Eastern Green Link 3

Marine Environmental Appraisal

Chapter 9 - Intertidal and Offshore Ornithology

Prepared for: Scottish Hydro Electric Transmission plc (SHE-T)

Scottish & Southern Electricity Networks
TRANSMISSION

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Abbreviations/Glossary

BEIS	Department for Business, Energy and Industrial Strategy
BTO	British Trust for Ornithology
CEMP	Construction Environmental Management Plan
DECC	Department of Energy & Climate Change
DSG	Divers, Grebes and Mergansers
EIA	Environmental Impact Assessment
EGL	Eastern Green Link
ESAS	European Seabirds at Seas
FAME	Future of the Atlantic Marine Environment
FeAST	Feature Activity Sensitivity Tool
FMMP	Fisheries Management and Mitigation Plan
GB	Great Britain
HDD	Horizontal Directional Drilling
HRA	Habitats Regulations Appraisal
HVDC	High Voltage Direct Current
IUCN	International Convention for the Conservation of Nature
JNCC	Joint Nature Conservation Committee
Km	Kilometre
Km^2	Kilometre Squared
M	Metre
MM	Millimetre
NCMPA	Nature Conservation Marine Protected Area
MCZ	Marine Conservation Zone
MEA	Marine Environmental Assessment
MEAp	Marine Environmental Appraisal
MHWS	Mean High Water Spring
MMMP	Marine Mammal Mitigation Plan
MPCP	Marine Pollution Contingency Plan
NGET	National Grid Electricity Transmission
NM	Nautical miles
NNR	National Nature Reserves
OESEA 4	Offshore Energy Strategic Environmental Assessment
OWF	Offshore Wind Farm
PMF	Priority Marine Features
pSPA	Potential Special Protection Area
RLB	Red Line Boundary
RSPB	Royal Society for the Protection of Birds
RTD	Red-Throated Diver
SAC	Special Area of Conservation
SGS	Seaducks, Geese and Swans
SHE-T	Scottish Hydro Electric Transmission plc

SNCB	Statutory Nature Conservation Bodies
SPA	Special Protection Area
SSC	Suspended Sediment Concentrations
SSSI	Site of Special Scientific Interest
STAR	Seabird Tracking and Research
TGKG	Terns, Gulls, Kittiwakes and Gannets
UK	United Kingdom
UK-BAP	UK Biodiversity Action Plan
WeBS	Wetland Bird Survey
WH	Waders and Harriers

9. Intertidal and Offshore Ornithology

9.1. Introduction

This chapter of the Marine Environmental Appraisal (MEAp) describes the potential impacts arising from the construction, operation and maintenance and decommissioning of the Proposed Development on intertidal and offshore ornithology. For the purposes of seeking the necessary consents, the Eastern Green Link (EGL) 3 Project has been split into different 'Schemes' i.e. English Onshore Scheme, English Offshore Scheme, Scottish Onshore Scheme and the Scottish Offshore Scheme (with the latter herein after referred to as 'the Proposed Development'). Collectively all components of EGL 3 are referred to as "the Project".

A description of the works expected to be undertaken during construction, operation and maintenance and decommissioning of the Proposed Development is provided in **Chapter 3: Project Description.** The Proposed Development, defined spatially by the Red Line Boundary (RLB), includes approximately 145 kilometres (km) of subsea High Voltage Direct Current (HVDC) cables from mean high water springs (MHWS) at the proposed landfall at Sandford Bay, Scotland, to the boundary with adjacent English waters and is nominally 700 metres (m) wide. This width is considered adequate to micro-site around sensitive seabed feature or habitat, or to allow for the footprint of installation vessels and is the maximum extent of seabed in which construction and operation of the Proposed Development may take place. The RLB is shown in **Figure 9-1 (Drawing reference C01494-EGL3-MEA-BIRD-002-B).**

As set out in **Chapter 1: Introduction,** cable installation and some associated activities beyond 12 nautical miles (NM) are exempt from the requirement to obtain a Marine Licence under the Marine and Coastal Access Act 2009, as well as repair of the installed cable in inshore and offshore waters. This chapter presents an assessment of the effects of the Proposed Development from MHWS at the Sandford Bay landfall to the border with English adjacent waters. This is to provide a holistic view of the Proposed Development and any associated impacts. However, consent is not being sought for the exempt cable (either installation or repair) and only cable protection would be included in the Marine Licence beyond 12 NM.

Kilometre Points (KPs) are used in this chapter to provide context as to where within the Study Area a feature lies (see **Section 9.1.1** for definition of Study Area). KP 436 is defined at the border with adjacent English waters, while KP 580 is defined at the proposed landfall in Sandford Bay, Peterhead.

Intertidal and offshore ornithology receptors include species of bird that use the intertidal and/or offshore area for breeding, foraging and loafing. Where appropriate, the chapter identifies proportionate measures to avoid or mitigate any predicted adverse effects. The potential for interaction between the Proposed Development and other plans and/or projects, which may result in significant cumulative effects on intertidal and offshore ornithology is assessed in **Section 9.11.**

This chapter should be read in conjunction with:

- **Chapter 3: Project Description;**
- **Chapter 6: Marine Physical Processes** which identifies the spatial extent of potential impacts from temporary sediment suspension and subsequent redeposition;
- **Chapter 7: Intertidal and Subtidal Benthic Ecology** which identifies the habitats within the RLB which support intertidal and offshore ornithological receptors; and
- **Chapter 8: Fish and Shellfish** which identifies the potential impacts on fish and shellfish species many of which are prey species for intertidal and offshore ornithological receptors.

This chapter is supported by the following appendices:

- **Appendix 2A: National Marine Plan Compliance Assessment**
- **Appendix 3B: Outline Construction Environmental Management Plan (CEMP)**
- **Appendix 5A: Habitats Regulations Appraisal (HRA) Stage 1 Screening**
- **Appendix 5B: Habitats Regulations Appraisal Stage 2 Report to Inform Appropriate Assessment**
- **Appendix 5C: Marine Protected Area Assessment Stage 1 Initial Screening**

9.1.1. Study Area

The Proposed Development will route from MHWS at Sandford Bay, Peterhead, to the border between Scottish and English adjacent waters. The Study Area for intertidal and offshore ornithology, relevant to the Marine Environmental Assessment (MEA), includes the RLB to MHWS plus an additional 15 km buffer either side (hereafter referred to in this chapter as the 'Study Area').

The Study Area was defined with reference to the maximum likely ZoI over which the Proposed Development may incur significant effects (noting the ZoI may vary by species or phase of development), with consideration of the need to gather sufficient information to account for worst case scenarios for the impact assessment. It takes into consideration:

- Seabird foraging ranges (Thaxter *et al.*, 2012; Woodward *et al.*, 2019).
- Recent recommendations from statutory nature conservation bodies (SNCBs) regarding maximum disturbance/displacement ranges for sensitive bird species (MIG-BIRD 2022).
- Maximum tidal excursion to encompass the potential impact pathway from increased suspended sediment concentrations, which could affect some birds' ability to seek prey (see **Chapter 6: Marine Physical Processes).**

The defined ZoI are feature-specific; this can be for functional groups or individual species where relevant. It should be noted that the ZoI can change depending on the stage the Proposed Development is in, e.g., it may be larger during construction for a certain receptor than it is during operation. The ZoI can also vary depending on the individual sensitivities of different bird species within the same ornithological group. In such cases, the largest ZoI for that functional group has been considered.

The 15 km buffer used for the Study Area is a precautionary maximum ZoI that encompasses the worst-case scenario of potential impact pathways from increased suspended sediment concentrations. It is based on the conclusions of **Chapter 6: Marine Physical Processes**. According to advice from SNCBs, a maximum buffer of 10 km should be applied to consider disturbance effects on red-throated diver (*Gavia stellata*) and a buffer of at least 4 km should be applied for other diving birds (MIG-BIRD 2022). The 15 km buffer used to define the Study Area is therefore sufficiently precautionary to cover the potential effects of displacement as well as potential effects resulting from increases in turbidity.

9.2. Data Sources

9.2.1. Site-Specific Survey Data

Due to the temporary and transient nature of construction, offshore site-specific bird surveys are not considered necessary for the Proposed Development, which is consistent with the approach taken by other subsea electricity cable projects installed in UK waters, for example Eastern Green Link 1 and 2, Viking Link, GreenLink, GridLink. Extensive contemporary and historic information is available regarding the ornithological characteristics of the North Sea.

9.2.2. Publicly Available Data

A desk-based review of publicly available data sources (literature and GIS mapping files) has been used to describe the baseline environment. **Table 9-1** lists the key data sources which have been used in the assessment.

Table 9-1: Key publicly available data sources for intertidal and offshore ornithology

Data Source	Description	Reference
Joint Nature Conservation Committee (JNCC)	JNCC Conservation Advice for Marine Protected Areas	JNCC (2019)
Natural England	Natural England Designated Sites View: provides site information including conservation objectives and advice on operations for designated sites, including but not limited to: Special Protection Areas (SPAs), Ramsar sites, Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs).	Natural England (2025a)
British Trust for Ornithology (BTO) Non-Estuarine Waterbird Surveys (NEWS)	Results of the third Non-Estuarine Waterbird Survey, including Population Estimates for Key Waterbird Species.	Austin *et al.* (2017)
BTO Wetland Bird Survey (WebS)	WeBS Report Online: Peak data by species from annual survey reports of wetland waterbirds. Site: Peterhead Bay and Sandford Bay	BTO WeBS Reports
BTO WeBS	Results of the annual Wetland Bird Survey, including information on the current status and distribution of waterbirds in the UK.	Calbrade *et al.* (2025)
BTO Research Reports	Desk-based revision of seabird foraging ranges.	Woodward *et al.* (2019)

Data Source	Description	Reference
Journal of Applied Ecology	Distribution maps of cetacean and seabird populations in the North-East Atlantic	Waggitt *et al.* (2020)
Journal of Biological Conservation	Seabird foraging ranges	Thaxter *et al.* (2012)
IUCN	The International Convention for the Conservation of Nature (IUCN) Red List of Threatened Species	IUCN (2025)
Offshore Energy Strategic Environmental Assessment (OESEA) 4	Describes the distribution and ecology of bird species making specific use of the UK's coast and marine environments.	BEIS (2022)
National Bird Atlas	Results of the five years of breeding season and wintering surveys across the UK at a 10 km resolution.	Balmer *et al.* (2013)
NatureScot	Report of the Seasonal Periods for Birds in the Scottish Marine Environment. Provides recommended periods during which listed species should be considered when planning activity in the Scottish marine environment.	NatureScot (2020)
The Future of the Atlantic Marine Environment (FAME) and Seabird Tracking and Research (STAR) projects	Projects run by the Royal Society for the Protection of Birds (RSPB) in collaboration with partners and funded by Marine Scotland, NatureScot and the JNCC tracking multiple species of seabird from multiple colonies since 2010. Open datasets and reports identifying hotspots for seabirds across the UK.	Scottish Government (2019)
Environmental Statements and Scoping reports from Offshore Wind Farm (OWF) Developments. (From MD-LOT Public Register)	• Morven Offshore Wind Farm Array Project Environmental Impact Assessment Scoping Report (RPS 2023) • Ossian Offshore Wind Farm Array Environmental Impact Assessment Scoping Report (RPS 2023a)	RPS (2023) RPS (2023a)
Environmental Appraisal Report and Scoping Report for HVDC link projects. National Grid Electricity Transmission and Scottish Hydro Electric Transmission plc.	• Eastern Green Link 2 Environmental Appraisal Report (2022) • Scotland to England Green Link (SEGL), Marine Scheme Environmental Appraisal Report, Volume 2 Chapter 11: Ornithology	AECOM (2022) AECOM (2022a)

9.3. Consultation

9.3.1. Non-Statutory Scoping

In January 2024, a MEA Non-Statutory Scoping Report was submitted to the Scottish Government Marine Directorate – Licensing Operations Team (MD-LOT) as part of a pre-application consultation exercise for the Proposed Development. Responses from consultees were received on 15 July 2024. Responses which are relevant to this chapter were received from the following stakeholders:

- NatureScot; and
- JNCC

The feedback received broadly confirmed that consultees were content with the proposed scope of the intertidal and offshore ornithology MEAp chapter as set out in the MEA Non-Statutory Scoping Report.

Table 9-2 summarises the comments received relevant to the intertidal and offshore ornithology assessment, and the regard given to these in preparing the chapter.

Table 9-2: Summary of Scoping Opinion responses for intertidal and offshore ornithology

Consultee	Comments	Response
NatureScot	We broadly agree with the proposed mitigation and monitoring measures; however, we would like to see a Marine Mammal Mitigation Plan, and Ornithological mitigation measures submitted for the pre-construction and construction periods of this project.	A Marine Mammal Mitigation Plan would be submitted prior to construction for approval by MD-LOT as a likely condition of the Marine Licence. Mitigation in respect to this assessment of ornithology would be secured as a condition of the Marine Licence, as described in **Section 9.7** and **Section 9.9** of this MEAp.
	Expect the Environmental Appraisal to include identified and agreed mitigation measures during pre-construction and construction for marine birds and sea ducks as qualifying interests of SPAs.	The assessment of potential effects is provided in **Section 9.8**. **Section 9.7** lists the measures embedded into the design of the Proposed Development, whilst **Section 9.9** lists project-specific mitigation that has been identified as necessary to avoid or minimise significant adverse effects.
	Note that the Study Area may be reviewed and refined based on the sediment dispersion modelling. There is no mention in addition to the potential impact of sediment to affect diving birds' ability to seek prey as to what extent there may by disruption to habitats supporting prey species. This should be considered.	The Study Area has remained at 15 km and is justified in **Section 9.1.1**. **Section 9.8.1** assesses the impacts on species from changes in water clarity as a result of suspended sediment. **Section 9.8.2** assesses whether there would be a change in distribution of prey species taking into consideration factors such as sediment deposition, changes in habitat from the deposition of cable protection, temporary habitat changes from construction and underwater noise.
	Note foraging birds from the coastal breeding sites are likely to be observed within the coastal corridor.	Noted. A description of the current baseline is presented in **Section 9.4.**
	Whilst the pre-construction and construction activities are likely to be short term in nature, it is worth identifying potential mitigation measures to be deployed such as reducing vessel movement, speed, applying the Scottish Marine Wildlife Watching Code within the SPA, and planning cable 'pull-in' to take place outside of the breeding season (April to September).	The assessment of potential effects is provided in **Section 9.8**. **Section 9.7** lists the measures embedded into the design of the Proposed Development, whilst **Section 9.9** lists project-specific mitigation that has been identified as necessary to avoid or minimise significant adverse effects.
	There is no clarity provided in terms of how cumulative effects will be assessed and with which other activities. We advise this needs to be considered further.	The approach to assessing cumulative impacts is described in **Chapter 4: Marine Environmental Appraisal Scope and Methodology.** The assessment of cumulative effects for intertidal and offshore ornithology is provided in **Section 9.11** of this chapter.
JNCC	Agreed with potential impacts scoped into the assessment.	The assessment of potential effects is provided in **Section 9.8**.

9.3.2. Other Consultations

In addition to the non-statutory scoping consultation process, the Applicant has undertaken supplementary consultations with individual stakeholders to keep them informed of ongoing updates. **Table** 9-3 summarises the comments received, and the regard given to them in preparing this chapter.

Table 9-3: Summary of relevant stakeholder consultation on intertidal and offshore ornithology assessment

Date	Organisation (s)	Summary
14/12/2023	NatureScot Natural England	Discussed landfall at Sandford Bay. Buchan Ness to Collieston Coast SPA is designated for a number of breeding bird species, including fulmar (*Fulmarus glacialis*), guillemot (*Uria aalge*), herring gull (*Larus argentatus*), Kittiwake (*Rissa tridactyla*) and European shag

Date	Organisation (s)	Summary
		(*Phalacrocorax aristotelis*). Discussed potential seasonal avoidance of works during key stages such as breeding or migratory periods

9.4. Baseline Characterisation

9.4.1. Overview

Intertidal and offshore ornithology refers to the diversity, abundance and function of marine bird species present in the Study Area, at all life stages including feeding, breeding, overwintering and migrating. Marine birds are highly mobile but can be constrained during certain times of the year by factors such as their need to return to a colony to feed and care for chicks, or when they are flightless during post-breeding moult. Species can also be restricted by their foraging strategy, the availability of prey species and their sensitivity to human activities such as vessel traffic (Atterbury, *et al.*, 2021).

For the purposes of this MEAp, marine birds have been described according to Atterbury *et al.* (2021) based on their functional group, of which there are five groups:

- Divers, grebes and mergansers
- Seaducks, geese and swans
- Auks
- Terns, gulls, kittiwakes and gannets
- Waders and harriers

9.4.2. Intertidal Ornithology

The proposed landfall at Sandford Bay, Peterhead lies within The Wetland Bird Survey (WeBS) site 'Peterhead Bay and Sandford Bay' (Location Code 88436). The site is below MWHS and overlaps with the Study Area, with the habitat noted as 'estuarine.' Sixty species have been recorded at the site over the last ten years, with the most prevalent functional group being 'terns, gulls, kittiwakes and gannets,' (14 species) (Calbrade *et al.*, 2025).

The top five most abundant species recorded over the last five years of surveys (2017/18 – 2021/22) are (in order of abundance): herring gull (*Larus argentatus)*, European shag (*Phalacrocorax aristotelis)*, black- legged kittiwake (*Rissa tridactyla)*, common gull *(Larus canus)* and Sandwich tern *(Thalasseus sandvicensis)*.

Whilst the Peterhead Bay and Sandford Bay vantage point WeBS surveys are ongoing, red-throated diver have only been recorded at low numbers over the last ten years, with a peak sighting of two individuals recorded in 2005/06, 2016/17 and 2020/21. Five individuals were recorded over the last five years of surveys (2017/18 – 2021/22).

Sandford Bay is bordered on the southern side by Buchan Ness to Collieston Coast SPA, with designated species using the bay for foraging and loafing. Designated species include black-legged kittiwake, common guillemot (*Uria aalge*), European shag, fulmar (*Fulmarus glacialis*) and herring gull. Further detail is provided in **Section 9.4.5.** Table 9-4 provides a summary of the bird sightings recorded at the Peterhead Bay and Sandford Bay WeBS site between 2017 and 2022.

Table 9-4: Wetland bird survey records at the Peterhead Bay and Sandford Bay WeBS site – annual peak counts

Key	Annex I Species		Non-Annex I Species	

DGM - Divers, grebes and mergansers
TGKG - Terns, gulls, kittiwakes and gannets
SGS - Seaducks, geese and swans
WH - Waders and harriers
Auk – Auks

Species Name	Functional Group	2017/18	2018/19	2019/20	2020/21	2021/22
European shag	DGM	135	42	178	67	21
Eider (*Somateria mollissima*)	SGS	57	42	23	82	27
Oystercatcher (*Haematopus ostralegus*)	WH	70	70	51	43	22
Redshank (*Tringa tetanus)*	WH	90	90	23	6	6

Species Name	Functional Group	2017/18	2018/19	2019/20	2020/21	2021/22
Cormorant (*Phalacrocorax carbo*)	DGM	20	18	13	5	3
Ringed plover (*Charadrius hiaticula*)	WH	23	25	15	4	0
Grey heron (*Ardea cinerea*)	WH	2	1	3	4	4
Turnstone (*Arenaria interpres*)	WH	67	16	6	6	0
Curlew (*Numenius arquata*)	WH	8	9	2	2	2
Mallard (*Anas platyrhynchos*)	SGS	0	11	2	0	2
Red-breasted merganser (*Mergus serrator*)	DGM	4	3	2	2	0
Red-throated diver (*Gavia stellata*)	DGM	1	1	0	2	1
Brent goose (*Branta bernicla*)	SGS	0	0	0	0	0
Canada goose (*Branta canadensis*)	SGS	0	0	0	0	0
Greylag goose (*Anser anser*)	SGS	0	0	0	0	0
Pink-footed goose (*Anser brachyrhynchus*)	SGS	0	0	0	0	0
Mute swan (*Cygnus olor*)	SGS	0	0	0	0	1
Shelduck (*Tadorna tadorna*)	SGS	0	4	0	0	0
Wigeon (*Anas penelope*)	SGS	0	0	0	0	0
Teal (*Anas crecca*)	SGS	4	0	0	0	0
Tufted duck (*Aythya fuligula*)	SGS	0	0	0	0	0
Scaup (*Aythya marila*)	SGS	0	0	0	0	0
Velvet scoter (*Melanitta fusca*)	SGS	0	0	0	0	0
Common scoter (*Melanitta nigra*)	SGS	0	0	0	0	0
Long-tailed duck (*Clangula hyemalis*)	SGS	0	0	0	0	0
Goldeneye (*Bucephala clangula*)	SGS	8	3	0	1	0
Goosander (*Mergus merganser*)	SGS	0	0	0	1	0
Little grebe (*Tachybaptus ruficollis*)	DGM	0	0	1	0	0
Red-necked grebe (*Podiceps grisegena*)	DGM	1	0	0	0	0
Slavonian grebe (*Podiceps auritus*)	DGM	0	0	0	0	0
Lapwing (*Vanellus vanellus*)	WH	0	0	1	0	0
Golden plover (*Pluvialis apricaria*)	WH	1	0	0	0	0
Grey plover (Pluvialis squatarola)	WH	0	0	0	0	0
Whimbrel (*Numenius phaepus*)	WH	1	2	0	0	0
Bar-tailed godwit (*Limosa lapponica*)	WH	3	0	1	0	0
Knot (*Calidris canutus*)	WH	0	0	0	0	0
Sanderling (*Calidris alba*)	WH	9	2	0	0	0
Dunlin (*Calidris alpina*)	WH	1	6	0	0	0
Purple sandpiper (*Calidris maritma*)	WH	1	2	0	0	0
Woodcock (*Scolopax rusticola*)	WH	0	0	0	0	0
Snipe (*Gallinago gallinago*)	WH	0	0	0	0	0
Common sandpiper (*Actitis hypoleucos*)	WH	2	0	0	0	0
Black-legged kittiwake	TGKG	1	300	-	-	-
Black-headed gull (*Chroicocephalus ridibundus*)	TGKG	135	90	-	-	-

Species Name	Functional Group	2017/18	2018/19	2019/20	2020/21	2021/22
Little gull *(Hydrocoloeus (Larus) minutus)*	TGKG	0	1	-	-	-
Mediterranean gull *(Ichthyaetus melanocephalus)*	TGKG	0	0	-	-	-
Common gull*)*	TGKG	120	170	-	-	-
Great black-backed gull *(Larus marinus)*	TGKG	180	65	-	-	-
Glaucous gull *(Larus hyperboreus)*	TGKG	1	0	-	-	-
Iceland gull (Larus glaucoides)	TGKG	0	0	-	-	-
Herring gull	TGKG	730	600	-	-	-
Lesser black-backed gull *(Larus fuscus)*	TGKG	4	1	-	-	-
Sandwich tern	TGKG	180	102	-	-	-
Common tern *(sterna hirundo)*	TGKG	2	2	-	-	-
Arctic tern *(Sterna paradisaea)*	TGKG	0	0	-	-	-

9.4.2.1. Waders and harriers

Of the five functional groups, this functional group focuses on species which would only be present within the intertidal area of the RLB. It includes waders that breed, migrate and winter along the UK coast. Wader species employ various foraging strategies, but all are surface or near-surface feeders, making use of open coast, mud and sandflats, saltmarshes, saline lagoons, rocky coasts and nearby grazing marsh and arable land to both feed and roost. While some species, like the oystercatcher, are more dependent on localised food resources such as cockle and mussel beds, others are more generalist in their diet. Certain waders have specific breeding habitat preferences – avocets (*Recurvirostra avosetta*) favour saline lagoons, saltpans, and scrapes, while ringed plovers (*Charadrius hiaticula*) prefer sand, shingle and saltmarsh edges – though some species use a broader range of coastal and adjacent habitats. This group also includes marsh and hen harriers (*Circus aeruginosus, Circus cyaneus*), both of which make extensive use of intertidal habitats for foraging and roosting during the winter. Marsh harriers also breed in coastal habitats, particularly saline reedbeds.

These species are sensitive to visual and noise disturbances from vessel traffic. Waders and other species using intertidal habitats are particularly vulnerable to disturbances caused by people and machinery operating within or near their habitats. Generally, shipping poses a lower risk to these habitats except where shallow-draft vessels are employed. Activities that disturb intertidal habitats or prey species can reduce the availability of suitable prey, potentially impacting these species' feeding opportunities.

Digital aerial bird surveys from OWFs (Morven and Ossian) within the Study Area, WeBS data collected from the Peterhead Bay and Sandford Bay site between 2017 and 2022 and information on designated sites from NatureScot identified and recorded the following marine birds from this functional group. Species highlighted in **bold** are also features of designated sites within the Study Area:

- Grey heron
- Oystercatcher
- **Lapwing**
- Golden plover
- Ringed plover
- Whimbrel
- Curlew
- Bar-tailed godwit
- Turnstone
- Sanderling
- Dunlin
- Purple sandpiper
- Common sandpiper
- **Redshank**

9.4.3. Offshore Ornithology

The recent Offshore Energy Strategic Environmental Assessment (OESEA) 4 discusses aspects of the UK baseline environment to facilitate discussion around the potential for future development of renewable energy and oil & gas abstraction. It characterises the UK bird fauna as 'western Palaearctic', meaning that the majority of species are found across western Europe and extend into western Asia and northern Africa. The RLB traverses through the central North Sea and the adjacent coastline provides habitats (both breeding and foraging areas) for a wide range of both nationally and internationally recognised marine bird populations. The distribution and abundance of these bird populations fluctuates throughout the year depending on factors such as food availability and seasonality for periods such as breeding.

In breeding season, the sea in the southeast of Scotland is internationally important for at least 13 breeding bird species, which include: northern gannet (*Morus bassanus*), Manx shearwater (*Puffinus puffinus*), cormorant, European shag (*Gulosus aristotelis*), herring gull, lesser black-backed gull, black-legged kittiwake, common tern, Arctic tern, Sandwich tern, common guillemot (*Uria aalge*), razorbill (*Alca torda*) and Atlantic puffin (*Fratercula arctica*) (NatureScot, 2020; Stone, *et al.,* 1995). There is regional digital aerial bird survey data available for two planned OWFs within the Study Area (Morven and Ossian). These sites have identified the marine birds listed in Error! Reference source not found. as being recorded within the Study Area. Also noted within **Table 9-6** are the protected species which are present at the designated sites within the Study Area.

The Applicant recognises that seabirds from outside the boundaries of the RLB may at times be present within it, through foraging or migratory periods. In particular, seabirds with notably large foraging ranges, such as Manx shearwater and gannet, are expected to be occasional visitors. It is not possible for the Applicant to identify the source of each of these birds, but it should be recognised that the density of foraging birds declines the further they are from their colony of origin.

The following sub-sections outline the species likely to be present within the Study Area.

9.4.3.1. Divers, grebes and mergansers

This functional group are highly sensitive to noise and visual disturbance, such as from vessel traffic (Fliessbach, *et al.*, 2019). As some of these species may not resettle quickly after being flushed, the vessel transit route plus a buffer of several kilometres may be effectively lost as habitat to some diver and grebe species, with evidence for this being particularly strong for red-throated diver (Mendel, *et al.*, 2019). These species are also thought to have some sensitivity to underwater noise and may be impacted by changes in suspended solids when foraging in the water column.

These species tend to aggregate in coastal waters, and in bays, estuaries and firths. They can aggregate in large numbers in specific areas over the winter, whilst during the breeding season they tend to forage within restricted ranges from their breeding areas. Some of these species have a flightless period following breeding (moulting), during which they may be particularly sensitive to certain impacts. They are largely thought to be water column feeders, although there is some evidence that some species may also be benthic feeders (Duckworth, *et al.,* 2021).

Digital aerial bird surveys from OWFs (Morven and Ossian) within the Study Area, WeBS data collected from the Peterhead Bay and Sandford Bay site between 2017 and 2022 and information on designated sites from NatureScot identified and recorded the following marine birds from this functional group. Species highlighted in **bold** are also features of designated sites within the Study Area:

- Red-throated diver
- Red-breasted merganser
- Little grebe
- Red-necked grebe
- **European shag**
- Cormorant

9.4.3.2. Seaducks, geese and swans

This category includes species which breed in the UK, migrate through UK waters, and/or winter in the UK. They use a variety of waters both inshore and offshore and are benthic, surface or grazing feeders. While some diving sea duck species like eiders and scoters (*Melanitta spp.*) specialise in foraging on shellfish and crustaceans, others like long-tailed duck, goldeneye and scaup are generalist feeders and their diet can include aquatic plants, polychaetes, amphipods, aquatic insects and some small fish. Other duck, swan and geese species within this group are surface feeders, utilising prey on the surface of intertidal habitats such as small gastropod molluscs as well as grazing on saltmarsh and coastal grazing marsh.

Most species within this group are sensitive to visual and noise disturbance from vessel traffic (Fliessbach *et al*. 2019). Studies on disturbance effects, including research on common scoters, have shown that some species may not resettle after being flushed (Schwemmer, *et al.,* 2011; Fliessbach, *et al.,* 2019). However, for many species, it remains unclear whether or how quickly they recover and return to areas once a vessel has passed through. It is unknown whether species within this group are sensitive to underwater noise. While their sensitivity to underwater noise is unknown, benthic-feeding species may be affected by activities that disturb seabed habitats and species, potentially affecting the availability of suitable prey.

Digital aerial bird surveys from OWFs (Morven and Ossian) within the Study Area, WeBS data collected from the Peterhead Bay and Sandford Bay site between 2017 and 2022 and information on designated sites from NatureScot identified and recorded the following marine birds from this functional group. Species highlighted in **bold** are also features of designated sites within the Study Area:

- Wigeon
- **Common eider**
- Mute swan
- Shelduck **Greylag goose**
- **Barnacle goose (*Branta leucopsis*)**
- Mallard
- **Teal**
- **Goldeneye**
- Goosander
- **Pink-footed goose**

- **Whooper swan (*Cygnus cygnus*)**

9.4.3.3. Auks

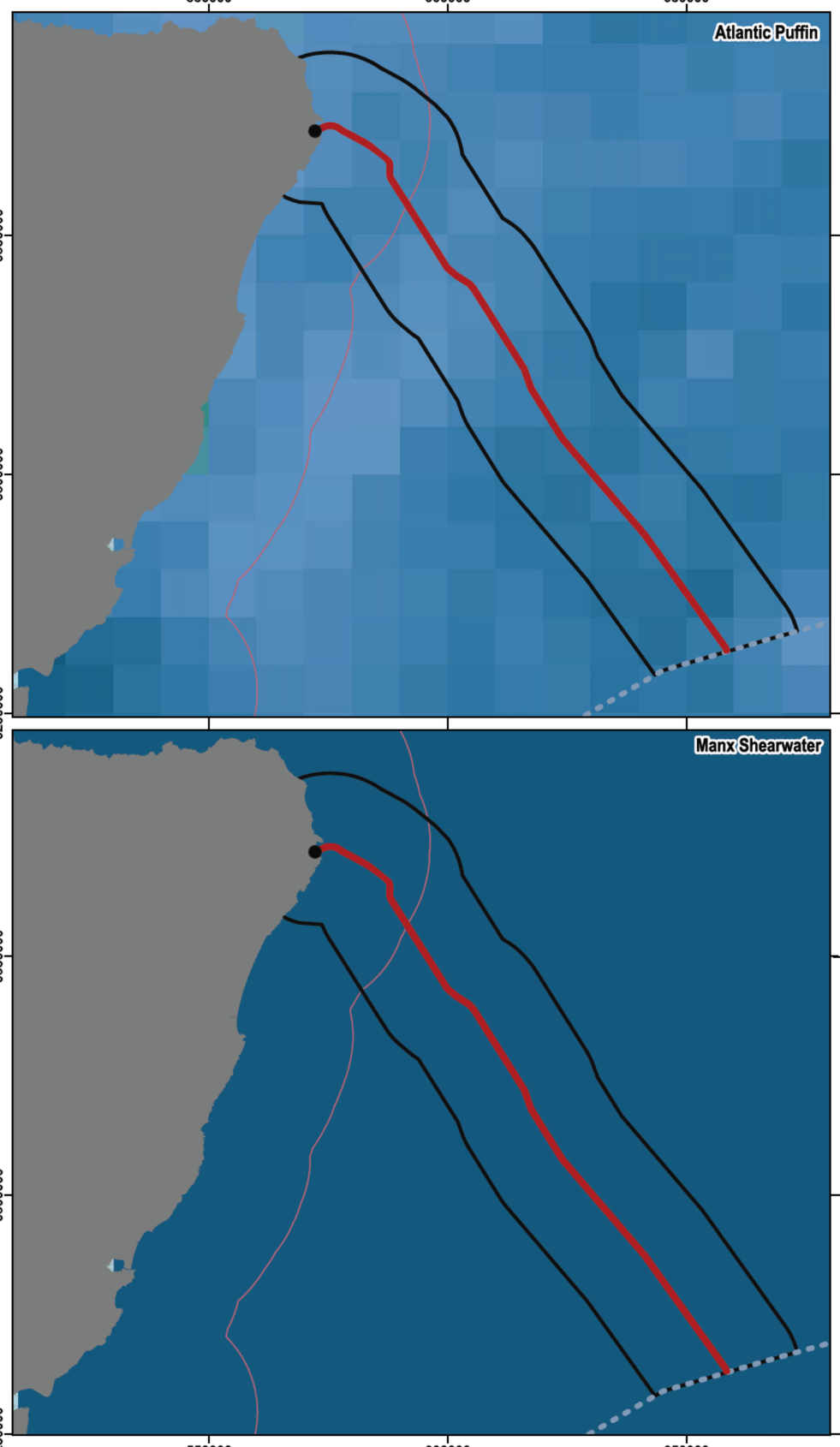
Four auk species are commonly found in waters around the UK namely: Atlantic puffin, black guillemot (*Ceppus grille*), common guillemot and razorbill. They aggregate around the UK in inshore and offshore waters throughout the year. In breeding season, they tend to form large colonies, and impacts occurring in favoured foraging areas within range of these colonies can have implications for their ability to successfully raise chicks. After fledging, both adults and chicks experience flightless moulting periods. For adults this can last several months, and for chicks it can continue for several weeks. During these periods adults and chicks may be particularly sensitive to some pressures, including noise and visual disturbance. Auks are water-column feeders, feeding largely on pelagic and demersal fish.

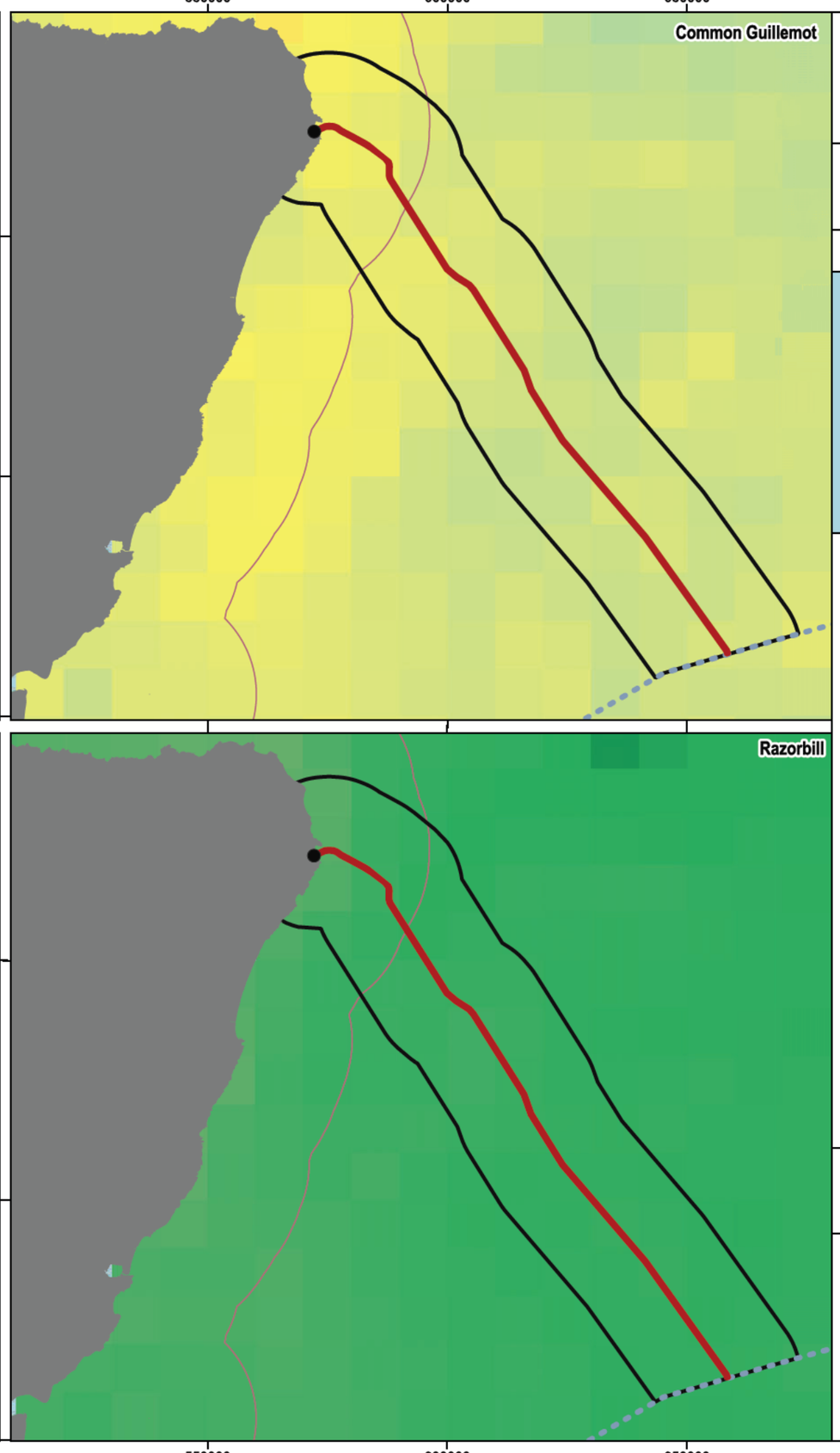
Auks are sensitive to noise and visual disturbance. Vessel movements through important foraging areas or aggregations of these birds causes disturbance. While there is some evidence that underwater anthropogenic noise can affect the foraging behaviour of related species (African penguins; Pichegru, *et al.,* 2017 in Atterbury *et al*. 2021), it remains unclear how sensitive auks are to this impact. As auk feed in the water column, they can be affected by changes in water turbidity due to increases in suspended sediments, which affects their ability to successfully forage for prey. In addition, disturbance and loss of seabed habitats may affect availability of suitable prey (e.g., sandeel).

Digital aerial bird surveys from OWFs (Morven and Ossian) within the Study Area, WeBS data collected from the Peterhead Bay and Sandford Bay site between 2017 and 2022 and information on designated sites from NatureScot identified and recorded the following marine birds from this functional group. Species highlighted in **bold** are also features of designated sites within the Study Area:

- **Common guillemot**
- Atlantic puffin
- Black guillemot
- Sooty shearwater (*Puffinus griseus)*
- Little auk (*Alle alle*)
- Razorbill
- Manx shearwater

Heat maps showing the predicted seasonal distribution of common guillemot, Atlantic puffin, Manx shearwater and razorbill within the Study Area are provided in Figure 9-1 (**Drawing reference C01494-EGL3-MEA-BIRD-002-B)** (January) and **Figure 9-2 (Drawing reference C01494-EGL3-MEA-BIRD-003-B)** (July).





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Predicted Density Of Auks In January, 2019

C01494-EGL3-MEA-BIRD-002-B

Legend

- Red Line Boundary
- Study Area (15km Buffer)
- Sandford Bay Landfall

Bird species predicted density (Waggit et al., 2019) (animals per km²)

- 0.02
- 0.04
- 0.06
- 0.08
- 0.10
- 0.50
- 1.00
- 2.00
- 3.00
- Scottish Adjacent Waters
- 12NM Limit

0 20 40 60 KM

0 10 20 30 NM

N

Date	08/05/2025
Coordinate System	WGS 84 / UTM zone 30N
Projection	Universal Transverse Mercator (UTM)
Unit	meters
Scale at A3	1:1,100,000
Created	JC
Reviewed	AN/EE
Authorised	JDM

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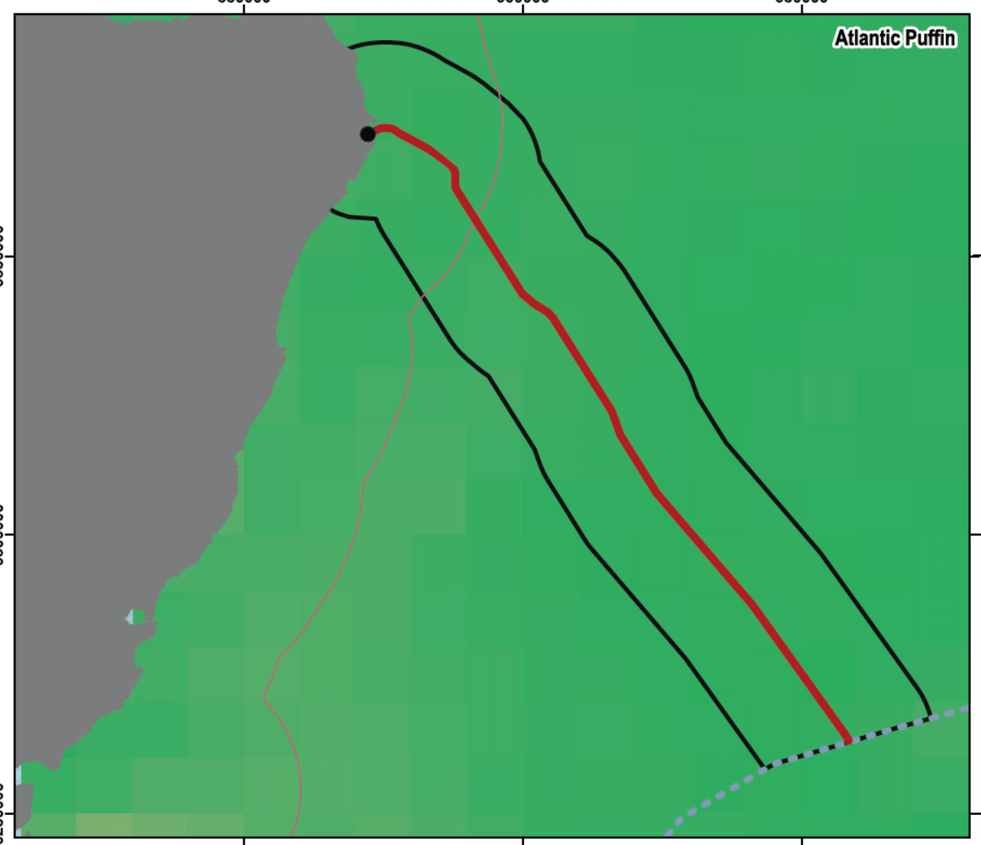

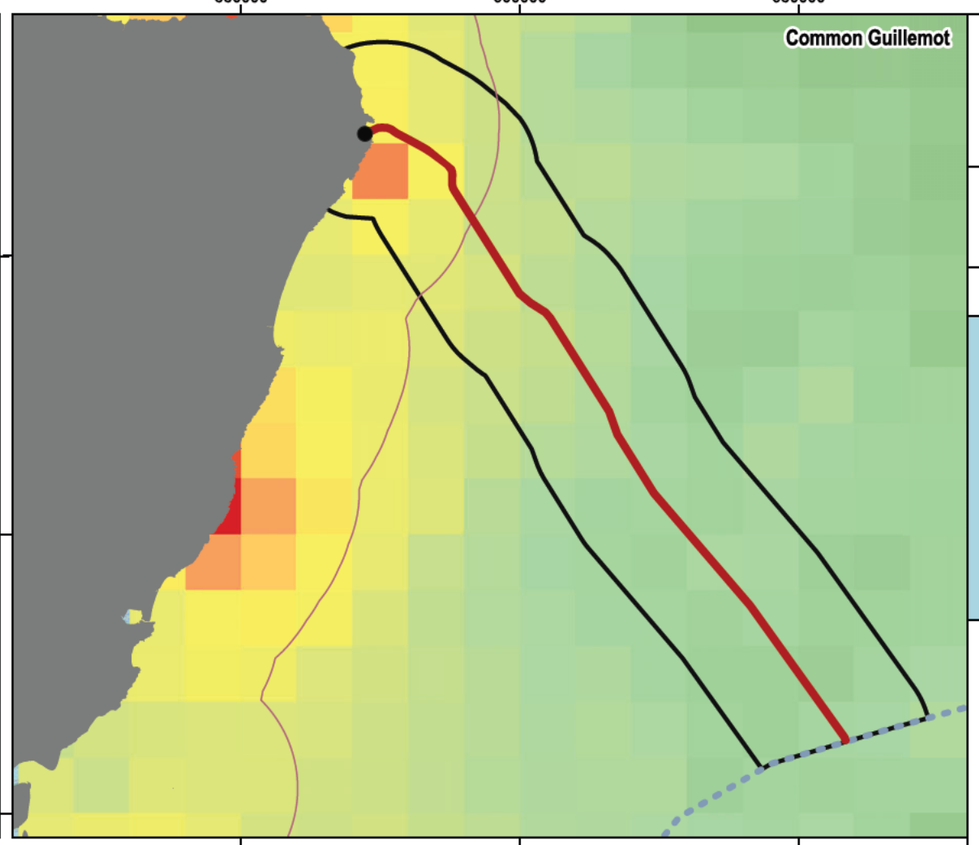

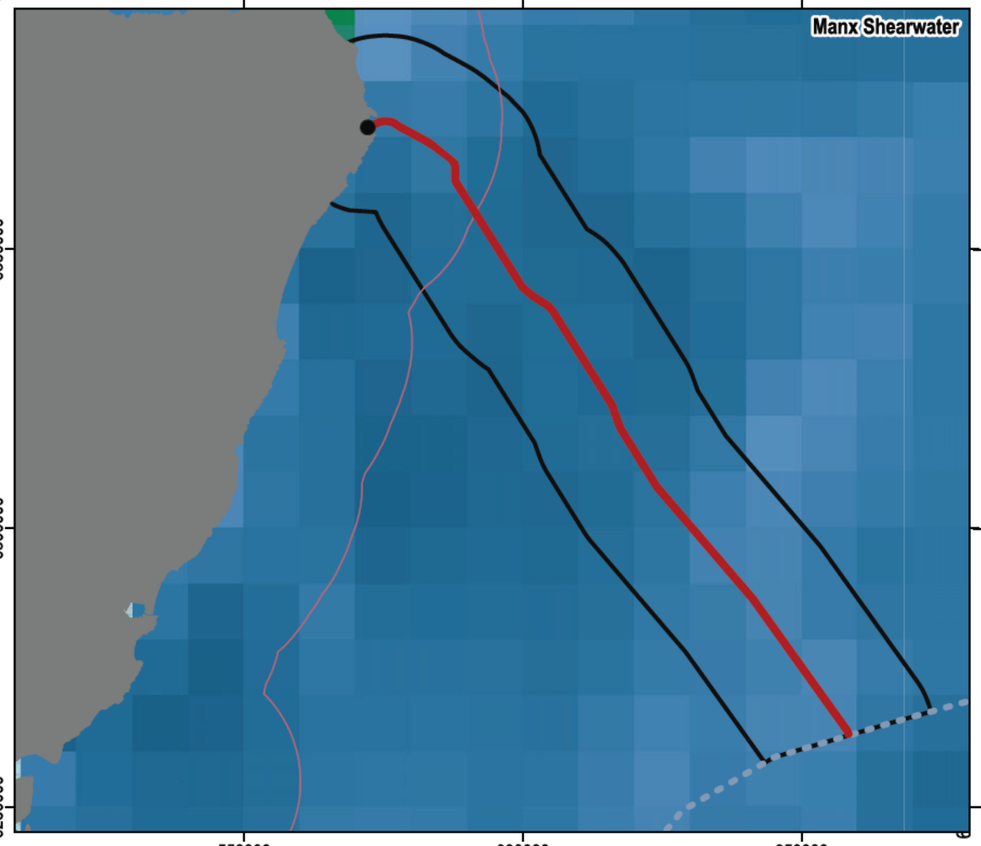

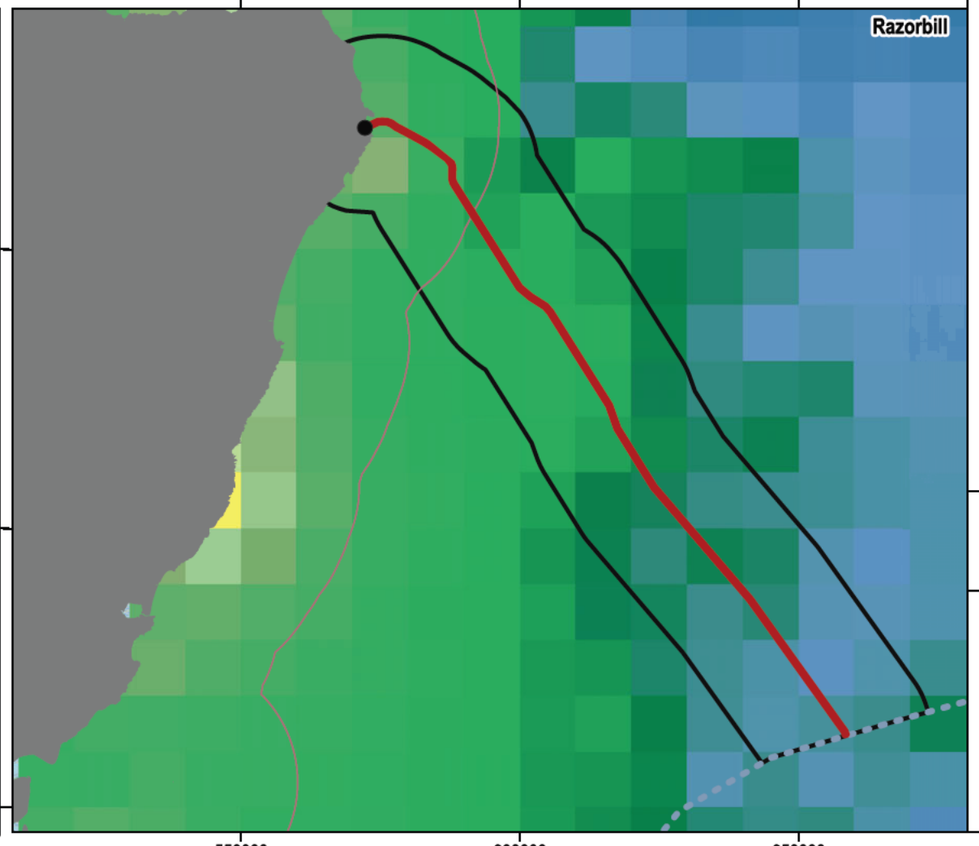

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Predicted Density Of Auks In July, 2019

C01494-EGL3-MEA-BIRD-003-B

Legend

- Red Line Boundary
- Study Area (15km Buffer)
- Sandford Bay Landfall

Bird species predicted density (Waggit et al., 2019) (animals per km²)

- 0-0.04
- 0.04
- 0.06
- 0.08
- 0.10
- 0.50
- 1.00
- 2.00
- 3.00
- Above 4.00
- Scottish Adjacent Waters
- 12NM Limit

0 20 40 60 KM

0 10 20 30 NM

N

Date	08/05/2025
Coordinate System	WGS 84 / UTM zone 30N
Projection	Universal Transverse Mercator (UTM)
Unit	meters
Scale at A3	1:1,100,000
Created	JC
Reviewed	AN/EE
Authorised	JDM

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9.4.3.4. Terns, gulls, kittiwakes and gannets

This group includes species of tern, gulls, kittiwakes, petrel and gannets, which aggregate around the UK in inshore and offshore waters. Terns are typically present during spring and autumn migrations and the breeding season, while other species may be found in UK waters year-round. During the breeding season, these birds often form colonies, and sources of anthropogenic disturbance within key foraging areas near these colonies can impact their ability to raise chicks successfully. With the exception of gannets, which are plunge divers, the species in this group are surface feeders, with some also foraging in exposed tidal areas. Their diet includes a variety of marine prey including fish, squid, crustaceans, jellyfish and offal.

This functional group has low to moderate sensitivity to noise and visual disturbances, though some species may be attracted to vessels, possibly due to the availability of fishery discards or offal. Their sensitivity to underwater noise remains unknown. As surface feeders, most species in this group may be affected by increases in suspended solids in the water, which could impair their ability to forage successfully for their prey (van Krutchen & van der Hammen, 2011; Cook & Burton, 2010, both cited in Atterbury *et al*. 2021).

Digital aerial bird surveys from OWFs (Morven and Ossian) within the Study Area, WeBS data collected from the Peterhead Bay and Sandford Bay site between 2017 and 2022 and information on designated sites from NatureScot identified and recorded the following marine birds from this functional group. Species highlighted in **bold** are also features of designated sites within the Study Area:

- Artic skua (*Stercorarius parasiticus*)
- **Black-legged kittiwake**
- **Common tern**
- Great skua (*Stercorarius skua*)
- Lesser black-backed gull
- **Northern fulmar (*Fulmarus glacialis*)**
- **Sandwich tern**
- [redacted]
- Artic tern
- Common gull
- Great black-backed gull
- **Herring gull**
- Little gull
- Glaucous gull
- Northern gannet

Heat maps showing the predicted seasonal distribution of gulls, kittiwakes and gannets along the proposed submarine cable corridor are provided in **Figure 9-3 (Drawing reference C01494-EGL3-MEA-BIRD-004-B)** (January) and **Figure 9-4 (Drawing reference C01494-EGL3-MEA-BIRD-005-B)** (July).

Black Legged Kittiwake

Great Skua

Herring Gull

Lesser Black-Backed Gull

Northern Fulmar

Northern Gannet

550000 600000 650000

6400000 6350000 6300000 6250000

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Predicted Density Of Gulls, Kittiwakes And Gannets In January, 2019

C01494-EGL3-MEA-BIRD-004-B

Legend

- Red Line Boundary
- Study Area (15km Buffer)
- Sandford Bay Landfall

Bird Species Predicted Density (Waggit et al., 2019)

(animals per km²)

- 0.02
- 0.04
- 0.06
- 0.08
- 0.10
- 0.50
- 1.00
- Scottish Adjacent Waters
- 12NM_Limit

0 20 40 60 KM

0 10 20 30 NM

N

Date	08/05/2025
Coordinate System	WGS 84 / UTM zone 30N
Projection	Universal Transverse Mercator (UTM)
Unit	meters
Scale at A3	1:1,300,000
Created	JC
Reviewed	AN/EE
Authorised	JDM

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Black Legged Kittiwake

Great Skua

Herring Gull

Lesser Black-Backed Gull

Northern Fulmar

Northern Gannet

550000 600000 650000

6400000 6350000 6300000 6250000

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Predicted Density Of Gulls, Kittiwakes And Gannets In July, 2019

C01494-EGL3-MEA-BIRD-005-B

Legend

- Red Line Boundary
- Study Area (15km Buffer)
- Sandford Bay Landfall

Bird Species Predicted Density (Waggit et al., 2019)

(animals per km²)

- 0.02
- 0.04
- 0.06
- 0.08
- 0.10
- 0.50
- 1.00
- 2.00
- Scottish Adjacent Waters
- 12NM Limit

0 20 40 60 KM

0 10 20 30 NM

N

Date	08/05/2025
Coordinate System	WGS 84 / UTM zone 30N
Projection	Universal Transverse Mercator (UTM)
Unit	meters
Scale at A3	1:1,300,000
Created	JC
Reviewed	AN/EE
Authorised	JDM

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9.4.4. Protected Species

In Scotland the protection of marine birds is governed by the Wildlife and Countryside Act 1981 and the Conservation (Natural Habitats, & c.) Regulations 1994 which each apply out to 12 NM from the coast (inshore waters) and the Conservation of Offshore Marine Habitats and Species Regulations 2017 which apply in offshore waters from 12 NM to 200 NM. These three pieces of legislation implement the requirements of the European Commission's Birds Directive (Directive 79/409/EEC and later amended by Directive 2009/147/EC). The laws aim to protect all wild birds, their nests and eggs. They divide species into birds that are particularly threatened which are listed in Annex I of the Birds Directive and regularly occurring migratory bird species. A total of 106 bird species listed on the Directive are thought to use UK waters. **Table 9-5** summarises the bird species listed in the Directive which have been recorded in the Study Area and their designation under the Directive:

Table 9-5: Bird species listed in the Birds Directive which have been recorded within the Study Area and their designation

Species Name	Designation	Species Name	Designation
Arctic skua	Migratory	Great skua	Migratory
Arctic tern	Annex I	Herring gull	Migratory
Atlantic puffin	Migratory	Lesser black-backed gull	Migratory
Black-legged kittiwake	Migratory	Little auk	Migratory
Common eider	Migratory	Little gull	Migratory
Common goldeneye	Migratory	Manx shearwater	Migratory
Common guillemot	Migratory	Northern fulmar	Migratory
Common gull	Migratory	Northern gannet	Migratory
Common tern	Annex I	Razorbill	Migratory
European shag	Migratory	Red-breasted merganser	Migratory
Glaucous gull	Migratory	Red-necked grebe	Migratory
Goosander	Migratory	Red-throated diver	Annex I
Great black-backed gull	Migratory	Sandwich tern	Annex I
Great cormorant	Migratory	Sooty shearwater	Migratory

A list of threatened species, including birds, has been collated by the International Union for Conservation (IUCN) (2025), which considers the state of a species on a global and more regional basis. Several species which have been recorded within the Study Area are noted to be 'Near Threatened or Vulnerable' on the IUCN red list, including black-legged kittiwake and Atlantic puffin.

9.4.5. Designated Sites

The proposed landfall lies approximately 82 m west of the Buchan Ness to Collieston Coast SPA; the RLB also overlaps the Buchan Ness to Collieston SPA for 205 m on approach to the proposed landfall. There are a number of neighbouring designated sites within the Study Area. The Buchan Ness to Collieston Coast SPA includes a variety of marine habitats that support breeding bird populations. The area is characterised by varied coastal vegetation on the ledges and the cliff tops include maritime heath, grassland and brackish flushes (NatureScot, 2009).

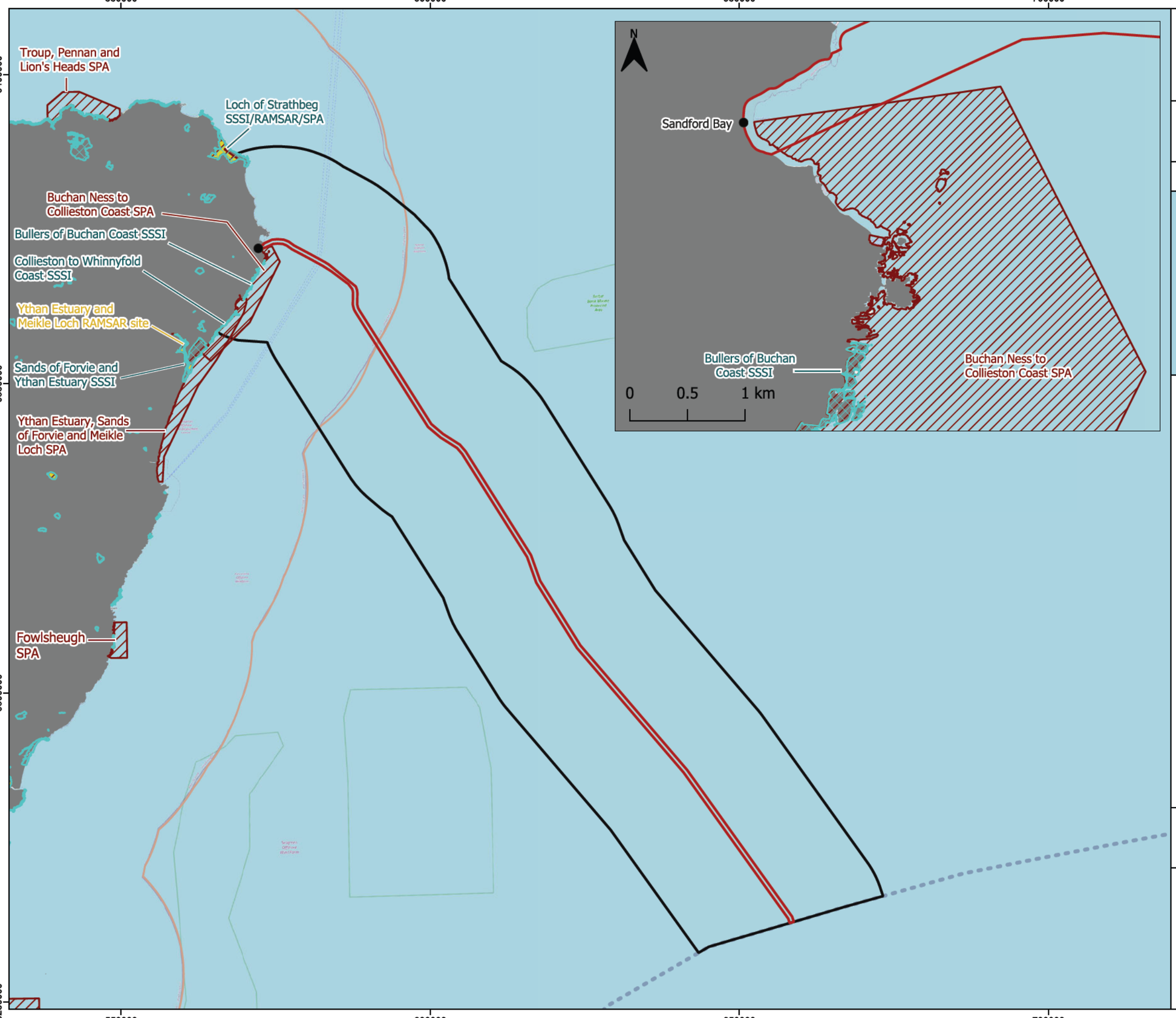
The intertidal and offshore areas in Scotland adjacent to the RLB are extensively covered by designated sites for the protection of bird species and their habitats, including SPAs, Ramsar sites and Sites of Special Scientific Interest (SSSIs). Those sites which fall within the Study Area are illustrated in **Figure 9-5 (Drawing reference C01494-EGL3-MEA-BIRD-006-C).**

Seabirds are highly mobile and transient in nature, therefore is it possible that qualifying seabird features of designated sites not considered below may interact with the Proposed Development.

A HRA Screening, Report to Inform Appropriate Assessment and MPA Screening Assessment was undertaken for the Proposed Development as described in **Appendix 5A: Habitats Regulations Appraisal (HRA) Stage 1 Screening, Appendix 5B: Habitats Regulations Appraisal Stage 2 Report to Inform Appropriate Assessment, and Appendix 5C: Marine Protected Area Assessment Stage 1 Initial Screening**. The purpose of the HRA Screening is to identify any European site that is designated for mobile species that have the potential to travel to the area of the Proposed Development or its likely ZoI and focuses on assessing likely significant effects of the Proposed Development on those designated sites. The HRA Screening identified nineteen relevant designated sites for ornithology based on the foraging ranges of their designated species after Woodward *et al.* (2019) and MIG-Birds

(2022). The purpose of this chapter of the MEAp is to identify the potential impacts of the Proposed Development on the environment in the vicinity within which works would be carried out and therefore focuses on the designated sites which overlap with the Study Area. **Table 9-6** lists the relevant designated sites for this chapter of the MEAp and **Table 9-7** identifies the sensitive periods for each designated feature, for example breeding or over-wintering periods.

The breeding season for seabirds identified within the Study Area varies between species but is generally at its peak between April and August. During this period, seabirds have restricted foraging ranges, this is defined by their distance from their breeding colony. During the non-breeding season, migratory birds may over-winter within proximity of the Proposed Development, although many are limited to the intertidal area or inland. Additionally, some seabirds may enter a flightless moulting period after the breeding season ends, making them highly vulnerable to disturbance.



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Designated Sites in the Scottish Study Area

C01494-EGL3-MEA-BIRD-006-C

Legend

- Sandford Bay Landfall
- Red Line Boundary
- Study Area (15km Buffer)
- Special Protection Area (SPA)
- Site of Special Scientific Interest (SSSI)
- RAMSAR Site
- Scottish Adjacent Waters
- 12NM Limit

0 10 20 30 KM

0 5 10 15 NM

N

Date	19/08/2025
Coordinate System	WGS 84 / UTM zone 30N
Projection	Universal Transverse Mercator (UTM)
Unit	meters
Scale at A3	1:600,000
Created	JC
Reviewed	AN/EE
Authorised	JDM

Table 9-6: Designated sites for ornithological features relevant to the Proposed Development

Designated Site	Designated Features	Conservation Objectives	Proximity to the RLB and potential for designated species to occur within this
Buchan Ness to Collieston Coast SPA [UK9002491]	Breeding seabirds: ▪ Black-legged kittiwake (migratory) ▪ Common guillemot ▪ European shag ▪ Fulmar ▪ Herring gull An internationally important seabird assemblage of more than 20,000 seabirds in the breeding season.	▪ To ensure that the qualifying features of the Buchan Ness to Collieston Coast SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status. ▪ To ensure that the integrity of the Buchan Ness to Collieston Coast SPA is restored in the context of environmental changes by meeting the following objectives for each feature: o The populations of the qualifying features are viable components of the Buchan Ness to Collieston Coast SPA. o The distribution of the qualifying features is maintained throughout the site by avoiding significant disturbance of the species. o The supporting habitats and processes relevant to qualifying species and their prey resources are maintained, or where appropriate restored, at the Buchan Ness to Collieston Coast SPA.	The RLB overlaps with the Buchan Ness to Collieston SPA for 205 m on approach to the proposed landfall. However, the RLB does not overlap with any of the sea cliff habitat components of this site which form important habitat for breeding seabirds. All species noted in the designation of this site have the potential to occur within the RLB.
Ythan Estuary, Sands of Forvie and Meikle Loch SPA	Breeding seabirds (Migratory): ▪ Common tern Eider ▪ Lapwing ▪ [redacted] ▪ Pink-footed goose Redshank (*Tringa totanus*) ▪ Sandwich tern An internationally important seabird assemblage of more than 20,000 seabirds in the breeding season.	▪ To ensure that the qualifying features of the Ythan Estuary, Sands of Forvie and Meikle Loch SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status. ▪ To ensure that the integrity of the Ythan Estuary, Sands of Forvie and Meikle Loch SPA is restored in the context of environmental changes by meeting the following objectives for each feature: o The populations of the qualifying features are viable components of the Ythan Estuary, Sands of Forvie and Meikle Loch SPA. o The distribution of the qualifying features is maintained throughout the site by avoiding significant disturbance of the species. o The supporting habitats and processes relevant to qualifying species and their prey resources are maintained, or where appropriate restored, at the Ythan Estuary, Sands of Forvie and Meikle Loch SPA.	The Ythan Estuary, Sands of Forvie and Meikle Loch SPA is approximately 8.0 km to the south of the RLB. The RLB is within the foraging range of common eider and sandwich tern (Scottish National Heritage, 2016; NatureScot, 2023).

Designated Site	Designated Features	Conservation Objectives	Proximity to the RLB and potential for designated species to occur within this
Loch of Strathbeg SPA	Breeding seabirds (Migratory): ▪ Teal ▪ Greylag goose ▪ Pink-footed goose ▪ Barnacle goose (*Branta leucopsis*) ▪ Goldeneye Whooper swan (*Cygnus cygnus*) ▪ Sandwich tern An internationally important seabird assemblage of more than 30,000 seabirds in the non-breeding season.	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 the 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	The Loch of Strathbeg SPA is approximately 13.9 km north-west of the RLB at its closest point. The RLB is within the core foraging ranges of greylag geese, pink-footed geese, barnacle geese and Sandwich tern (Scottish National Heritage, 2016).
Loch of Strathbeg Ramsar	**Ramsar criterion 5** Internationally important population of waterfowl of over 47,000 birds in the non-breeding season. **Ramsar criterion 6** Species and populations occurring at internationally important levels of: ▪ Pink-footed goose Whooper swan (*Cygnus cygnus*) ▪ Greylag goose	N/A	The Loch of Strathbeg Ramsar is approximately 13.9 km north-west of the RLB at its closest point. The RLB is within the core foraging ranges of pink-footed geese and greylag geese (Scottish National Heritage, 2016).
Bullers of Buchan Coast SSSI	**Notified Natural Features** ▪ Kittiwake ▪ Guillemot *(Uria aalge)* ▪ European shag *(Phalacrocorax aristotelis)*	Objectives for management: ▪ Ensure the continued natural evolution of the system ▪ Maintain the physical and visual integrity of the landforms for educational and research purposes ▪ Maintain populations and overall assemblages of birds ▪ Maintain cliff habitats – crevice and ledge vegetation, heaths, brackish flushes, and maritime grasslands – in favourable condition ▪ Support appropriate public access and the development of interpretation for amenity, education and research purposes	The Bullers and Buchan Coast SSSI is approximately 2.1 km south of the RLB at its closet point. The RLB is within the core foraging ranges of all three species (NatureScot, 2025)

Designated Site	Designated Features	Conservation Objectives	Proximity to the RLB and potential for designated species to occur within this
Collieston to Whinnyfold Coast SSSI	**Notified Natural Features** ▪ Kittiwake ▪ Guillemot *(Uria aalge)* ▪ Fulmar *(Fulmarus glacialis)* ▪ Razorbill *(Alca torda)*	Objectives for management: ▪ To maintain the important maritime cliff and cliff-slope habitats including any associated flora and fauna ▪ To maintain the visibility of and access to the rock outcrops for educational and research purposes ▪ To support appropriate public access and the development of interpretation for amenity, education and research purposes as compatible with the first two objectives	Collieston to Whinnyfold SSSI is located on the east coast of Aberdeenshire approximately 11 km south of the RLB at its closet point. The RLB is within the core foraging ranges of all four species (NatureScot, 2024)
Loch of Strathbeg SSSI	**Notified Natural Features** ▪ Breeding bird assemblage ▪ Pink-footed goose, non-breeding ▪ Greylag goose, non-breeding ▪ Whooper swan (*Cygnus cygnus*), non-breeding ▪ Goldeneye, non-breeding	Objectives for management: ▪ To maintain the open standing water habitat and associated flora and fauna ▪ To maintain current extent and diversity of fen and swamp habitats along with zonal transitions ▪ To maintain the physical and visual integrity of the coastal landforms and associated habitats ▪ To maintain existing visitor facilities for encouraging public awareness and understanding of the site	The Loch of Strathbeg SSSI is located on the north-east coast of Scotland, 13.9 km north of the RLB at its closet point. The RLB is within the core foraging ranges of pink-footed geese and greylag geese (NatureScot, 2024a)

Table 9-7: Species seasonality for designated sites

Key	Annex I Species			Non-Annex I species	

Protected species	Site(s)	Sensitivity	Seasonality											
			J	F	M	A	M	J	J	A	S	O	N	D
Common eider	Ythan Estuary, Sands of Forvie and Meikle Loch SPA	Non-breeding												
Common tern	Ythan Estuary, Sands of Forvie and Meikle Loch SPA	Breeding												
Fulmar (*Fulmarus glacialis*)	Buchan Ness to Collieston Coast SPA, Collieston to Whinnyfold Coast SSSI	Breeding												
Goldeneye	Loch of Strathbeg SPA, SSSI and Ramsar	Non-breeding												
Greylag goose	Loch of Strathbeg SPA, SSSI and Ramsar, Meikle Loch and Kippet Hills SSSI	Non-breeding												
Guillemot	Buchan Ness to Collieston Coast SPA, Bullers to Buchan Coast SSSI, Collieston to Whinnyfold Coast SSSI	Breeding												
Herring gull	Buchan Ness to Collieston Coast SPA	Breeding												
Kittiwake	Buchan Ness to Collieston Coast SPA, Bullers to Buchan Coast SSSI, Collieston to Whinnyfold Coast SSSI	Breeding												
[redacted]	Ythan Estuary, Sands of Forvie and Meikle Loch SPA	Breeding												
Pink-footed goose	Ythan Estuary, Sands of Forvie and Meikle Loch SPA, Loch of Strathbeg SPA, SSSI and Ramsar, Meikle Loch and Kippet Hills SSSI	Non-breeding												
Sandwich tern	Ythan Estuary, Sands of Forvie and Meikle Loch SPA, Loch of Strathbeg SPA	Breeding												
Shag	Buchan Ness to Collieston Coast SPA, Bullers to Buchan Coast SSSI	Breeding												
Svalbard barnacle goose (*Branta leucopsis*)	Loch of Strathbeg SPA and Ramsar	Non-breeding												
Teal	Loch of Strathbeg SPA and Ramsar	Non-breeding												
Razorbill	Collieston to Whinnyfold Coast SSSI	Breeding												
Redshank	Ythan Estuary, Sands of Forvie and Meikle Loch SPA	Non-breeding												
Whooper swan	Loch of Strathbeg SPA, SSSI and Ramsar	Non-breeding												

9.5. Potential Pressure Identification and Zone of Influence

9.5.1. Spatial Scope

The Study Area for intertidal and offshore ornithology includes the RLB plus an additional 15 km buffer on either side as described in **Section 9.1.1**.

9.5.2. Temporal Scope

The temporal scope of the assessment of intertidal and offshore ornithology is consistent with the period over which the Proposed Development would be carried out. It assumes construction of the Proposed Development would commence at the earliest 2028 with the latest possible completion by 2033. Within this window, construction (including pre-lay activity) is expected to take 55 months. Operation would commence in 2033 with periodical maintenance required during the operational phase. It is assumed that maintenance and repair activities could take place at any time during the life span of the Proposed Development.

The Proposed Development is expected to have a life span of more than 40 years. If decommissioning requires cessation of operation and removal of infrastructure at this point in time, then activities and effects associated with the decommissioning phase are expected to be of a similar level to those during the construction phase, albeit with a lesser duration of two years. Acknowledging the complexities of completing a detailed assessment for decommissioning works up to 40 years in the future, based on the information available, the Applicant has concluded that impacts from decommissioning would be no greater than those during the construction phase. Furthermore, should decommissioning take place it is expected that an assessment in accordance with the legislation and guidance at the time of decommissioning would be undertaken and a separate Marine Licence would be sought for decommissioning activities.

9.5.3. Identification of Pressure-Receptor Pathways

Table 9-8 provides a summary of the receptors scoped into the assessment and the potential impacts assessed. The scoping 'in' of these impacts are based on the potential impacts identified within the intertidal and offshore ornithology chapter of the MEA Non-Statutory Scoping Report. This took a precautionary approach whereby some impacts were scoped 'in' to the assessment if a strong evidence base to scope the impact 'out' was lacking. Wider consultation then concluded the impacts to be scoped in/out, such as the potential for impacts on habitats supporting prey species as a result of 'Temporary increase and deposition of suspended sediments,' which has been scoped back 'in' to the assessment. This impact was originally scoped 'out' due to evidence from Chapter 6 Marine Physical Environment of the MEA Non-Statutory Scoping Report which suggested that any sediment plumes would be rapidly dissipated as a result of natural current flow. In addition, it was considered that the footprint of the Proposed Development would be sufficiently narrow such that a relatively small area of the seabed would be affected at any one time. Stakeholders requested that the pressure-receptor pathway be scoped 'in' to the assessment.

Table 9-8: Justification for the zone of influence assigned to potential impacts scoped in for ornithological receptors.

Potential impact	Activity	Project stage	Receptor	Zone of Influence	Reason for Consideration
Temporary increase and deposition of suspended sediments	Boulder clearance, Pre-Lay Grapnel Run (PLGR), pre-sweeping of sand waves. Horizontal directional drilling (HDD) duct excavation. Cable burial and trenching. Deposit of external cable protection.	All phases	Divers, grebes and mergansers	15 km	Precautionary maximum ZoI based on the maximum tidal excursion that encompasses the potential impact pathway from increased sediment concentrations which could affect diving birds' ability to seek prey. All direct impacts would be spatially limited and confined to within 15 km of the RLB in reflection of this. There is the possibility that species from distant SPAs may be foraging within or passing through the ZoI so may also be affected. The 15 km buffer is sufficient to cover the potential effects of displacement of diving birds as well as potential effects arising from changes in turbidity.
			Seaducks, geese and swans		
			Terns, gulls, kittiwakes and gannets		
			Auks		
Changes in distribution of prey species	Deposit of external cable protection.	Construction Operation & Maintenance	All species	15 km	Changes in prey availability is a potential indirect impact which could arise during any phase of the project life cycle. Activities that lead to temporary or permanent habitat loss (such as seabed preparation, cable burial, deposition of cable protection) affect seabed habitats which could affect the availability of prey. Disturbance of the seabed during the spawning season for species with a demersal life stage (such as sandeel and

Potential impact	Activity	Project stage	Receptor	Zone of Influence	Reason for Consideration
					herring) and temporary or permanent habitat loss for such species could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species for birds. Other impacts on fish species such as changes in underwater noise, EMF, thermal changes could also affect the distribution and availability of prey.
Visual/physical disturbance or displacement	Presence of project vessels and equipment.	All phases	Divers, grebes and mergansers	4 km	The presence of project vessels and equipment can create visual stimuli which can evoke a disturbance response in mobile species such as seabirds. The magnitude of the impact will depend on the nature and scale/intensity of the activity (e.g., location and timing of operation). Diving species such as red-throated diver, European shag and seaducks, such as common eider and goldeneye, and waders are recognised as being highly sensitive to noise and visual disturbance, such as that caused by vessel traffic (Atterbury *et al.*,2021). Once flushed, they may not rapidly resettle. Therefore, SNCBs recommend a 4 km precautionary approached displacement buffer for divers and seaducks (MIG-BIRD 2022). Disturbance of waders is more likely to occur in the intertidal zone (Fliessbach, et al., 2019), although this is unlikely given the Proposed Development would use HDD to avoid disturbance of the intertidal area.
			Seaducks, geese and swans		
			Harriers and Waders		
			Auks		

9.5.4. Guidance

The intertidal and offshore ornithology assessment has been undertaken in accordance with relevant guidance and has been compiled in accordance with professional standards. The guidance and standards which relate to this assessment are:

- NatureScot conservation advice for designated sites;
- Habitats regulations assessments: protecting a European site (HM Government 2023);
- Natural England Offshore Wind cabling ten years' experience and recommendations (Natural England 2018);
- Joint SNCB Interim Displacement Advice Note (2022) (MIG-BIRD 2022);
- A Guide to Best Practice for Watching Marine Wildlife (NatureScot 2017); and
- The Scottish Marine Wildlife Watching Code (NatureScot 2017a).

9.6. Key Parameters for Assessment

9.6.1. Realistic Worst-Case Design Scenario

The assessment has followed the Rochdale Envelope approach as outlined in **Chapter 3: Project Description**. The assessment of effects has been based on the description of the Proposed Development and parameters outlined in **Chapter 3: Project Description**. However, where there is uncertainty regarding a particular design parameter, the realistic worst-case parameters are provided in **Table 9-9** below with regards to intertidal and offshore ornithology, along with the reasons why these parameters are considered worst-case. The assessment for intertidal and offshore ornithology has been undertaken on this basis. Effects of greater adverse significance are not likely to arise should any other development scenario (e.g., different infrastructure layout within the RLB), to that assessed here, be taken forward in the final design plan, provided the development scenario is within the Rochdale Envelope parameters set out.

It should be noted that Unexploded Ordnance (UXO) clearance is not being sought under the Marine Licence to which this MEAp relates. In the event that clearance is identified as necessary, a separate Marine Licence would be sought and assessment would be carried out in support of that Marine Licence application. As such UXO clearance has not been assessed in this MEAp.

Table 9-9: Worst-case assumptions

Impact Pathway	Construction	Operation	Decommissioning	Most sensitive location or scenario
Temporary habitat loss/ seabed disturbance	4.35 km² – width of the PLGR 30 m x 145 km	To be determined if maintenance is required	Similar footprint as is disturbed during construction and operation combined.	Prey habitat
Permanent habitat loss from the deployment of cable protection	0.135 km² (including 0.035 km² from infrastructure crossings)	To be determined if maintenance is required	No new deposits but assumes cable protection remains in place.	Prey habitat
Changes in prey	Changes in prey considers the combination of all impact pathways and the impact assessment from **Chapter 8: Fish and Shellfish,** and is therefore not considered specifically in this table.			N/A
Temporary increase and deposition of suspended sediments	Project specific data presented in **Chapter 6: Marine Physical Processes,** concludes coarse sediment would settle within the RLB and fine sediment particles can travel up to 13.6 km and would cause light surface smothering of <1 millimetre (mm).			Prey habitat Visual foragers
Visual and/or physical disturbance or displacement due to the presence of vessels associated with the Proposed Development	**Chapter 3: Project Description** states that a condition of the Marine Licence could be for the construction contractor to confirm the number and types of vessels to be used during all phases of construction. It is assumed that the worst-case scenario would be a maximum of seven vessels present within Sandford Bay, adjacent to the Buchan Ness to Collieston Coast SPA during the cable pull-in.			Divers, grebes and mergansers Seaducks, geese and swans Harriers and waders Auks

9.7. Embedded Mitigation Measures

As set out in **Chapter 4: Marine Environmental Appraisal Scope and Methodology**, embedded mitigation measures form part of the design for which consent is sought and can be characterised as 'design measures' or 'control and management measures.' This embedded mitigation would be implemented as part of the Proposed Development and secured by way of condition in the Marine Licence as relevant.

Several management plans would be provided to discharge Marine Licence conditions prior to the start of construction. These would include a Construction Environmental Management Plan (CEMP), Marine Pollution Contingency Plan (MPCP), Marine Mammal Mitigation Plan (MMMP) and a Fisheries Management and Mitigation Plan (FMMP). These documents would outline measures to be implemented to comply with legislation, such as the International Convention for the Prevention of Pollution from Ships (MARPOL) and the Safety of Life at Sea (SOLAS) convention, and the mitigation commitments proposed within this MEAp (Embedded Mitigation Measure OMT08). An Outline CEMP is provided as **Appendix 3B: Outline Construction Environmental Management Plan**. In addition, design measures identified through the MEA process have been applied to avoid or reduce potential significant effects as far as possible.

Table 9-10 outlines the embedded mitigation measures that would be implemented for the Proposed Development that have been considered by the intertidal and offshore ornithology MEA.

Table 9-10: Embedded mitigation measures used for intertidal and offshore ornithology assessment

Potential Changes and Effects	Receptor	Embedded mitigation measures
Visual and physical disturbance or displacement	Waders	OMT01 - Intertidal zone would be crossed by HDD to avoid disturbance to surface sediments and habitats.
	Divers and seaducks	OO01 - Existing shipping lanes would be utilised for vessel transiting routes to avoid additional disturbance to seabirds, where practicable.
	Divers	OO02 - Vessel operators would be made aware of the importance and sensitivity of relevant species to disturbance. Vessels would avoid rafting birds and areas with high densities of birds, where practicable.
	All species	OO03 - Artificial lighting on vessels would be directional and only used when necessary, noting that health and safety requirements would need to be met for safe working practices.
	All species	OO04 - All vessels used during the course of the licensed activity would adhere to the Scottish Marine Wildlife Watching Code.
Changes in distribution of prey species	All species	MPP01 - Detailed route development and micro-routeing would be undertaken within the RLB, informed by pre-construction data evaluation to avoid or minimise localised engineering and environmental constraints.
	All species	OMT03 - The intention would be to bury the cables in the seabed, except in areas where burial is not possible e.g., where ground conditions do not allow burial or at infrastructure crossings.
	All species	OMT04 - Cable protection would only be installed where considered necessary for the safe operation of the Proposed Development. This includes the repair of cables due to accidental damage, where depth of lowering is not achieved and at infrastructure crossings.
	All species	OMT05 - Where possible, cable protection materials would be selected to match the environment (e.g., when cables are installed in areas of cobbles or other natural rock features, rock of similar diameter and material as the receiving environment should be used).

9.8. Significance Assessment

The generic project-wide approach to the assessment methodology is set out in **Chapter 4: Marine Environmental Appraisal Scope and Methodology**. The criteria for characterising the value and sensitivity and magnitude for intertidal and offshore ornithology receptors are outlined in **Table 9-11** and **Table 9-12** respectively. The significance of an effect, either adverse or beneficial, has been determined using a combination of the magnitude of the impact and the sensitivity of the receptor based on a matrix approach (**Table 9-13**) which is used throughout all topic areas to ensure a consistent approach within the assessment. This assessment has used publicly available survey data, background scientific literature, professional judgement and knowledge of receptors behaviour to determine the level of impact.

The assessment of sensitivity has been made with consideration of the vulnerability of the receptor to an impact and its ability to recover and adapt. Vulnerability can differ between different groups and species of bird, and will also vary depending on the impact pathway. For example, certain species of diver (e.g., red-throated diver) and seaduck (e.g., common scoter) are more sensitive to visual disturbance than terns and gulls, whilst sensitivity to temporary changes in suspended sediment concentrations typically only affects species which plunge dive for prey (e.g., red-throated diver, tern species), with species such as waders not considered sensitive.

It should be noted though, that species identified as present within the Study Area which are protected by international and national legislation, are of very high importance. However, if baseline studies and species characteristics show that the species is only rarely or occasionally present in the Study Area, or if it is not sensitive to the impact pathway, professional judgement may justify lowering its sensitivity category. Where such assessments have been made, justification has been provided.

The assessment of magnitude has been made with consideration of the extent of the area impacted, the duration and frequency of the impact and the scale of the change. The magnitude criteria in **Table 9-12** has been simplified from that provided at non-statutory

scoping based on advice received from SNCBs on the application for development consent for the English elements of the EGL 3 Project.. The magnitude criteria has been used throughout the assessments with justified professional judgement applied to assign impacts to an appropriate magnitude classification.

Table 9-11: Criteria for characterising the sensitivity of receptors

Sensitivity	Definition
High	Receptor is of very high or high importance and rarity, international or national scale. Receptor has low tolerance to change, i.e., recovery will take longer than 10 years following the cessation of activity or will not occur. The receptor is a protected feature of an internationally designated site (e.g., SPA) and the licensable activity is taking place during a sensitive season.
Medium	Receptor is of medium importance and rarity, regional scale. Receptor has intermediate tolerance to change i.e., recovery to pre-impact conditions is possible between 5 and 10 years. The receptor is a protected feature of a nationally designated site (e.g., Nature Conservation Marine Protected Area (NCMPA), SSSI).
Low	Receptor is of low importance and rarity, local scale. Receptor has high tolerance to change with recovery to pre-impact conditions between 1 and 5 years. Common and widespread habitats/species of no specific conservation value.
Negligible	Receptor is common or widespread. The receptor is tolerant to change with no effect on its character. Recovery expected to be relatively rapid, i.e., less than approximately six months following cessation of activity. Artificial, highly modified, and/or degraded benthic habitats/species of low/no conservation interest.

Table 9-12: Criteria for characterising the magnitude of an impact

Magnitude	Definition
High	Impacts last >15 years on a regional or population/habitat level or are a major alteration to key elements/features of the baseline condition such that post-impact baseline character will be fundamentally changed. Natural recruitment will not return the population/habitat to the baseline condition.
Medium	Impacts are of medium term (7-15 years) duration on a local level (wider than project footprint) or alter an element of the baseline conditions such as that post-impact the damage to the baseline is above that experienced under natural conditions but with no permanent effect on integrity.
Low	Impacts are temporary (<1 year) or short term (1-7 years) in duration on a site-specific level. Impacts limited to discrete areas within the footprint of the Proposed Development. Negligible contribution to cumulative effects.
Negligible	Very little or no detectable change from baseline conditions, for any length of time. Disturbance is within the range of natural variability or is a highly localised impact such that the alteration to key characteristics and features of the particular receptor does not affect ecological function. Negligible contribution to cumulative effects.

Table 9-13: Significance matrix

		Sensitivity			
		High	**Medium**	**Low**	**Negligible**
Adverse magnitude	**High**	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Minor
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Minor	Minor	Negligible	Negligible
Beneficial magnitude	**Negligible**	Minor	Minor	Negligible	Negligible
	Low	Moderate	Minor	Negligible	Negligible
	Medium	Major	Moderate	Minor	Negligible
	High	Major	Major	Moderate	Minor

9.8.1. Temporary Increase and Deposition of Suspended Sediments – All Phases

This impact relates to changes in water clarity (or turbidity) due to changes in suspended sediment concentrations (SSC). Sediment suspension is caused by activities that penetrate the seabed or that abrade surface layers. This would include construction activities such as seabed preparation works (including pre-sweeping of sand waves) and cable burial, repair and maintenance works such as cable repair and burial and placement of remedial cable protection, and during decommissioning cable removal. The SSCs at a particular location depend on the activity, hydrological conditions and the sediment particle size distribution.

Although several activities would create minor elevations in suspended sediment concentrations, cable burial and pre-sweeping of sandwaves would cause the largest temporary sediment plume. Certain diving species (such as terns, little gull, red-throated diver, European shag) are sensitive to changes in water clarity. These species are generally visually foraging birds, which depend on clear water to identify and catch potential prey (van Kruchten and van der Hammen., 2011). The preliminary assessment below considers the significance of the impact on the key functional groups likely to be affected.

The Feature Activity Sensitivity Tool (FeAST) provides the following benchmark for the pressure 'water clarity changes': A change in rank on the Water Framework Directive scale for one year. For Sandford Bay this would equate to a change from clear (SSC <10 mg/l) to intermediate (SSC 10-100 mg/l) for one year. **Chapter 6: Marine Physical Processes** concludes that in the near-field (within 10m) sediment disturbance form construction activity would result in very high SSC, which would last whilst the activity persists. A large portion of the sediment would settle back onto the seabed with the RLB. However, once the activity ceases, sediment would settle out of suspension and SSC would rapidly drop returning to pre-impact levels within hours. The benchmark for the pressure would therefore not be reached. The **magnitude** of the impact for all species has therefore been assessed as **low**, given the small spatial scale of the impact, and the short duration of changes in water clarity.

The following preliminary assessment has been sub-divided to consider each receptor, providing an assessment that provides justification for the assigned receptor sensitivities and the magnitude of the impact. A summary of the assessment conclusions is provided in **Table 9-14** for ease of reference. Where receptors share a common sensitivity, magnitude and significance of effect they have been grouped together.

Table 9-14: Summary of assessment conclusions for temporary increase and deposition of suspended sediments

Receptor	Sensitivity	Magnitude	Significance of Effect
All functional groups	Medium	Low	Minor

9.8.1.1. Divers, grebes and mergansers

Divers, grebes and mergansers are thought to be sensitive to temporary changes in SSCs due to their reliance on underwater visibility for foraging, but there is little evidence to determine whether the sensitivity is high or low in the specific area of the RLB. Cook and Burton (2010) note that they are more sensitive than auks and gannets. Price and Thompson (2006) observed Great northern diver (common loon) along a Maryland estuary in North America. They concluded that loon dove for longer periods in areas with higher water clarity, but no relationship was identified between water clarity and distribution of wintering loon. The FeAST tool does not provide any sensitivity assessment for diving species but Natural England's advice on operations for the Falmouth Bay to St Austell Bay SPA which is designated for diving species indicates that Slavonian grebe and black-throated diver are of medium sensitivity to changes in SSCs and that great northern diver are of low sensitivity; however the confidence in these conclusions is low (Natural England, 2025b).

As discussed in **Section 9.4.3.1**, baseline information indicates that few species from this functional group have been consistently recorded within the Study Area, with the exception of European shag. Red-throated diver are not a qualifying interest feature of any of the designated sites within the Study Area, and only five individuals have been recorded over the last five years of intertidal surveys (2017/18 – 2021/22). This suggests that the Study Area may not be of importance for red-throated diver.

European shag are a qualifying feature of the Buchan Ness to Collieston Coast SPA, which the RLB crosses for 205 m and is immediately adjacent to the proposed landfall. European shag are benthic feeders whose primary food source is sandeel. Though there may be a temporary reduction in visual clarity resulting from an increase in SSCs during construction, maintenance and/or decommissioning works, this would be temporary, of a short duration and over a localised footprint. European shag typically forage within a radius of 5.9 km from their breeding colonies, although they have a maximum range of 17 km (Natural England 2012). In addition, there is sufficient alternative foraging habitat available within the flight range of European shag.

The foraging range of this functional group is <35 km, they are unlikely to be present within the majority of the RLB. The Proposed Development is largely sited >35 km from the coastline.

Acknowledging the sensitivity of divers, grebes and mergansers to increases in SSCs, the **sensitivity** of this receptor has been assessed as **medium.** The **magnitude** of the impact has been assessed as **low** due to the relatively large foraging range of European shag, the limited duration of the works and the availability of alternative habitats within proximity of the Proposed Development.

The **significance** of the effect has been assessed as **Minor** and **Not Significant** during all phases of the Proposed Development.

9.8.1.2. Seaducks, geese and swans

For the most part the species identified within the Study Area in this functional group are surface or grazing feeders and restricted to within the first 40 km of the Study Area. However, some diving sea duck species such as common eider, goldeneye and goosander are diving ducks which specialise in foraging for shellfish, crustaceans small fish and polychaetes. Common eider and goldeneye are qualifying interest features of designated sites within the Study Area and the RLB is within their foraging range. There is little information of the species' sensitivity to changes in water clarity but as diving visual foragers it is assumed that reduced water clarity would make it more difficult for species to locate prey. The **sensitivity** of this receptor has been assessed as **medium.** The **magnitude** of the impact has been assessed as **low** because of the limited duration of the works and the availability of alternative habitats within proximity of the Proposed Development.

The **significance** of the effect has been assessed as **Minor** and **Not Significant** during all phases of the Proposed Development.

9.8.1.3. Terns, gulls, kittiwakes and gannets

Thirteen different species within this functional group have been identified within the Study Area. However, the sensitivity to the impact of temporary changes in suspended sediments (change in water clarity) varies between species. Natural England's advice for SPAs in English waters classifies tern species as having a high sensitivity to changes in water clarity, kittiwake as medium sensitivity and gannet as low sensitivity. Sensitivity within gull species varies depending on their feeding habitats with little gull exhibiting high sensitivity. Foraging distances range from 5-35 km for tern species and 509 km for gannet, 300 km for kittiwake and up to 236 km for gull species.

Common tern, Sandwich tern and [redacted] are qualifying features of the Ythan Estuary, Sands of Forvie and Meikle Loch SPA, which is located approximately 8.2 km to the south of the RLB. [redacted] have a foraging range of approximately 5 km, and it is therefore unlikely that birds from the Ythan Estuary, Sands of Forvie and Meikle Loch SPA will be present within the Study Area. There is the potential for common tern and Sandwich tern to forage within the Study Area, as their foraging range is approximately 30 km. Tern species are highly vulnerable to changes in turbidity as vision plays an important role in the species' foraging capability. A report by Brenninkmeijer *et al.* (2002) states that the food intake rate for [redacted] and Sandwich tern was lower in the most turbid waters compared to clearer waters at their study site in West Africa.

Kittiwake are a qualifying feature of the Buchan Ness to Collieston Coast SPA, which is crossed by the RLB. Though kittiwake may use inshore waters for loafing or preening (NatureScot, 2024b), they tend to use waters further offshore for foraging, as outlined above have a medium sensitivity to changes in water clarity.

As different areas of the RLB would be used by different species depending on their foraging range and distance from the coastline the assessment has been based on tern species which have the highest sensitivity to increases in SSCs. Although tern species have a high sensitivity to a reduction in water clarity the **sensitivity** of the functional group has been assessed as **medium**. The Proposed Development is largely offshore and there is sufficient alternative foraging habitat that the receptor would be able to tolerate the localised temporary change within the RLB. The **magnitude** of the impact has been assessed as **low** because of the limited duration of the works and the availability of alternative habitats within proximity of the Proposed Development.

The **significance** of the effect has been assessed as **Minor** and **Not Significant** during all phases of the Proposed Development.

9.8.1.4. Auks

Species from this functional group such as common guillemot, Atlantic puffin are common across the Study Area. As these are species that feed within the water column they may be sensitive to changes in water clarity. Foraging ranges of the functional group can exceed 100 km suggesting they forage over wide areas from breeding colonies. As an example of the species within the group, common guillemot, a qualifying species of the Buchan Ness to Collieston Coast SPA, which is crossed by the RLB, have a foraging range of 95.2 km (based on mean-max foraging ranges ± standard deviation) (Woodward *et al.,* 2019). Guillemot feed on small schooling fish such as sandeel and juvenile herring (NatureScot, 2024b) and will also forage for molluscs, squid and crustaceans. They therefore have the potential to be affected by increases in turbidity due to changes in SSCs. However, given their wide feeding preferences and their large foraging range they can access extensive alternative foraging grounds. The **sensitivity** of the functional group to the impact has been assessed as **medium**. The **magnitude** of the impact has been assessed as **low** because of the relatively large foraging range of common guillemot, the limited duration of the works and the availability of alternative habitats within proximity of the Proposed Development.

The **significance** of the effect has been assessed as **Minor** and **Not Significant** during all phases of the Proposed Development.

9.8.2. Changes in Distribution of Prey Species – Construction and Operation

This assessment focuses on changes in the distribution of prey species. This could occur as an indirect result of permanent habitat loss from the deposit of external cable protection during construction. However, other impacts on prey species such as underwater noise, temporary increase and deposition of suspended sediments and sediment heat change could also combine with temporary and permanent habitat loss to lead to a change in prey availability.

The decommissioning phase has been scoped out of the assessment as described in the MEA Non-Statutory Scoping Report.

Marine birds feed on a variety of prey species and some can travel great distances to forage. Conversely, they may also have specific habitat preferences which limit their foraging ranges. Seabirds such as gannets and auks typically forage further offshore, feeding on plankton and fish that live in the water column, whereas gulls and terns tend to remain closer to shore (OSPAR, 2017). Divers, mergansers and grebes feed on small fish in shallow inshore waters, and some diving ducks and gulls forage for benthic invertebrates such as bivalves. Fish species such as Atlantic herring and sandeel are known to be of particular importance as a prey species for a variety of marine fauna, including seabirds. Sandeel in particular are widely recognised as a critical food source for many seabirds, fish and marine mammals (Frederiksen *et al.,* 2006; Wanless *et al.,* 2008; Reach *et al.,* 2024) and have been identified as the most important forage fish in the North Sea.

Activities that lead to temporary or permanent habitat loss affect seabed habitats which in turn could affect the availability or distribution of prey. Significant or widespread disturbance of the seabed during the spawning season for species with a demersal life stage (such as sandeel or herring) could have a direct impact on the spawning biomass for a specific year group, leading to a shortage of prey species for birds in subsequent years.

If fish species are avoiding an area, then birds may potentially be required to travel greater distances to locate prey, with an associated energetic cost. For example, loss of a preferred prey close to breeding colonies would increase the amount of time birds are at sea foraging or lead to lower food availability for chick survival. The maintenance of supporting habitats and processes to ensure the provision of prey species for birds is therefore a key consideration in maintaining the favourable conservation status of the individual species.

With regards to fish and shellfish prey species, **Chapter 8: Fish and Shellfish** considered a number of impact pathways during construction on marine species including herring, sandeel and shellfish. The impact pathways considered as part of the MEA include:

- Temporary habitat loss **(Section 8.8.1)**
- Permanent habitat loss **(Section 8.8.2)**
- Temporary increase and deposition of suspended sediments **(Section 8.8.3)**
- Electromagnetic changes and barriers to species movement (**Section 8.8.4**)
- Temperature increase (**Section 8.8.5**)

Herring, sandeel and shellfish were identified as having a value and sensitivity of medium for all impact pathways assessed due to their specific habitat requirements and/or low mobility, making them vulnerable to seabed disturbance. The magnitude of the impacts was assessed as low based on the highly localised, temporary nature of the construction works. The assessment concluded that the significance of all effects on fish and shellfish receptors was Minor and Not Significant. In the absence of any environmentally significant impact on prey species, on the basis of professional judgement and experience it can be concluded that there will be no discernible effect on seabird species.

In conclusion, the **significance** of the effect has been assessed as **Negligible** and **Not Significant** for all intertidal and offshore ornithology species.

9.8.3. Visual/Physical Disturbance or Displacement

Intertidal and marine bird species are mobile in nature and may be able to avoid anthropogenic disturbance. However, individual species react differently to offshore development, with some species actively choosing to avoid sources of disturbance (not returning until sometime later), whilst others show little sensitivity, continuing with their activities. Species sensitivity to disturbance can often depend on the time of year. During specific seasons some species may have limited ability to alter their use of an area. For example, during the chick-rearing period, birds need to return frequently to the colony to feed and care for chicks. Birds can be discouraged from using feeding grounds or be forced further afield to forage if there are regular disturbances. Post-breeding, certain species such as Atlantic puffin are flightless, as they undergo a moult causing them to spend extended periods of time rafting on the sea surface, making them vulnerable to vessel movements. For other species, such as red-throated diver, winter and spring months are the most sensitive period as they remain at sea to forage, making them sensitive to unnecessary flight.

Disturbance may result in the bird choosing to move to continue their activity elsewhere either by swimming or flying away. If the bird is continually disturbed, or they must move a significant distance to find alternative grounds, this can cause the birds to expend additional energy and reduce feeding time to avoid obstacles. There may be a significant impact, altering the condition or distribution of species. Displacement occurs when a bird is deterred from entering an area because of the human activity that is taking place, which again may restrict their ability to access prime habitat.

The following preliminary assessment has been sub-divided to consider each receptor, providing an assessment that provides justification for the assigned receptor sensitivities and the magnitude of the impact. A summary of the assessment conclusions is provided in **Table 9-15** for ease of reference. Where receptors share a common sensitivity, magnitude and significance of effect they have been grouped together.

Table 9-15: Summary of assessment conclusions for visual/physical disturbance or displacement

Receptor	Sensitivity	Magnitude	Significance of Effect
Designated species of the Buchan Ness to Collieston Coast SPA	High	Low	**Moderate and Significant** (see **Section 9.9** for mitigation measures)
Intertidal and offshore ornithology receptors not designated features of the Buchan Ness to Collieston Coast SPA	High	Negligible	Minor

9.8.3.1. Sandford Bay and within 2 km of coastline

The proposed landfall at Sandford Bay and first few kilometres of the RLB are adjacent to the Buchan Ness to Collieston Coast SPA, with the RLB overlapping the SPA for 205 m.

The Buchan Ness to Collieston Coast SPA is a 15 km stretch of south-east facing cliff running south from the southern coast of Sandford Bay, Peterhead. The boundary of the SPA extends approximately 2 km into the marine environment to include the seabed, water column and surface. The SPA regularly supports 95,000 seabirds including nationally important numbers of guillemot, fulmar, shag, herring gull and black-legged kittiwake. Breeding starts for most species (guillemot, herring gull, kittiwake and fulmar) in April, although shag can start earlier from February onwards. The end of the breeding season is August for guillemot, herring gull and kittiwake, with fulmar and shag extending to mid-September (SNH, 2014).

The conservation and management advice for the SPA notes that guillemot show sensitivity to visual disturbance associated with vessels and noise disturbance, and fulmar are vulnerable to human intrusion and disturbance with repeated disturbance leading to nest desertion if approached too closely (Nature Scot 2024b). Atterbury *et al* (2021) suggest the functional group which fulmar are part of (terns, gulls, kittiwakes and gannets) have low to moderate sensitivity to noise and visual disturbance. Although not detailed in the conservation advice, Atterbury *et al.* (2021) note that shag have been observed to be highly sensitive to vessel traffic. As a result, the **sensitivity** of receptors within the SPA has been assessed as **high.**

At the proposed landfall, marine activities would include the presence of vessels engaged in landfall enabling works (such as the marine excavation of the HDD duct ends), cable pull-in and cable lay away from the landfall. A jack-up barge, spud barge or multi cat would be on site at the HDD exit for a period of 2-4 months. Upon arrival, the vessel would be stationary for the duration of the works. Other small vessels may be used such as guard vessels, crew transfer vessels or construction support vessels. Each cable pull is expected to take up to seven days of 24 hour working, giving a total duration of 14 days. For this activity up to seven vessels may be present including the larger cable lay vessel. Given that the location of the proposed landfall is adjacent to and overlapping for 205 m the marine extension of the Buchan Ness to Collieston Coast SPA, there is the potential for species sensitive to disturbance to be present within the vicinity of the installation vessels. As outlined above, species for the SPA are likely to be loafing and feeding in Sandford Bay between March and mid-September.

Sandford Bay experiences relatively high levels of shipping activity due to its proximity to Peterhead harbour, with recreational boating, leisure activities and larger vessels present. EMODnet Map viewer indicates that vessel density averaged between 12 and 53 hours per km² for the period 2017 – 2023 (Peterhead harbour averaged 3,622 hours per km²). This suggests a certain degree of habituation to recreational and vessel use of Sandford Bay, with birds used to seeing and hearing vessels. Where practicable, existing shipping lanes would be utilised for vessel transiting routes to avoid additional disturbance.

All cable installation activities would be conducted on a 24-hour working basis, as such vessels would be operating during hours of darkness, and lighting would be required in order to ensure operations on the vessels can be conducted safety. This lighting would be directed and only used in the vicinity of the work area, to minimise the likelihood of seabirds being attracted to vessels during the night. The duration of these works and distance from breeding colonies further reduces the chances of seabirds being attracted.

The **magnitude** of the impact has been assessed as **low**. Whilst it is acknowledged that vessels may be present at the landfall for the entirety of a breeding season, for the most part the vessels would be stationary, outside of the SPA boundary, and in an area where there is already disturbance by recreational boating activity. Higher vessel use activities such as cable pull-in would be restricted in duration to several weeks. The breeding species are highly mobile and have large foraging ranges, the smallest being European shag at 23.7 km (based on mean-max foraging ranges ± standard deviation) (Woodward *et al.,* 2019), meaning they can avoid project vessels and use alternative foraging areas during periods of higher vessel activity.

Due to the protection afforded to the designated species during the breeding period and the high sensitivity to disturbance, even given the low magnitude of the impact, the **significance** of the effect has been assessed as **Moderate adverse** should vessels enter the Buchan and Collieston Coast SPA. Additional project specific mitigation measures have been proposed in **Section 9.9**.

9.8.3.2. RLB outside the Buchan Ness to Collieston Coast SPA

Past the Buchan Ness to Collieston Coast SPA, the remainder of the RLB is in open coastal and offshore waters. The sensitivity of species in coastal and offshore waters is driven by species such as seaducks and divers which are known to be highly sensitive to visual disturbance, with escape distances of 2 – 3.2 km observed (Fliessbach *et al.* 2019). Typically, species that are highly sensitive to vessel disturbance occur in more coastal waters, with sensitivity reducing with distance offshore. For example, seaducks are generally found within 30 km of the coastline. Auks' sensitivity to visual disturbance is lower than that of other functional groups. MIG-BIRD (2022) score common guillemot, razorbill and Atlantic puffin as having a disturbance susceptibility of 3 (out of 5), with Atlantic puffin scoring 2 (out of 5). Fliessbach *et al.,* (2019) report escape distances to be on average 395 m (± 216 m) for razorbill, suggesting that the zone of influence of displacement and disturbance would be limited to within the RLB. However, it should be noted that the sensitivity for auks can be heightened during the flightless moult period adult and chick auks undergo immediately following the breeding season, which can last for several months. The **sensitivity** of all species has been assessed as **high** given the presence of species which exhibit strong avoidance behaviour to vessels.

The **magnitude** of the impact has been assessed as **negligible.** Marine activities would progress in a linear manner along the RLB. Disturbance and displacement impacts would be temporary and reversible with individuals able to return once vessels have passed through. There would be no permanent barrier to access foraging, loafing and resting areas. Alternative, preferred foraging areas are available in the wider region for the functional groups and the Proposed Development would not lead to a change in distribution of species.

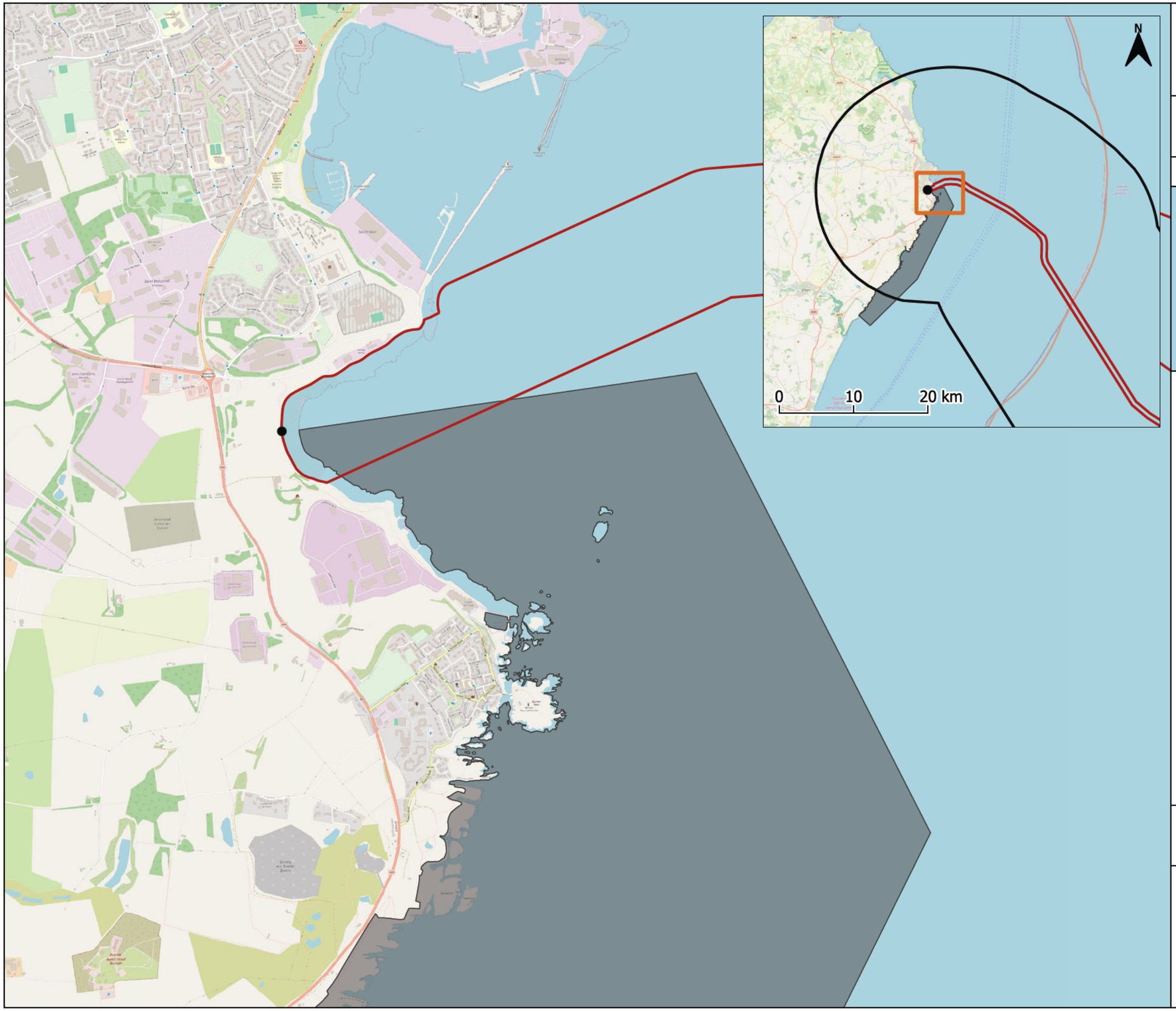
The **significance** of the effect has been assessed as **Minor** and **Not Significant**.

9.9. Project Specific Mitigation Measures

The significance of the effect of visual /physical disturbance or displacement on designated species of the Buchan Ness to Collieston Coast SPA has been assessed as **Moderate and Significant** during the breeding season (March to September). In order to mitigate impacts additional project specific mitigation would be implemented as outlined in **Table 9-16.** Incorporating this mitigation, the effect has been re-assessed in **Section 9.10**.

Table 9-16: Project specific mitigation measures for ornithology

Potential impact	Mitigation Measures
Visual/physical disturbance or displacement	PSM01 ▪ All project vessels operating within 12 Nautical Miles (NM) of the coastline will have the boundary of the Buchan Ness to Collieston Coast SPA marked on their navigational systems. ▪ Vessel transit routes will be planned to avoid entering the Buchan Ness to Collieston Coast Special Protection Area (SPA). ▪ Vessels must avoid entering the Buchan Ness to Collieston Coast SPA (the seaward extension of which extends 2 km from the coastline as shown in Error! Not a valid result for table. **(Drawing reference C01494-EGL3-MEA-BIRD-009-A)** during the period 01 March to 15 September inclusive. Where the RLB overlaps with the SPA, vessels should remain within the RLB. If such vessels are required to enter the SPA outside of the RLB this must be for the purposes of safe navigation (or as agreed with NatureScot), they must avoid approaching cliffs where nesting birds are present and adhere to the Scottish Marine Wildlife Watching Code.



collaborative environmental advisers

Buchan Ness to Collieston Coast SPA

C01494-EGL3-MEA-BIRD-009-A

Legend

- Sandford Bay Landfall
- Red Line Boundary
- Ornithology Study Area (15km Buffer)
- Buchan Ness to Collieston Coast SPA

0 0.5 1 1.5 KM

0 0.25 0.5 0.75 NM

N

Date	25/07/2025
Coordinate System	WGS 84 / UTM zone 30N
Projection	Universal Transverse Mercator (UTM)
Unit	meters
Scale at A3	1:20,000
Created	AN
Reviewed	EE
Authorised	JDM

Document Path: X:\GIS\GIS_PROJECTS\C01494_EGL3&4\Project\QGS\EGL3\MEA\09_BIRD\C01494_EGL3_MEA_BIRD_009.qgz

9.10. Residual Effects

9.10.1. Visual/Physical Disturbance or Displacement

It is concluded in **Section 9.8.3.1** that if Project vessels were present undertaking marine activities within the Buchan Ness to Collieston Coast SPA (including the 2 km marine extension) there is the potential for a **moderate adverse** significant effect. The mitigation proposed in **Table 9-16** would ensure that vessel movements within the SPA are restricted during the breeding season as per the management objectives for the site. The mitigation proposed is aligned with that contained within the Marine Licence for Eastern Green Link 2 (EGL 2), a similar cable project consented and co-located at the landfall in Sandford Bay. This mitigation would minimise interference with nesting birds, reducing the magnitude of the impact to negligible.

The significance of the residual effect has been assessed as **Minor** and **Not Significant**.

9.11. Cumulative Effects

If the construction or decommissioning of other plans and projects have a temporal overlap with the construction of the Proposed Development, there is potential for cumulative adverse effects on intertidal and offshore ornithology greater than that caused solely by the Proposed Development. As outlined by **Chapter 4: Marine Environmental Appraisal Scope and Methodology**, a four-stage approach has been undertaken to assess the cumulative adverse effects from other plans and projects in-combination with the construction of the Proposed Development.

9.11.1. Stage 1: Identification of ZoI

Chapter 8: Marine Physical Processes concluded that the furthest distance that suspended sediment would be deposited from the Proposed Development is 13.6 km, dependent on peak flow speed. All sedimentation outside the RLB would be from fine particulates that would settle in 1 mm (at 6.5 km from the plume source) or less thickness, which is indistinguishable from background levels. Additionally, Sinclair *et al.* (2023) reported that 90 % of sediments suspended during cable laying activities are predicted to resettle within 1 km of the RLB and Gooding *et al.* (2012) suggests that fine particles may travel 1-2 km from the source. Therefore, the ZoI for the cumulative effects assessment for intertidal and offshore ornithology is 2 km for potential cumulative effects relating to suspended sediments. Any sedimentation outside of this 2 km ZoI as a result of the Proposed Development would not cause significant cumulative adverse effects on intertidal and offshore ornithology receptors.

Any projects that require external cable protection within habitats shared with the RLB have potential for cumulative adverse effects from changes in the distribution of prey species. Therefore, the ZoI for the cumulative effects assessment for intertidal and offshore ornithology is 2 km for potential cumulative effects relating to changes to prey species distribution.

As discussed in **Section 9.5.3**, SNCBs recommend a 4 km precautionary displacement buffer for divers and seaducks (MIG-BIRD 2022) due to the sensitivity of these species to disturbance and the uncertainties surrounding the time taken for them to resettle (Atterbury *et al.*, 2021). Therefore, the ZoI for the cumulative effects assessment for intertidal and offshore ornithology is 4 km for potential cumulative effects relating to visual/physical disturbance and displacement.

All plans and projects within the above described ZoIs are assessed in-combination with the Proposed Development for the relevant effects, to determine if there would be any significant cumulative adverse effects to intertidal and offshore ornithology (**Section 9.11.4**).

9.11.2. Stage 2: Shortlist of Plans and Projects Relevant to Intertidal and Offshore Ornithology

Chapter 4: Marine Environmental Appraisal Scope and Methodology outlines a longlist of plans and projects within 30 km of the Proposed Development. From this longlist, eight plans/projects within 4 km of the Proposed Development have been shortlisted to inform the cumulative effects assessment for intertidal and offshore ornithology (**Table 9-17**). Infrastructure within this ZoI that is already operational has been scoped out, since the effects of the maintenance of operational projects has influenced the baseline assessment.

Table 9-17: Shortlist of projects

Application Reference	Plan or project	Type of project	Distance from Proposed Development	Status
00010861	Ossian Floating OWF	OWF	2.66 km	Application – EIA submitted
00010344	Morven OWF	OWF	1.98 km	Pre Application - Scoping Report
00009943	Eastern Green Link 2 (EGL 2)	Cable	0 km / crosses	Licence granted
06771 & 06870	NorthConnect	Cable	0 km / crosses	Licence expired

Application Reference	Plan or project	Type of project	Distance from Proposed Development	Status
00011091	Cenos Floating OWF – transmission infrastructure	Export cable	0 km/crosses	Application – EIA submitted
SCOP-0066	Aspen Floating OWF – transmission infrastructure	Export cable	0 km/crosses	Pre Application – Scoping Report
SCOP-0020	MarramWind OWF	OWF	0 km/crosses	Pre Application – Scoping Report
00011026	Muir Mhor OWF	OWF	~3 km	Application – EIA submitted

9.11.3. Stage 3: Information Gathering and Identification of Pressure-Receptor Pathways

Construction of the Proposed Development is scheduled to commence in 2028 with the latest possible completion by 2033. Within this window, construction (including pre-lay activity) is expected to take 55 months.

Ossian Floating OWF is situated approximately 2.66 km outside of the RLB, and is planning to commence construction in early 2030 (SSE Renewables, 2025). The simultaneous or sequential construction of the two projects gives rise to the potential for cumulative adverse effects from changes in the distribution of prey species and visual/physical disturbance or displacement.

Morven OWF is situated approximately 1.98 km from the Proposed Development and is due to commence construction in 2027, with commercial operation scheduled to begin in 2030 (Power Technology, 2024). Thus, there would be a direct temporal overlap in construction between the two projects. As Morven OWF is situated outside of the RLB of the Proposed Development, simultaneous construction or sequential construction in quick succession of the two projects has the potential for cumulative adverse effects from temporary increase and deposition of suspended sediments and visual/physical displacement or disturbance from associated construction activities. Due to the application stage of Morven OWF, there is no EIA available for this project and its project-alone impact to ornithology receptors is unknown. Therefore, Morven OWF cannot be assessed in-combination with the Proposed Development and will not be taken forward to stage 4 of the cumulative effects assessment. As Morven OWF is at an earlier development stage than the Proposed Development it would need to complete a cumulative impact assessment and include the Proposed Development within its EIA.

The construction of EGL 2 is currently underway, with cable operation scheduled for 2029 (Eastern Green Link 2, 2025). Additionally, EGL 2 and the Proposed Development share the same landfall at Sandford Bay, Peterhead. Therefore, it is expected that there would be a temporal overlap in construction with the Proposed Development for one year. Consent for EGL 2 was granted on 20 May 2025, and can be viewed using MD-LOT's Marine Licence Application database (case reference: 00009943/00011033). As EGL 2 overlaps the RLB of the Proposed Development at Sandford Bay Landfall and Peterhead nearshore, there is potential for cumulative adverse effects from: temporary increase and deposition of suspended sediments and visual/physical displacement or disturbance from associated construction activities.

NorthConnect is planned to cross the Proposed Development at approximately KP 576. However, construction of NorthConnect has been placed on hold by the Norwegian Government, and the current Marine Licence for this project has expired (expiration date 2024) (NorthConnect, 2025). As no new marine licence application has been submitted or Marine Licence granted for the project, it is assumed that this project would not have a temporal overlap in construction with the Proposed Development. Therefore, NorthConnect will not be assessed in-combination with the Proposed Development and will not be taken forward to stage 4 of the cumulative effects assessment.

Cenos Floating OWF's export cable corridor crosses the Proposed Development at KP 576, utilising the DC routing of NorthConnect within 12 NM to reduce the need for additional infrastructure (Scottish Government, 2025a). Cenos Floating OWF is currently in its application phase, having submitted its EIA in January 2025 (application reference number: 00011091) (Scottish Government, 2025a), and is scheduled to commence construction from 2030, with operation in 2031. As such, there may be a direct temporal overlap in construction between the two projects. As outlined in **Chapter 3: Project Description**, a worst-case scenario has been assumed that, where the developments cross, Cenos Floating OWF will be constructed prior to the Proposed Development and the area of external cable protection required by the Proposed Development for this cable crossing is included in the worst-case scenario for permanent habitat loss outlined in **Table 9-9**. As Cenos Floating OWF's export cable corridor overlaps the RLB of the Proposed Development, there is potential for cumulative adverse effects from temporary increase and deposition of suspended sediments and visual/physical displacement or disturbance. As the Proposed Development is assumed to cross Cenos Floating OWF's export cable corridor, there is potential for cumulative adverse effects from changes in distribution of prey species as a result of the addition of external rock cable protection at this cable crossing.

Aspen Floating OWF is currently in pre-application, having submitted the Scoping Report in May 2025 (application reference number: SCOP-0066) (Scottish Government, 2025b), and is scheduled to begin construction in 2028 with operation commencing in 2029/2030.

As such, there may be a direct temporal overlap in construction between the two projects. The export cable corridor scoping boundary of Aspen Floating OWF overlaps with the Proposed Development and, due to the uncertainty of overlap in construction timelines, it is unclear as to which project will carry out cable installation first. Due to the application stage of Aspen Floating OWF, there is no EIA available for this project and its project-alone impact to intertidal and offshore ornithology receptors is unknown. Therefore, Aspen Floating OWF cannot be assessed in-combination with the Proposed Development and will not be taken forward to stage 4 of the cumulative effects assessment. However, as outlined in **Chapter 3: Project Description**, a worst-case scenario has been assumed that, where the developments cross, Aspen Floating OWF will be constructed prior to the Proposed Development and the area of external cable protection required by the Proposed Development for this cable crossing is included in the worst-case scenario for permanent habitat loss (outlined in **Table 9-9)**.

MarramWind OWF is currently in pre-application, having submitted the Scoping Report in January 2023 (application reference number: SCOP-0020) (Scottish Government, 2023). Construction is scheduled to begin in the late 2020s, following planning decisions in 2026, and MarramWind OWF is scheduled to be operational in the 2030s. Therefore, there may be a direct temporal overlap in construction between the two projects. The scoping boundary of MarramWind OWF overlaps with the RLB of the Proposed Development at Peterhead nearshore. However, due to the application stage of MarramWind OWF, there is no EIA available for this project and its project-alone impact to intertidal and offshore ornithology receptors is unknown. Therefore, MarramWind OWF cannot be assessed in-combination with the Proposed Development and will not be taken forward to stage 4 of the cumulative effects assessment. However, as outlined in **Chapter 3: Project Description**, a worst-case scenario has been assumed that, where the developments cross, MarramWind OWF will be constructed prior to the Proposed Development and the area of external cable protection required by the Proposed Development for this cable crossing is included in the worst-case scenario for permanent habitat loss (outlined in **Table 9-9)**.

The export cable corridor of Miur Mhòr OWF is situated approximately 3 km from the RLB of the Proposed Development. Miur Mhòr OWF is currently in its application phase, having submitted EIA in December 2024 (application reference number: 00011026) (Scottish Government, 2024), and is scheduled to commence construction in 2030, with construction activities lasting up to four years (MMOWF Ltd, 2024). As such, there may be a direct temporal overlap in construction between the two projects and potential for cumulative adverse effects from temporary increase and deposition of suspended sediments, changes in the distribution of prey species, and visual/physical disturbance or displacement.

9.11.4. Stage 4: Assessment

9.11.4.1. Temporary increase and deposition of suspended sediments

Both EGL 2 and the Proposed Development would use HDD at the Sandford Bay Landfall, avoiding intrusive works in the intertidal area. Each project would have separate cable ducts, adjacent to one another. The exit point for the cable ducts would be entirely in the subtidal environment and there would be no direct impacts to intertidal and offshore ornithology receptors by either project, except in the event of drilling fluid (bentonite or similar) breakout (frac-out), where clean-up activities may be required. A frac-out can occur if drilling occurs within unconsolidated sediment. In this situation a pathway can form between the drilling bore and the surface (e.g., the ground or seabed). The bentonite used within the bore can travel through this pathway to the surface, causing a temporary increase of suspended sediment.

If a frac-out were to occur for each project, either simultaneously or in rapid succession, this would cause a greater sediment plume within the intertidal area than that of the Proposed Development alone. However, bentonite is an inert, clay-like lubricant listed on the Cefas list of notified chemicals and has been proven to have no long-lasting effects on the environment. Due to its clay-like nature, bentonite consists of very fine particulates that will remain in the water column until dissipated by tidal cycles and current flows. The CEMP for the Proposed Development would include mitigation plans to ensure frac-outs are managed appropriately should a pollution event occur; this involves the use of an absorbent mat to remove the bentonite from the marine environment. The magnitude of increased suspended sediments in the intertidal area is therefore assessed as negligible.

EGL 2 and Cenos Floating OWF overlap with the Proposed Development at Peterhead nearshore. If sediment plumes from each project were to overlap, this would increase the SSC within the RLB of the Proposed Development.

Section 9.8.1 of this MEAp considered the potential for a temporary increase and deposition of suspended sediments to have a significant adverse effect on intertidal and offshore ornithology receptors according to their functional groups and concluded that there would be no significant adverse effects as a result of this pressure on any of the functional groups. **Chapter 6: Marine Physical Processes** demonstrates that coarse sediment plumes created from seabed preparation and cable trenching activities would settle from the water column within the RLB. Fine sediment particulate plumes can travel up to 13.6 km from trenching activities. Increased SSC is a temporary effect of cable construction activities.

As outlined in Chapter 7: Physical Environment of the Eastern Green Link 2 – Marine Scheme Environmental Appraisal report (AECOM, 2022b), coarse sediment plumes, created from seabed preparation and cable trenching activities, would settle within 247 m of the source. Thus, there is potential for a spatial overlap of sediment plumes if simultaneous construction of the projects occurs within Peterhead nearshore.

Chapter 11: Ornithology of the Marine Environmental Appraisal Report (AECOM, 2022a) and Chapter 10 Ornithology of the Marine Scheme Scoping Report for EGL 2 (AECOM, 2021) do not assess the potential for temporary increase and deposition of suspended sediments to have a significant adverse effect on intertidal and offshore ornithology receptors. In the absence of an assessment, it is assumed that this pressure was not considered likely to have a significant adverse effect and was therefore scoped out of the assessment for EGL 2.

As outlined above, construction of the Proposed Development is scheduled to commence in 2028, construction of EGL 2 is currently underway, with cable operation scheduled for 2029 and Cenos Floating OWF's export cable corridor is scheduled to commence construction in 2030. It is unlikely that simultaneous construction of all three projects would occur in Peterhead nearshore, and, due to engineering constraints, the projects would be cable trenching sequentially with sufficient time in between to allow for smothering to disperse and SSC to decrease to background levels. Furthermore, it is assumed the Proposed Development would cross Cenos Floating OWF's export cable corridor, thus heavy smothering from the construction activities of Cenos Floating OWF would disperse by the time of construction of the Proposed Development within the same area. Therefore, the cumulative magnitude of temporary increase and deposition of suspended sediments has been assessed as low.

The cumulative effect of temporary increase and deposition of suspended sediment to intertidal and offshore ornithology receptors has been assessed as **Minor** and **Not Significant**.

9.11.4.2. Changes in the distribution of prey species

As discussed in **Section 9.8.2.1** of this MEAp, changes in the distribution of prey species has been assessed with regards to the potential for a permanent loss of habitat for prey species such as herring and sandeel as a result of the deposition of cable protection during construction and operation.

Although both EGL 2 and EGL 3 project cables would occur within the same area, these cables would run adjacent to one another and not overlap. Furthermore, each project cable would be buried within its own trench. Chapter 11: Ornithology of the Marine Environmental Appraisal Report for EGL 2 concluded 'not significant' effects for all intertidal and offshore ornithology receptors, given the small area of available marine habitats and the high recoverability of receptors (AECOM, 2022a).

The EIA Scoping Report for the Ossian OWF transmission asset (the export cable) was submitted in February 2025 (RPS, 2025) and concluded that potential impacts on fish and shellfish prey during all project phases would be scoped 'in' to the final assessment. As the final EIA has not yet been published for the Ossian OWF transmission asset, a project alone significance assessment is not available to inform this cumulative effects assessment.

Chapter 3: Project Description of this MEA states that at present the locations and footprints of cable protection proposed for EGL 3 are limited to the six identified infrastructure crossings. At present the locations of any remedial cable protection which may be required due to the cable not reaching target burial depth during construction or following cable repair works are unknown. The six infrastructure crossing which would require cable protection during the construction phase are not located within the 2 km ZoI, and there is therefore no potential for cumulative impacts on intertidal and offshore ornithology receptors. The closest distance between cable crossings is the Cruden Pipeline, which is crossed by both EGL 2 and EGL 3. The crossings are located 3.14 km apart and therefore outside the ZoI.

Section 9.8.2 of this MEAp considered the potential for changes in the distribution of prey species to have a significant adverse effect on intertidal and offshore ornithology receptors according to their functional groups and concluded that there would be no significant adverse effects as a result of this pressure on any of the functional groups. Similarly, **Chapter 8: Fish and Shellfish** concluded that there would be no significant adverse effects of permanent habitat loss on fish and shellfish (including herring and sandeel) as a result of the Proposed Development.

The cumulative effect of temporary increase and deposition of changes in the distribution of prey species to intertidal and offshore ornithology receptors has been assessed as **Negligible** and **Not Significant.**

9.11.4.3. Visual/physical disturbance or displacement

As discussed in **Section 9.8.3** of this MEAp, visual/physical disturbance or displacement has been assessed with regards to the potential for works associated with the construction, operation or decommissioning of the Proposed Development to result in an adverse impact on intertidal and offshore ornithology receptors that are designated features of protected sites, particularly in respect to the proposed landfall at Sandford Bay and the nearshore region, which is adjacent to the Buchan Ness to Collieston Coast SPA, and also intersects it for 205 m.

EGL 2 and Cenos OWF overlap with the Proposed Development at Peterhead nearshore. If works associated with the Proposed Development, EGL 2 and/or Cenos OWF were to occur simultaneously or in close succession, this would result in the potential for a cumulative effect to occur.

The EIA Scoping Report for the Ossian OWF transmission asset was submitted in February 2025 (RPS, 2025) and concluded that potential impacts of visual/physical disturbance or displacement on offshore ornithology receptors during all project phases would be

scoped in to the final assessment. As the final EIA has not yet been published for the Ossian OWF transmission asset, a project alone significance assessment is not available to inform this cumulative effects assessment.

The EIA for the Ossian OWF array was submitted in June 2024 (RPS, 2024) and assessed the potential for visual/physical disturbance or displacement for offshore ornithology receptors during all phases. The assessment concluded that the significance of the effect would be of minor adverse significance for all species, which is not significant in EIA terms.

Section 9.8.3.1 of this MEAp concluded that whilst the magnitude of the impact would be low as a result of the temporary nature of activities associated with the Proposed Development and the existing baseline of recreational boating activity, the sensitivity of designated species of breeding seabirds within the Buchan Ness to Collieston Coast SPA means that the potential effect of visual/physical disturbance or displacement would be of **Moderate adverse significance** during the breeding season.

Consequently, there is potential for a significant cumulative effect of visual/physical disturbance or displacement to intertidal and offshore ornithology receptors within the Buchan Ness to Collieston Coast SPA. There would be no cumulative adverse effects to intertidal and offshore ornithology receptors which are not designated features of the Buchan Ness to Collieston Coast SPA due to their reduced sensitivity to disturbance.

As outlined above, construction of the Proposed Development is scheduled to commence in 2028. Construction of EGL 2 is currently underway, with cable operation scheduled for 2029. Therefore, it is unlikely that cable construction activities for both projects within Peterhead nearshore would occur simultaneously. Cenos OWF, Ossian Floating OWF and Muir Mhòr OWF are scheduled to commence construction from 2030, and there is therefore the potential for a direct temporal overlap in construction. In order to mitigate the potential for significant visual/physical disturbance or displacement of intertidal and offshore ornithology receptors that are designated features of the Buchan Ness to Collieston Coast SPA, the Applicant has committed to the following measures, which are also described in **Table 9-10**:

- Ensuring the boundary of the Buchan Ness to Collieston Coast SPA is marked on the navigational systems of all Project vessels operating within 12 NM of the coastline.
- Planning vessel transit routes to avoid entering the Buchan Ness to Collieston Coast SPA where practicable.
- Avoidance of works within the Buchan Ness to Collieston Coast SPA during the period 1 March to 15 September inclusive. If vessels are required to travel in the SPA during this period, they must avoid approaching cliffs where nesting birds are present and adhere to the Scottish Marine Wildlife Watching Code.

The above mitigation will ensure that vessel movements within the Buchan Ness to Collieston Coast SPA associated with the Proposed Development are restricted during the breeding season as per the management objectives for the site. This mitigation would minimise interference with nesting birds, reducing the magnitude of the impact to negligible.

The cumulative effect of visual/physical disturbance or displacement to intertidal and offshore ornithology receptors within the Buchan Ness to Collieston Coast SPA has been assessed as **Minor** and **Not Significant**.

9.11.4.4. Stage 4 assessment conclusions

Cumulative effects have been assessed for temporary increase and deposition of suspended sediments, changes in distribution of prey species, and visual/physical disturbance or displacement, for projects Ossian Floating OWF, Morven OWF, Eastern Green Link 2, NorthConnect, Cenos Floating OWF, Aspen Floating OWF, MarramWind OWF, and Muir Mhor OWF. In all cases, no cumulative effects were concluded.

References

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