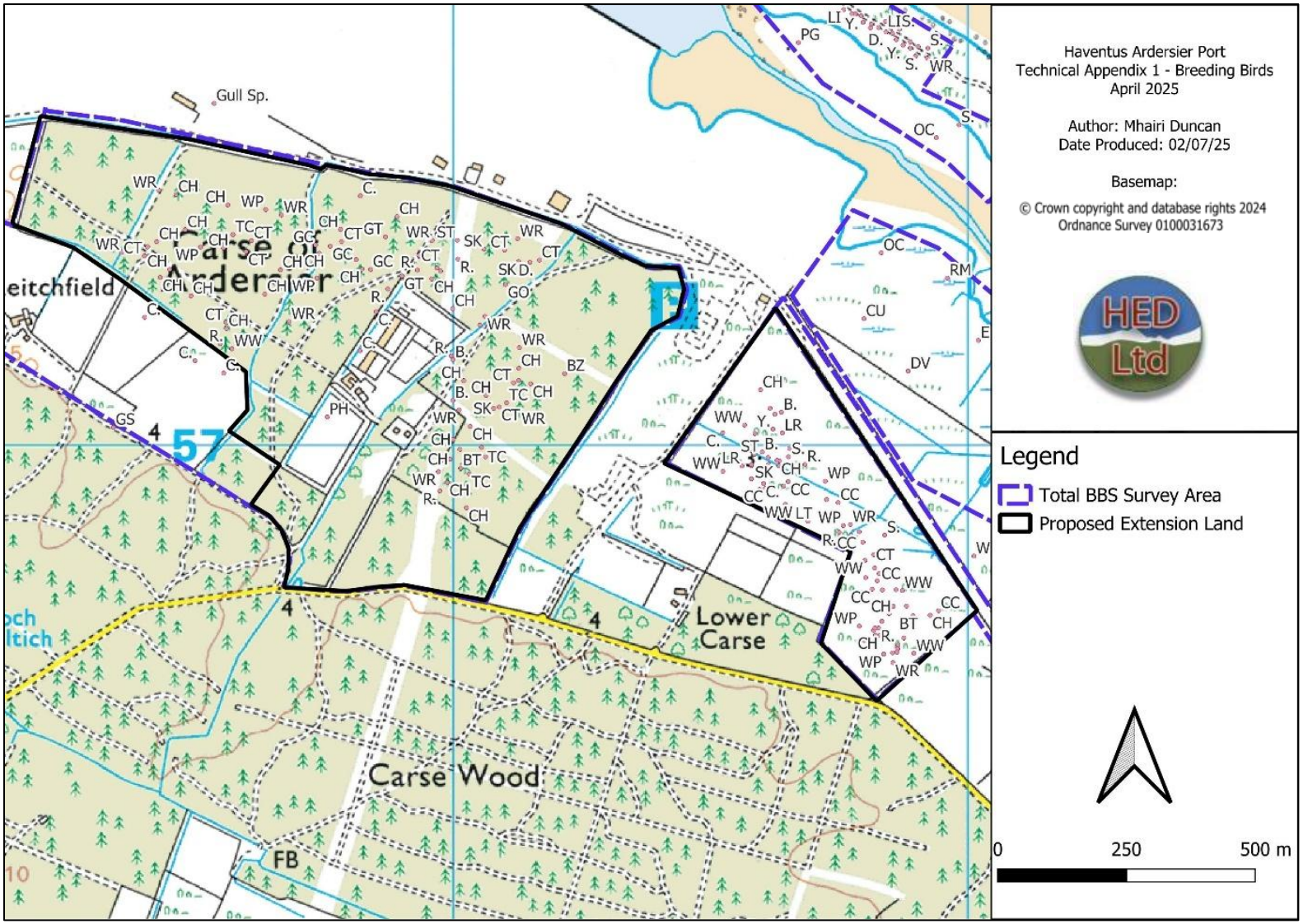

Figure 2: Results from BBS April 2025

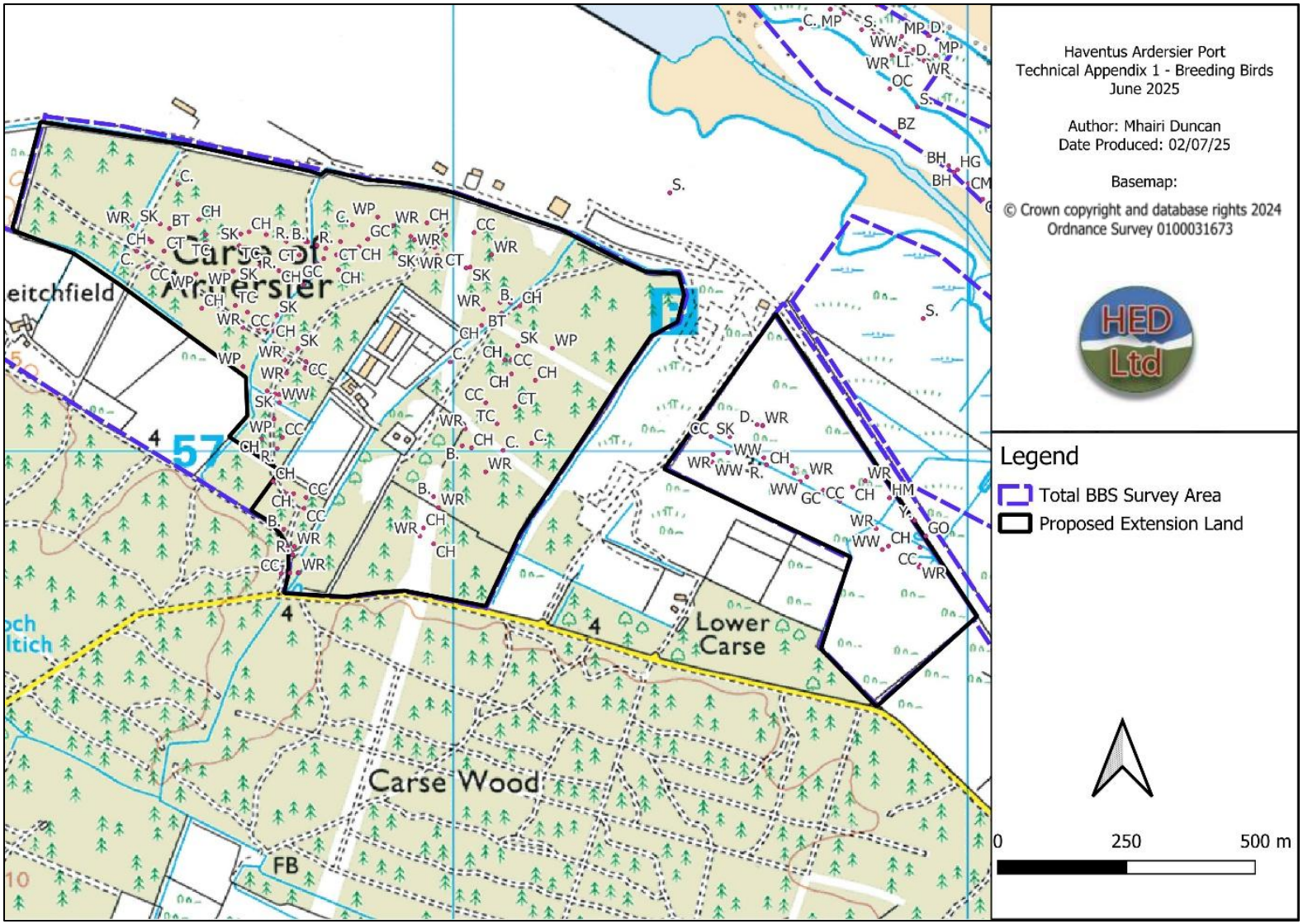

Figure 3: Results from BBS June 2025

4.0 BTO Species Codes

Table 3: BTO Species Codes (extracted from BTO website).

BTO SPECIES CODES

AC	Arctic Skua	GA	Godwall	LE	Long-eared Owl	SM	Sand Martin
AE	Arctic Tern	GX	Gannet	LT	Long-tailed Tit	SS	Sanderling
AV	Avocet	GW	Garden Warbler	MG	Magpie	TE	Sandwich Tern
BO	Barn Owl	GY	Garganey	MA	Mallard	VI	Savi's Warbler
BY	Barnacle Goose	GC	Goldcrest	MN	Mandarin Duck	SQ	Scarlet Rosefinch
BA	Bar-tailed Godwit	EA	Golden Eagle	MX	Manx Shearwater	SP	Scaup
BR	Bearded Tit	OL	Golden Oriole	MR	Marsh Harrier	CY	Scottish Crossbill
BS	Berwick's Swan	GF	Golden Pheasant	MT	Marsh Tit	SW	Sedge Warbler
BI	Bittern	GP	Golden Plover	MW	Marsh Warbler	NS	Serin
BK	Black Grouse	GN	Goldeneye	MP	Meadow Pipit	SA	Shag
TY	Black Guillemot	GO	Goldfinch	MU	Mediterranean Gull	SU	Shelduck
BX	Black Redstart	GD	Goosander	ML	Merlin	SX	Shorelark
BJ	Black Tern	GI	Goshawk	M.	Mistle Thrush	SE	Short-eared Owl
B.	Blackbird	GH	Grasshopper Warbler	MO	Montagu's Harrier	SV	Shoveler
BC	Blackcap	GB	Great Black-backed Gull	MH	Moorhen	SK	Siskin
BH	Black-headed Gull	GG	Great Crested Grebe	MS	Mute Swan	S.	Skylark
BN	Black-necked Grebe	ND	Great Northern Diver	N.	Nightingale	SZ	Slavonian Grebe
BW	Black-tailed Godwit	NX	Great Skua	NJ	Nightjar	SN	Snipe
BV	Black-throated Diver	GS	Great Spotted Woodpecker	NH	Nuthatch	SB	Snow Bunting
BT	Blue Tit	GT	Great Tit	OP	Osprey	ST	Song Thrush
BU	Bluethroat	GE	Green Sandpiper	OC	Oystercatcher	SH	Sparrowhawk
BL	Brambling	G.	Green Woodpecker	PX	Peafowl/Peacock	AK	Spotted Crake
BG	Brent Goose	GR	Greenfinch	PE	Peregrine	SF	Spotted Flycatcher
BF	Bullfinch	GK	Greenshank	PH	Pheasant	DR	Spotted Redshank
BZ	Buzzard	H.	Grey Heron	PF	Pied Flycatcher	SG	Starling
CG	Canada Goose	P.	Grey Partridge	PW	Pied Wagtail	SD	Stock Dove
CP	Capercaillie	GV	Grey Plover	PG	Pink-footed Goose	SC	Stonechat
C.	Carrion Crow	GL	Grey Wagtail	PT	Pintail	TN	Stone-curlew
CW	Cetti's Warbler	GJ	Greylag Goose	PO	Pochard	TM	Storm Petrel
CH	Chaffinch	GU	Guillemot	PM	Ptarmigan	SL	Swallow
CC	Chiffchaff	FW	Guineafowl (Helmeted)	PU	Puffin	SI	Swift
CF	Chough	HF	Hawfinch	PS	Purple Sandpiper	TO	Tawny Owl
CL	Cirl Bunting	HH	Hen Harrier	Q.	Quail	T.	Teal
CT	Coal Tit	HG	Herring Gull	RN	Raven	TK	Temminck's Stint
CD	Collared Dove	HY	Hobby	RA	Razorbill	TP	Tree Pipit
CM	Common Gull	HZ	Honey Buzzard	RG	Red Grouse	TS	Tree Sparrow
CS	Common Sandpiper	HC	Hooded Crow	KT	Red Kite	TC	Treecreeper
CX	Common Scoter	HP	Hoopoe	ED	Red-backed Shrike	TU	Tufted Duck
CN	Common Tern	HM	House Martin	RM	Red-breasted Merganser	TT	Turnstone
CO	Coot	HS	House Sparrow	RQ	Red-crested Pochard	TD	Turtle Dove
CA	Cormorant	JD	Jackdaw	FV	Red-footed Falcon	TW	Twite
CB	Corn Bunting	J.	Jay	RL	Red-legged Partridge	WA	Water Rail
CE	Corncrake	K.	Kestrel	NK	Red-necked Phalarope	W.	Wheatear
CI	Crested Tit	KF	Kingfisher	LR	Redpoll (Lesser)	WM	Whimbrel
CR	Crossbill (Common)	KI	Kittiwake	RK	Redshank	WC	Whinchat
CK	Cuckoo	KN	Knot	RT	Redstart	WG	White-fronted Goose
CU	Curlew	LM	Lady Amherst's Pheasant	RH	Red-throated Diver	WH	Whitethroat
DW	Dartford Warbler	LA	Lapland Bunting	RE	Redwing	WS	Whooper Swan
DI	Dipper	L.	Lapwing	RB	Reed Bunting	WN	Wigeon
DO	Dotterel	TL	Leach's Petrel	RW	Reed Warbler	WT	Willow Tit
DN	Dunlin	LB	Lesser Black-backed Gull	RZ	Ring Ouzel	WW	Willow Warbler
D.	Dunnock	LS	Lesser Spotted Woodpecker	RP	Ringed Plover	OD	Wood Sandpiper
EG	Egyptian Goose	LW	Lesser Whitethroat	RI	Ring-necked Parakeet	WO	Wood Warbler
E.	Eider	LI	Linnet	R.	Robin	WK	Woodcock
FP	Feral Pigeon	ET	Little Egret	DV	Rock Dove (not feral)	WL	Woodlark
ZL	Feral/hybrid goose	LG	Little Grebe	RC	Rock Pipit	WP	Woodpigeon
ZF	Feral/hybrid mallard type	LU	Little Gull	RO	Rook	WR	Wren
FF	Fieldfare	LO	Little Owl	RS	Roseate Tern	WY	Wryneck
FC	Firecrest	LP	Little Ringed Plover	RY	Ruddy Duck	YW	Yellow Wagtail
F.	Fulmar	AF	Little Tern	RU	Ruff	Y.	Yellowhammer

5.0 Legislative Protection

For any wild bird species, it is an offence to intentionally or recklessly:

- kill, injure, or take a bird.
- take, damage, destroy or interfere with a nest of any bird while it is in use or being built.
- obstruct or prevent any bird from using its nest.
- take or destroy an egg of any bird.

For any wild bird species listed on Schedule 1, it is an offence to disturb:

- any bird while it is building a nest.
- any bird while is in, on, or near a nest containing eggs or young.
- any bird while lekking.
- the dependent young of any bird.

Further protection is given to birds listed under schedule 1A and A1 all year round.

For any wild bird species listed on Schedule 1A, it is an offence to intentionally or recklessly harass any bird. For any wild bird species listed on Schedule A1, it is an offence to intentionally or recklessly take, damage, destroy or interfere at any time with a nest habitually used by any bird.

It is also an offence to:

- possess or control a living or dead wild bird
- possess or control an egg of a wild bird (or any such derivatives)
- knowingly cause or permit any of the above acts to be carried out.

6.0 References

BRIG. 2007. Report on the Species and Habitat Review (Report by the Biodiversity Reporting and Information Group (BRIG) to the UK Standing Committee). JNCC, Peterborough.

Goodship, N.M. and Furness, R.W. 2022. Disturbance Distances Review: An updated literature review of disturbance distances of selected bird species.

Gilbert, G., Gibbons, D.W. & Evans, J. 1998. Bird Monitoring Methods: a manual of techniques for key UK species. RSPB, Sandy.

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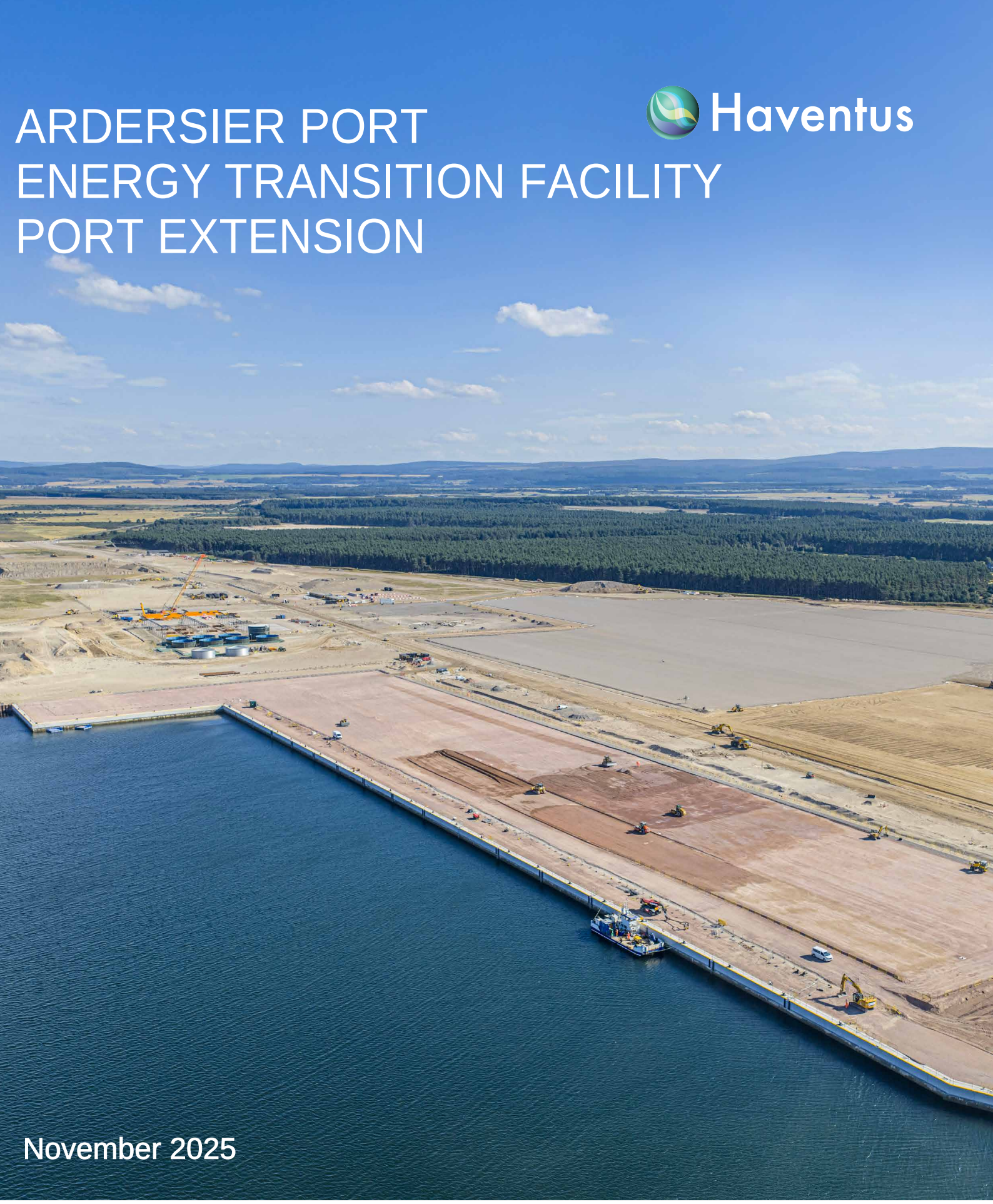
ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION



November 2025

Appendix 13.8 Autumn/ Winter 2024-25 Wader Monitoring Report

Ardersier Port
Autumn/ Winter 2024-25 Wader Monitoring Report

May 2025

CONTROL SHEET

Client: Ardersier Port Ltd
Project Title: Ardersier Port
Report Title: Autumn/ Winter 2024-25 Wader Monitoring Report
Document number: 15220
Project number: 677965

Issue Record

Issue	Status	Author	Reviewer	Approver	Issue Date
1	Final	H Addlesee	V Marshall	H Addlesee	13th May 2025
2					

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1 INTRODUCTION

1.1 Terms of Reference

EnviroCentre Ltd was commissioned by Ardersier Port Ltd (AP) to undertake wader monitoring at the site during winter 2024/25, in accordance with the Habitat Management Plan for the site, with the results to be compiled in a factual report.

1.2 Survey Aims

The aim of the monitoring is to assess Special Protection Area (SPA) / Site of Special Scientific Interest (SSSI) wader populations using the site area. Other wader species present are also recorded.

Large numbers of waders feed on Whiteness Sands west of the site from the end of summer throughout the winter, including Oystercatcher, Curlew, Bar-tailed Godwit and Redshank, which are component species of the Inner Moray Firth SPA, and Knot, which is a component species of the Whiteness Head SSSI. Over the high tide period, when the sandflats are covered by water, waders often gather in large numbers to roost at several shoreline locations on or adjacent to the site.

This report details the survey methods and the results of the monitoring, documenting those species found to be present.

1.3 Report Usage

The information and recommendations contained within this report have been prepared in the specific context stated above and should not be utilised in any other context without prior written permission from EnviroCentre Limited.

If this report is to be submitted for regulatory approval more than 12 months following the report date, it is recommended that it is referred to EnviroCentre Limited for review to ensure that any relevant changes in data, best practice, guidance or legislation in the intervening period are integrated into an updated version of the report.

Whilst the Client has a right to use the information as appropriate, EnviroCentre Limited retains ownership of the copyright and intellectual content of this report. EnviroCentre Limited does not accept liability to any third party for the contents of this report unless written agreement is secured in advance, stating the intended use of the information.

EnviroCentre Limited accepts no liability for use of the report for purposes other than those for which it was originally provided, or where EnviroCentre Limited has confirmed it is appropriate for the new context.

2 METHODS

2.1 Survey Method

Monitoring comprised the following:

- Monthly winter high tide roost counts between September and March to monitor the composition of species and the number of birds at each roost location on and adjacent to the site; and
- Monthly passage and winter low tide wader counts between August and April to monitor the composition of species and numbers of birds feeding on Whiteness Sands.

Low tide and high tide counts were typically carried out on the same day.

2.2 Survey Conditions

A summary of the dates, conditions, survey effort and surveyors is provided in Table 2.1.

2.3 Survey Constraints

Due to site access issues, the February low tide count was carried out at a later date than the high tide count.

On several occasions, viewing conditions did not allow Dunlin and Sanderling, neither of which is an SPA/ SSSI species, to be confidently separated, resulting in combined counts for the two species.

Areas outwith the site boundary were observed only from within the boundary.

Observations of potential disturbance are included in the Results section.

Table 2.1: Survey Dates and Conditions

Date	Surveyor[$]	Survey[+]	Wind Speed (/12)[*]	Wind Direction[**]	Precipitation (/3)[***]	Visibility[#]	Cloud Cover (/8)[##]
23/08/2024	TL	LT	3	WSW	0	E	4
18/09/2024	TL	LT, HT	1	SE	0	E	0
22/10/2024	TL	LT, HT	3	SW	0	E	2
21/11/2024	HA	LT, HT	3	WSW	0 - 1	E	8
17/12/2024	TL	LT, HT	1	SW	0 - 2	G - E	8
21/01/2025	TL	LT, HT	2	SW	0	E	0
17/02/2025	TL	HT	2	N	0	E	4
28/02/2025	TL	LT	1	SW	0	E	0
21/03/2025	TL	LT, HT	2 - 4	SE	0	P - E	3
16/04/2025	HA	LT, HT	2 - 3	NW - NE	0	E	7 - 8

LEGEND: [$]Surveyor: HA=Hugh Addlesee, TL=Tim Leerschool; [+]Survey: LT=low tide count, HT=high tide count; [*]Wind Speed is based on the Beaufort Scale; [**]Wind Direction based on a 16-point compass direction; [***]Precipitation Scale is 0=none, 1=light showers, 2=persistent rain/ heavy showers, 3=heavy rain; [#]Visibility is Excellent=>3km, Good=2-3km, Poor=<2km, Zero=<100m; [##]Cloud Cover is based on oktas.

3 RESULTS

Low tide counts are provided in Table 3.1 and high tide counts in Table 3.2 to Table 3.9. On-site high tide roosts are identified in accordance with Drawing 677965-GIS010 in Appendix A. Roosting birds observed at the range are also included, when it was possible to incorporate them in the count.

Other observations:

- 23/08/2024: Disturbance by Peregrine hunting at Whiteness Sands.
- 18/09/2024: Disturbance by kayaker, with birds possibly disturbed from roost b and some birds from roost c possibly included in subsequent counts at roosts f and g.
- 22/10/2024: Dogwalkers on the Fort George side. Disturbance of roost g by Peregrine, on approach prior to counting, with many waders (mainly Redshank) going uncounted.
- 21/11/2024: Range active in morning and causing some obvious disturbance of wader flocks, *i.e.* putting to flight further out onto sands.
- 17/12/2024: Works were ongoing in Statom area, with excavator movement and banksmen present within line of sight of roost b (approximately 220m away). Birds seemed agitated and alert, regularly flying and groups leaving during the 15 minute count.
- 21/01/2025: Range active. In addition, wildfowler with dog observed wading near roost e during high tide count and appeared to head further north.
- 28/02/2025: Peregrine observed overhead during low tide count.
- 16/04/2025: Dredging activity off harbour mouth, with survey vessel and multicat movements causing no obvious disturbance of roosts.

Table 3.1: Whiteness Sands Low Tide Counts

Species	Date								
	23/08/2024	18/09/2024	22/10/2024	21/11/2024	17/12/2024	21/01/2025	28/02/2025	21/03/2025	16/04/2025
Oystercatcher	188	356	535	c286	200	217	104	141	137
Lapwing		3							
Golden Plover	6	2	20	49			3		
Ringed Plover	488	160	80	c20		12	48	6	97
Whimbrel	12								
Curlew	78	112	132	45	12	60	58	51	42
Bar-tailed Godwit	80	14	305	c270	96	224	119	301	130
Black-tailed Godwit	3								
Turnstone			1						
Knot	213	7	107	28	202	125	28	387	c180
Sanderling	64	31	27	c5	118	65	29		
Dunlin	69	22	52	85+		218	54		36
Redshank	0	7	2	53	8	52	4	7	23

Table 3.2: High Tide Roost Counts, 18/09/2024

Species	Roost							
	a	b[1]	c	d	e	f	g	Range
Oystercatcher			379			393	189	
Golden Plover		2						
Ringed Plover		6						
Curlew			73			2	84	6
Bar-tailed Godwit			14			2	18	
Knot			79			80	72	
Sanderling		4						
Dunlin		4						
Redshank						6	84	

Table 3.3: High Tide Roost Counts, 22/10/2024

Species	Roost							
	a	b	c	d	e	f	g	Range
Oystercatcher		52				93		
Curlew		92			32	3	50	
Bar-tailed Godwit		c180						
Dunlin						16		
Redshank					2	43	Present	
Greenshank						1		

[1] Birds were on the remnant causeway, possibly having been disturbed from the island.

Table 3.4: High Tide Roost Counts, 21/11/2024

Species	Roost							
	a	b[2]	c	d	e	f	g	Range
Oystercatcher		24				227	50	c85
Curlew		28					86	
Bar-tailed Godwit		Present				8	85	c30
Turnstone							5	
Knot							2	
Dunlin					1	1	c37	
Redshank					71		c70	

Table 3.5: High Tide Roost Counts, 17/12/2024

Species	Roost							
	a	b	c	d	e	f	g	Range
Oystercatcher				4		268		
Golden Plover		1						
Curlew		70					54	
Bar-tailed Godwit		3						
Turnstone						6		
Knot		23					11	
Dunlin						2	42	
Redshank				5			76	

[2] Large flock (probably 100+) of Bar-tailed Godwit & possibly other species (*e.g*. Knot) seen in brief flight from north of island, but not viewable otherwise from the Port.

Table 3.6: High Tide Roost Counts, 21/01/2025

Species	Roost							
	a	b	c	d	e	f	g	Range
Oystercatcher	159						121	
Curlew	6	24	c100				253	
Bar-tailed Godwit	126	Present	c200				35+	
Knot		Present	c150					
Sanderling			c250					
Dunlin	6	Present					16+	
Redshank							42+	

Table 3.7: High Tide Roost Counts, 17/02/2025

Species	Roost[3]							
	a	b	c	d	e	f	g	Range
Oystercatcher			1			2	182	
Ringed Plover					1			
Curlew							63	
Turnstone							3	
Dunlin							130+	
Redshank					6		121+	

[3] 51 Ringed Plover and 10 Dunlin were additionally observed roosting on sand storage at the Port.

Table 3.8: High Tide Roost Counts, 21/03/2025

Species	Roost							
	a	b	c	d	e	f	g	Range
Oystercatcher		10			1		20	
Ringed Plover		2	16		6			
Curlew								Present
Bar-tailed Godwit							8	Present
Knot								Present
Dunlin					1			
Redshank			6				4	

Table 3.9: High Tide Roost Counts, 16/04/2025

Species	Roost							
	a	b	c	d	e	f	g	Range
Oystercatcher		133				1	32	
Ringed Plover					11			
Curlew		2					45	2
Bar-tailed Godwit		c142						
Knot		165+						
Dunlin					1			
Redshank	c52	1			11			

APPENDICES

A DRAWINGS

279000 280000 281000 282000 283000

860000 859000 858000 857000

a b c d e f g

Imagery source: Esri, DigitalGlobe, GeoEye, Earthstar Geographic, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Legend

- Port boundary
- MHWS
- MLWS
- Dredge boundary
- Current wader roosts
- Former wader roosts
- Wader roosts 200m buffer
- Wader roosts 650m buffer
- Sand storage (approx.)
- Bentonite sand bund
- No-dredge refuge area

Do not scale this map

Client
Ardersier Port Ltd

Project
Ardersier Port

Title
Wader Roost Protection

Status
FINAL

Drawing No.	Revision	Date
677965-GIS010	-	14 Nov 2024
Drawn	**Checked**	**Approved**
HA	MM	MM

Scale
1:15,000 @ A3

Rev	Date	Amendment	Initials
-	-	-	-

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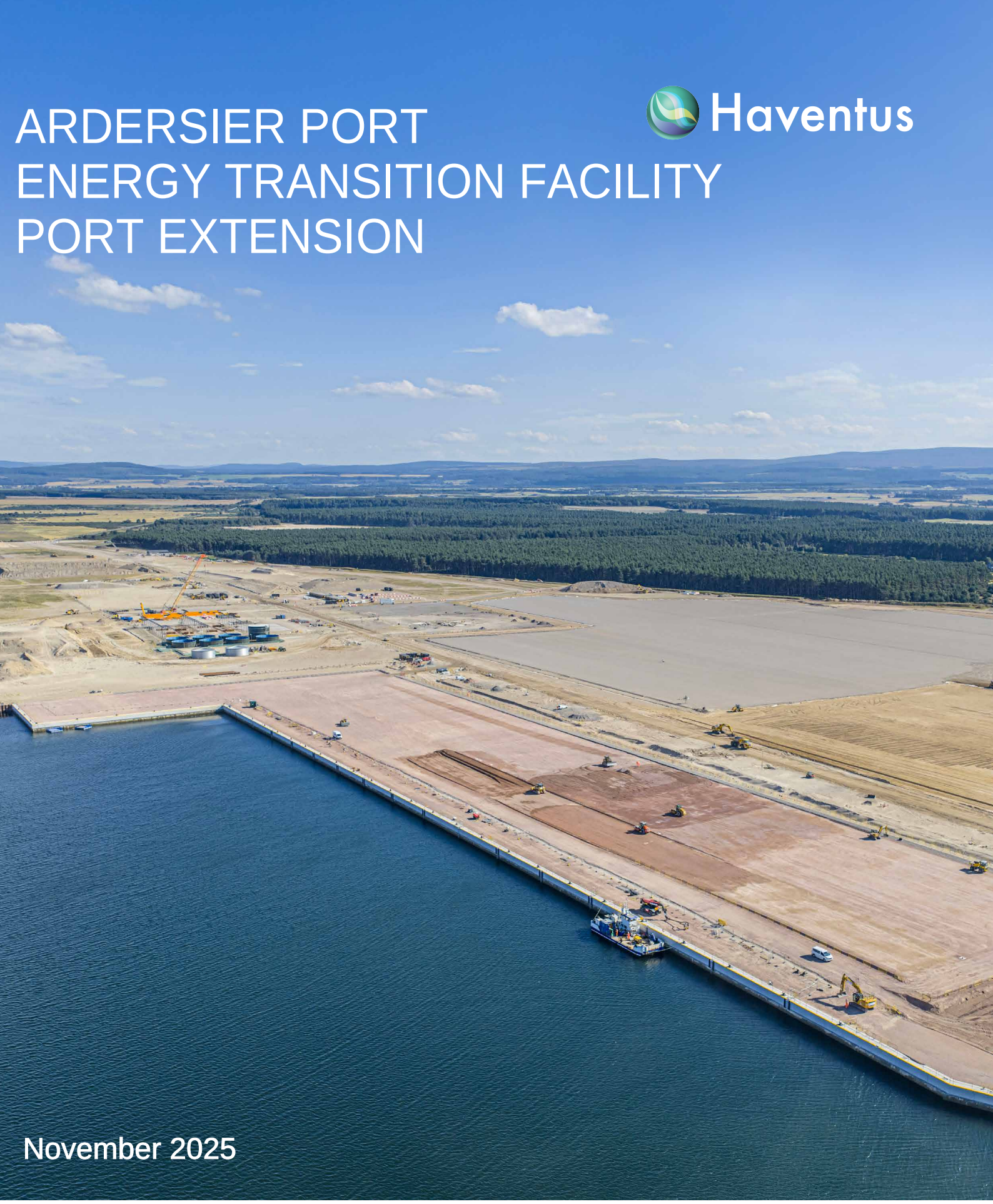
ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION

Haventus



November 2025

Appendix 13.9 Report to Inform Appropriate Assessment - Ornithology

Appendix 13.9 - Ardersier Port Extension

784-B069769

Report to Inform Appropriate Assessment – Habitats Regulations Assessment Stage 1 Screening for Likely Significant Effect and Stage 2 Appropriate Assessment

Haventus

31 October 2025

Document prepared on behalf of Tetra Tech Limited. Registered in England number: 01959704

TETRA TECH

Tetra Tech Edinburgh, 3rd Floor Quay 2, 139 Fountainbridge, Edinburgh, United Kingdom, EH3 9QG

Tetra Tech Limited. Registered in England number: 01959704
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DOCUMENT CONTROL

Document:	Report to Inform Appropriate Assessment – Habitats Regulations Assessment Stage 1 Screening for Likely Significant Effect and Stage 2 Appropriate Assessment
Project:	Appendix 13.9 - Ardersier Port Extension
Client:	Haventus
Project Number:	784-B069769
File Origin:	\\lds-dc-vm-101\Data\Projects\784-B069769_Ardersier_Ecology_Scoping\60_Output\63_Published\

Version	1	**Prepared by:**	Sam King BSc (Hons) ACIEEM **Senior Ecologist** [Redacted]
Date:	31 October 2025	**Checked by:**	Ashley Endacott BSc (Hons) **Senior Habitats Regulations Assessment Specialist** [Redacted]
Status:	Final	**Approved By:**	Elaine Anderson BSc (Hons) ACIEEM **Principal Ecologist** [Redacted]
Description	Issue		

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EXECUTIVE SUMMARY

Contents	Summary
Site Location	The proposed development lies on the southern shore of the Inner Moray Firth, immediately adjacent to the Inner Moray Firth Special Protection Area (SPA) and Ramsar site, and within close proximity (~730 m) to the Moray Firth SPA.
Proposals	The proposed development comprises extension of port facilities, new quay walls, extensive capital and maintenance dredging (inner harbour), woodland clearance and land raising to create working platforms, and the assembly and tow-out of floating offshore wind turbines (tall items up to ~330 m). Recent sites specific surveys (wader, breeding bird, pinewood specialists, raptors), appendices and Environmental Impact Assessment Report (EIAR) chapters provide a high resolution evidence base.
Scope of this Report	This Report to Inform Appropriate Assessment (RIAA) is confined to ornithology; marine mammals are assessed in EIAR Chapter 11 (Marine Mammals) in line with the Scoping Opinion. The purpose of this report is to assess the impact pathways, in lieu of mitigation, to likely significant effect of the proposed development upon the Habitats sites (Habitats Regulations Assessment Screening Assessment: Stage 1), and subsequently assess whether these would result in an adverse effect on the integrity of these Habitats sites, thus proceeding to Appropriate Assessment: Stage 2. This RIAA has been prepared to meet the requirements of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended), and is structured to provide a transparent, evidence-based, and legally robust assessment of the project's implications for the conservation objectives of all relevant Habitats sites. The assessment is grounded in a comprehensive evidence base, including detailed wader, breeding bird, pinewood bird, and raptor surveys, a targeted literature review on displacement and collision risk, and the full suite of appendices and EIAR chapters. The methodology follows best practice as set out

	by the Chartered Institute of Ecology and Environmental Management (CIEEM), NatureScot and the Marine Directorate's EIA Scoping Opinion.
Stage 1: Screening Results	Following the screening assessment of potential impact pathways, it can be concluded that in lieu of mitigation measures, a Likely Significant Effects (LSE) could not be excluded for: • Disturbance (noise, visual, lighting, human presence) on functionally linked land (FLL) adjacent to the Inner Moray Firth SPA & Ramsar; • Physical habitat loss/alteration (FLL and adjacent supratidal/intertidal areas); • Hydrodynamic change to supporting intertidal habitats; • Water quality/turbidity effects from capital/maintenance dredging and construction earthworks; • Disturbance/displacement within the Moray Firth SPA from assembly and tow-out and associated vessel movements (including tall item presence in nearshore SPA waters); and • Cromarty Firth SPA (and Dornoch Firth & Loch Fleet SPA) were screened out at Stage 1 on the basis of distance, with no direct or indirect waterborne pathway between the Ardersier site and the SPA, and lack of a credible pathway.
Stage 2: Appropriate Assessment	The Appropriate Assessment (AA) concludes that, with the following enforceable measures in place (Construction Environmental Management Plan (CEMP)/Habitat Management Plan (HMP), method statements, lighting and vessel protocols, and Ecological Clerk of Works (ECoW) oversight), the proposed development will not adversely affect the integrity of the Inner Moray Firth SPA & Ramsar or the Moray Firth SPA: • Disturbance (construction/operation): Visual/acoustic screening, roost buffers, controlled timing of high-disturbance tasks, shielded lighting, disciplined access, and monitoring will limit effects to minor, short-term behavioural responses.

- Physical habitat loss/alteration: The intertidal/supratidal frontage used by SPA features is retained; local works are landward. No FLL loss or functional degradation is predicted at AA. A ~2 ha wetland is identified as an EIA terrestrial enhancement only and is not relied upon for the AA conclusion.
- Water quality/turbidity and pollution: Construction drainage, Sustainable Drainage Systems (SuDS), turbidity monitoring, and Scottish Environment Protection Agency (SEPA) aligned pollution controls will interrupt pollution pathways.
- Barrier/displacement from tall structures: No hot testing; blades remain static during assembly, so collision and barrier risks are negligible.
- Hydrodynamic / coastal-process change: Hydrodynamic and wave modelling confirms no change to tidal velocities or tidal heights and no significant change to wave heights, and the dredge design avoids any impacts on intertidal areas. On this basis, the Appropriate Assessment concludes no adverse effect on site integrity (AEoI) for hydrodynamic/coastal-process change without reliance on any management plan. A proportionate Sediment Transport Monitoring Plan (STMP) will be secured through the CEMD/CEMP to verify predictions and provide an early-warning/ reporting framework if monitoring indicates deviations outside the envelope of natural variability; this verification is not required to reach the AA conclusion.
- Moray Firth SPA (disturbance/displacement): Tow-out will use slow speeds, agreed routes, and adaptive management to avoid sustained disturbance.

An in-combination assessment has been undertaken. For the other pathways, no AEoI in-combination is predicted once measures are secured. The measures intend to avoid the harmful effects of the project on the qualifying features of the Habitats sites. The EIAR cumulative review also found no significant ornithological cumulative effects.

Conclusion	With the above mitigation measures legally secured through planning conditions, there will be no adverse effect on site integrity from Assessed pressures/threats: • Disturbance (noise, visual, lighting and human presence) on functionally linked land adjacent to the Inner Moray Firth SPA & Ramsar. • Physical habitat loss/alteration within FLL and adjacent supratidal/intertidal areas. • Hydrodynamic change to supporting intertidal habitats: No AEoI. The completed hydrodynamic/wave modelling demonstrates no change to tidal velocities, no change to tidal heights and no significant change to wave heights, with the dredge designed to avoid intertidal impacts; therefore no reasonable scientific doubt remains that site integrity will be maintained. An STMP will be secured via the CEMD/CEMP for verification only, not as a dependency of this conclusion. • Water-quality/turbidity effects from capital/maintenance dredging and construction earthworks. • Construction pollution risks from fuels, oils, concrete/cementitious materials (including silt-laden runoff). • Barrier/displacement effects from tall structures and cranes during port-side assembly. • Disturbance/displacement within the Moray Firth SPA from assembly & tow-out and associated vessel movements. It is expected that the qualifying features will be unaffected and will remain a viable component of the Habitats sites. Their distribution will not be inhibited. There will be no reduction on the condition of the qualifying features. The conservation objectives to maintain (or restore) each feature in favourable condition will not be impacted. The proposed development will not impede the achievement of the conservation objectives which are being, or will be, delivered under Article 6(1) or 6(2) of the Habitats Directive.

1.0 INTRODUCTION

1.1 BACKGROUND

Tetra Tech Limited (Tetra Tech) was commissioned by the Applicant in October 2025 to prepare a RIAA for the proposed Ardersier Port Extension, located on the southern shore of the Inner Moray Firth. Hereafter this is referred to as "the proposed development site" and displayed in Figure 1.

This report is required to establish the potential for the proposed development to affect the qualifying features of any Habitats sites either alone or in combination with other plans or projects. The Highland Council (for terrestrial elements) and the Marine Directorate (for marine elements) are the competent authorities and are required to assess the proposed development under Regulation 48 of The Conservation (Natural Habitats, &c.) Regulations 1994, hereafter referred to as the Habitats Regulations. This report is prepared to assist the competent authorities in undertaking their duties.

This report has been prepared by Senior Ecologist Sam King BSc (Hons) ACIEEM. It has been reviewed by Senior HRA Specialist Ashley Endacott BSc (Hons) and verified by Elaine Anderson Principal Ecologist BSc (Hons) ACIEEM. The conditions pertinent to it are provided in Appendix A.

1.2 SITE DESCRIPTION

The proposed development is located on the southern shore of the Inner Moray Firth, bordered by the Moray Firth to the north, Carse of Delnies to the east, Carse Wood to the south, and the sand dunes and tidal sandflats of Whiteness Sands to the west. The proposed development site is adjacent to the Inner Moray Firth SPA and Ramsar site, and is within 730 metres (m) of the Moray Firth SPA. The proposed development site is centred at National Grid Reference NH 80562 57455.

The area is characterised by a high degree of openness, extensive intertidal flats, and a mosaic of woodland, scrub, grassland, and lagoon habitats. The proposed development site and the immediate surroundings support regionally and nationally important assemblages of waders, breeding birds, pinewood specialists, and raptors.

The hydrological baseline for the proposed development and its surrounding area is described in detail in Chapter 9 (Hydrology and Hydrogeology (Revised 25 September 2025)). The site is adjacent to, and hydrologically connected with, internationally and nationally designated ornithological sites, including the Inner Moray Firth SPA, Ramsar, and Whiteness Head Site of Special Scientific Interest (SSSI). Key ornithological habitats such as saltmarsh, intertidal flats, and the lagoon are directly influenced by surface water drainage, groundwater, and tidal processes (see EIAR Chapter 9, Table 9.3).

The hydrological regime is critical for maintaining the ecological character and supporting the qualifying bird features of these sites. The baseline assessment confirms that the lagoon and saltmarsh are designated for their importance to non-breeding and breeding waterbirds and waders, and that their condition is dependent on the maintenance of appropriate water levels, water quality, and sediment dynamics.

1.3 DEVELOPMENT PROPOSALS

The proposed development comprises the following key elements:

Marine works:

- Construction of new quay walls and integration pockets for wind turbine assembly.
- Removal of old sheet piles.
- Extensive capital dredging of the inner harbour (up to 2,000,000 m^3).
- Installation of rock armour and mooring dolphins.
- Maintenance dredging.

Terrestrial works:

- Clearance of approximately 45 hectares of Scots pine plantation and associated woodland.
- Demolition of existing buildings.
- Land raising and creation of working platforms using dredged sand and local stone.
- Installation of drainage and landscaping.
- Retention of a 20 m woodland buffer along the southern edge.

Operational activities:

- Assembly and tow-out of floating offshore wind turbines (up to 330 m tall).
- Ongoing port operations, vessel movements, and maintenance.
- Erection of offices, industrial and storage buildings, manufacturing infrastructure, boundary fencing, lighting, and internal roads.

The design incorporates a range of embedded mitigation measures, including a 3 m earth bund along the consented boundary to reduce visual and acoustic disturbance to adjacent intertidal habitats, retention of buffer woodland strips, and timing of works to avoid sensitive periods for key ornithological receptors.

This ornithology RIAA does not assess the operational impacts of any wind farm itself; those effects will be subject to a separate Habitats Regulations Assessment for any individual wind farm project. This report is focused solely on the port-side assembly and tow-out activities associated with the proposed development.

1.4 REQUIREMENT FOR HRA

The requirement for a Habitat Regulation Assessment (HRA) is established through Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, hereby referred to as the 'Habitats Directive', in Articles 6(3) and 6(4). The Habitats Directive is transposed into national legislation by the Habitats Regulations.

A HRA is an assessment of the potential impacts of a proposed project or plan on the conservation objectives of any Habitats site and, where necessary, an assessment of the development mitigation and / or avoidance measures to preclude negative effects.

Habitats sites (cited as European sites within the Habitats Regulations) are defined within (Regulation 10(1)[1] as:

(a) a special area of conservation,

(b) a site of Community importance which has been placed on the list referred to in the third sub-paragraph of Article 4(2) of the Habitats Directive before exit day,

(d) an area classified before exit day pursuant to Article 4(1) or (2) of Council Directive 1979/409/EEC on the conservation of wild birds or Article 4(1) or (2) of the Wild Birds Directive or classified after exit day under the retained transposing regulations or

(e) a site which has been proposed to the European Commission in accordance with Article 4(1) of the Habitats Directive until such time as;

(i) the site is designated as a special area of conservation under regulation 7 or under the equivalent provision in the other retained transposing regulations; or

(ii) the Scottish Ministers give notice of their intention not to designate the site, setting out the reasons for their decision, in accordance with regulation 112(3).

Policy 4b of the National Planning Framework 4 (NPF4) (The Scottish Government, 2023) states that:

"Development proposals that are likely to have a significant effect on an existing or proposed European site (Special Area of Conservation or Special Protection Areas) and are not directly connected with or necessary to their conservation management are required to be subject to an "appropriate assessment" of the implications for the conservation objectives."

Policy 4c also states:

[1] Reg. 10(1)(c) omitted (31.12.2020) by virtue of The Conservation (Natural Habitats, &c.) (EU Exit) (Scotland) (Amendment) Regulations 2019 (S.S.I. 2019/113), regs. 1, 12(2)(b); 2020 c. 1, Sch. 5 para. 1(1)

"All Ramsar sites are also European site and/or Sites of Special Scientific Interest and are extended protection under the relevant statutory regimes."

To help differentiate when describing European sites and those afforded protection under Policy 4c of the NPF, they are referred to as 'Habitats sites' within this report (formerly also referred to as 'Natura' or 'Natura 2000' sites).

Updated Ramsar policy (July 2025). On 9 July 2025 the Scottish Government confirmed that listed Ramsar sites are to be treated as if they were European sites for the purposes of land-use change decision-making. In practice, any plan or project which could affect a Ramsar site must undergo Habitats Regulations Appraisal (HRA) and, where relevant, Appropriate Assessment (AA). This updated policy is a material consideration and should be applied alongside NPF4; NatureScot should be consulted as part of any AA. This RIAA therefore assesses Ramsar features on the same basis as European sites.

The impacts assessed within a HRA must include the direct and indirect impacts, and possible cumulative impacts, of approving the plan or project, considered with any current or proposed activities, developments or policies impacting on the Habitats site. The potential impacts of projects and polices outside the Habitats sites, but potentially impacting upon them (i.e., negative effects upon functionally linked habitat used by their qualifying features) must also be included in the assessment.

Under Regulation 48 of the Habitats Regulations, any plan or project which is likely to have a significant effect on a Habitats site (either alone or in-combination with other plans or projects) and is not directly connected with, or necessary for the management of the Habitats site, must be subject to an HRA to determine the implications for the plan or project in view of its conservation objectives.

A HRA can only be performed by a Competent Authority. Regulation 48(1) details that '*A competent authority, before deciding to undertake, or give any consent or other authorisation for, a plan or project… shall make an appropriate assessment of the implications for the site in view of that site's conservation objectives.*'

This RIAA is prepared in accordance with Regulation 48 (2) and provides '*such information as the competent authority may reasonably require for the purposes of the assessment or to enable the competent authority to determine whether an appropriate assessment is required.*'

1.5 HRA GUIDANCE

The HRA process undertaken by Tetra Tech has been developed in accordance with the following guidance:

- Tyldesley, D., and Chapman C., (2025) The Habitats Regulations Assessment Handbook, edition UK: DTA Publications Limited (accessed online, by subscription only).
- HRA judgement (Holohan and Others v An Bord Pleanála, 2018) has also been considered within this assessment. In summary this judgement provides further clarification about the scope of an Appropriate Assessment (AA), requiring that the assessment must:
  - Catalogue the entirety of habitat types and species for which a site is protected;
  - Identify and examine the implications of the project for species present on the Special Protection Areas (SPAs) / Special Areas of Conservation (SACs) / Ramsar sites for which the site has not been listed provided that those implications are liable to affect the Conservation Objectives of the site (i.e. if they are necessary to the conservation of the habitat types and species listed for the protected area); and
  - Consider the implications for habitat types and species to be found outside the SPA / SAC / Ramsar sites provided that those implications are liable to affect the Conservation Objectives of the SPA / SAC / Ramsar (i.e. if they are necessary to the conservation of the habitat types and species listed for the protected area).

This RIAA follows the NatureScot Habitats Regulations Appraisal (HRA) guidance for projects in Scotland, including the staging and recording of decisions, and the Marine Directorate factsheet for HRA applied to marine licensing. Screening conclusions do not rely on mitigation (NatureScot, 2025), with any avoidance/mitigation considered at AA.

In essence this is how a thorough HRA is carried out, as there may be other features supporting the Conservation Objectives of the Habitats site which are not actually listed as qualifying features, both within the boundary of the Habitats site and outside it.

1.6 INFORMATION / DOCUMENTS USED IN THIS ASSESSMENT

The following information sources and documents have been used to inform this Habitats Regulations Assessment (HRA):

Statutory site information:

- Inner Moray Firth SPA — NatureScot SiteLink
- Inner Moray Firth Ramsar — Ramsar Sites Information Service (RIS) (site sheet and documentation)
- Moray Firth SPA — NatureScot SiteLink
- Moray Firth SPA — JNCC Standard Data Form (SDF)
- Moray & Nairn Coast SPA — JNCC SDF
- Moray & Nairn Coast Ramsar — RIS
- Loch Flemington SPA — JNCC SDF

Desk studies and mapping:

- Scotland's Environment Web. Scotland's Environment Map
- NatureScot & SEPA. Habitat Map of Scotland (HabMoS)
- Aerial Imagery and GIS Datasets: Project GIS datasets including UKHab polygons

Environmental Impact Assessment (EIA) documentation:

- Ardersier EIAR Chapter 9 – Hydrology and Hydrogeology
- Ardersier EIAR Chapter 13 – Ornithology

Technical appendices and survey reports:

- 784-B069769 Ardersier Ornithology Technical Appendix 13.3 Desk Study
- 784-B069769 Ardersier Ornithology Technical Appendix 13.4 Mitigation
- HED Ltd Haventus Ardersier Port Technical Appendix 13.5 - Pinewood Bird Survey Report
- HED Ltd Haventus Ardersier Port Technical Appendix 13.6 - Breeding Birds
- HED Ltd Haventus Ardersier Port Technical Appendix 13.7 – Raptors
- Haventus Ardersier Port Technical Appendix 13.8 Autumn-Winter 2024-25 Wader Monitoring Report
- Haventus Ardersier Port Technical Appendix 13.10 Literature Review (displacement and collision risk, species sensitivity, behavioural adaptation)

Regulatory and best practice guidance:

- CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland
- NatureScot (2022) Habitats Regulations Appraisal Guidance
- Scottish Government (2023) National Planning Framework 4

Consultation responses:

- Marine Directorate

- NatureScot
- The Highland Council
- Scottish Forestry

Relevant case law and literature:

- Waddenzee, Sweetman, People Over Wind, Holohan
- Goodship, N.M. & Furness, R.W. (2022) Disturbance Distances Review
- Gilbert, G., Gibbons, D.W. & Evans, J. (1998) Bird Monitoring Methods
- Stanbury, A. et al. (2021) Birds of Conservation Concern

2.0 ASSESSMENT METHODOLOGY

An assessment under the Habitats Regulations involves the following tasks split according to the guidance stages. The current report is concerned with Stage 1 – Likely Significant Effects (LSE) Screening and Stage 2 - AA. Table 1 provides a summary of each stage of the HRA process.

Table 1. HRA Stages

Stage	Details
Stage 1 **Assessment of Likely Significant Effects**	This is often called an Assessment of LSE and is essentially a risk assessment, typically utilising existing data, records and specialist knowledge. The purpose of the test is to decide whether 'full' AA is required. The essential question is: *"Is the project, either alone or in-combination with other relevant projects and plans, likely to result in a significant effect upon Habitats sites?"* A likely significant effect is any significant effect which would undermine the conservation objectives for Habitats sites. As a result of European case law, in Waddenzee, irrespective of the normal English meaning of 'likely', in this statutory context 'a likely significant effect' is 'a possible significant effect.' If it can be demonstrated that significant effects will not occur, in lieu of mitigation, no further assessment is required. If this cannot be demonstrated works progress to Stage 2.
Stage 2 **Appropriate Assessment**	If it cannot be satisfactorily demonstrated that significant effects are unlikely, an AA will be required. This stage is focussed entirely upon the qualifying features of the Habitats sites in question. The essential question here is: "*Will the project, either alone or in-combination with other relevant projects and plans, actually result in an adverse effect upon the integrity of any Habitats sites?*" If it is concluded that adverse effects will occur, mitigation measures will be required to either avoid the impact in the first place, or to reduce the ecological effect to such an extent that it is no longer significant. Note that, unlike standard Ecological Impact Assessment, compensation for adverse effects (i.e. creation of alternative habitat) is not permitted to be considered at the Appropriate Assessment stage.
Stage 3 **Alternatives**	Stage 3 involves the examination of alternative ways of achieving the objectives and avoiding adverse impacts on the integrity of the National Site Network.
Stage 4 IROPI and Compensation	Stage 4 is an assessment of Imperative Reasons of Overriding Public Interest (IROPI). A plan or project may proceed for reasons of IROPI if compensatory measures are secured.

Case-law principles applied. At screening (Stage 1), no measures intended to avoid or reduce effects ('mitigation') are taken into account when judging likely significant effects (People over Wind, C-323/17). Where an LSE cannot be excluded without such measures, the pathway progresses to AA. At AA (Stage 2), the competent authority may only agree to a plan or project after ascertaining, on the basis of the best scientific knowledge and complete information, that it will not adversely affect site integrity, with no reasonable scientific doubt remaining (Waddenzee, C-127/02; Sweetman, C-258/11; Holohan, C-461/17).

The Stage 1 Screening Assessment comprises four steps, as described below:

- Step 1. Determining whether the project or plan is directly connected with or necessary to the management of the Habitats site(s);
- Step 2. Describing the project or plan and the description and characterisation of other projects or plans that in-combination have the potential for having significant effects on the Habitats site(s);
- Step 3. Identifying the potential effects on the Habitats site(s); and
- Step 4. Assessing the significance of any effects on the Habitats site(s).

At HRA Stage 2 an AA should identify the effects of those plans or projects on qualifying features of the Habitats site(s) in relation to the Conservation Objectives of the Habitats site(s) and determine whether these effects will result in an adverse effect on the integrity of the site(s). Only where the Competent Authority is satisfied that there will be no adverse effect on integrity, or where there are reasons of imperative overriding public interest (Stage 4), may consent be granted.

Under Regulation 48 of the Habitats Regulations, an AA needs to be carried out in respect of any plan or project which:

(i) either alone or in-combination with other plans or projects would be likely to have a significant effect on a Habitats site; and
(ii) is not directly connected with the management of the site for nature conservation.

3.0 SCOPE OF ASSESSMENT

This RIAA is intentionally limited to ornithological receptors. This scope follows the Marine Directorate – Licensing Operations Team Scoping Opinion for the Ardersier Port Extension (June 2025), which states that "*ornithology should be scoped in for both the construction and operational phases*" and that assessment should address displacement/disturbance of SPA waterfowl from tall components/partial turbine construction at port side and potential effects during towing through the harbour channel as part of a shadow HRA for the Inner Moray Firth SPA and Moray Firth SPA (see Scoping Opinion, Section 5.20 Ornithology) (Marine Directorate Scoping Opinion, June 2025).

By contrast, designated sites with marine-mammal receptors are assessed within the EIA: the Scoping Opinion scopes Marine Mammals into the EIAR (underwater noise, vessel disturbance and "indirect impacts via prey species," etc.; Section 5.14 Marine Mammals). Potential effects on marine mammals and the Moray Firth SAC (bottlenose dolphin) are addressed in a separate HRA report that informs the Marine Licence decision. For completeness of the HRA record, the competent authorities should read this ornithology RIAA together with Appendix 11.6 (EIAR Chapter 11 (Marine Mammals)), which provides the screening and Appropriate Assessment for the Moray Firth SAC, while this HRA is confined to ornithology for the relevant SPAs.

It is further noted that under Regulation 52(2):

Nothing in regulation 48(1) or 50(2) requires a competent authority to assess any implications of a plan or project which would be more appropriately assessed under that provision by another competent authority.

3.1 IDENTIFICATION OF HABITATS SITES WITH POTENTIAL TO BE AFFECTED BY THE PROJECT

Within a 10 km Zone of Influence (ZoI) around the proposed development, Habitats sites have been identified using a source–pathway–receptor lens, recognising that mobile qualifying species and supporting features outside site boundaries can be integral to achieving conservation objectives (i.e. functional linkage). At this stage, sites are identified only; formal Stage-1 screening judgements are set out in Section 4.4.

Adjacent/nearby sites:

- Inner Moray Firth SPA — adjacent
- Inner Moray Firth Ramsar — adjacent
- Moray Firth SPA — approximately 730 m northwest

Other sites within 10 km:

- Loch Flemington SPA — approximately 4.7 km south (inland loch)
- Moray & Nairn Coast SPA/Ramsar — approximately 8.2 km east (coastal complex)
- Cromarty Firth SPA — approximately 9.4 km northwest

Distances are from the Desk Study / project GIS. Locations are shown on Figure 1. Qualifying features and threats/pressures are summarised in Table 2 (following Section 3.2).

3.2 DETERMINING THE ZONE OF INFLUENCE

The zone of influence (ZoI) used within this report was determined using a standard source-pathway-receptor model. In order for an effect to be established all three elements of this mechanism must be in place. The absence or removal of one of the elements of the mechanism is sufficient to conclude that a potential effect is not of any relevance or significance.

Receptors are the ecological features that are known to be utilised by the qualifying features of a Habitat site. A source is any identifiable element of the proposed scheme provision that is known to interact with ecological processes. The pathways are any connections or links between the source and the receptor.

A 10 km ZoI search radius from the proposed development site was used to identify any Habitats sites that could be adversely affected (Figure 1). This is considered sufficient to capture all Habitats sites which may be impacted by the proposed development, noting the direct adjacency to the Inner Moray Firth SPA and Ramsar, and its proximity (≈730 m northwest) to the Moray Firth SPA. The ZoI also encompasses Loch Flemington SPA (approximately 4.7 km south) and the Moray and Nairn Coast SPA and Ramsar (approximately 8.2 km east), both of which are within 10 km of the site. In addition, the ZoI includes functionally linked land (FLL) adjacent to the port and nearshore waters relevant to turbine assembly and tow-out vessel movements.

Table 2 below lists the Habitats sites identified that could be affected by the proposed development and details each site's qualifying and supporting features, any threats to their integrity (as identified in the JNCC Standard Data Form), and their high-level conservation objectives.

Table 2 - Site Selection.

Habitats Site	Distance to Proposed Development	Qualifying Features	Threats and Pressures[2]	Conservation Objectives
UK9001624 Inner Moray Firth SPA	Adjacent to project boundary (southern shore of Inner Moray Firth)	**General site character:** intertidal flats, saltmarsh, sand dunes. Qualifying interests (summary): **Article 4(1) (Annex I species):** *Sterna hirundo* common tern (breeding); *Pandion haliaetus* osprey (foraging/breeding within range). **Article 4(2) (migratory species & assemblage):** e.g. greylag goose *Anser anser*, red-breasted merganser *Mergus serrator*, redshank *Tringa totanus*, and waterfowl assemblage exceeding 20,000 individuals (see citation for full list).	**D02** Utility & service lines/pipelines; **H07** other pollution; **I01** invasive non-native species; **M02** changes in abiotic conditions; **M01** climate change; **C03** production of renewable energy (abiotic – wind/wave/tidal); **K03** hydrological modifications; **G01** outdoor sports/leisure/recreation; and **F03** hunting & collection of terrestrial wild animals.	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. - Distribution and extent of habitats supporting the species. - Structure, function and supporting processes of habitats supporting the species. - No significant disturbance of the species.
UK13025 -Inner Moray Firth Ramsar	Adjacent to project boundary	**Criterion 1:** Intertidal mudflats and sandflats supporting areas of saltmarsh Sand dunes and a shingle bar **Criterion 2:** Osprey Common tern *Sterna hirundo* **Criterion 4:** Scaup Curlew Goosander Goldeneye Teal Wigeon Cormorant Oystercatcher **Criterion 6:** Bar-tailed godwit Greylag goose Red-breasted merganser Redshank **Source:** (NatureScot, 2022)	RIS notes activities/pressures associated with: nature conservation and tourism/recreation; fishing; hunting and grazing affecting intertidal resources and roosting/foraging behaviour.	The conservation objectives for Inner Moray Firth Ramsar are the same as those listed for the Inner Moray Firth SPA. This Ramsar site overlaps with the Inner Moray Firth SPA Habitat site. Conservation Advice packages for overlapping Habitat site designations are, in most cases, sufficient to support the management of the Ramsar interests. As such, the Conservation Advice package for Inner Moray Firth SPA Habitat site has been used.
UK9020313 Moray Firth SPA	≈730 m northwest from the Site	**General site character:** marine open coast, subtidal sediments/rock, estuary. **Annex I Species:** (Breeding) European shag *Phalacrocorax aristotelis* (Wintering)	**F06** other hunting/fishing & collection activities; **F02** fishing & harvesting of aquatic resources; **M02** changes in abiotic conditions; **H03** pollution to marine waters; **C03** production of renewable energy (abiotic, e.g., offshore wind/wave/tidal); and **M01** climate change.	**1.** 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. **2.** To ensure that the integrity of the Moray Firth SPA is restored in the context of environmental changes by meeting objectives 2a, 2b and 2c for each qualifying feature: **2a.** The populations of qualifying features are viable components of the site.

[2] Natura 2000 "Threats, Pressures & Activities (TPA)" codes used in JNCC Standard Data Forms. TPA codes (e.g., K03, G01) are the standard Natura 2000 threats/pressures categories from the site's SDF; code meanings are as listed above (e.g., K03 hydrological modifications; G01 recreation.)

Habitats Site	Distance to Proposed Development	Qualifying Features	Threats and Pressures[2]	Conservation Objectives
		Great northern diver *Gavia immer* Red-throated diver *Gavia stellata* Slavonian grebe *Podiceps auritus* Greater scaup *Aythya marila* Common eider *Somateria mollissima* Long-tailed duck *Clangula hyemalis* Common scoter *Melanitta nigra* Velvet scoter *Melanitta fusca* Common goldeneye *Bucephala clangula* Red-breasted merganser *Mergus serrator* **Source:** (NatureScot, 2020)		**2b**. The distribution of the qualifying features is maintained throughout the site by avoiding significant disturbance of the species. **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.
Moray & Nairn Coast SPA (UK9001625)	≈8.2 km east	**General site character:** dunes, shingle, saltmarsh, estuarine areas, floodplain. Bar-tailed godwit *Limosa lapponica* – non-breeding; Greylag goose *Anser anser* – non-breeding; Osprey *Pandion haliaetus* – breeding/foraging; Pink-footed goose *Anser brachyrhynchus* – non-breeding; Redshank *Tringa totanus* – non-breeding; Non-breeding waterfowl assemblage with assemblage qualifiers only: Dunlin *Calidris alpina alpina**; Oystercatcher *Haematopus ostralegus**; Red-breasted merganser *Mergus serrator**; Wigeon *Anas penelope**. *Indicates assemblage qualifier only.	**F06** other hunting/fishing & collection activities; **F02** fishing & harvesting of aquatic resources; **M02** changes in abiotic conditions; **H03** pollution to marine waters; **C03** production of renewable energy (abiotic, e.g., offshore wind/wave/tidal); and **M01** climate change.	Conservation Objectives for Moray & Nairn Coast SPA: - To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and - To ensure for the qualifying species that the following are maintained in the long term: - Population of the species as a viable component of the site. - Distribution of the species within site. - Distribution and extent of habitats supporting the species. - Structure, function and supporting processes of habitats supporting the species. - No significant disturbance of the species.
Loch Flemington SPA (UK9001691)	≈4.7 km south	**General site character:** shallow eutrophic loch with emergent/sedge fen. Slavonian grebe *Podiceps auritus* – breeding.	**M02** changes in abiotic conditions; **L08** natural processes; **K03** hydrological modifications; and **I01** invasive non-native species.	Conservation Objectives for Loch Flemington SPA: - To avoid deterioration of the habitats of the qualifying species (listed below) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and - To ensure for the qualifying species that the following are maintained in the long term: - Population of the species as a viable component of the site - Distribution of the species within site - Distribution and extent of habitats supporting the species - Structure, function and supporting processes of habitats supporting the species - No significant disturbance of the species
Moray & Nairn Coast Ramsar (RSIS 890)	≈8.2 km east	**Ramsar wetland/habitat interests**: Sand dune (Culbin Bar SAC); Shingle (Culbin Bar SAC; Lower River Spey–Spey Bay SAC); Saltmarsh (Culbin Bar SAC); Estuarine alder woodland (Lower River Spey–Spey Bay SAC); Flora: Sea centaury *Centaurium littorale*, Dwarf eelgrass *Zostera noltei*,	Ramsar site documentation notes activities including recreation, shellfish collecting, hunting, and timber harvesting/forestry, alongside wider coastal land-use that can affect habitats and waterbirds.	Ramsar Conservation Objectives: For habitat/other features, refer to the relevant SAC Conservation Advice Packages throughout the Ramsar site (e.g., Shifting dunes; Coastal shingle vegetation; Atlantic salt meadows; Alder woodland on floodplains; Sea centaury/Dwarf eelgrass protected via Atlantic salt meadows). For Ramsar waterbird interests, apply the Moray & Nairn Coast SPA Conservation Objectives verbatim (see SPA CO text).

Habitats Site	Distance to Proposed Development	Qualifying Features	Threats and Pressures[2]	Conservation Objectives
		Oysterplant *Mertensia maritima*, Baltic rush *Juncus balticus*; **Invertebrates**: *Ochthebius lenensis* water beetle, *Tetanocera freyi* snail-killing fly. **Waterbirds supported include**: Bar-tailed godwit, Dunlin, Greylag goose, Osprey, Oystercatcher, Pink-footed goose, Red-breasted merganser, Redshank, Wigeon		
Cromarty Firth SPA (UK9001623)	≈9.4 km northwest	**Annex I (Art. 4.1):** Osprey *Pandion haliaetus* (foraging; 2008–2012 mean up to 25 territories within feeding range; 12.5% GB; 1 pair breeding within site), Common tern *Sterna hirundo* (breeding; 1989–1993 mean 294 pairs; ~2% GB), Whooper swan *Cygnus cygnus* (wintering; 1992/93–1996/97 winter peak mean 64; ~1% GB), Bar-tailed godwit *Limosa lapponica* (wintering; ~1,355; ~3% GB). **Annex II/Art. 4.2 migratory**: Greylag goose *Anser anser* (Iceland/UK/Ireland biogeographic population; winter peak mean ~1,782; ~2%). Waterfowl assemblage: >20,000 individuals (winter peak mean ~30,200 birds; 1992/93–1996/97).	**K03** hydrological modifications; **G01** outdoor sports/leisure/recreation; **H07** other pollution; **C03** production of renewable energy (abiotic – wind/wave/tidal); **D02** utility & service lines/pipelines; **F03** hunting & collection of terrestrial wild animals; **M02** changes in abiotic conditions; **I01** invasive non-native species; and **M01** climate change.	Conservation Objectives - 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; - 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.

4.0 STAGE 1: SCREENING ASSESSMENT

4.1 IS THE PROJECT DIRECTLY CONNECTED WITH OR NECESSARY TO THE SITE MANAGEMENT FOR NATURE CONSERVATION?

The proposed development is not connected with and is not necessary for the management of any Habitats sites detailed in this report.

4.2 ASSESSING RISK OF IMPACT PATHWAYS LEADING TO LIKELY SIGNIFICANT EFFECTS

On evaluation of the conservation objectives of the Habitats sites, the potential impact pathways to LSEs as a result of the proposed development are discussed below. The threats and pressures listed are taken from the published JNCC standard data forms. On a precautionary basis, additional pressures that are considered relevant are assessed also (see Section 4.2.2).

4.2.1 Threats and Pressures Excluded from Consideration

The following threats and pressures are identified in the JNCC Standard Data Forms and Ramsar Information Sheets for the relevant sites but are excluded from further consideration in this RIAA because they are not part of the proposed development, have no credible source–pathway–receptor linkage to SPA/Ramsar qualifying features, or otherwise fall outside the ornithology scope of assessment:

- Fishing and harvesting of aquatic resources (e.g. commercial fishing, shellfish collection) – not part of the project and no pathway to ornithological features.
- Aquaculture and shellfish farming – not proposed or affected by the development.
- Grazing management (e.g. livestock grazing, mowing) – no change to existing management regimes as a result of the project.
- Farming and agricultural activities – not included in the project and no pathway to designated sites.
- Military activities – not part of the project; no pathway.
- New waste disposal – no new disposal to a designated sites is proposed.
- Hunting and collection of terrestrial wild animals – not part of the project and not permitted within the designated sites.

- Hunting and collection of aquatic wild animals – not part of the project and not permitted within the designated sites.
- Recreational activities (beyond those associated with the project workforce) – no increase in public access or recreational pressure as a result of the project.
- Mining, quarrying, and extraction – not included in the project.
- Introduction and spread of invasive non-native species (INNS) – no new pathway created; standard biosecurity measures will be in place.
- Climate change (sea-level rise, storm surges, temperature change) – while recognised as a background pressure, the project does not contribute to or exacerbate these pressures.
- Modification of water levels – only project-related modifications are assessed; no new abstraction or impoundment is proposed.
- Renewable energy generation – only the port-side assembly and tow-out of turbines is assessed; operational wind farm impacts are excluded (to be assessed separately).
- Compensation measures – not considered at the Appropriate Assessment stage in line with HRA guidance.

Only those threats and pressures for which a credible source, pathway, receptor linkage exists between the project and the qualifying features of the designated sites are taken forward for detailed assessment in Section 4.2.2. All other pressures, those not present in the project design, not capable of exerting an effect on the qualifying features of the relevant European sites, or otherwise outside the scope of the proposed development, are excluded from further assessment in this report.

4.2.2 Threats and Pressures Requiring Assessment

The following threats and pressures have credible source–pathway–receptor linkages between the proposed development and the qualifying features of the relevant SPAs and Ramsar interests. They are therefore taken forward to Appropriate Assessment (AA) and are first introduced here. This structure reflects the Marine Directorate – Licensing Operations Team Scoping Opinion for the Ardersier Port Extension (June 2025), which scoped ornithology in for construction and operation (including disturbance from tall components/partial assembly at the port and the towing of large components through the harbour channel), and the JNCC Standard Data Forms/Ramsar Information Sheets for the sites considered.

Primary pressures assessed in AA:

- Construction-phase visual and non-impulsive noise disturbance within the port estate, including tall structures/partial turbine assembly: potential temporary displacement and reduced foraging efficiency of SPA waders and waterbirds, with higher sensitivity at high tide and during cold snaps when roost options are limited.

- Vessel movements associated with port operations and towing of large components through the harbour channel: potential disturbance and temporary redistribution of qualifying bird features using adjacent intertidal/supratidal areas.
- Dredging and associated works within the harbour/approaches (including coastal processes): potential visual/noise disturbance to birds using adjacent intertidal habitats and potential temporary reductions in feeding efficiency linked to plume/turbidity and nearshore process interactions, to be considered with project hydrodynamics controls.
- Operational lighting within the port: risk of night-time disturbance and behavioural effects on birds using nearby intertidal roosts/foraging areas; to be managed through the project lighting strategy.

Additional pressures introduced for completeness (not assessed as standalone):

The following pressures are first introduced here at screening because plausible source–pathway–receptor linkages exist, but they are not assessed as standalone topics in the screening/AA matrices; instead, their effects are assessed within the relevant primary pressures listed above:

- Transfer of non-native/invasive species via ships' ballast water (operation): a plausible pathway exists during vessel operations. Compliance with the Merchant Shipping (Control and Management of Ships' Ballast Water and Sediments) Regulations 2022 and harbour/port ballast-water management controls will be relied upon. Effects are considered within "vessel movements/port operations" and are not assessed as a separate pressure.
- On-site urbanisation/transport infrastructure within the project footprint: internal roads, laydown and hardstanding are part of the project. Any effects (e.g., human presence/disturbance, lighting, drainage) are assessed under the corresponding primary pressures and are not assessed as a separate pressure.
- Plantation woodland clearance within the project boundary: included because vegetation removal within/adjacent to areas with potential FLL (functionally linked land) for SPA/Assemblage species may influence disturbance/redistribution. Effects are captured under "construction-phase disturbance within/adjacent to the port estate" and are not assessed as a separate pressure.
- Natural/hydrodynamic processes potentially altered by project activities: included pending hydrodynamic/coastal processes modelling and embedded controls (e.g., Dredge/Coastal Processes Management Plan). Effects are addressed under "dredging and associated works/coastal processes" and are not assessed as a separate pressure.

The detailed assessment and integrity test for the primary pressures are presented in Sections 5.1–5.7 and Section 6 (Integrity Test and Conclusions), with embedded/standard measures referenced in Section 5.9 and the relevant appendices.

At screening, no measures intended to avoid or reduce effects are taken into account. Where, in the absence of any such measures, a credible source-pathway-receptor link exists, the pathway is screened in for Appropriate Assessment.

In addition to the threats and pressures listed in Table 2, additional impact pathways (see Table 3) are taken forward for Stage 1 assessment in view of the conservation objectives of all relevant designated sites, including the Inner Moray Firth SPA and Ramsar, Moray Firth SPA, Moray & Nairn Coast SPA and Ramsar, Loch Flemington SPA, and associated functionally linked land (FLL). Inclusion is based on the project description, site-specific surveys (2024–25 wader monitoring; breeding, pinewood and raptor surveys), and regulatory/literature guidance referenced in this report.

In addition to the pathways listed, the following hydrology-to-ornithology linkages are explicitly considered by reference to EIAR Chapter 9 (Hydrology and Hydrogeology):

(i) Hydrology-driven habitat condition: potential alteration of surface water pathways (cut-off drains, land raising) and any knock-on changes to inundation/salinity affecting intertidal/supratidal bird habitats; managed via embedded drainage design and Flood Risk Assessment (FRA)/ Drainage Impact Assessment (DIA) commitments.

(ii) Sediment/turbidity pulses: construction earthworks and dredging with potential to increase suspended solids in the lagoon/saltmarsh; controlled through construction drainage, settlement/attenuation and monitoring measures in the Construction Environmental Management Document (CEMD)/ Construction Environmental Management Plan (CEMP).

The potential for collision risk to SPA birds from tall items (e.g., cranes, turbine components) during port-side assembly has been considered. As no hot-testing of turbines is planned at Ardersier and all blades will remain static or feathered during assembly, the risk of collision to SPA birds from on-site tall items is considered negligible relative to an operational wind-farm context. On this basis, collision risk at port is not taken forward for detailed assessment.

The four topics listed under “Additional pressures introduced for completeness (not assessed as standalone)” are not assessed as separate rows in Tables 3 and 4. Their effects are attributed to the relevant primary pressures (e.g., vessel movements/port operations, construction-phase disturbance including lighting/noise, and dredging/coastal processes) to avoid double-counting.

Table 3 - Threats and Pressures Requiring Assessment

Impact pathway (pressure)	Receptors	Source (project activity)	Rationale for inclusion / evidence
Physical habitat loss / alteration (FLL, woodland; supratidal margins)	Inner Moray Firth SPA & Ramsar (via functionally linked land, FLL); onsite breeding birds/raptors/pinewood specialists	Land raising; formation of working platforms; quay works; woodland clearance	FLL occurs immediately adjacent to the SPA/Ramsar. Although the intertidal/supratidal frontage is retained and design indicates no FLL land-take, the proximity of platform formation and drainage alterations requires assessment to confirm no functional degradation of roost/foraging resource adjacent to the SPA/Ramsar. Onsite woodland/edge works interact with breeding birds/raptors/pinewood specialists recorded in the baseline.
Disturbance – construction (noise, visual, human presence)	Inner Moray Firth SPA & Ramsar; onsite breeding birds/raptors	Quay wall works, dredging plant, HGVs, lifting/assembly operations; workforce presence	Monthly wader monitoring (Autumn–Winter 2024–25) recorded regular foraging and high-tide roosting immediately adjacent to the port and documented disturbance events linked to construction/port activity; highest sensitivity during high-tides and cold snaps. Proximity + frequency of works necessitate assessment.
Disturbance – operation (routine port activity)	Inner Moray Firth SPA & Ramsar	Ongoing yard activity, mobile plant, maintenance	Routine operations in shore-adjacent corridors can influence roost use and short-term behaviour if unmanaged; requires assessment and operational discipline to avoid recurring pressure.
Disturbance – lighting (construction and operation)	Inner Moray Firth SPA & Ramsar; onsite receptors	Yard/quay/security/tall-item task lighting	Night-time lighting close to roost/foraging areas can alter behaviour/use. Assessment needed against the lighting design targets stated in the RIAA (≤ 0.5 lux at SPA boundary; ≤ 1.0 lux at mapped roost margins; ≤ 3000 K CCT; curfews) and to ensure enforceability through CEMD/CEMP.
Hydrodynamic change to intertidal supporting habitats	Inner Moray Firth SPA & Ramsar	Capital dredging (inner harbour); rock mattress/armour; altered tidal prism	The hydrodynamic and wave modelling confirms no change to tidal velocities or heights and no significant change to wave heights, and confirms that the dredge footprint/design avoids intertidal areas; hydrodynamic change is therefore not a pathway to AEoI. A proportionate STMP (via the CEMD/CEMP) will verify predictions

Impact pathway (pressure)	Receptors	Source (project activity)	Rationale for inclusion / evidence
			post-dredge; this verification is not relied upon to reach the AA conclusion.
Pollution – waterborne (turbidity/sediment; fuels, oils, concrete washings; silt-laden runoff)	Inner Moray Firth SPA & Ramsar; near-shore Moray Firth SPA	Earthworks; drainage tie-ins; capital/maintenance dredging; fuel/chemical handling; concrete works	Credible source–pathway–receptor link to lagoon/saltmarsh/near-shore if unmanaged. Assessment required against drainage design (cut-off ditches, staging/attenuation, permeable/infiltration measures), turbidity monitoring and stop-work thresholds; and SEPA GPP-aligned pollution controls in CEMD/CEMP.
Vessel activity and tow-out related disturbance / displacement	Moray Firth SPA (non-breeding divers, grebes, sea ducks, shags)	Slow-speed tow-out; tug/escort transits; RIB use	Near-shore SPA waters (~ 730 m northwest) could experience temporary displacement during assembly/tow-out and escorting, even at slow speeds, thus requiring assessment of routes, timing, speed limits and on-water observation/adaptive measures (Port Marine Safety Code). (NB: Tow-out route does not traverse Cromarty Firth SPA, which was screened out at Stage-1.)
Barrier / displacement effects from tall structures and cranes (port-side)	Inner Moray Firth SPA & Ramsar (flightlines over FLL); onsite birds	Tall cranes and partially assembled structures	Although no hot-testing and static blades are proposed, the temporary presence of tall items proximate to flightlines warrants assessment of localised displacement/barrier risk and any short-term flight-path adjustments over FLL.
Airborne dust deposition	Intertidal/supratidal vegetation supporting SPA use; onsite habitats	Earthworks; traffic on unsealed routes; stockpiles	Potential exists for deposition on vegetation/foreshore, affecting forage or sward condition adjacent to FLL. While managed under the Dust Management Plan, assessment is retained here due to adjacency and frequency of earthworks.
Traffic / access management (human presence along shore-adjacent corridors)	Inner Moray Firth SPA & Ramsar	Shore-proximate logistics; foot/vehicle movements	Disturbance events have included responses to personnel/vehicle movements near mapped roosts; assessment required to confirm buffering, timing and routing provisions in the CEMD/CEMP.
Road-traffic emissions (NOx/NO2; N-deposition) — status: data dependent	SPA/Ramsar supporting habitats adjacent to road links	Construction and operational traffic on local network	The Marine EIA scoped air quality out; the terrestrial EIA should be read alongside it. As of this RIAA version, no TA/CTMP/flows were available to quantify road-traffic

Impact pathway (pressure)	Receptors	Source (project activity)	Rationale for inclusion / evidence
			emissions/deposition on SPA supporting habitats. Action: Hold as data-gap; undertake proportionate AQ screening if traffic data are supplied during determination.

Table 4 - Identifying Pathways to Likely Significant Effects (LSE)

Habitat Site	Qualifying Feature	Impact Pathway	Assessment	Determination of LSE
Inner Moray Firth SPA & Ramsar	Non-breeding waders & waterbirds; breeding common tern; osprey	**Construction** • Disturbance (noise, visual, human presence, near-port vessel movement) • Lighting (yard/quay/security/task lighting) • Physical habitat loss/alteration (FLL; supratidal margins) • Hydrodynamic change to supporting intertidal habitats • Pollution to water (turbidity/sediment; fuels, oils, concrete washings; silt-laden runoff) • Airborne dust deposition • Traffic/access management (human presence along shore-adjacent corridors) **Operation** • Disturbance (routine yard/port activity along shore-adjacent corridors) • Lighting (routine lighting regime)	The project footprint lies adjacent to the SPA/Ramsar. Monthly wader monitoring confirms regular foraging and high-tide roosting on adjacent intertidal/supratidal habitats, with documented disturbance events linked to construction and other activities. Loss and alteration of foraging/roosting areas immediately adjacent to designated features could affect availability and use of functionally linked land.	LSE

Habitat Site	Qualifying Feature	Impact Pathway	Assessment	Determination of LSE
		• Access management (shore-proximate routes		
Moray Firth SPA	Non-breeding divers, grebes, sea ducks, shags	**Operation** Vessel activity & tow-out related disturbance/displacement	Near-shore SPA waters (~730 m northwest from port) could experience temporary displacement during assembly/tow-out and escorting, even at slow speeds; assessment required of routes, timing, speed limits and on-water observation/adaptive measures (Port Marine Safety Code). Tow-out route does not traverse Cromarty Firth SPA (screened out).	LSE
Onsite receptors (supporting FLL for SPA)	Breeding birds (incl. red/amber-listed; UKBAP priority spp.)	**Construction** Habitat loss and disturbance	Baseline surveys record a diverse breeding assemblage; vegetation clearance and works risk nest loss, reduced productivity and behavioural disturbance; assessment retained with seasonal controls and ECoW oversight.	LSE
Onsite receptors (supporting FLL for SPA)	Raptors (buzzard, sparrowhawk, peregrine [Sched. 1], kestrel)	**Construction** Habitat loss/disturbance (incl. risk to active nests)	Suitable nesting habitat/activity recorded; felling/works near nests risk destruction or breeding failure; high sensitivity during nesting; assessment retained for buffers/timing.	LSE
Onsite receptors	Pinewood specialists (crested tit [Sched. 1],	**Construction** Habitat loss/fragmentation and	Commercial Scots pine blocks/edges support key species; loss/degradation and increased edge effects	LSE

Habitat Site	Qualifying Feature	Impact Pathway	Assessment	Determination of LSE
(supporting FLL for SPA)	common crossbill, woodcock)	disturbance	may reduce breeding success/viability; assessment retained with habitat-structure measures and phasing.	
Loch Flemington SPA (≈ 4.7 km S; inland loch)	Breeding Slavonian grebe	Disturbance / functional linkage	The proposed development is coastal and drains to the Hilton of Cadboll to Whiteness Head coastal waterbody (WFD 200501) (EIAR Chapter 9 (Hydrology and Hydrogeology)), with no hydrological linkage to this inland SPA. Loch Flemington is designated for breeding Slavonian grebe, which nest and forage within the loch. Slavonian grebes are highly site-faithful during the breeding season, typically remaining within the confines of their breeding loch for nesting and foraging. Published evidence and the SPA citation confirm that breeding Slavonian grebes at Scottish lochs, including Loch Flemington, are not known to commute significant distances away from their breeding sites during the nesting period. Studies and conservation guidance indicate that adults and chicks remain on the breeding loch throughout the season; there is no evidence of regular overland or over-water commuting between inland breeding sites and coastal or marine environments during this period. Typical foraging and	No LSE (screened-out)

Habitat Site	Qualifying Feature	Impact Pathway	Assessment	Determination of LSE
			movement is restricted to the loch itself and its immediate margins. Therefore, there is no credible disturbance or functional linkage pathway from coastal construction/operations or near-shore marine tow-out to breeding grebes at this location. Applying the People over Wind rule (no reliance on mitigation at screening) and the precautionary LSE test in Waddenzee, there is no source–pathway–receptor link; No LSE is therefore concluded for Loch Flemington SPA in relation to the proposed development.	
Moray & Nairn Coast SPA/Ramsar (≈ 8.2 km E)	SPA qualifying waterfowl assemblage; Ramsar wetland features	Hydrodynamic / disturbance	The proposed development is coastal and its drainage discharges into the Hilton of Cadboll to Whiteness Head coastal waterbody (WFD 200501), whereas the coastline fronting Moray & Nairn Coast lies to the north of Whiteness Head and is associated with Whiteness Head to Burghead (WFD 200502); these are separate receiving waters, confirming no hydrological pathway to the SPA/Ramsar (see Figure 9-1 and baseline text in EIAR Chapter 9 (Hydrology and Hydrogeology)). Site-specific hydraulic modelling in Chapter 9 also shows small, localised effects confined to the immediate receiving	No LSE (screened-out)

Habitat Site	Qualifying Feature	Impact Pathway	Assessment	Determination of LSE
			channels, with peak modelled velocities around ≈ 0.5 m/s (QMED) and ≈ 0.8 m/s (1:200 + CC), i.e., not propagating beyond those channels (Section 9.5; Appendix 9.3). Taken together, the receiving-water separation and modelling demonstrate no hydrodynamic pathway to Moray & Nairn Coast. For context, Moray & Nairn Coast SPA (Culbin Bars, Findhorn Bay and Spey Bay) is designated for a diverse waterfowl assemblage and qualifying features including osprey (foraging), bar-tailed godwit, pink-footed goose, greylag goose, redshank, and > 20,000 wintering waterbirds; the Ramsar citation reflects the same ecosystem values (wetland mosaic, eelgrass, shingle bars, saltmarsh) and the large waterbird assemblage. The site lies ≈ 8.2 km east of Ardersier; at this separation, and with no project activities proposed within or adjacent to the SPA/Ramsar, there is no realistic disturbance route from construction or near-shore port operations; this aligns with NatureScot's Moray Firth HRA framing that a credible source–pathway–receptor linkage is required before screening-in.	

Habitat Site	Qualifying Feature	Impact Pathway	Assessment	Determination of LSE
			Applying People over Wind at screening (no reliance on mitigation) and the Holohan principle (consider supporting features outside the boundary only where effects are liable to affect the site's conservation objectives), the demonstrated hydrodynamic separation, locality of modelled effects, and distance indicate no source–pathway–receptor link to the SPA/Ramsar's qualifying features or their supporting habitats. No LSE is therefore concluded at Stage-1, without reliance on mitigation.	
Cromarty Firth SPA (≈ 9.4 km NW)	Osprey, common tern, whooper swan, bar-tailed godwit; > 20,000 waterfowl	Hydrodynamic / navigation disturbance / functional linkage	The project's discharges and drainage are confined to the inner harbour/saltmarsh/lagoon and WFD 200501; Cromarty Firth is hydrodynamically separate. Tow-out and associated marine movements are restricted to the Inner Moray Firth approach/channel at slow speeds, with navigation notices requiring slow-speed passing during works; the route does not traverse Cromarty Firth SPA. The 2024–25 ornithological baseline and EcIA evidence identify no functional linkage. Under People over Wind and the precautionary Waddenzee test, No LSE is concluded on a no-pathway basis.	No LSE (screened-out)

Habitat Site	Qualifying Feature	Impact Pathway	Assessment	Determination of LSE
			For context, the Cromarty Firth SPA is a large estuarine site designated for internationally important populations of waterfowl and waders, including osprey, common tern, whooper swan, bar-tailed godwit, and greylag goose, and regularly supports > 20,000 individual waterfowl. The screening rationale is as follows: • Hydrodynamic separation: The proposed development ‘s discharges and drainage are confined to the inner harbour, saltmarsh, lagoon, and the Hilton of Cadboll to Whiteness Head coastal waterbody (WFD 200501). Cromarty Firth SPA is hydrodynamically separate, with no direct or indirect waterborne pathway between the Ardersier site and the SPA (see EIAR Chapter 9 (Hydrology and Hydrogeology)). • Marine operations and tow-out: All tow-out and associated marine vessel movements are restricted to the Inner Moray Firth approach/channel at slow speeds, in accordance with navigation notices requiring	

Habitat Site	Qualifying Feature	Impact Pathway	Assessment	Determination of LSE
			slow-speed passing during works. The designated tow-out route does not traverse Cromarty Firth SPA, and there is no risk of disturbance to SPA features from vessel activity along this route envelope. • Functional linkage: The 2024–25 ornithological baseline[3] and EcIA evidence confirm no functional linkage between the Ardersier site and Cromarty Firth SPA. No qualifying species or supporting habitats are shared or connected in a way that could create a source–pathway–receptor relationship. Accordingly, there is no source–pathway–receptor linkage between the proposed development and Cromarty Firth SPA. No LSE is concluded at Stage-1, and no further assessment of Cromarty Firth SPA is required in this report.	

4.3 SCREENING ASSESSMENT FOR LIKELY SIGNIFICANT EFFECTS IN-COMBINATION

In-combination effects are those which when considered alone are not significant, but when combined with the effects of other plans and projects reach a significant level (for example through addition). Upon reviewing the feature-pressure interactions in Table 4 above, it is considered that the proposed development will have an LSE alone because a pathway between the source and receptors has been identified such that an effect on all the listed Habitats sites may occur. The conclusions for feature-pressure interactions from LSE alone are listed in Table 4. All feature-pressure interactions will next be considered at AA Alone. An in-combination assessment is not required at the screening stage.

5.0 STAGE 2: APPROPRIATE ASSESSMENT

The following sections discuss the pathway to LSE that could result in impacts on the integrity of the Habitats sites identified during Stage 1: Screening.

The DTA Handbook (DTA Publications, 2025) states that '*The assessment must be of the implications of the plan or project, for the qualifying features of the site, in view of the site's conservation objectives, in light of the best scientific knowledge in the field. The assessment should also address the implications of the proposed plan or project for habitat types and species to be found outside the boundaries of the site if those implications may affect the achievement of the conservation objectives of the site*.'

The AA should also include consideration of the conservation status of the qualifying feature(s) in the Habitat site(s) and Habitats sites' condition.

The conclusions of the AA must inform the Integrity Test. The outcome of the Integrity Test will influence the decision made by the Competent Authority. Under Regulation 48(5) "*…the authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site.*".

The AA therefore provides an objective and scientific assessment necessary to enable the Competent Authority to make its decision in respect of site integrity with an appropriate degree of confidence.

5.1 NOISE AND VISUAL DISTURBANCE UPON FUNCTIONALLY LINKED LAND ADJACENT TO INNER MORAY FIRTH SPA & RAMSAR (CONSTRUCTION)

Monthly wader monitoring (Autumn/Winter 2024–25)[3] confirmed regular use of the intertidal and supratidal habitats directly adjacent to the port by SPA qualifying species (e.g., oystercatcher, curlew, bar-tailed godwit, knot, redshank) for foraging and high-tide roosting, with documented disturbance events linked to machinery, personnel and other activities. Construction at the quay/yard and along shore-adjacent corridors presents credible noise/visual/light and human-presence pathways to these receptors.

Mitigation

Construction phase

Disturbance Controls (noise/visual/human presence)

- Screening bunds. The Contractor shall maintain the ~3 m northern consented bund and install the ~2 m eastern bund prior to shore-proximal works to provide visual/acoustic screening to mapped roosts (Project Description; secured in CEMP).
- Setbacks to roosts. The ECoW/Environment Advisor shall mark and enforce buffers to mapped high-tide roosts, with regular checks while shore-proximal works occur (CEMP/HMP).
- High-tide window controls. The timing and duration of a “noisy-task high-tide window” (e.g., piling, concentrated HGV runs) shall be defined pre-start, recorded in the CEMP/HMP, and used to avoid high-disturbance activities within that window near mapped roosts where practicable and safe.
- Cold-weather constraint. When mean daily temperature ≤ 0 °C for ≥ 3 consecutive days (nearest Met Office site), the Contractor shall reschedule high-noise tasks away from the agreed high-tide window where practicable/safe; record decisions in the CEMP site log.
- Piling method & scheduling. Vibro shall be the preferred technique. Impact piling only where required to achieve design, with soft-start as standard. Avoid impact piling within the agreed high-tide window proximate to mapped roosts unless the ECoW confirms no roost use that day.

Lighting controls (night-time behaviour/roost use)

- Luminaire specification. Full cut-off luminaires (0% ULR) at ≤ 3000 K CCT.
- Design targets. Achieve ≤ 0.5 lux at the SPA/Ramsar boundary and ≤ 1.0 lux at mapped roost margins; demonstrate via the Lighting Plan photometrics.

[3] Haventus (2025). *Ardersier Port Technical Appendix 13.8 Autumn-Winter 2024-25 Wader Monitoring Report*.

- A night-time lighting restriction will be applied, with the exact hours to be determined. Any exceptions for safety-critical areas shall be listed in the Lighting Plan (CEMP/Lighting Plan).

Access discipline (land & marine)

- Land access. Permit access only along pre-defined shore-adjacent corridors with posted speed limits; no ad-hoc beach-edge access (CEMP).
- Marine movements. Route all vessels per the Port Marine Safety Code; keep near-harbour transits slow and predictable and minimise residence near sensitive roost cells (see Section 5.7; Port Marine Safety Code in CEMP/ Port Operations Environmental Management Plan (POEMP)).

Monitoring & adaptive triggers

- Roost-use spot counts will be undertaken at agreed high tides during peak winter months within the nearest supratidal cells, as set out in the Habitat Management Plan (HMP). The frequency and timing of counts will be determined in consultation with the competent authority and NatureScot, taking account of project phase, ecological sensitivity, and practical considerations. Monitoring will be proportionate to the risk of disturbance and may be adjusted as required to ensure effective oversight without excessive burden.
- Results of monitoring will be reviewed periodically with the Ecological Clerk of Works (ECoW) and relevant stakeholders. Where monitoring identifies notable changes in roost use, the project team will consider whether any site-related factors may be contributing and, if appropriate, will consult with the ECoW and competent authority to determine if further investigation or adaptive management is warranted.

Operational phase

Disturbance & screening

- Maintain screening: retain the bunds and roost buffers while any shore-proximal heavy activities continue (Operations CEMP / O&M procedures).

Operational lighting

- Run-time controls. Operate lighting to the construction-stage design targets (≤ 0.5 lux SPA boundary; ≤ 1.0 lux roost margins; ≤ 3000 K), with dimming/curfews except where safety requires otherwise (documented).
- Change control. Any future lighting changes shall maintain the design targets; ECoW review required for changes within the shore-adjacent corridors (Lighting Plan / Operations manual).

Access & vessel management

- Land access discipline retained: fixed routes, speed limits, briefings/toolbox talks for all shore-adjacent personnel and drivers.
- Port Marine Safety Code in force: continue slow, predictable near-harbour movements; avoid unnecessary hovering/holding near sensitive roost areas (Port Marine Safety Code).

Light-touch monitoring & review

- Roost-use spot checks may be undertaken during the first operational winter at agreed high tides, as set out in the Habitat Management Plan (HMP). The scope, timing, and frequency of monitoring will be determined in consultation with the competent authority and NatureScot, and will be proportionate to the risk of disturbance. If monitoring indicates a sustained reduction in roost use compared to the pre-construction baseline, the project team will review activity and, if appropriate, consider adaptive measures in consultation with the Ecological Clerk of Works (ECoW) and relevant stakeholders.

Governance, deliverables and evidence of compliance

- Pre-commencement submissions:
    - CEMP (including access discipline, piling method statement, high-tide/temperature controls, site logs).
    - HMP (roost mapping; spot-count method; triggers & adaptive measures).
    - Lighting Plan (photometrics, curfews, exceptions register, maintenance regime).
    - Port Marine Safety Code (routes, speeds, behaviours, on-water observation & contact chain).
- Site records: Maintain daily logs, trigger evaluations, toolbox talks and lighting curfew exception records; make available to the Competent Authority upon request.

With these specific and enforceable measures secured through the Outline CEMD → CEMP, HMP, Lighting Plan and Port Marine Safety Code, the source-pathway-receptor link for noise/visual disturbance on FLL is interrupted/controlled such that there is no adverse effect on site integrity (AEoI) for the Inner Moray Firth SPA/Ramsar, alone or in-combination. Residual effects are not predicted once measures are applied and monitored, therefore no in-combination assessment is required for this pathway.

5.3 PHYSICAL HABITAT LOSS / ALTERATION OF FUNCTIONALLY LINKED LAND & ADJACENT SUPRATIDAL/INTERTIDAL AREAS

Quay construction, land-raising and dredging introduce physical change within and adjacent to areas regularly used by SPA qualifying species. While the wider hinterland provides alternative habitat, localised loss/alteration of FLL could, without controls, affect usage adjacent to the SPA/Ramsar boundary.

The intertidal and supratidal frontage adjacent to the Inner Moray Firth SPA/Ramsar is retained and will not be physically lost or functionally degraded by the proposed development. Platform raising and new cut-off drains are landward works; discharges follow existing culverts to the saltmarsh (east) and lagoon (west). Lagoon works restore historical coastal connectivity (enhancement), not land take. Accordingly, no FLL loss arises for SPA birds and no FLL mitigation is required at AA.

Mitigation:

- Retain woodland buffer strips and supratidal features to maintain screening/flight corridors adjacent to FLL.
- Dredged inner-harbour sediments are predominantly sands with gravel and minimal silts/clays; these materials are not a relied-upon prey resource for SPA waders and are managed within the harbour footprint.
- The HRA integrity test does not rely on habitat creation or enhancement. As no FLL loss is predicted, no mitigation or compensation is required for SPA/Ramsar features. The ~2 ha wetland in the southeast is outside the HRA and is treated as an EIA enhancement for terrestrial biodiversity only (see EIAR Chapter 9); it does not form part of the HRA conclusion of no AEoI.
- Manage habitat structure (selective conifer retention, snag creation, buffer belts) per Ornithology Mitigation Appendix, with ECoW sign-off prior to felling phases.

No loss of functionally linked land (FLL) is predicted from the project and no functional degradation of adjacent roost/foraging resource is expected. The intertidal/supratidal frontage used by SPA qualifying features as FLL is retained; land-raising and drainage modifications are landward, with discharges via existing culverts to saltmarsh/lagoon. Inner-harbour dredged sediments are predominantly sand/gravel (minimal silts/clays) and are not a relied-upon prey resource for SPA waders; dredge arisings are managed within the harbour footprint. With the specific, enforceable measures secured through the CEMD/CEMP/HMP (bund screening, ECoW-verified buffers and adaptive scheduling, directional/curfewed lighting, access discipline, and construction drainage/turbidity/pollution controls), there is no reduction in

the availability or function of roost/foraging habitat for SPA features. Compensation is not relied upon at Appropriate Assessment. On this basis, no adverse effect on site integrity (AEoI) arises for the Inner Moray Firth SPA & Ramsar for this pathway alone.

As no residual effect remains for this pathway, there is no mechanism for additive FLL loss with other plans/projects. Notwithstanding this, the project's cumulative register has been reviewed and no overlapping proposals were identified that would remove or degrade the same FLL units/roost cells within the assessment period; if relevant proposals emerge during determination, this conclusion will be reviewed in consultation with the competent authority.

5.4 HYDRODYNAMIC CHANGE TO SUPPORTING INTERTIDAL HABITATS

Hydrodynamic and wave modelling for the consented design envelope, as provided and confirmed by the Applicant's project management team, determined that the proposed inner-harbour capital dredge and protective works do not change tidal velocities, do not change tidal heights, and do not cause any significant change to wave heights at the SPA-adjacent intertidal receptors. The dredge has been designed to avoid any impacts on intertidal areas; accordingly, there is no mechanism for adverse alteration of inundation regime, sediment mobility or morphology that support SPA/Ramsar qualifying features along the project frontage.

Applying the Article 6(3) test, and the standard of no reasonable scientific doubt under Waddenzee and Sweetman, the competent authority can therefore ascertain no adverse effect on site integrity (AEoI) for this pathway without any reliance on future management plans.

A proportionate Sediment Transport Monitoring Plan (STMP) will be secured through the CEMD/CEMP to verify model predictions. This post-consent verification does not form part of the reasoning needed to reach the AA conclusion; it is an appropriate diligence measure consistent with NatureScot/Marine Directorate HRA practice and the Ports & Marine Facilities Safety Code approach to adaptive site management.

5.5 WATER-QUALITY EFFECTS FROM CAPITAL/MAINTENANCE DREDGING AND CONSTRUCTION EARTHWORKS (TURBIDITY/SEDIMENTATION)

No change to SPA bird usage is anticipated from surface-water management because embedded drainage measures (e.g., two-stage cut-off ditches, permeable paving/infiltration, inlet screening) (EIAR Chapter 9 (Hydrology and Hydrogeology)) are designed to avoid adverse changes to water levels or water quality at adjacent roost/foraging areas during works; these are relied upon here as part of the disturbance avoidance package.

Capital dredging (inner harbour) and maintenance dredging, together with earthworks and drainage tie-ins, create potential turbidity/sedimentation and suspended solids pathways to intertidal and nearshore habitats used by SPA qualifying features, if not tightly controlled. The construction drainage design (silt fences, settlement/attenuation, staged platforming, perimeter cut-off drains with two-stage capacity) and operational SuDS (permeable paving with infiltration) are detailed in EIAR Chapter 9 (Hydrology and Hydrogeology) and are relied upon here to prevent off-site sediment delivery to SPA supporting habitats; turbidity/visual monitoring will be undertaken during sensitive near-shore activities with agreed stop-work thresholds in the CEMP.

Mitigation:

- Implement a CEMP and HMP covering: silt fencing, settlement/attenuation measures, cofferdams where appropriate, secondary containment, and designated refuelling/maintenance zones away from water.
- Spill prevention and response: on-plant spill kits, trained operatives, and stop-work triggers in adverse weather.
- Drainage isolation/booms as required; turbidity/visual monitoring during sensitive near-shore activities where an ornithological pathway exists.
- Pre-dredge sediment characterisation (chemistry/particle size) will be undertaken to Marine Scotland/SEPA requirements and dredge design adapted if necessary. Sediment is known to be dominantly sands and gravels.
- Traffic/air deposition: No traffic-related air-quality baseline was available at the time of writing this report. Given separation to designated intertidal receptors and the dominance of tidal flushing, a material nutrient/dust deposition pathway is unlikely; however, if traffic data are provided during

determination, a proportionate AQ screening will be appended and any required controls incorporated into the CEMP/POEMP.

These measures are already embedded/committed in the Project (bund screening, lighting controls, access management, and ECoW-led buffers) and secured through the Outline CEMD / CEMP and the Habitat Management Plan.

With the above controls in place, including final coastal-process modelling, and embedded measures secured through the Outline CEMD/CEMP and Habitat Management Plan, elevated turbidity and sedimentation will be prevented or contained, thereby avoiding degradation of supporting intertidal habitats within the Inner Moray Firth SPA/Ramsar. Accordingly, no residual effects remain after mitigation, an adverse effect on site integrity (AEoI) is not predicted, and no in-combination assessment is required, as no residual effects persist following implementation of the above measures.

5.6 CONSTRUCTION POLLUTION RISK (FUEL, OILS, CONCRETE/CEMENTITIOUS MATERIALS, SILT-LADEN RUNOFF)

Construction activity has the potential to introduce accidental release risks (e.g., fuels, oils, wet concrete/cement washings) and silt-laden runoff with potential pathways to intertidal and nearshore receptors if unmanaged.

Mitigation:

- Secure storage of fuels/chemicals; bunded tanks (≥110 %); designated refuelling areas with drip-trays and interception.
- Concrete management: controlled wash-out areas; capture and correct disposal of cementitious waters and sediments.
- Wheel-wash / housekeeping: clean internal/local haul routes; manage stockpiles; maintain spill logs; ECoW oversight with authority to enforce stop-works.

Pollution control will follow the CEMD/CEMP and SEPA GPP practice for storage, refuelling, concrete washout and spill response; these measures are already cited in EIAR Chapter 9 (Hydrology and Hydrogeology) and are treated as embedded mitigation for ornithology where they protect SPA/Ramsar supporting habitats.

With the above measures in place, including secure storage and handling of fuels and chemicals, bunded tanks, designated refuelling areas, controlled concrete washout, robust housekeeping, and pollution controls aligned with the Outline CEMD/CEMP and Habitat Management Plan, the source–pathway–

receptor link for water quality impacts is effectively removed or interrupted. As a result, no adverse water quality effect arises to the supporting habitats of SPA qualifying species, including those of the Inner Moray Firth SPA/Ramsar. No residual effects remain after mitigation, adverse effect on site integrity (AEoI) is not predicted, and no in-combination assessment is required. Should a region-wide "Harbour Turbine Towing Protocol" be adopted by NatureScot or the ICFGF during determination, the Project will also align with that framework in addition to the site-specific vessel management measures described above.

5.7 DISTURBANCE / DISPLACEMENT WITHIN MORAY FIRTH SPA FROM ASSEMBLY & TOW-OUT AND ASSOCIATED VESSEL MOVEMENTS

This RIAA assesses port-side assembly and tow-out only; operational wind-farm effects are assessed separately under the Habitats Regulations for the wind farm.

The Moray Firth SPA (≈730 m northwest from the port) is designated for non-breeding divers, grebes, sea ducks and shags. The assembly and tow-out of floating offshore wind turbines and related vessel movements present a credible temporary disturbance/displacement pathway in nearshore SPA waters. Although direct, regular use of the immediate port waters by these qualifying features is not evidenced during the construction window, risk cannot be excluded without controls.

Mitigation:

- Vessel management protocols:
    - Slow, predictable transits (~3–4 kn) on agreed routes to minimise residence time in nearshore SPA waters;
    - Timing to avoid peak periods for SPA qualifying features where practicable/safe;
    - RIB management (limits on speed/turning near sensitive areas); and
    - On-water observation during key operations with adaptive response if notable displacement is detected. (Documented in the CEMP/POEMP).

Tow-out will be conducted at low speeds (~3–4 knots), using agreed transit routes to minimise residence time in nearshore SPA waters, and avoiding peak non-breeding periods. Operational protocols will limit the use and speed of RIBs and implement on-water observation with adaptive responses if notable bird displacement is detected. The Project Description confirms these tow-out operational envelopes. The Literature Review collates evidence that slow, predictable vessel movements are associated with reduced disturbance and faster resettlement of non-breeding waterbirds compared to high-speed craft.

With timing and Port Marine Safety Code in place, including slow, predictable transits on agreed routes, on-water observation, and adaptive responses, no sustained displacement of SPA qualifying features is expected within the Moray Firth SPA as a result of assembly, tow-out, or associated vessel movements. Accordingly, no residual effects remain after mitigation, an adverse effect on site integrity (AEoI) is not predicted, and no in-combination assessment is required, as no residual effects persist following implementation of these measures. The EIAR cumulative review concluded that, once standard timing, buffer, and vessel management measures are applied, there are no significant cumulative effects on ornithological receptors. The HRA therefore relies on the tow-out Port Marine Safety Code to avoid sustained displacement of qualifying SPA species in near-shore waters. All other Habitats sites within 10 km, including Loch Flemington SPA and Moray & Nairn Coast SPA/Ramsar, were screened out at Stage 1 on a no-pathway basis and are not subject to further assessment.

5.8 INTEGRITY TEST

The ‘integrity’ of a site is considered to be the quality or condition of being whole or complete; or in a dynamic ecological context, as having resilience and an ability to evolve in ways that are favourable to conservation. A site can be described as having a high degree of integrity where the inherent potential for meeting site conservation objectives is realised, the capacity for self-repair and self-renewal under dynamic conditions is maintained, and a minimum of external management support is required (DTA Publications, 2025).

The ‘integrity of a site’ relates to the site’s conservation objectives. Taking each qualifying feature in turn, if the conservation objectives for a feature will be undermined, site integrity is necessarily adversely affected. On the contrary, site integrity cannot be considered to be adversely affected if the findings of an appropriate assessment demonstrate that the conservation objectives will not be undermined alone or in combination with other plans or projects. The test is whether there is 'reasonable' scientific doubt rather than an absolute certainty. It is not possible to demonstrate, nor is it necessary to show, an absolute guarantee that there will not be an adverse effect on site integrity (DTA Publications, 2025).

The conservation objectives for the Habitats sites are to maintain (or restore) each feature in favourable condition.

For the hydrodynamic/coastal-process pathway, the final modelling shows no change to tidal velocities, no change to tidal heights and no significant change to wave heights, and confirms the dredge is designed to avoid impacts on intertidal areas. On the basis of the best scientific knowledge and a complete information set, the competent authority can ascertain no AEoI without reliance on future management plans, thereby meeting the Waddenzee/Sweetman standard of no reasonable scientific doubt and the Holohan requirements regarding information sufficiency and enforceable conditions where needed.

An STMP will be secured through the CEMD/CEMP to verify model predictions as a diligence measure. The AA conclusion does not depend on that monitoring or on any contingent corrective actions. People over Wind continues to apply at screening; at AA it remains lawful to secure conditions, but in this case no mitigation is required to reach the hydrodynamics conclusion.

Recent NatureScot condition assessments summary of relevance to this AA. NatureScot’s Site Condition Monitoring (SCM) assigns each feature to standard categories (e.g., Favourable maintained / recovered /

declining; Unfavourable recovering / no change / declining). These categories provide the evidential frame for the "maintain / restore" conservation objectives used in Appropriate Assessment[4].

Inner Moray Firth SPA & overlapping Ramsar (adjacent to project). The SPA boundary follows, in large part, the Beauly Firth, Longman & Castle Stuart Bays, Munlochy Bay and Whiteness Head SSSI boundaries[5]. At Whiteness Head SSSI, NatureScot's most recent published statements record Favourable condition for the shingle spit and sand-dune interests (both assessed Aug 2010), Favourable for bar-tailed godwit (monitoring 1999–2004), and Unfavourable for saltmarsh (July 2002) due to localised vehicle access and horse-poaching[6]. This pattern underscores that disturbance management and coastal processes are decisive drivers for condition at the SPA-adjacent frontage. In this AA, the bund screening, lighting controls, access discipline and ECoW-led roost buffers address disturbance pathways.

Moray Firth SPA (≈ 730 m north; screened-in for tow-out disturbance). NatureScot's Conservation & Management Advice (2022) sets the qualifying features, sensitivities (including disturbance) and conservation objectives for this SPA. While the CMA does not tabulate feature-by-feature SCM results, it is the authoritative management reference. The Port Marine Safety Code (slow, predictable transits on agreed routes, RIB controls, on-water observation/adaptive response) is aligned to the disturbance sensitivities described in that advice and is therefore consistent with maintaining the SPA's qualifying features in favourable condition[7].

Without mitigation, the proposed development could reduce the conservation status of the qualifying features where they are no longer being maintained in favourable condition, and efforts to restore may become compromised.

Even where a Habitats site's qualifying features are not currently at favourable conservation status, and conservation objective targets are to 'restore', projects can go ahead if they either provide a reduction in the relevant pressure or they do not contribute toward it. In such cases there is no adverse effect on integrity even if the proposals are not actually contributing to an improvement; they are not making the situation

[4] NatureScot. *Assessment of condition (Site Condition Monitoring – condition categories and use).* Last updated 09 Oct 2024. Available at: https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/site-condition-monitoring/assessment-condition
[5] NatureScot. *Inner Moray Firth Special Protection Area (SPA) – Citation.* Confirms the SPA boundary follows Beauly Firth SSSI, Longman & Castle Stuart Bays SSSI, Munlochy Bay SSSI and Whiteness Head SSSI. Available at: https://www.nature.scot/sites/default/files/special-protection-area/8515/spa-citation.pdf
[6] NatureScot. *Whiteness Head Site of Special Scientific Interest – Site Management Statement.* Records SCM outcomes: Favourable (shingle spit, Aug 2010), Favourable (sand dunes, Aug 2010), Favourable (bar-tailed godwit, 1999–2004 monitoring window), Unfavourable (saltmarsh, July 2002; vehicle access/horse-poaching). Available at: https://www.nature.scot/sites/default/files/site-special-scientific-interest/1633/site-management-statement.pdf
[7] NatureScot. *Moray Firth SPA – Conservation & Management Advice (CMA).* June 2022. Defines qualifying features, disturbance sensitivities, and conservation objectives relevant to tow-out and vessel activity. Available at: https://www.nature.scot/sites/default/files/special-protection-area/10490/conservation-and-management-advice.pdf

worse, nor are they impeding the achievement of the conservation objectives which are being or will be delivered under Article 6(1) or 6(2).

The mitigation measures set out above include adherence to an approved CEMP/HMP, method statements (including bund screening, ECoW-verified buffers and adaptive scheduling, directional/curfewed lighting, access discipline, dredge/silt/pollution controls), the coastal-process modelling commitments, and vessel management/tow-out protocols.

With the mitigation measures adhered to in full, it is expected that the population of the species will be unaffected and will remain a viable component of the Habitats site(s). Their distribution will not be inhibited and disturbance will be avoided.

The proposed development will not impede the achievement of the conservation objectives which are being, or will be, delivered under Article 6(1) or 6(2) of the Habitats Directive.

No compensation is relied upon at AA. The intertidal/supratidal frontage that functions as FLL is retained; therefore no FLL mitigation is required for SPA birds. With the specific measures secured (bunds, buffers, timing/lighting/access protocols, Dredge/Coastal Processes & Port Marine Safety Code plans), the competent authorities can ascertain no AEoI for the Inner Moray Firth SPA/Ramsar and Moray Firth SPA.

5.9 IN-COMBINATION ASSESSMENT (STAGE 2)

For hydrodynamic/coastal-process change, the completed modelling shows no material change to the relevant physical processes that support SPA/Ramsar features; therefore no residual effect is predicted and no in-combination effect can arise. For the other screened-in pathways (disturbance/lighting/FLL, turbidity/pollution, vessel/tow-out), no residual effects remain once CEMD/CEMP measures and operational vessel protocols are secured; consequently, no AEoI in-combination is predicted.. With the Ardersier project's specific and enforceable measures secured, bund screening, timing controls, lighting design, vessel management, CEMP pollution/silt controls, and the coastal-process commitments, there are no residual effect pathways that would interact materially with other plans or projects to undermine the conservation objectives of the Inner Moray Firth SPA/Ramsar or the Moray Firth SPA. Accordingly, once the measures in Section 5 are secured and, no AEoSI in-combination is predicted.

This conclusion will be kept under review by the project team and the competent authorities if any overlapping programmes materially change during determination. For the other screened-in pathways (disturbance/lighting/FLL, turbidity/pollution, vessel/tow-out), there are no residual effects after

mitigation secured by condition and no plausible additive projects in the same space/time windows; no AEoI in-combination is therefore predicted for those pathways.

6.0 CONCLUSION

This RIAA records Stage-1 screening and Stage-2 AA. For disturbance/lighting/FLL, turbidity/pollution and tow-out/vessel disturbance, the competent authority can ascertain no AEoI, with measures secured by condition. The Stage 2 Appropriate Assessment concludes that the proposed development will not have an adverse effect on the integrity of the Inner Moray Firth SPA/Ramsar or the Moray Firth SPA, alone or in-combination. In particular, the final hydrodynamic and wave modelling demonstrates no change to tidal velocities, no change to tidal heights, and no significant change to wave heights, and confirms that the dredge is designed to avoid any intertidal impacts. Accordingly, no AEoI arises for the hydrodynamic/coastal-process pathway without reliance on a management plan. A proportionate Sediment Transport Monitoring Plan (STMP) will be secured via the CEMD/CEMP to verify predictions post-dredge; this verification is not required to reach the AA conclusion. The remaining pathways (disturbance/lighting/FLL, turbidity/pollution, vessel/tow-out) also conclude no AEoI with measures secured by enforceable conditions.

This is a record of the Stage 1 LSE screening and Stage 2 AA required by Regulation 48 of The Conservation (Natural Habitats, &c.) Regulations 1994, and undertaken by Tetra Tech in respect of the proposed development.

The alone Stage 1 LSE assessment concluded that the proposed development would have a LSE on the following Habitat Sites:

- Inner Moray Firth SPA/Ramsar
- Moray Firth SPA

Habitat Sites within 10 km but screened out at Stage 1 on pathway ground:

- Loch Flemington SPA
- Moray & Nairn Coast SPA/Ramsar
- Cromarty Firth SPA

The Stage 2 Appropriate Assessment has concluded that the proposed development would not have an adverse effect on the integrity of the Habitats sites either alone or in-combination with other plans or projects. This conclusion is dependent on the mitigation measures set out being legally secured by planning conditions.

Subject to positive determination, and with the mitigation measures legally secured through appropriate planning conditions, it is considered that these pressures do not have the capacity to cause an adverse

effect on site integrity alone. An in-combination AA has been completed and concludes no AEoI in-combination. The measures are intended to avoid the harmful effects of the project on the Habitats sites.

Subject to the above, this report provides the information required by Regulation 48(2) for the competent authorities to complete the AA. Accordingly, the overall AA concludes no AEoSI.

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Key Literature

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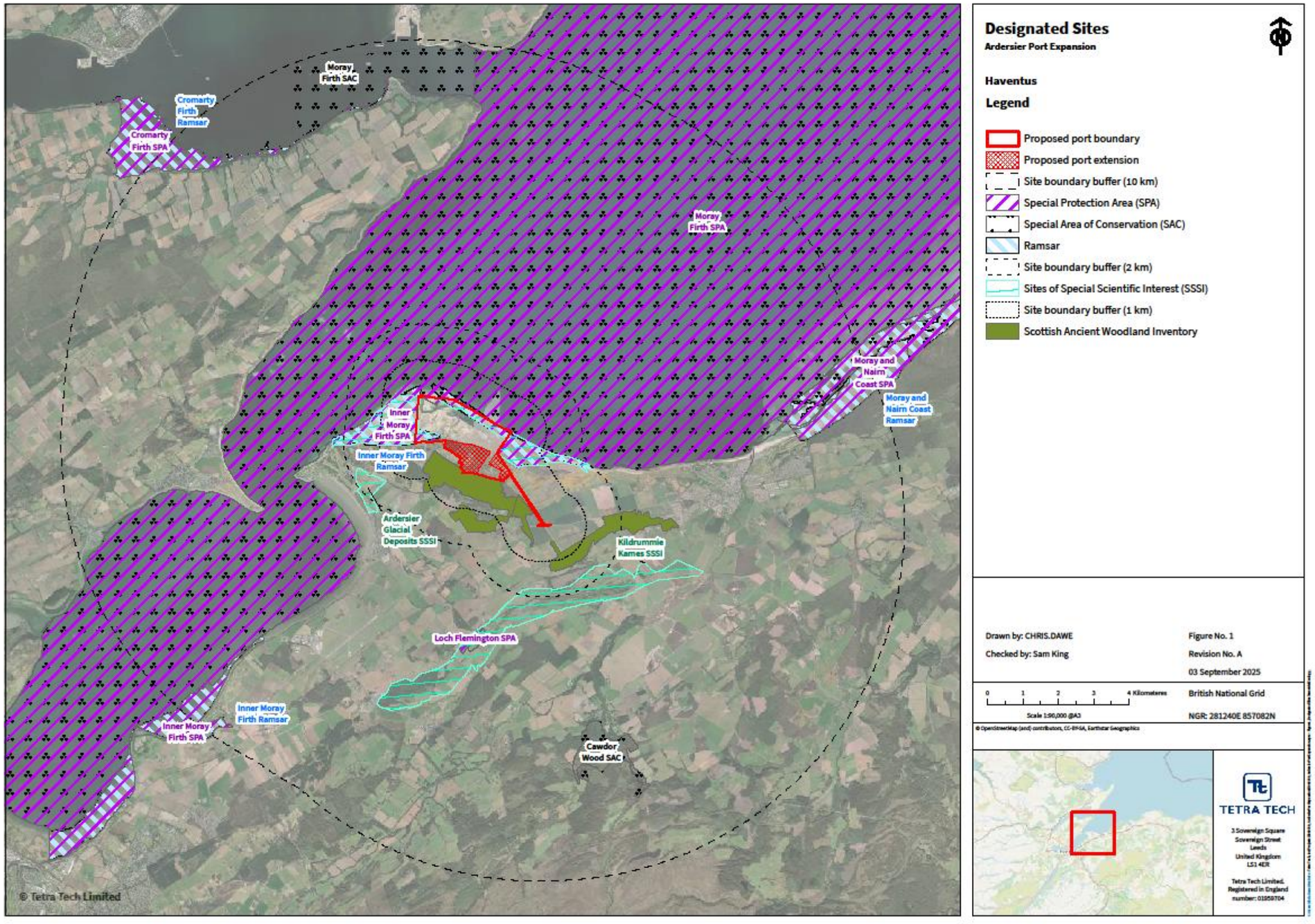
Statutory Site Information

- JNCC Standard Data Form: Moray & Nairn Coast SPA (UK9001625). https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9001625.pdf
- JNCC Standard Data Form: Moray Firth SPA (UK9020313). https://jncc.gov.uk/jncc-assets/SPA-N2K/UK9020313.pdf
- NatureScot SiteLink: Inner Moray Firth Ramsar: https://rsis.ramsar.org/ris/1002
- NatureScot SiteLink: Inner Moray Firth SPA: https://sitelink.nature.scot/site/8430
- NatureScot SiteLink: Moray Firth SPA: https://sitelink.nature.scot/site/10490
- Ramsar Sites Information Service: Inner Moray Firth (RSIS 1002). https://rsis.ramsar.org/ris/1002
- Ramsar Sites Information Service: Moray & Nairn Coast (RSIS 890). https://rsis.ramsar.org/ris/890

FIGURES

Figure 1: Statutory Designated Sites within 10 km of the Proposed Development


Moray Firth SAC
Cromarty Firth Ramsar
Cromarty Firth SPA
Moray Firth SPA
Moray and Nairn Coast SPA
Moray and Nairn Coast Ramsar
Inner Moray Firth SPA
Inner Moray Firth Ramsar
Ardersier Glacial Deposits SSSI
Kildrummie Kames SSSI
Loch Flemington SPA
Inner Moray Firth SPA
Inner Moray Firth Ramsar
Cawdor Wood SAC
© Tetra Tech Limited
Designated Sites
Ardersier Port Expansion
Haventus
Legend
Proposed port boundary
Proposed port extension
Site boundary buffer (10 km)
Special Protection Area (SPA)
Special Area of Conservation (SAC)
Ramsar
Site boundary buffer (2 km)
Sites of Special Scientific Interest (SSSI)
Site boundary buffer (1 km)
Scottish Ancient Woodland Inventory
Drawn by: CHRIS.DAWE
Checked by: Sam King
Figure No. 1
Revision No. A
03 September 2025
0 1 2 3 4 Kilometers
Scale 1:90,000 @A3
British National Grid
NGR: 281240E 857082N
© OpenStreetMap (and) contributors, CC-BY-SA, Earthstar Geographics
TETRA TECH
3 Sovereign Square
Sovereign Street
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The whole of the report must be read as other sections of the report may contain information which puts into context the findings in any executive summary.

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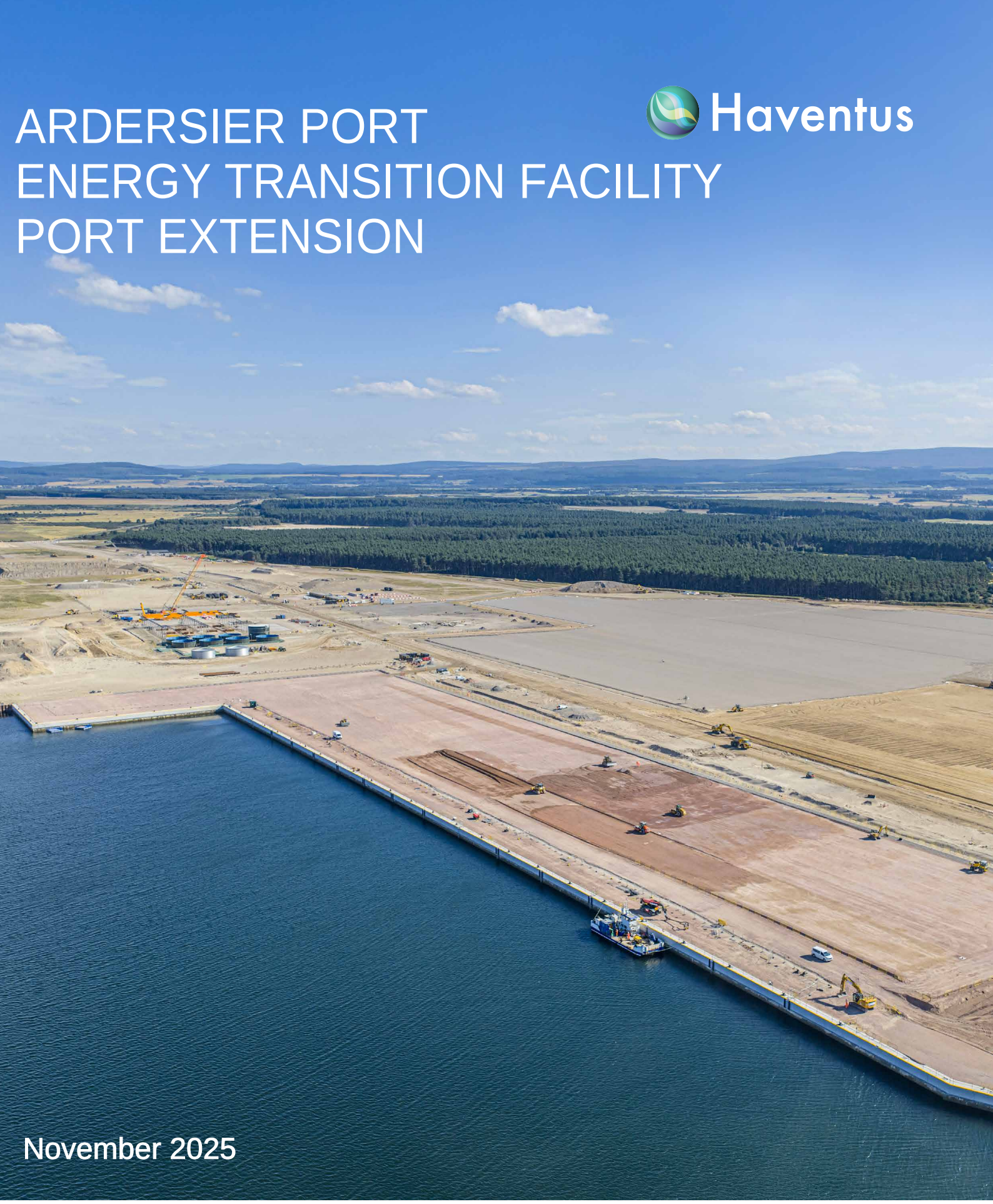
ARDERSIER PORT ENERGY TRANSITION FACILITY PORT EXTENSION



November 2025

Appendix 13.10 Literature Review

Displacement and Collision of Moray Firth SPA, Whiteness Head SSSI and Inner Moray Firth SPA Bird Species with Tall Structures and Activities Associated with Floating Wind Turbine Assembly at Ardersier Port Energy Transition Facility

Introduction

Recently established Ardersier Port provides port related services for energy related purposes, which includes storage, manufacture and shipping of wind farm components when port construction is completed. It is expected that this will consist, predominantly, of components for floating wind turbines, including floating bases, tower sections, blades and nacelles.

Construction of the port is in progress and continued development, and anticipated expansion of the port, may potentially include assembly and tow-out of assembled floating wind turbines components. The design envelope use by Ardersier Port for an assembled floating wind turbine is a base and tower that may be up to 215m high, before nacelle and blades are added, potentially taking the overall height to 310m to the tip of the blade. Jackets may by up to 130m and associated cranes for assembly up to 250m. To provide context, planning application for Scottish onshore wind farms in 2024 had a maximum height of 250m to tip of the blade (Scottish Government 2024).

A literature review to explore the potential impacts on the SPA's ornithological features due to displacement and collision risks was recommended by NatureScot through the scoping consultation for the expansion of Ardersier Port to inform the assessment process.

Scope & Limitations

The search for articles has been conducted online using search phrases including 'birds', 'waders' and 'wind farms', 'wind turbines', 'tall structures', 'disturbance', 'displacement', 'over shadowing' and combinations of other similar phrases and words.

The review has been limited to articles that are publicly available, accessible at NatureScots library at Great Glen House, Inverness, or have free online access. Where necessary, the abstract, summary or partial sections of relevant articles that do not have full online access have been utilised.

Cumulative effects from other ports in the Moray and Cromarty Firths conducting similar activities, and non-avian features of designated sites are considered to be outside the scope of this review. Mitigation and collision modelling techniques are not discussed as they are beyond the scope of the review.

Offshore Floating Wind Technology

Floating offshore wind is a developing technology, enabling the utilisation of areas of the sea that would not otherwise be economically viable or practical to use traditional bottom fixed monopile turbines (Crowles & Thies 2022[b]; Hong *et al* 2024). There is no universal design of the floating bases or anchoring systems for floating offshore wind turbines (FOWT), instead several designs are currently used to meet site specific needs. These design differences are discussed in detail, including the advantages and drawbacks of different floating base designs by Edward *et al* (2023) and BVG Associates (2023).

Generally floating wind turbines towers are 120m high, tapering from 10m at the base to 6m at the top. The hub (nacelle) usually brings the height of structure to 135m on average. The rotor, including blades, generally has a diameter of 224m (BVG Associates 2023). Ardersier Port is working on a design envelope of a fully assembled FOWT potentially having a total height of 310m. Currently the largest floating offshore wind turbine, constructed and installed in China in January 2025 has a hub height of 151m and a rotor 260m diameter, including blades (CRRC 2025; Xinhau 2024).

Unlike monopile, fixed bottom, offshore wind turbines there is no reliable method for installing FOWT components at their offshore locations due to the complexity of assembly and challenges associated with specific designs. This has necessitated the need to tow fully assembled turbines and bases from an onshore base to their offshore locations. As such most early construction of floating wind turbines take place onshore. Facilities that are capable of handling components with suitable infrastructure and storage are limited and the towing of the assembled structures is highly weather dependant (Crowles & Thies 2022[B]; Hong *et al* 2024).

The tow-out process of a fully assembled FOWT from its onshore base requires a fair weather window sufficient to complete process or return to the onshore base if problems arise. A maximum significant wave height, the trough to crest heigh of the highest third of waves over a given period, of 1-1.5m and an average wind speed below 14m/s. The tow-out transit speed of the vessel is around 3-4 knots (BVG Associates 2023, Crowle & Thies 2022[A]).

Whiteness Head SSSI and Moray Firth SPA bird assemblages

Ardersier Port sits between several designated sites Whiteness Head SSSI, Inner Moray Firth SPA & Ramsar which encompasses Whiteness Head SSSI and several other SSSI sites, Moray Firth SPA and Moray Firth SAC. The designated features of the SSSI's and SPA's include a number of non-breeding wintering birds, breeding birds, intertidal sand banks and an active shingle ridge.

The impact on geomorphological features is outside the scope or this review and a list of breeding and non-breeding bird for each designation is provided in Table 1. The Moray Firth SAC does not cover avian features and has not been considered further in this review.

Ardersier Port has undertaken surveys of non-breeding wintering species since August 2023 and continues to do so. The species observed during these surveys as well as casual and ad hoc observations at Ardersier Port are included in Table 1. The absence of an observed species in Table 1 does not guarantee the absence of that species in the vicinity of Ardersier Port. The wider area of Whiteness and Fort George has also been regularly surveyed by BTO volunteers as part of the Wetland Bird Survey program, although that data is not represented in this review.

During surveys the majority of SPA wading birds, including Oystercatcher, Bar-tailed Godwit, Knot and Curlew have been observed feeding at low tide on the extensive Whiteness Sand flats, included in the Whiteness Head SSSI, and the channel between the port and Whiteness Head SSSI spit. During high tides roosts form in several locations within Whiteness Head SSSI and adjacent to the port, these predominantly consist of waders including Oystercatcher, Bar-tailed Godwit, Curlew and other wading species on occasions Eider and Red-breasted Merganser have also been observed on the roosts. Common tern breed on a recently created island near the harbour entrance Oystercatchers and Eiders have also nested in the port, whilst construction activities are taking place.

In addition to the ornithological features of the SSSI and SPA's other wading species have been observed feeding on Whiteness Sands at low tide including Dunlin (*Calidris alpnia*), Sanderling (*Calidris alba*) and Ringed Plover (*Charadrius hiaticula*). These species are also observed at the high tide roost along with occasional Turnstone (*Arenaria interpres*) and gull species (*Larus sp.* and *C. ridibundus*). Ringed plover was found to be nesting in construction areas of the port and a small colony of Little Tern (*Sternula albifrons*) breeds on the same island as Common Tern.

Species	Observed at Ardersier Port	Inner Moray Firth SPA/RAMSAR	Whiteness Head SSSI	Moray Firth SPA	UK BoCC status	IUCN status
Oystercatcher *Haematopus ostralegus*	B/NB	NB			A	NT
Curlew *Numenius arquata*	NB	NB			R	NT
Bar-tailed Godwit *Limosa lapponica*	NB	NB	NB		A	NT
Osprey *Pandion haliaetus*	Foraging	B			A	LC
Knot *Calidris canutus*	NB		NB		A	NT
Eider *Somateria mollissima*	B/NB			NB	A	NT / EN*
Long-Tailed Duck *Clangula hyemalis*	NB			NB	R	LC / VU*
Goosander *Mergus merganser*		NB			G	LC
Common Scoter *Melanitta nigra*				NB	R	LC
Greylag Goose *Anser Anser*		NB			A	LC
Teal *Anas crecca*	NB	NB			A	LC
Wigeon *Mareca Penelope*	NB	NB			A	LC
Red Throated Diver *Gavia stellata*	NB			NB	G	LC
Great Northern diver *Gavia Immer*				NB	A	LC
Goldeneye *Bucephala clangula*	NB	NB		NB	R	LC
Red Breasted Merganser *Mergus serrator*	YR			NB	A	LC /NT*
Redshank *Tringa totanus*	NB	NB			A	LC
Common tern *Sterna hirundo*	B	B			A	LC
Slavonian grebe *Podiceps auritus*				NB	R	VU / NT*
Cormorant *Phalacrocorax carbo*	NB	NB			G	LC
Scaup *Aythya marila*		NB		NB	R	LC
Shag *Gulosus aristotelis*				B/NB	R	LC
Velvet scoter *Melanitta fusca*				NB	R	VU

Table 1. Avian features of Whiteness Head SSSI, Inner Moray Firth SPA/Ramsar and Moray Firth SPA. Observations at Ardersier Port based on low tide wader surveys, high tide roost surveys and ad hoc/casual observations from September 2023 – August 2025. IUCN and Birds of Conservation Concern (BoCC) status correct as of August 2025, where a global and European IUCN status exist both have been included *denotes European assessment. Non-breeding (NB), breeding (B), present year round (YR). Least Concern (LC), Near Threatened (NT), Vulnerable (VU).

Collision with floating offshore wind turbines and structures

Collision between wind turbines and birds is well studied across the literature, however no articles could be found that specifically address collision risk with onshore construction, assembly or tow-out of FOWT components. Whilst the majority of studies focus on post-construction offshore or onshore windfarms, which are not wholly relevant to Ardersier Port activities, these have been included as they are the main source of information relating to collision.

There is little to cause doubt that birds will accidentally fly into structures, not only turbine blades, but towers, nacelles and associated structures such as masts and cables (Drewitt & Langston 2006). In a review Drewitt & Langston (2006) found that the average rate of bird strike, per turbine, varies between 0.01 to 23 birds annually. They also caution that whilst average figures provide a useful standardisation, it can hide variances such as seasonality or higher levels of bird strike associated with particular turbines.

The birds with the highest risk of collision are listed by Martin & Banks (2023) citing Furness *et al* (2013), based on how frequently birds fly within the height and range of the blade swept area, flight manoeuvrability and the likelihood of nocturnal flights. Martin & Banks (2023) interpret that gulls, terns and skuas were most vulnerable Scottish coastal birds to collision with turbines, whilst divers, ducks, petrels and auks were least vulnerable. The Furness *et al* (2013) table used by Martin & Banks ranks herring gull, both black-backed gulls, white-tailed eagle and gannet as the top 5 most vulnerable birds, with divers and terns ranked similarly followed by sea ducks, petrels and auks. Unfortunately, the original Furness *et al* (2013) paper was not fully accessible.

The risk of collision is likely to be greater when wind farms are located near areas where large numbers of birds feed, roost or on flyways (Drewitt & Langston 2006) and during night or periods of low visibility such as rain and fog (Winkleman 1992; Percival 2001; Wilson *et al* 2007, Dirksen *et al* 2007, Drewitt & Langston 2006). This is countered by Krijgsveld *et al* (2019) who found diurnally active birds to be the mostly likely to be collision victims. Collision risk may also vary at coastal sites due to birds responding to changes in tidal states and currents, and also within the same species depending on age and behaviour of individuals (Drewitt & Langston 2006).

The design of turbines may also influence the collision rate of birds, Krijgsveld *et al* (2019) found that modern turbines, that were taller and have a larger rotor diameter but a slower rotation rate, had a considerably lower collision rate compared to older turbines with a smaller rotor diameter but a faster rotation rate. This was attributed to allowing more birds to pass underneath the rotor swept area and the slower rotor speed. Johnston *et al* (2014) also find that higher hub heights and a larger diameter rotor may reduce the risk of collision to marine birds by reducing the number of turbines required, increasing the space between turbines and raising the rotor swept area higher above the sea surface. Percival (2017) also predicts that larger turbines with a higher rotor height, a slower rotational speed and an overall reduction in the number of turbines would reduce predicted collision risk by 30-70%, despite a bigger rotor swept area.

FOWT turbines are generally taller than onshore turbines, with the lowest tip of the blade being 70-100m above the sea surface (Danovaro *et al* 2024). Danovaro *et al* (2024) note from Furness *et al* (2013) that migrating birds tend to fly 200 – 1500m above sea level, Krijgsveld *et al* (2019*)* also record migrating birds flying between 50-1000m, whilst local birds will often be below 70 – 100m above sea level. Larsen & Guillemette (2007) found the majority of Eiders studied flew below 10m and only 2% of the Eiders were observed crossing the rotor swept area at Tuno Knob wind park, Denmark. Diving ducks including goldeneye, scaup and tufted duck have been recorded flying below 100m with the majority being lower than 50-75m, cormorants generally less than 50-60m, with the majority flying below the lowest blade tip (Dirksen *et al* 2007).

A structure that appears to be overlooked when considering collision risks is that of shipping vessels, a single report was found on the subject. Wilson et al (2007) considers the risk of avian collision with shipping, either birds contacting the ship or the vessel colliding with a raft of birds on the water. Despite no empirical evidence

being available it is concluded that this was likely to be low risk to most species, including divers, grebes, terns and seaducks.

Underwater collisions are also noted to be rarely addressed by Wilson *et al* (2007) finding there is no data for underwater collisions of foraging birds in relation to wave and tidal marine renewable devices. Wilson *et al* (2007) theorise that as light levels are typically poorer underwater there would be an accentuated risk and species that rely on tactile foraging e.g. eiders, red-breasted mergansers, scoter and long-tailed duck would be at higher risk than those that used visual foraging. Species that utilized plunge diving, such as terns, would likely be comparably higher risk of underwater collision than surface feeders like gulls.

Martin & Banks (2023) consider why a bird may not detect and therefore avoid colliding with turbines, noting that studies like Furness *et al* (2013) the premise is based on the probability of an individual being in 'wrong place at the wrong time' resulting in a collision. Martin & Banks suggest that a perceptual basis of collision may be a failure of sensory information in that a bird may have 'looked but failed to see' or 'saw but failed to avoid' due to failing to interpret sensory information correctly. Both of these perceptual failures ultimately resulting from insufficient information being retrieved or employed to control behaviour. Martin & Banks (2023) also put forward evidence that birds regularly fly without looking ahead, potentially due to searching for prey or checking for predators. Birds may use prediction and familiarity of an environment to carry out these behaviours, or when they are only able to gain partial information from the environment, such as in poor weather conditions, thus when a change is introduced collision becomes more likely to occur.

Habitualisation and adaption may occur to the presence of wind turbines and thus reduce collision risk. Percival (2001) cites Still *et al* (1996) and Painter *et al* (1999) studies at Blyth Harbour wind farm, whilst initially 6 collision victims were found in the first 3 months following construction, this rate reduced to 3 in the following 6 months and 3 in the following 18 months. The reduced collision risk over time was attributed to birds adapting their flight behaviour to avoid close proximity to the turbines. After 4.5 years of study the collision rate was less than 0.01%, taking into account that less than half of collisions victims were found, and a further 2 years later the collision rate had further decreased. Unfortunately, only the abstract summary was accessible for Still *et al* (1996) and Painter *et al* (1999) was not available.

Displacement from Floating Offshore Wind Turbines activities

The risks and impacts of collision with operational wind turbines, regardless of location, and other structures is well documented. The displacement of birds resulting from construction and operation of wind turbines is less well documented with comparatively fewer studies available. The majority of studies available focus on inland and offshore construction of wind farms and no studies could be found that specifically address bird displacement resulting from onshore construction and towing of FLOWT.

A challenge to locating relevant articles is the use of the phrase 'displacement' as this can have a wide definition, for example avoidance (Wilson *et al* 2010; May 2015), displacement effects e.g. on foraging or functional habitat loss (Fox & Petersen 2019), behavioural avoidance (Schaffer *et al* 2019) and disturbance (Percival 2005; Stewart *et al* 2007), a change in behaviour resulting in a temporal or spatial change in use of an area (Perrow 2017; Stewart *et al* 2007). Due to these wide definitions, it is possible that some relevant and accessible articles have not been reviewed. For the purposes of this synthesis displacement will be defined as birds moving permanently to other areas or a reduced density of individuals using an area taken from Marques *et al* (2021) as this definition would seem most relevant to Ardersier Port activities.

After reviewing 71 peer-reviewed studied on displacement Marques *et al* (2021) observed that displacement studies use variable designs, modelling and analysis and comparisons between displacement studies and species should be interpreted with caution due to the potential limitations of different methodologies. Drewitt & Langston (2006) also note that much of the research on displacement is inconclusive due to the lack of before, after, control and impact (BACI) methodologies, which are considered to be the most robust approach (Marques

et al 2021). However BACI studies have been criticised for the impossibility for find a control site that has the same environmental variables other than impact (Welcker and Nehls 2016)

A review of the available literature suggests that displacement of birds at a windfarm sites could result from a number of variables: increased human presence, noise and movement disturbance during construction (Percival 2005), habitat loss (Langston & Pullan (2004), shadow-flicker (Kim et al 2025) and the presence of structures (Perrow 2017).

Shadow-flicker

Shadow flicker from turbines is caused by the motion of the blades and reflection of sunlight casting moving shadows on the ground or creating a pulsating effect where sunlight passes through moving blades (Nazir *et al* 2020, Bosjnakovic et al 2024).The majority of studies focus on the impacts of shadow-flicker as an aspect of human health, and very few exclusively look at shadow-flicker impacts on birds. Kim *et al* (2025) cite Chen & Dong (2023) suggestion that prolonged shadow-flicker increases the risk of disrupting natural behaviours, however this article was not available and no further information could be found.

Taubmann *et al* (2021) modelled hours per year of meteorological expected shadows cast by turbines in a woodland wind farm find that it may have an impact on Capercaillie (*Tetrao urogallus*) lekking site selection and presence. A study on the impacts of shadow-flicker caused by wind turbines on Atlantic salmon (S*almo salar*) by Dodd & Briers (2021) was ultimately inconclusive.

Structures and over-shadowing.

Compared to other subjects the effects of the presence of turbines on bird displacement is better documented, if less numerous, than collision. There is some consensus on the displacement of birds due to the presence of wind turbines, however the responses of birds are generally found not to be consistent. Not all studies were able to control for confounding factors, and whilst changes in bird abundance was recorded around windfarms they could not always be attributed specifically to height of the structures or the presence of the turbines themselves. The majority of accessible studies relate to post-construction of offshore and onshore or inland wind farms and thus are less relevant to Ardersier Port activities around on shore construction but have been included as the main source of information and for completeness.

Marques *et al* (2021) review of 71 studies found that there is evidence for displacement of birds around wind turbines particularly divers, which had full consensus across 68 trials, as well as ducks, Gannets and raptors in the majority of reports. Attraction to wind farms by waders was reported in 11.6% of reviewed trials and no effects on waders in 55% of studies. Marques *et al* (2021) also observe that the effect of displacement is highly variable across species and studies, an observation also made by Drewitt & Langston (2006).

Douglas *et al* (2011) study of an upland windfarm found there was no significant change in abundance or distribution of red grouse (*Lagopus lagopus*) and golden plover (*Pluvalis apricaria*). Wintering farmland birds including Yellowhammer (*Emberiza citronella*), Corn Bunting (*Emberiza clandra*) and Skylark (*Alauda arvensis*) distribution were not affected when other factors, such as edge effects and crop type, on two wind farms in East Anglia (Devereux *et al* 2008). Hale *et al* (2014) also finds no significant effect on 2 American breeding grassland songbirds. Conversely Leddy *et al* (1999) found a lower density of songbirds within 80m of turbines, Rehling *et al* (2023) found turbines in deciduous and coniferous woodland wind farm displaced some species. Zhao *et al* (2020) finds that wintering ducks tended to avoid onshore windfarms, and Pink-footed geese (*Anser* brachyrhynchus*)* tend to avoid areas with turbines (Larsen & Madsen 2000). Breeding Golden Plover were found to avoid turbines by 200m (Pearce-Higgins *et al* 2008). Meek *et al* (1993) found nesting Red-throated Diver to be the only species that was adversely affected by installation of wind turbines.

Diershcke *et al* (2016) find consistent displacement of divers and Gannets around post-construction offshore wind farms, but less consistent displacement of Long-tailed Duck, Common Scoter, auks and Sandwich Terns.

This slightly contradicts Petersen (2005) who finds that along with divers, Common Scoter and auks showed an increased avoidance of a windfarm area. Guillemette *et al* (1998,1999) found a decline in Eider ducks around wind farm but this seemed to be related to prey abundance. Larsen & Guillemette (2007) concluded that Eiders were avoiding the physical structure of the turbines rather than reacting to the noise or rotation of the blades. Terns and gulls showed attraction to the Horns Rev windfarm in Denmark (Petersen 2005). Diershcke *et al* (2016) found Red-breasted Merganser showed some attraction whilst cormorants and shags showed a strong attraction to turbines as perches for drying plumage. Welcher & Nehls (2016) found a lower abundance of divers, auks and terns at a North Sea wind farm. Harwood *et al* (2017) found the overall abundance of breeding Sandwich Terns around an offshore wind farm did not significantly reduce, although the terns avoided construction activity.

The presence of the turbines themselves may not necessarily be the root cause of displacement or be separated from other confounding factors in the study. Leddy *et al* (1999) note that turbine noise and movement and human disturbance could also have impacted the nesting songbirds. Rehling *et al* (2023) whilst finding that abundance and species richness did have a negative correlation with the rotor diameter, the strength of that correlation varied between years and the rotor diameter could not be separated from detection of the birds during the trial, turbine height or density. Dierschke *et al* (2016) observed that displacement of birds around wind farms appeared to increase whilst the blades were rotating. Douglas *et al* (2011) cite weather and natural variability of breeding bird numbers between years as potential confounding factors. Prey availability and foraging opportunities may account for changes in abundance or species rather than the presence of turbines (Guillemette *et al* 1998;1999, Petersen 2005, Dierschke *et al* 2016), although this is countered Fox & Petersen (2016) theorising that displacement may occur because of individuals avoiding foraging around turbines. It is likely the increased disturbance from human activity and marine traffic associated with onshore or offshore wind farms may also have a role to play in bird distribution changes (Petersen 2005; Meek *et al* 1993) and may account for the increased impact during construction observed by Pearce-Higgins *et al* (2012) and Harwood *et al* (2007). Lamb *et al* (2024) note that their review of 39 studies about seabird displacement suggest that the characteristics of post construction windfarms were less important when detecting seabird distribution changes in windfarm as their distance from shore, density of turbines and latitude. Changes in seabird distribution were reduced, or less detectable, near shore than offshore. Lamb *et al* (2024) postulates that this may be due to the higher human and background activities masking changes or favouring species that are less sensitive to disturbance or birds being more closely tied to certain characteristics making them less likely to move. Whilst Meek *et al* (1993) did find changes in bird populations during the study but most were attributed to unfavourable vegetation changes.

The construction of 9 coastal wind turbines along the Blyth harbour breakwater is, perhaps, a useful case study for Ardersier Port activities. The study of the Blyth Harbour windfarm started before construction, making before and after comparison possible (Percival 2001). Similar to Ardersier Port the Blyth Harbour turbines are located within a SSSI and near an SPA and has a lower number of turbines present compared to some other wind farm studies. The original 9 singular turbines were spaced 200m apart on a 1.2km long breakwater (Still *et* al1996). Percival (2001) notes that the only disturbance effect from construction was on roosting Cormorants, which moved to an alternative, nearby, roost site and returned after construction with no subsequent impacts during operation. There was no evidence of disturbance to the purple sandpipers (*Calidris maritima*), Eiders or gulls noted by Percival (2001). After over 9 years of monitoring the bird population Lawerence *et al* (2007) concluded that there was no evidence of displacement for any wintering or summer bird populations, including the Cormorant roosting within 120m of the nearest turbine and the Purple Sandpiper roost which remained throughout construction and operation. A later study into collision rates also noted the breakwater still supported Cormorant and Purple Sandpiper roosts (Newton & Little 2009). A re-powering project for the breakwater commenced in 2008, by 2017 all 9 turbines had been removed and 1 larger turbine had been installed (Percival *et al* 2017). Surveys conducted by Percival *et al* (2017) over a 3 year period found that there was some evidence of displacement for Eider, Cormorant and Herring Gull (*Larus* argentatus) within 600m of the new turbine and an increase of these species within 600m of the previous locations of the removed turbines compared to preconstruction suggesting some displacement. Conversely abundance of Redshank, Purple

Sandpiper, Turnstone, Dunlin and Oystercatcher increased within 600m of the new turbine and decreased within 600m of the old turbine locations. Overall Percival *et* al (2017) concluded that there were no major effects on wintering bird population from the operation of the new turbine or the removal of the 9 original turbines.

No literature could be found that addressed displacement of wintering birds by over-shadowing tall structures, specifically wind turbines. Height of turbines being one of the confounding factors previously discussed. A review of literature published between 1969 and 2013 by Walters *et al* (2014) concluded that there was no consistent response of birds to tall structures, nor could the height of a structure be separated from other aspects of development. Unfortunately, the full article was not accessible.

It is known that breeding waders and ground nesting birds tend to avoid areas near trees (Stroud *et al* 1986; Stroud *et al* 1990*, Wilson et al* 2014, Tamis & Heemskerk 2020) although the perceived openness of a habitat may also play a role along with the edge-effect of trees (Keyel *et al* 2013). Wallander *et al* (2006) also found wader nests were placed further away from man-made structures such as fences and stones walls than would be expected by chance. This is generally believed to be due to nest predation, which tends to be higher within or near forestry areas, lowering breeding success (Stroud *et al* 1990, Hanski *et al* 1996; Kassiku *et al* 2022). Although Wallander *et al* (2006) finds that whilst Crows (*Corvus sp.*) spent more time near stone walls and fences than expected by chance but there was no significant difference in nest predation relative to man-made structures. Tamis & Heemskerk (2020) also found the presence of trees and grazing geese were stronger predictors of breeding numbers at Demmerik Polder, Netherlands, than avian predators.

Tow-Out Operations

No studies could be found that specifically address potential displacement impacts associated with towing of fully assembled FOWT turbines, the movement or towing of tall structures or similar towing operations such as tow-out of oil rigs. Several articles were found that focused on short-term behavioural responses by seabirds to general marine traffic but no study was long enough to deduce whether this resulted in displacement or abandonment of an area, although displacement may be inferred from Larsen and Laubek (2005).

There can be little doubt that seabirds will generally respond to the presence of marine traffic to avoid vessels within a certain distance usually by taking flight, swimming away or diving. Sensitivity to marine traffic disturbance varies between species. Red-throated diver, Black-throated diver (*Gavia arctica*), Slavonian Grebe and Red-breasted Merganser are species most likely to give a behavioural response at the greatest distance to passing marine traffic (Jarrett *et al* 2021, Jarrett *et al* 2018; Gittings & Donoghue 2016; Burger *et al* 2010). Eider, black guillemot (*Cepphus grylle*) and shag are the least likely to respond (Jarrett *et al* 2010 &2018). Jarrett *et al* (2018) also assessed Long-tailed Duck as highly sensitive to marine traffic. Whilst Red and Black-throated Divers were considered to be most likely to respond at a greater distance Great Northern Divers (*Gavia* immer) studied at Inner Galway Bay did not seem to be highly sensitive to marine traffic (Gittings *et al* 2015) which contradicts Jarrett *et al* (2018) assessment of Great Northern Diver being a highly sensitive to marine traffic.

Jarret *et al* (2021) in a study of 11 bird species, including Red-throated Diver, Long-tailed Duck, Eider and Red-breasted Merganser in North Orkney and Scapa Flow SPAs found that the likelihood of birds responding to ferry traffic reduced during winter, attributed to habitualisation, and in poorer sea states species were more likely to give a flight response, particularly Eiders, Shag and Black Guillemot. This change in behavioural response was suggested to be associated with lower energetic cost of take-off in higher winds resulting is birds substituting other responses in favour of flight. They also note a significant difference in response behaviours between the two SPAs suggesting local effects also influencing behaviour, but do not elaborate further.

Speed of marine traffic seems to impact the likelihood of seabirds or waders responding to traffic. Burger *et al* (2019) observed that non-breeding Red-throated Diver resettled faster after being disturbed by slower moving vessels. During Gittings *et al* (2015) study the only Great Northern Divers seen to give a flight response was due to RIBs travelling at 20-30 knots directly at the bird. Bellefleur *et al* (2009) found more birds flushed at speeds

over 29knots compared to less than 12 knots. Speed of marine traffic may have indirect effects on avoidance behaviour, Larsen and Laubek (2005) found fewer Eider within 500m of a regular high speed ferry route even when the ferry was absent from the route. As there is no physical marking of the route and the Eiders redistributed themselves each day, Larsen & Laubek (2005) postulate that another factor was influence the Eiders avoidance behaviour, potentially the wash from the ferry impacting prey availability.

Jarrett *et al* (2021) note that behavioural response is often used as a proxy for vulnerability to displacement but should not be used to predict long-term population impacts. Beal and Monaghan (2004) found that Turnstones that were in better condition, due to supplementary feeding, were more likely to respond to disturbance compared to Turnstones that were not feed and therefore likely to have a greater energetic cost to any disturbance response. Suggesting that the most vulnerable individuals may be the least likely to give a behavioural response. Mckinney et al (2010) found that whilst wader density and species richness decreased with increasing amount of active disturbance, passive disturbance did not impact density or richness. Both indexes also increased with increasing fish and invertebrate availability suggesting that the benefits of good foraging outweigh costs related to disturbance. Peter and Otis (2010) note that there was no clear relationship between flushing overwintering wading birds on high traffic tidal creeks and the driving factors for the differences in distribution were tidal stage, creek width and dates. Thus, it is not necessarily true that behavioural sensitivity will always result in displacement in relation to marine traffic.

Noise and movement from construction

In a continuing theme, no articles could be found that specifically focused on wader or near-shore seabird displacement resulting from onshore construction of FOWT. Compared to post-construction studies there are relatively few studies relating to bird disturbance during construction. Where these studies exist the majority focus on offshore or upland construction rather than onshore, and the construction of the wind farm as a whole, rather than off-site assembly of component and individual turbines. Rarely, if at all have the impacts of construction been assessed separately (Exo *et al* 2003), perhaps due to short-term or temporary nature of construction phases (Fox & Petersen 2019).

It treated as common knowledge that noise and movement during construction will result in displacement or disturbance to birds during wind farm construction (Exo *et* al 2003; Percival 2005; Langston & Pullan 2004; Fox & Petersen 2019) and this is generally borne out in everyday observations that birds fly away from sudden loud noises and movement. Pearce-Higgins *et al* (2012) found that when analysed across upland wind farms there were greater impacts during to construction compared to operational upland farms. Harwood *et al* (2017) observed that avoidance of offshore wind turbines by sandwich tern was greater during assembly of the turbines. Winkleman (1992) considers that the construction phase of an onshore windfarm may have been more disturbing than operation. Meek *et al* (1993) also considers that the adverse effect of turbines observed on Red-throated Divers may be more due to increased disturbance by people than the turbines themselves.

As previously addressed in relation to collisions habitualisation and adaption to turbines and regular human disturbance is possible (Nisbet 2000; Langston & Pullan 2004) and again can be observed in general everyday observations, particularly urban birds. Langston & Pullan (2004) also note that a long-lived and site faithful bird's attachment to a location may outweigh a behavioural response to change in the environment. Madsen & Boertmann (2008) recorded pink-footed geese had adapted to the presence of onshore turbines and were foraging closer to the wind turbines than in previous studies.

Conclusions

There is no specific literature that addresses the potential displacement or collision risk of waders and seabirds from onshore construction or tow-out of FOWT. The majority of information on collision risk and displacement has been gained through studies of post-construction, operational, onshore and offshore wind farms which are not directly relevant to Ardersier Port activities. It may not be necessarily appropriate to assess the impact of the

ports activities against an operational windfarm, despite the presence of similar structures. However, some general information can be gathered from available literature

There is some evidence that the construction phase of wind farms may be more disruptive to birds than the operation, due to the increased human activity and traffic (e.g. Exo *et al* 2003; Langstone & Pullan 2004). Arguably, the most significant disturbance to SPA species at Ardersier Port has already occurred during the construction of the ports quay wall and working platform.

In the absence of any data relating specifically related to displacement to tall man-made structured or the tow-out operation it should be expected that birds will have at least a short-term behavioural response to avoid marine traffic. However, it should not be assumed that this will lead to permanent displacement, and no study recorded the complete abandonment of an area. Red Throated Diver, Red-Breasted Merganser and Long-tailed duck would seem to be the species most likely to be impacted at Ardersier Port based on their presence and potential sensitivity. The use of RIBs at the port has the potential to provoke a greater behavioural response due to the faster speeds of the vessel. The slow vessel speeds of the tow-out operation may be less likely to provoke a behavioural response and more likely to allow faster resettlement.

Displacement, particularly of waders and roosting birds on the Inner Moray Firth SPA/Ramsar and Moray Firth SPA, due to the overshadowing presence of turbines either during assembly or the tow-out process, inhibited by the lack or study or full accessibility to articles on the subject, remains an unknown impact. There does not appear to be a consistence response to the presence of turbines, and these studies are sometimes frustrated by confounding factors such as vegetation structure and prey availability (e.g. Rehling *et al* 2023, Guillemette *et al* 1999; Meek *et al* 1993). Some concerns around over-shadowing of waders from structures would appear to stem from to the impacts of edge effect of trees on breeding waders. It is perhaps worth noting that despite the use of tall mobile cranes non-breeding waders have continued to be observed at the port, and Oystercatcher, Eiders and Common Tern have been observed nesting at the port. To this end it should not be assumed that SPA non-breeding waders will respond in a similar way to breeding waders in the presence of trees. The availability of good habitat, foraging, site fidelity and the potential for eventual habitualisation may also outweigh a displacement response to the presence of structures and disturbance at the port (e.g. Langston & Pullan 2004; Lawerence *et al* 2007; Peter & Otis 2010).

It should be acknowledged that some collisions with structures at Ardersier port will occur, however birds do not necessarily willingly fly into structures and will take evasive manoeuvres to avoid collisions (e.g. Percival 2017). However, the comparison of the collision risk at Ardersier Port to a fully operational wind farm, is perhaps unjustified given it is the moving rotor swept area that is the focus of most attention (e.g. Johnston *et al* 2014) and the blades of assembled turbines at Ardersier Port will either be fixed or feathered, with no hot testing of turbines planned at the port. Birds may rely on predictability and familiarity with their environment to navigate whilst carrying out other tasks such as foraging and predator avoidance (Martin & Banks 2023). The assembly of the turbines and tow-out of the turbines will create changes to an environment on a regular basis may be present a challenge birds flying through, however local birds may adapt their behaviour to accommodate this change (e.g. Percival 2001).

Evidence of habitualisation has been recorded in studies (e.g. Percival 2001; Madsen & Boertmann 2008). However, there are relatively few studies have continued long enough to demonstrate habitualisation. Marques *et al* (2021) found only 14% of studies were longer than 10 years from the start of operations and calls for more long-term studies in future research. Perhaps this is typified by Percival (2017) concluding monitoring for the re-powering of Blyth Harbour wind turbine after 3, compared to over 9 years of data collected for the original Blyth Harbour turbines (e.g. Percival 2001; Lawrence *et al* 2007). It is possible that collision risks can reduce over time (Percival 2001) and displacement or attraction to wind farms could be temporary, as changes in tolerance or risk perception with exposure to infrastructure and activities (May 2015 cited by Marques *et al* 2021).

The impact of onshore construction of FOWT and subsequent tow-out operations on birds clearly represents and under researched area. Assessment of the impact of Ardersier Port and other locations undertaking similar developments should be mindful of this. The avoidance of assumption, or full comparison to operational windfarms, is perhaps key to assessment in the absence of directly relevant data.

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