Addendum to the
Natura Impact Statement

NISA
North Irish Sea Array

Volume 2: Appendices

Appendix A17
Offshore and Intertidal Ornithology Displacement Analysis

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Offshore Ornithology Displacement Analysis

North Irish Sea Array Offshore Windfarm

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3.0	June 2026	Final	JG/AW	JM/WH/CC	CC

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Acronyms

Term	Definition
ACP	An Coimisiún Pleanála
CI	Confidence Intervals
DAS	Digital Aerial Survey
ECC	Export Cable Corridor
EIAR	Environmental Impact Assessment Report
NISA	North Irish Sea Array
NPWS	National Parks and Wildlife Service
NWIS	North West Irish Sea
OSP	Offshore Substation Platform
OWF	Offshore Windfarm
PFI	Proposed Footprint of Infrastructure
RFI	Request for Further Information
SCI	Special Conservation Interest
SNCB	Statutory Nature Conservation Body
SPA	Special Protection Area
WTG	Wind Turbine Generator

1 Introduction

1.1.1 North Irish Sea Array Windfarm Ltd (NISA, hereafter referred to as 'the Developer') has been considering the Request for Further Information (RFI) issued by An Bord Pleanála (now An Coimisiún Pleanála) as well as the third-party submissions received following public consultation. At An Coimisiún Pleanála's (ACPs) behest, the Developer has also continued to consult with stakeholders in respect of the 2024 planning application throughout 2024-2026. The Developer has refined elements of the design to respond to the third-party submissions, the continued public and stakeholder consultation and the RFI. Amendments are therefore required to Appendix 15.5 Offshore and Intertidal Ornithology Displacement Analysis of the 2024 Environmental Impact Assessment Report (EIAR) and related appendices. Full details of consultation undertaken can be found in Appendix A.1.2 in the Addendum to the EIAR.

1.1.2 For the purposes of clarity, this document should be read in conjunction with Appendix 15.5 Offshore and Intertidal Ornithology Displacement Analysis submitted as part of the 2024 EIAR.

1.1.3 Any cross reference to a chapter, section, table, image, figure or appendix within this document is to another location within the Addendum to the EIAR unless explicitly stated otherwise. Any cross reference to anything included of the 2024 EIAR will be clearly labelled as such.

1.1.4 Text in bold is only used throughout this document to indicate where changes are required, and what is subsequently driving them. Text in italics is text from a section of Appendix 15.5 Offshore and Intertidal Ornithology Displacement Analysis which is deleted, or quotations from other documents (as explicitly stated). Replacement text is in normal font.

1.1.5 Tables which have been updated from the 2024 Appendix 15.5 Offshore and Intertidal Ornithology Displacement Analysis, or entirely new tables, have been included in Appendix A15.5 Offshore and Intertidal Ornithology Displacement Analysis. These can be identified by the "A" prefix in the caption. Any changes within updated tables, in comparison to tables within Appendix 15.5 Offshore and Intertidal Ornithology Displacement Analysis, are indicated by grey shading in the relevant cell, column or row, as necessary.

1.1.6 The sections relevant to Appendix A15.5 in the RFI are included below.

RFI Section	RFI	Relevance to Appendix
1 (b)	The scientific information provided as part of the planning application documentation should be based on up-to-date survey reports and data. Accordingly, the applicant is requested to confirm/provide justification/verification that the information submitted in support of the planning application remains relevant and appropriate at the point of submitting further information or to update same as required.	The Developer has since undertaken further digital aerial surveys (DAS) with a larger buffer of 10 km (for the consideration of red-throated diver) which covers the North West Irish Sea (NWIS) Special Protection Area (SPA), including the marine waters along and adjacent to the proposed cable route. The surveys were carried out from September 2024 to August 2025.
1 (c)	The applicant is requested to confirm whether any on-going or additional surveying has been carried out since the application was lodged and, if so, the applicant is invited to submit any further survey data results and analysis and update the planning application documentation, as appropriate.	Additional ornithological surveys have been undertaken since submission of the Application. These additional surveys are described in Section 15.2.5 of Chapter 15: Offshore Ornithology.
8. a) ii.	Red-throated Diver *Gavia stellata*: The desktop review summarised in Table 15.3 of Chapter 15 of the EIAR does not appear to include the results generated from a series of Digital Aerial Surveys (DAS) undertaken over marine waters off Gormanstown (HiDef, 2019) that was commissioned by the Marine Institute and referenced in the National Parks and Wildlife Service (NPWS) Conservation Objective document for the NWIS cSPA. This survey data indicates a high density of Red-throated Diver in the area of the coast west of the array, and overlapping with the proposed cable route. Densities were notably larger than those densities that informed the applicant's assessment of mortality caused by displacement-disturbance effects for this proposed development (i.e. 3.26 individuals km-2 on 29/12/2018; 1.35 individuals km-2 on 16/01/19; 3.45 individuals km-2 on 04/02/19; 2.99 individuals km-2 on 23/03/19). As well as being important for assessment of Red-throated Diver, the HiDef/Gormanstown 2019 surveys are also likely to be relevant for the assessment of other species that the applicant is requested to	As above, the Developer has since undertaken further DAS with a larger buffer of 10 km (for the consideration of red-throated diver) which covers the NWIS cSPA, including the marine waters along and adjacent to the proposed cable route. The surveys were carried out over 12 months from September 2024 to August 2025. Distributions of red-throated diver, common scoter and great northern diver in relation to the proposed developments PFI and export cable corridor (ECC) have been updated using the DAS data, with the updated assessments presented throughout the EIAR. The HiDef/Gormanstown 2019 data was reviewed, but because diver distribution closely matched the more recent, higher-resolution, NWIS cSPA survey data,the NWIS cSPA dataset was selected as the basis for the quantitative analysis.

RFI Section	RFI	Relevance to Appendix
	reconsider (e.g. Great Northern Diver *Gavia immer*, Common Scoter *Melanitta nigra*). As such, the applicant is requested to include the HiDef/Gormanstown 2019 survey data in the assessment of impacts on the marine birds of the NWIS cSPA in relation to this proposed development, including in the assessment associated with the cable route. The applicant is requested to review the EIAR and NIS accordingly.	
8. a) iii.	Red-throated Diver is a species known to be highly sensitive to offshore wind farm developments due to displacement effects. A 4 km displacement buffer is applied in the application documentation. The Board note that for Red—throated Diver best available evidence as presented in the UK Joint SNCB 'Interim Advice On The Treatment Of Displacement For Red-Throated Diver' (SNCB, 2022) states that: "For non-breeding red-throated diver, a pragmatic displacement buffer of at least 10 km is recommended for use in site characterization, impact assessments and post-consent monitoring where a plan or project is within 10 km of a Special Protection Area (SPA) designated for non-breeding red-throated diver. Where a plan or project is further than 10 km from a SPA designated for non-breeding red-throated diver, a standard displacement buffer of 4 km should continue to be used". The DAU in their observation identifies the following papers which further indicate displacement impacts of greater than 4 km for Red-throated Diver: Heinänen *et al*. (2016); Žydelis *et al*. (2016); Webb *et al*. (2017); Mendel *et al*. (2019); Heinänen *et al*. (2020); Vilela *et al*. (2020); and APEM (2021).	The Developer has updated the red-throated diver assessment to include potential disturbance up to 10 km from the PFI. The Developer notes the Statutory Nature Conservation Body (SNCB) (2022) guidance in regard to potential red-throated diver displacement rates: "*Displacement will not be 100% throughout the distance over which the effect occurs but there will likely be a gradation, with decreasing effects at increased distance from an OWF. That is to say that red-throated diver densities might be expected to increase at increasing distances from an OWF. While displacement within the OWF footprint may be close to 100%, the rate of change in displacement up to and beyond 4 km appears to vary, perhaps between regions and survey platforms*". The Developer has reviewed the available evidence on red-throated diver disturbance (Percival *et al.,* 2010; Webb *et al.,* 2017; Mendel *et al.,* 2019; Heinänen *et al*., 2020; Vilela *et al*., 2020; APEM, 2021; Garthe *et al.,* 2023). A variety of disturbance distances and displacement rates have been estimated within these studies, therefore there is the potential for other factors to influence displacement rates i.e. water depth, prey distribution, additional potential anthropogenic disturbance. The Developer's position is to

RFI Section	RFI	Relevance to Appendix
	The Board notes that the proposed development is located entirely within the NWIS cSPA, for which Red-throated Diver is a SCI, and given the evidence sources available, the Board requests that the applicant reconsiders screening out displacement effects on Red-throated Diver associated with the array area. The information available from HiDef (2019) surveys indicates the known extent of Red-throated Diver and their densities, and shows the species concentrating in shallower coastal areas. This therefore provides an evidence base for waters of 5-20m, however the species can also use water depths up to 30m (Natural England, 2012). There appears to be a data gap between the HiDef survey boundary and the array area boundary. The applicant is requested to overlay the application survey maps with the HiDef survey maps and, where there is a data gap, the applicant is requested to undertake additional survey work to address the data gap. The survey should provide sufficient coverage to reliably characterise the distribution and abundance of Red-throated Diver from the proposed array area western boundary to a distance of 10 km towards the coast (west). The applicant is requested to assess displacement of Red-throated Diver to a distance of at least 10 km from the proposed array area due to project infrastructure, having regard to recent best available evidence as presented in the UK Joint SNCB Interim Displacement Advice Note (SNCB, 2022), and update the EIAR and NIS accordingly. Note: Due to the water depth within the array area and low numbers of Red-throated Diver observed in the existing DAS (May 2020 to October 2022), two full winter seasons may not be required to be surveyed to address any data gap, where it is detected. It is requested	use a displacement rate of 100% within the PFI and 4 km buffer, decreasing to 52% between the 4 km and 10 km buffer. This is based on Garthe *et al.* (2023) and is a precautionary approach as the other surveys reviewed (those which estimated displacement rates) suggested lower displacement rates both within the 4 km (55% to 90%) and 10 km (34% to 44.5%) buffers.

RFI Section	RFI	Relevance to Appendix
	that the applicant considers undertaking targeted surveys covering one winter period, with two surveys per month undertaken in critical months for wintering Red-throated Diver. This would comprise one survey per month to be undertaken in November and December; two surveys per month in each of January, February, and March, and one survey to be undertaken in April.	
8 c) i.	Displacement Methodology: The Board is satisfied that the applicant has used the industry standard Displacement Matrix approach. However, the Board notes that the applicant has based conclusions in relation to displacement on its preferred rates for displacement and mortality of auks and Northern Gannet (50% displacement and 1% mortality for auks, 70% displacement and 1% mortality for Northern Gannet Morus bassanus) instead of on industry recommended rates, and has taken these rates forward to Population Viability Analysis (PVA). The Board queries the applicant's use of preferred rates in relation to auks, due to the proposed developments close proximity to the coast and to breeding Common Guillemot and Razorbill Alca torda colonies (NWIS cSPA, Lambay Island SPA, and Ireland's Eye SPA). The applicant is requested to review the EIAR and NIS to apply rates more appropriate to the location and scale of the development, and in line with industry recommendations (60% displacement and 1-5% mortality for auks; and 70% displacement and 1-3% mortality for Northern Gannet; NatureScot, 2023), to inform assessment and enable comprehensive conclusions. Where impacts with these rates result in a >1% increase in baseline mortality rate, the mortality estimates should be taken forward to PVA.	As requested in the RFI, the Developer has revised the displacement analysis to follow NatureScot's recommended displacement and mortality rates. The previous approach, based largely on Natural England's displacement ranges, is no longer applied, although the corresponding values remain visible within the matrices. Any areas where the Developer's approach diverges from the NatureScot advice are explained in Section 2.4.
8. c) ii.	Black-legged Kittiwake *Rissa tridactyla* Displacement: Appendices 15.7, 15.8 and 15.9 document a proposed method statement for ornithology for the Irish Sea Phase 1 ORE projects, which was responded to by the NPWS, with a further response by the applicant	As requested in the RFI, the Developer has included kittiwake within this displacement appendix and assessed kittiwake for displacement within the EIAR. However, the Developer maintains the position that

RFI Section	RFI	Relevance to Appendix
	to the NPWS response. The issue of Black-legged Kittiwake displacement has been set out in the EIAR and within the appendices referenced. The Board notes that the species is a SCI for the NWIS cSPA, as well as Lambay Island SPA and Ireland's Eye SPA within foraging range of the proposed array area. Black-legged Kittiwake has variable responses to OWFs, ranging from up to 45% displacement effects to mild attraction effects, varying at different latitudes, distances from colonies, and seasons (e.g. Peschko *et al.,* 2020; Pollock *et al.,* 2024). Having reviewed the information presented, the Board disagrees with the screening out of Black-legged Kittiwake for displacement for reasons related to the proximity of the proposed development to the coast and to breeding colonies. The applicant is requested to use the displacement matrix approach, as for other species. Here, a 30% displacement rate should be applied, and mortality rates should be based on best available evidence, but with a range of rates presented, from 1% to 3%, as advised by NatureScot (2023). The applicant, based on the revised findings, is requested to re-analyse the displacement impacts on the regional population of Black-legged Kittiwake in the EIAR and against the Conservation Objectives of the relevant SPAs and cSPA in the NIS to ensure comprehensiveness of appropriate assessment conclusions.	kittiwake is not vulnerable to displacement, as discussed in Section 2.3.
8. c) iii.	Red-throated Diver Displacement: The Board requests that the applicant reconsiders screening out displacement effects on Red-throated Diver associated with the array area. As noted in point a(iii) above, Red-throated Diver is highly sensitive to displacement effects associated with OWFs and vessel traffic (e.g. Furness *et al*., 2013; Bradbury *et al*., 2014a-b, Fliessbach *et al*., 2019). As described in point a(iii) and the references therein, Red-throated Diver can be displaced by OWFs up to 10 km. The species is a SCI of the NWIS cSPA and the region supports an important wintering population (HiDef, 2019). The	The Developer has updated the red-throated diver assessment to include potential disturbance up to 10 km from the PFI.

RFI Section	RFI	Relevance to Appendix
	applicant is requested to use appropriate data (as discussed in points a(ii) and (iii) above) to assess potential displacement impacts to the regional and the cSPA Red-throated Diver populations in the EIAR and the NIS. The applicant should consider displacement effects up to 10 km from the proposed array area during operation.	

1.1 Project Background

1.1.1 In response to RFI Section 8 (a) (ii), the key change for this section is the inclusion of a larger buffer surrounding the PFI (10 km) for the consideration of red-throated diver. The following paragraph of Appendix 15.5 of the 2024 EIAR shall be deleted:

- *The North Irish Sea Array Offshore Wind Farm (OWF) (hereafter the 'proposed development') is proposed for construction 11.3 km off the east coast of Ireland (at the nearest point to the mainland). The proposed development will consist of offshore wind turbine generators (WTGs), an offshore substation platform (OSP), inter-array cables, and export cables taking power to an onshore converter station. The area considered in the context of offshore ornithological receptors includes the entire array area, covering 89 km^2, an asymmetric 4 km buffer surrounding the array area, and the offshore ECC covering a further 67.9 km^2.*

1.1.2 And be replaced with:

- The North Irish Sea Array Offshore Wind Farm (OWF) (hereafter the 'proposed development') is proposed for construction 11.3 km off the east coast of Ireland (at the nearest point to the mainland). The proposed development will consist of offshore wind turbine generators (WTGs), an offshore substation platform (OSP), inter-array cables, and export cables taking power to an onshore converter station. The area considered in the context of offshore ornithological receptors includes the proposed footprint of infrastructure (PFI)[1], covering 57.7 km^2, a 4 km buffer surrounding the PFI (with a 10 km buffer considered for red-throated diver), and the offshore ECC covering a further 67.9 km^2.

1.1.3 There are no further changes to this section. Refer to Section 1.1 of the 2024 EIAR.

1.2 Displacement Analysis

1.2.1 The key change for this section is the inclusion of red-throated diver and kittiwake as species of interest in the PFI following comments from ACP through RFI Sections 8 a (ii) and (iii), provided in the RFI table in Section 1. Within the original EIAR, red-throated diver were not considered for displacement impacts in the PFI owing to low numbers recorded in DAS data (only recorded in two months out of 29 in the PFI plus 4 km buffer, with an estimated peak abundance of five individuals. Moreover, kittiwake were also not considered for displacement impacts within the original EIAR.

Species of Interest

1.2.2 As a result of the above comments from ACP (RFI Sections 8 (a) (ii) and (iii)), kittiwake and red throated diver have now been added to the list of species for consideration in the assessment. Therefore, the following paragraph of Appendix 15.5 of the 2024 EIAR shall be deleted:

[1] The PFI represents a defined ornithology study sub-area within the overall array area, where all permanent offshore array infrastructure will be located. The PFI has been developed following design refinements to minimise spatial overlap with sensitive receptors and occupies just 57.7 km², representing 2.5% of the NWIS cSPA.

- *Species of interest in the array area were identified for the displacement assessment based on their abundance in the proposed development array area plus relevant buffer from DAS data, and their sensitivity to displacement impacts as presented in the Offshore and Intertidal Ornithology Chapter. The following five species were identified as needing consideration for the displacement assessment:*
  - *Common guillemot, Uria aalge;*
  - *Razorbill, Alca torda;*
  - *Atlantic puffin, Fratercula arctica;*
  - *Manx shearwater Puffinus puffinus; and*
  - *Northern gannet Morus bassanus.*

1.2.3 **And be replaced with:**

- Species of interest in the PFI were identified for the displacement assessment based on their abundance in the proposed development PFI plus relevant buffer from DAS data, and their sensitivity to displacement impacts as presented in the Offshore and Intertidal Ornithology Chapter. The following seven species were identified as needing consideration for the displacement assessment:
  - Common guillemot, *Uria aalge*;
  - Razorbill, *Alca torda*;
  - Atlantic puffin, *Fratercula arctica;*
  - Manx shearwater, *Puffinus puffinus*;
  - Northern gannet, *Morus bassanus*;
  - Kittiwake, *Rissa tridactyla*; and
  - Red-throated diver, *Gavia stellata*.

1.2.4 **In response to RFI Section 1 (b), one additional change is the inclusion of site-specific DAS data to inform the species of interest in the offshore ECC. The following paragraph of Appendix 15.5 of the 2024 EIAR shall be deleted:**

- *Species of interest in the offshore ECC were identified based on their abundance in available aerial survey data from Jessop et al. (2018), with three species identified as needing consideration for the displacement assessment:*
  - *Common scoter Melanitta nigra;*
  - *Red-throated diver; and*
  - *Great northern diver Gavia immer.*

1.2.5 **And be replaced with:**

- Species of interest in the offshore ECC were identified based on their abundance in aerial survey data undertaken by the Applicant between September 2024 to August 2025, with three species identified as needing consideration for the displacement assessment:

- Common scoter, *Melanitta nigra*;
- Red-throated diver; and
- Great northern diver, *Gavia immer*.

1.2.6 **Further to this, the following paragraph of Appendix 15.5 of the 2024 EIAR shall be deleted:**

- *As outlined in the Offshore and Intertidal Ornithology Chapter, Jessop et al. (2018) did not distinguish between diver species, and therefore these were apportioned to red-throated diver and great northern diver based on the proportions of each species in the regional population in Furness (2015). Similarly, for any scoter species which were not identified to species level, it was assumed these were all common scoter as a precautionary measure.*

1.2.7 **And be replaced with:**

- As outlined in the Offshore and Intertidal Ornithology Chapter, birds not identified to species level were apportioned based on the proportions of each species recorded within the surveys. Further information is available within the Appendix A15.1: Offshore and Intertidal Ornithology Technical Baseline.

1.2.8 **There are no further changes to this section. Refer to Section 1.2 of the 2024 EIAR.**

2 Methodology

2.1 Guidance

2.1.1 **The key change for this section is the use of NatureScot advised displacement rates, as requested in RFI 8 (a) (iii), instead of displacement rates presented in the Irish Phase 1 Methodology Statement. The following paragraph of Appendix 15.5 of the 2024 EIAR shall be deleted:**

- *The methodology for assessing displacement and barrier effects is based on available evidence, UK SNCB guidance and consultation with other Phase 1 Irish projects (see agreed methodology in Irish Phase 1 Methodology Statement). This included a review of available Irish Guidance and best practice along with wider offshore renewable industry best-practice. Consideration of SNCB guidance (SNCBs, 2022) was heavily relied upon, given that this represents the closest established industry guidance and heavily supported by substantive and robust research and evidence. This guidance has also already been used to inform displacement assessments of several other recently consented OWF projects in the Irish Sea (for example Awel-y-Mor).*

2.1.2 **And be replaced with:**

- The methodology for assessing displacement and barrier effects is based on RFI 8 (a) (iii) . The Proposed Development was requested to use NatureScot displacement rates (NatureScot, 2023) (in preference of Natural England rates which were used in the application and agreed for use among Phase One ORE projects).

2.1.3 **There are no further changes to this section. Refer to Section 2.1 of the 2024 EIAR.**

2.2 DAS Surveys

2.2.1 **In response to RFI Section 1 (b) and 8 (a) (ii), the key change for this section is the inclusion of a 10 km buffer as per ACP comments for red-throated diver, and the use of the additional 12 months of DAS data covering the NWIS cSPA. The following paragraph of Appendix 15.5 of the 2024 EIAR shall be deleted:**

2.2.2 *Across the 29-months of DAS data collection, 26 bird species were recorded. For each recorded species, abundance and density estimates were calculated within the array area, array area plus 2km buffer and array area plus 4km buffer. For seabird species that are susceptible to displacement from OWFs, the displacement effects may not only be limited to the array area but also extend to the surrounding area, or buffer zone. Guidance from SNCBs in UK OWFs (SNCBs, 2022) has recommended the use of a 2 km buffer for displacement assessments for the majority of species, with a 4 km buffer recommended for divers and sea ducks. This approach has also been adopted for the displacement assessment for the proposed development.*

2.2.3 **And be replaced with:**

- Across the combined DAS data, covering 41-months, 32 bird species were recorded across the 10km buffer. For seabird species that are susceptible to displacement from OWFs, the displacement effects may not only be limited to the PFI but also extend to the surrounding area, or buffer zone. Guidance from SNCBs in UK OWFs (SNCBs, 2022) has recommended the use of a 2 km buffer for displacement assessments for the majority of species, with a 4 km buffer recommended for divers and sea ducks. This approach has also been adopted for the displacement assessment for the proposed development.
- The exception to this is red-throated diver, where ACP have requested the species is considered out to a 10 km buffer, stating:
- "The applicant is requested to assess displacement of red-throated diver to a distance of at least 10 km from the proposed array area due to project infrastructure, having regard to recent best available evidence as presented in the UK Joint SNCB Interim Displacement Advice Note (SNCB, 2022), and update the EIAR and NIS accordingly."
- The Proposed Development is within the North-West Irish Sea SPA for which red-throated diver is a Special Conservation Interest (SCI), and so a 10 km buffer is considered. This is discussed further in Section 2.4 in the context of displacement rates.

2.2.4 There are no further changes to this section. Refer to Section 2.2 of the 2024 EIAR.

2.3 Sensitivity to Displacement

2.3.1 **There are no further changes to this section. Refer to Section 2.3 of the 2024 EIAR.**

2.4 Displacement Rates

2.4.1 **Section 2.4 should be taken as additional text inserted as a new section after Section 2.3 of Appendix 15.5 of the 2024 EIAR. Section 2.4 includes discussion for the relevant species of the preferred displacement and mortality rates, in response to RFI Section 8 (a) (iii). Discussion surrounding the graded approach to displacement for red-throated diver has also been included which was not included in the original EIAR.**

Auk species

2.4.2 Auk species (guillemot, razorbill and puffin) show a medium level of sensitivity to ship and helicopter traffic (Garthe and Hüppop, 2004; Furness and Wade, 2012; Langston, 2010; and Bradbury *et al*., 2014).

2.4.3 Joint SNCB guidance (SNCBs, 2022a) for UK windfarms has suggested use of a displacement range of 30% to 70% for auk species, and a mortality range of 1% to 10%. Developers across the UK generally present 50% displacement and 1% mortality as a Developer's Approach (i.e., the rates deemed most appropriate by the Developer), but present the full range alongside. This approach was originally agreed as appropriate by Phase 1 Irish projects, and presented in the Phase 1 Irish Methodology Statement. However, since this method statement was published, NatureScot (2023) have released separate guidance for Scottish projects, advising the use of 60% displacement for auks, and 1% to 3% mortality in the non-breeding season, and 3% to 5% mortality in the breeding season.

2.4.4 Within RFI 8a (iii), ACP requested the applicant review the rates used in the EIAR and NIS in line with the NatureScot (2023) advice.

2.4.5 Based on this request, the Developer presents displacement impacts for auks in line with NatureScot (2023) advice (i.e., 60% displacement, and 1% to 5% mortality). The previous SNCB recommended range of 30% to 70% displacement and 1% to 10% mortality continues to be presented in the matrices. As previously submitted for the Proposed Development, the Developer's Approach of 50% displacement and 1% mortality is still considered the most appropriate approach for assessment.

2.4.6 Available evidence suggests that even a 50% displacement rate is precautionary, and that NatureScot's use of 60% is likely over-precautionary. Dierschke *et al*. (2016) reviewed 13 European OWFs and found responses ranging from displacement to attraction, concluding that overall displacement was weak. APEM (2022) reviewed UK post-consent monitoring and wider European studies, noting similar variability. Meanwhile, studies reporting high displacement often used unsuitable statistical models (e.g., inflated rates due to low abundance and zero counts). APEM recommended a precautionary displacement rate of 50% for auks, supported by Peschko *et al*. (2020a), who also found guillemot displacement reduced by ~20% during breeding compared to non-breeding seasons. This is important given Dierschke's data was largely non-breeding.

2.4.7 Post-construction monitoring at Beatrice OWF showed little evidence of auk displacement, suggesting 30% may be overly precautionary for guillemot and razorbill, though appropriate for puffin (MacArthur Green, 2023). These findings are relevant because Beatrice is a larger windfarm than many of the other studies (84 WTGs), and has both a similar distance to shore (13 km) and proximity to major auk colonies as the proposed development. Belgian surveys initially indicated displacement but later found no strong guillemot displacement and possible razorbill attraction, though causes remain unclear (Vanermen *et al.* 2023). APEM also reported a 44% rate from four Helgoland OWFs (Peschko *et al.* 2020b). Based on the evidence, applying a 50% displacement rate for all auk species is therefore considered to remain a suitably precautionary approach.

2.4.8 NatureScot's recommended mortality rates are considered highly precautionary, with little evidence to support mortality rates above 1%. Research undertaken on behalf of a range of developers in UK OWFs has concluded that 1% to 2% mortality is an appropriate range (as opposed to 1% to 10%) (Norfolk Vanguard, 2019; SPR, 2019; Orsted, 2018). Further support of this is provided by a study by van Kooten *et al*., (2018), which found that a mortality rate of 1% itself was precautionary, and Searle *et al*. (2014;2018) which concluded that mortality is unlikely to exceed 0.5% for both the breeding and non-breeding seasons. APEM (2022) predicted mortality rates using simulation models for the Flamborough and Filey Coast SPA from displacement impacts from Hornsea Four. These models predicted impacts of up to 1%, which was likely an overestimate given the distance between the SPA and the PFI. More recent studies at comparable distances have modelled guillemot mortalities of 0.2% (Buchan Ness and Collieston Coast SPA) and 2.7% (St Abb's Head to Fast Castle SPA). Additionally, in spite of an observed displacement rate of 44% from four windfarms in the vicinity of Helgoland, numbers of birds breeding at local colonies continues to rise, suggesting that the impact from (and as such the mortality rate related to) this displacement effect is not strong (Peschko *et al.* 2020b). Taking the evidence above into account, the use of a mortality value of 1% alongside a displacement rate of 50% in the assessments for all auk species can be considered a suitably precautionary approach.

Manx Shearwater

2.4.9 Manx shearwater are considered to be at low to very low vulnerability to displacement impacts (Bradbury *et al.*, 2014; Dierschke *et al.*, 2016), though it is noted there is uncertainty with their displacement risk (Wade *et al.*, 2016).Guidance on the assessment of Manx shearwater for displacement is limited, however, based on information provided by Bradbury *et al.* (2014) they are assigned the lowest score for both disturbance susceptibility and habitat specialisation, suggesting very low displacement sensitivity. They are therefore considered to have a low vulnerability to displacement impacts. To reflect their low risk a displacement rate of 10% is considered appropriate and sufficiently precautionary. No range-based values are presented for Manx shearwater; this approach is also recommended by UK SNCB guidance (MIG-Birds, 2022).

2.4.10 Manx shearwater were recorded in medium abundance during surveys, with a high proportion of these originating from the Skomer, Skokholm and Seas off Pembrokeshire SPA, and birds also using the North West Irish SPA. Manx shearwater are also BoCCI Amber listed and their conservation value is therefore considered to be. Although considered to have a low sensitivity to displacement impacts, Manx shearwater have been included due to its designation in the NWIS cSPA where the development is proposed to be located.

2.4.11 For assessment, a range of displacement and mortality rates are presented. However, to reflect the Manx shearwater's low vulnerability to displacement yet high conservation value, the Developer's Approach of a displacement rate of 10% and mortality rate of 1% is based on best available evidence (SNCBs, 2022a) and is therefore used in assessment (Table A2.1).

Gannet

2.4.12 There is evidence to suggest gannet exhibit a low level of sensitivity to ship and helicopter traffic (Garthe and Hüppop, 2004; Furness and Wade, 2012). Joint SNCB guidance (SNCBs, 2022a) advises the use of a displacement rate of 60% to 80%, and a mortality rate of 70%, with Developers generally putting forward 70% displacement and 1% mortality as a Developer Approach. This approach was also agreed appropriate by Phase 1 Irish projects within the Phase 1 Irish Methodology Statement. However, since this method statement, NatureScot (2023) guidance has been published, recommending the use of 70% displacement, and 1% to 3% mortality for gannet. The use of these NatureScot rates was requested by NPWS in RFI's (as outlined in Paragraph 2.4.4).

2.4.13 Gannet are well evidenced as avoiding OWFs (e.g., Dierschke *et al*. 2016, Leopold *et al*. 2013, Vanermen *et al*. 2013, Vanermen *et al*. 2016). Radar and visual observations during the post-construction monitoring of the Egmond aan Zee (OWEZ) OWF indicated that gannet demonstrated macro-avoidance, with 64% of individuals avoiding entering the wind farm (Krijgsveld *et al*., 2011). Similar data is available from a study at Thanet wind farm, finding 80% of gannet avoided the OWF (Skov et al., 2018), and from APEM (APEM, 2014) which found the rate to be 95% of gannet on migrations based on data for several OWFs, evidencing that most gannets would avoid flying into areas with operational WTGs (macro-avoidance) during their migration. More recently, gannet were found to exhibit high levels of avoidance from the Beatrice OWF during the project's second year of post-construction monitoring (MacArthur Green, 2023). Further to this, a Natural England report (Pavat et al., 2023) illustrated that a mean OWF avoidance rate for gannet was 86% (based on an evidence-based review of nine studies).

2.4.14 Gannet mortality rates arising from displacement are considered very low, and a 1% mortality value is widely regarded as highly precautionary. This reflects their extensive foraging ranges, efficient flight and low energetic costs, which enable individuals to modify movements with minimal physiological impact. Displacement is also greatest during migration rather than within key foraging areas, further limiting sustained energetic effects. Overall, even the low mortality rates are precautionary and likely overestimate realistic population-level consequences for the species.

2.4.15 In response to the RFI, the Developer presents displacement impacts for gannet in line with NatureScot (2023) advice (i.e., 70% displacement, and 1% to 3% mortality) and no longer presents the previous SNCB recommended range of 60% to 80% displacement. As previously submitted for the Proposed Development, the Developer's Approach of 70% displacement and 1% mortality is still considered the most appropriate approach so has been used to conduct the assessment (Table A2.1).

Kittiwake

2.4.16 Kittiwake are not considered vulnerable to impacts from disturbance and displacement (Bradbury *et al.*, 2014) and are not assessed for this impact in England. However, within RFI Section (8) (c), ACP disagreed with the screening out of Black-legged kittiwake for displacement and requested the use of the displacement matrix approach.

2.4.17 Consequently, an assessment is provided for displacement impacts for kittiwake, using advised rates (30% displacement and 1% to 3% mortality). However, based on available evidence, the Developer Approach of not assessing kittiwake for displacement, remains the most appropriate basis for evaluating impacts on this species (Table A2.1).

2.4.18 Joint SNCB guidance (SNCBs, 2022a) which NatureScot (2023) guidance references, sets out evidence for avoidance behaviour for OWFs and for consequent inclusion of species for assessment. Guidance states the following:

"…it is unlikely that cormorant and gull [noting that this includes kittiwake] species will need to be routinely assessed for displacement, as a number of empirical studies have demonstrated

these species can also be attracted as well as display no noticeable reaction to the presence of OWFs (e.g. Leopold *et al*. 2013; Vanermen *et al*. 2014; Petersen *et al*. 2006; Mendel *et al*. 2014).

"As a general guide, any species scoring 3 or more under either category ('Disturbance Susceptibility' or 'Habitat Specialization') in Table 1, and which is present in the OWF site or buffer should be progressed to the matrix stage unless there is strong empirical evidence to the contrary."

2.4.19 Within this guidance, kittiwake is noted to have a disturbance susceptibility score of 2, and habitat specialization score of 2, both under the threshold to be considered for a displacement assessment. Kittiwake are also BoCCI Amber listed and IUCN Least Concern and are therefore considered to have a medium conservation value. Kittiwake therefore have a low vulnerability, and a medium conservation value, with an overall receptor sensitivity assessed as medium based on the matrix approach in Table 15.6 of the 2024 EIAR.

2.4.20 There has been limited research or evidence since the 2022 SNCB guidance which justifies the inclusion of kittiwake for assessment of displacement as requested by NatureScot. A recent study by Lamb *et al*. (2024) has conducted a meta-analysis of multiple early-phase OWFs in the North Sea, and reported that avoidance responses were "mainly neutral or slightly positive for gulls", which suggests that gulls, including kittiwake, were present at similar or high numbers post-construction. This evidence would imply that kittiwakes have not been displaced, and in fact may be attracted to OWFs. This is supported by similar work by Dierschke *et al*. (2016) which considered 11 studies and found no consistent evidence for kittiwake displacement, and further work done by Wade *et al*. (2016) has estimated that there is very low uncertainty around our knowledge of kittiwake displacement caused by structures. Finally, a recent study found no evidence of kittiwake displacement at the Beatrice Offshore Wind Farm (Trinder *et al*., 2024), with observed densities remaining consistent with those expected under random turbine–seabird spatial relationships. The study's turbine-relocation analysis further showed that kittiwakes did not avoid areas close to turbines, indicating that operational infrastructure at Beatrice did not measurably influence their local distribution. Overall, there is a paucity of evidence for the routine displacement of kittiwake at operational OWFs, with current evidence instead suggesting little to no displacement effect and that the species should not be assessed as vulnerable to displacement on this basis.

PFI – red-throated diver only

2.4.21 Red-throated diver are considered to have a high vulnerability to disturbance and displacement impacts. Red-throated diver commonly avoid areas associated with shipping (e.g. Bellebaum et al., 2006; Irwin et al., 2019; Jarrett et al., 2018; Schwemmer et al., 2011), with birds recorded flushing due to the presence of ships up to 2km from the vessels, though the majority are expected to flush at 1km or less (Bellebaum et al., 2006; Jarrett et al., 2018; Topping and Petersen, 2011).

2.4.22 Red-throated diver therefore have a high vulnerability and a high conservation value, with overall receptor sensitivity assessed as high based on the matrix approach in Table 15.6 of the 2024 EIAR.

2.4.23 As outlined in Section 2.2, red-throated diver are considered for assessment in the PFI out to a 10 km buffer, based on NPWS feedback. However, the Developer notes the SNCB (2022b) guidance regarding potential red-throated diver displacement rates:

"Displacement will not be 100% throughout the distance over which the effect occurs but there will likely be a gradation, with decreasing effects at increased distance from an OWF. That is to say that red-throated diver densities might be expected to increase at increasing distances from an OWF. While displacement within the OWF footprint may be close to 100%, the rate of change in displacement up to and beyond 4 km appears to vary, perhaps between regions and survey platforms".

2.4.24 RFI 8 (a) iii highlighted seven papers which indicate potential displacement effects occurring greater than 4 km for red-throated diver which are outlined below:

- Percival *et al*. (2010): Kentish Flats (UK southern North Sea) – 95% displacement within array, reducing to 63% at 3 km.
- Webb *et al*. (2017): UK North Sea – 83% decrease within array, falling to 55% at 4 km and 34% at 8 km.
- Mendel *et al*. (2019): German North Sea – 70.8% decrease within windfarm (+3 km buffer), rising to 84% when combined with ship effects; red-throated diver density down 44.5% within windfarm (+10 km buffer).
- Heinänen *et al*. (2020): German North Sea – red-throated diver density down 90% within windfarm + 5 km buffer; displacement up to 10–15 km, decreasing with distance.
- Vilela *et al.* (2020): German North Sea – displacement up to 10.2 km overall; 11–13 km in northern sub-region (with some uncertainty on pre-construction data).
- APEM (2021): London Array (Thames Estuary) – displacement estimated at 10.5–12 km; diver densities increased with distance, similar gradient observed pre-construction.
- Garthe *et al*. (2023): German North Sea – red-throated diver abundance declined 94% within array + 1 km buffer; 52% decline within 10 km buffer.

2.4.25 A variety of disturbance distances and displacement rates have been estimated within these studies, therefore there is the potential for other factors to influence displacement rates i.e. water depth, prey distribution, additional potential anthropogenic disturbance.

2.4.26 The Developer's position for the assessment is to use a displacement rate of 100% within the PFI and 4 km buffer, decreasing to 52% between the 4 km and 10 km buffer and with a 1% mortality rate used across the entire PFI and 10 km buffer (Table A2.1). This is based on Garthe *et al*. (2023) and provides a precautionary approach as the other surveys reviewed (those which estimated displacement rates) suggested lower displacement rates both within the 4 km (55% to 90%) and 10 km (34% to 44.5%) buffers.

ECC

2.4.27 Red-throated diver, great northern diver and common scoter have shown to be highly susceptible to disturbance from boat and helicopter traffic (Garthe and Huppop, 2004), with birds showing disturbance responses at distances of over 1 km from boats (Kaser *et al*., 2006; Schwemmer *et al*., 2011).

2.4.28 Red-throated divers commonly avoid areas associated with shipping (e.g. Bellebaum *et al.,* 2006; Irwin *et al.,* 2019; Jarrett *et al*., 2018; Schwemmer *et al*., 2011), with birds recorded flushing due to the presence of ships up to 2 km from the vessels, though the majority are expected to flush at 1 km or less (Bellebaum *et al*., 2006; Jarrett *et al*., 2018; Topping and Petersen, 2011). Common scoter similarly show disturbance responses at distances of over 1 km from boats (Kaser *et al*., 2006; Schwemmer *et al.,* 2011). In comparison to red-throated diver (and common scoter), evidence on the sensitivity of great northern diver is sparse. Some evidence (e.g. Bradbury *et al.* 2014) indicates that great northern diver are highly vulnerable to disturbance and displacement, while research in Ireland has shown that great northern diver do not show a flush response to boat traffic, even when birds are within 20m of some birds (Gittings *et al*., 2015).

2.4.29 To reflect their high vulnerability to displacement, a displacement rate of 100% is used, with a range of 90% to 100% also presented (SNCBs, 2022b). For mortality, a rate of 1% is deemed most realistic for the assessment, with a range of 1% to 5% also presented.

Summary

2.4.30 The displacement and mortality rates for all species assessed within the PFI are summarised in Table A2.1. This table presents the Developer's preferred approach, based on the best available evidence, alongside the relevant NatureScot (2023) guidance values. All three sets of rates are included in the EIAR to support a balanced and robust conclusion on the significance of effects.

Table A2.1 – Summary of approaches for species assessed for displacement within the PFI.

Species	Developer Approach		Guidance Approach		
	Displacement (%)	Mortality (%)	Displacement (%)	Mortality (%) Breeding	Mortality (%) Non-breeding
Guillemot	50	1	60	3-5	1-3
Razorbill	50	1	60	3-5	1-3
Puffin	50	1	60	3-5	1-3
Manx shearwater	10	1	-	-	-
Gannet	70	1	70	1-3	1-3
Red-throated Diver	100 (PFI - 4km) 52 (4 - 10km)	1 1	-	-	-
Kittiwake	No Assessment	No Assessment	30	1-3	1-3

2.5 Bio-seasons

2.5.1 In response to RFI Section 8 (c) (ii), the key change for this section is the addition of kittiwake and bio-season updates for gannet to align with Furness (2015) seasonal definitions. Therefore, Table A2.2 outlines these updates and replaces Table 2.1 of Appendix 15.5 of the 2024 EIAR.

Table A2.2 – Bio-seasons used for seabird species in the displacement assessment (replaces Table 2.1 of Appendix 15.5 of the 2024 EIAR).

Species	Autumn migration	Spring season	Migration-free winter	Breeding season	Non-breeding
Common scoter	-	-	-	-	Sep-Apr
Kittiwake	Sep-Dec	Jan-Feb	-	Mar-Aug	-
Guillemot (project approach[2])	-	-	-	Apr-Jun	Jul-Mar
Guillemot (Furness approach)	-	-	-	Mar-Jul	Aug-Feb
Razorbill	Aug-Oct	Jan-Mar	Nov-Dec	Apr-Jul	-
Puffin	-	-	-	Apr-Jul	Aug-Mar
Red-throated diver	Sep-Nov	Feb-Apr	Dec-Jan	Mar-Aug	-
Great northern diver	-	-	-	-	Sep-May
Gannet	Oct-Nov	Dec-Feb	-	Mar-Sep	-
Manx shearwater	Sep-Oct	Mar-Mar	-	Apr-Aug	-

2.5.2 There are no further changes to this section. Refer to Section 2.4 of the 2024 EIAR.

[2] The Project Approach is considered most suitable by the Developer based on available evidence and is the preferred approach to assessment. For further information see Appendix A15.1 Offshore and Intertidal Ornithology Technical Baseline.

2.6 The Matrix Approach

2.6.1 In response to RFI Section 8 (a) (ii), a small change is required to the last paragraph of Section 2.5 of the 2024 EIAR, to just highlight red-throated diver was not assessed based on mean seasonal peak monthly abundance within the PFI, plus a 2 km buffer. The following paragraph shall be deleted:

- *The impacts of displacement were assessed based on mean seasonal peak monthly abundance within the array area, plus a 2km buffer for all species assessed.*

2.6.2 And be replaced with:

- The impacts of displacement were assessed based on mean seasonal peak monthly abundance within the PFI, plus a 2 km buffer for all species assessed, with the exception of red-throated diver which was assessed with a 10 km buffer.

2.6.3 There are no further changes to this section. Refer to Section 2.5 of the 2024 EIAR.

2.7 Disturbance and displacement in the offshore ECC

2.7.1 In response to RFI Section 1 (b) and 8 (a) (ii), the key change for this section is the use of the data from the Developer DAS campaign carried out between September 2024 to August 2025 to identify and inform the species of interest within the offshore ECC. The DAS campaign provided density and abundance data for ornithological species within the boundaries of the North West Irish Sea SPA, which includes both the ECC and PFI. The following paragraphs of Appendix 15.5 of the 2024 EIAR shall be deleted:

- *To assess displacement impacts to divers and seaducks in the ECC, data from Jessop et al. (2018) was used, which encompasses fine-scale aerial data on the distribution and abundance of seabirds in the western Irish Sea. On investigation it was found that the Jessop aerial survey data had a 2.3% coverage of the ECC. To increase coverage, and therefore the representativeness of density estimates in the ECC, data from a 4km buffer surrounding the ECC was collated, which increased the total coverage to 10.5%. The density within survey transects across this whole area was then scaled up, assuming an equal distribution of birds throughout, and used as a proxy for the density within just the ECC (i.e. the area over which divers and seaducks may be prone to vessel disturbance). As a survey was only undertaken in the Autumn bio-season, not the spring, the number of birds was assumed to be equal across these two bio-seasons.*
- *For the assessment of displacement impacts within the ECC, the assessment considers the impacts of one cable-laying vessel cluster, with a 2.5km disturbance buffer. Based on a 2.5km disturbance buffer around the vessel cluster, the area from which birds could be displaced was calculated to be 28.3km2. This is considered a precautionary approach, since vessels disturbance is unlikely to impact birds 2.5km away.*

2.7.2 And be replaced with:

- To assess displacement impacts to divers and seaducks in the ECC, data from DAS undertaken between September 2024 and August 2025 was used. Densities were extracted from the ECC plus a 2 km buffer on the basis of potential disturbance from vessels to up to 2 km.
- For the assessment of displacement impacts within the ECC, the assessment considers the impacts of one cable-laying vessel cluster. It is noted that a 2 km buffer around vessels is the standard approach, but a 3 km buffer is used here as an even more precautionary approach, accounting for the fact that vessels may be up to a kilometre apart from each other at a given point. Based on this, the area disturbed from the vessel cluster was calculated to be 28.3 km^2, from which birds could be displaced.

2.7.3 **Further to this, Table A2.3 below replaces Table 2.2 of Appendix 15.5 of the 2024 EIAR.**

Table A2.3 – Number of relevant birds at risk of displacement impacts in the offshore ECC based on DAS data collected between September 2025 and August 2025 (replaces Table 2.2 of Appendix 15.5 of the 2024 EIAR)

Species	Density of birds across the ECC (plus 2 km buffer) (birds per km^2)			Number of birds at risk of displacement impacts (based on a disturbance area of 28.3 km^2)		
	Autumn	Spring	Winter	Autumn	Spring	Winter
Common scoter	-	-	26.66	-	-	753.79
Red-throated diver	2.35	0.99	1.58	66.44	27.99	44.67
Great northern diver	-	-	0.35	-	-	9.90

2.7.4 **There are no further changes to this section. Refer to Section 2.6 of the 2024 EIAR.**

3 Results (PFI)

In response to RFI Section 8 (a) (iii), 8 (c) (ii) and (iii), Section 3 has been updated with the addition of kittiwake and red-throated diver displacement matrices in the PFI.

The results tables have been updated incorporating the additional 12 months of DAS data; updating the mean peak counts and displacement matrices for each species. As such, all tables in this section present updated results that replace all results and associated tables, presented within Appendix 15.5 of the 2024 EIAR.

The value shown at 100% displacement and 100% mortality represents the mean-peak abundance of birds present in the relevant area that could be affected by displacement. Where applicable, the Developer's approach is highlighted in green and the guidance approach is highlighted in blue.

3.1 Guillemot

3.1.1 In response to RFI Section 1 (b), and as a result of the additional 12 month DAS data, confidence intervals for mean peak bio-season counts for guillemot are presented in Table A3.1, and the full range of potential impacts based on the matrix approach are presented in

3.1.2 Table A3.2 to Table A3.5, these tables replace Table 3-1 to Table 3-5 of Appendix 15.5 of the 2024 EIAR.

Table A3.1 – Mean peak bio-season counts for guillemot in the PFI plus 2 km buffer, with upper and lower 95% confidence intervals (replaces Table 3.1 of Appendix 15.5 of the 2024 EIAR).

Bio-season	Mean peak count	Lower 95% CI	Upper 95% CI
Project approach			
Breeding (Apr-Jun)	988	716	1,279
Non-breeding (Jul-Mar)	21,074	12,388	31,293
Furness approach			
Breeding (Mar-Jul)	16,318	8,345	25,924
Non-breeding (Aug-Feb)	18,766	11,201	26,523

Table A3.2 - Guillemot breeding season displacement matrix (PFI plus 2 km buffer) – Project approach (replaces Table 3.2 of Appendix 15.5 of the 2024 EIAR). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	1	2	3	5	10	20	30	40	49	59	69	79	89	99
20	2	4	6	10	20	40	59	79	99	119	138	158	178	198
30	3	6	9	15	30	59	89	119	148	178	207	237	267	296
40	4	8	12	20	40	79	119	158	198	237	277	316	356	395
50	5	10	15	25	49	99	148	198	247	296	346	395	444	494
60	6	12	18	30	59	119	178	237	296	356	415	474	533	593
70	7	14	21	35	69	138	207	277	346	415	484	553	622	691
80	8	16	24	40	79	158	237	316	395	474	553	632	711	790
90	9	18	27	44	89	178	267	356	444	533	622	711	800	889
100	10	20	30	49	99	198	296	395	494	593	691	790	889	988

Table A3.3 – Guillemot non-breeding season displacement matrix (PFI plus 2 km buffer) – Project approach (replaces Table 3.3 of Appendix 15.5 of the 2024 EIAR). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	21	42	63	105	211	421	632	843	1,054	1,264	1,475	1,686	1,897	2,107
20	42	84	126	211	421	843	1,264	1,686	2,107	2,529	2,950	3,372	3,793	4,215
30	63	126	190	316	632	1,264	1,897	2,529	3,161	3,793	4,425	5,058	5,690	6,322
40	84	169	253	421	843	1,686	2,529	3,372	4,215	5,058	5,901	6,744	7,587	8,430
50	105	211	316	527	1,054	2,107	3,161	4,215	5,268	6,322	7,376	8,430	9,483	10,537
60	126	253	379	632	1,264	2,529	3,793	5,058	6,322	7,587	8,851	10,115	11,380	12,644
70	148	295	443	738	1,475	2,950	4,425	5,901	7,376	8,851	10,326	11,801	13,276	14,752
80	169	337	506	843	1,686	3,372	5,058	6,744	8,430	10,115	11,801	13,487	15,173	16,859
90	190	379	569	948	1,897	3,793	5,690	7,587	9,483	11,380	13,276	15,173	17,070	18,966
100	211	421	632	1,054	2,107	4,215	6,322	8,430	10,537	12,644	14,752	16,859	18,966	21,074

Table A3.4 - Guillemot breeding season displacement matrix (PFI plus 2 km buffer) – Furness approach (replaces Table 3.4 of Appendix 15.5 of the 2024 EIAR). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	16	33	49	82	163	326	490	653	816	979	1,142	1,305	1,469	1,632
20	33	65	98	163	326	653	979	1,305	1,632	1,958	2,285	2,611	2,937	3,264
30	49	98	147	245	490	979	1,469	1,958	2,448	2,937	3,427	3,916	4,406	4,895
40	65	131	196	326	653	1,305	1,958	2,611	3,264	3,916	4,569	5,222	5,875	6,527
50	82	163	245	408	816	1,632	2,448	3,264	4,080	4,895	5,711	6,527	7,343	8,159
60	98	196	294	490	979	1,958	2,937	3,916	4,895	5,875	6,854	7,833	8,812	9,791
70	114	228	343	571	1,142	2,285	3,427	4,569	5,711	6,854	7,996	9,138	10,280	11,423
80	131	261	392	653	1,305	2,611	3,916	5,222	6,527	7,833	9,138	10,444	11,749	13,055
90	147	294	441	734	1,469	2,937	4,406	5,875	7,343	8,812	10,280	11,749	13,218	14,686
100	163	326	490	816	1,632	3,264	4,895	6,527	8,159	9,791	11,423	13,055	14,686	16,318

Table A3.5 – Guillemot non-breeding season displacement matrix (PFI plus 2 km buffer) – Furness approach (replaces Table 3.5 of Appendix 15.5 of the 2024 EIAR). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	19	38	56	94	188	375	563	751	938	1,126	1,314	1,501	1,689	1,877
20	38	75	113	188	375	751	1,126	1,501	1,877	2,252	2,627	3,003	3,378	3,753
30	56	113	169	281	563	1,126	1,689	2,252	2,815	3,378	3,941	4,504	5,067	5,630
40	75	150	225	375	751	1,501	2,252	3,003	3,753	4,504	5,255	6,005	6,756	7,506
50	94	188	281	469	938	1,877	2,815	3,753	4,692	5,630	6,568	7,506	8,445	9,383
60	113	225	338	563	1,126	2,252	3,378	4,504	5,630	6,756	7,882	9,008	10,134	11,260
70	131	263	394	657	1,314	2,627	3,941	5,255	6,568	7,882	9,195	10,509	11,823	13,136
80	150	300	450	751	1,501	3,003	4,504	6,005	7,506	9,008	10,509	12,010	13,512	15,013
90	169	338	507	844	1,689	3,378	5,067	6,756	8,445	10,134	11,823	13,512	15,201	16,890
100	188	375	563	938	1,877	3,753	5,630	7,506	9,383	11,260	13,136	15,013	16,890	18,766

3.2 Razorbill

3.2.1 In Response to RFI Section 1 (b), and as a result if the additional 12 month DAS data, confidence intervals for mean peak bio-season counts for razorbill are presented in Table A3.6, and the full range of potential impacts based on the matrix approach are presented in Table A3.7 to Table A3.10, these tables replace Table 3-6 to Table 3-10 of Appendix 15.5 of the 2024 EIAR.

Table A3.6 – Mean peak bio-season counts for razorbill in the PFI plus 2 km buffer, with upper and lower 95% confidence intervals (replaces Table 3.6 of Appendix 15.5 of the 2024 EIAR).

Bio-season	Mean peak count	Lower 95% CI	Upper 95% CI
Spring (Jan-Mar)	915	669	1,180
Breeding (Apr-Jul)	1,110	418	1,778
Autumn (Aug-Oct)	4,896	1,995	8,087
Winter (Nov-Dec)	1,225	470	2,010

Table A3.7 – Razorbill spring migration season displacement matrix (PFI plus 2 km buffer) (replaces Table 3.7 of Appendix 15.5 of the 2024 EIAR). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	1	2	3	5	9	18	27	37	46	55	64	73	82	92
20	2	4	5	9	18	37	55	73	92	110	128	146	165	183
30	3	5	8	14	27	55	82	110	137	165	192	220	247	275
40	4	7	11	18	37	73	110	146	183	220	256	293	330	366
50	5	9	14	23	46	92	137	183	229	275	320	366	412	458
60	5	11	16	27	55	110	165	220	275	330	384	439	494	549
70	6	13	19	32	64	128	192	256	320	384	449	513	577	641
80	7	15	22	37	73	146	220	293	366	439	513	586	659	732
90	8	16	25	41	82	165	247	330	412	494	577	659	741	824
100	9	18	27	46	92	183	275	366	458	549	641	732	824	915

Table A3.8 – Razorbill breeding season displacement matrix (PFI plus 2 km buffer) (replaces Table 3.8 of Appendix 15.5 of the 2024 EIAR). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	1	2	3	6	11	22	33	44	55	67	78	89	100	111
20	2	4	7	11	22	44	67	89	111	133	155	178	200	222
30	3	7	10	17	33	67	100	133	166	200	233	266	300	333
40	4	9	13	22	44	89	133	178	222	266	311	355	399	444
50	6	11	17	28	55	111	166	222	277	333	388	444	499	555
60	7	13	20	33	67	133	200	266	333	399	466	533	599	666
70	8	16	23	39	78	155	233	311	388	466	544	621	699	777
80	9	18	27	44	89	178	266	355	444	533	621	710	799	888
90	10	20	30	50	100	200	300	399	499	599	699	799	899	999
100	11	22	33	55	111	222	333	444	555	666	777	888	999	1,110

Table A3.9 – Razorbill post-breeding migration season displacement matrix (PFI plus 2 km buffer) (replaces Table 3.9 of Appendix 15.5 of the 2024 EIAR). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	5	10	15	24	49	98	147	196	245	294	343	392	441	490
20	10	20	29	49	98	196	294	392	490	587	685	783	881	979
30	15	29	44	73	147	294	441	587	734	881	1,028	1,175	1,322	1,469
40	20	39	59	98	196	392	587	783	979	1,175	1,371	1,567	1,762	1,958
50	24	49	73	122	245	490	734	979	1,224	1,469	1,714	1,958	2,203	2,448
60	29	59	88	147	294	587	881	1,175	1,469	1,762	2,056	2,350	2,644	2,937
70	34	69	103	171	343	685	1,028	1,371	1,714	2,056	2,399	2,742	3,084	3,427
80	39	78	118	196	392	783	1,175	1,567	1,958	2,350	2,742	3,133	3,525	3,917
90	44	88	132	220	441	881	1,322	1,762	2,203	2,644	3,084	3,525	3,966	4,406
100	49	98	147	245	490	979	1,469	1,958	2,448	2,937	3,427	3,917	4,406	4,896

Table A3.10 – Razorbill migration-free winter season displacement matrix (PFI plus 2 km buffer) (replaces Table 3.10 of Appendix 15.5 of the 2024 EIAR). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	1	2	4	6	12	25	37	49	61	74	86	98	110	123
20	2	5	7	12	25	49	74	98	123	147	172	196	221	245
30	4	7	11	18	37	74	110	147	184	221	257	294	331	368
40	5	10	15	25	49	98	147	196	245	294	343	392	441	490
50	6	12	18	31	61	123	184	245	306	368	429	490	551	613
60	7	15	22	37	74	147	221	294	368	441	515	588	662	735
70	9	17	26	43	86	172	257	343	429	515	600	686	772	858
80	10	20	29	49	98	196	294	392	490	588	686	784	882	980
90	11	22	33	55	110	221	331	441	551	662	772	882	993	1,103
100	12	25	37	61	123	245	368	490	613	735	858	980	1,103	1,225

3.3 Puffin

3.3.1 In Response to RFI Section 1 (b), and as a result of the additional 12 month DAS data, confidence intervals for mean peak bio-season counts for puffin are presented in Table A3.11, and the full range of potential impacts based on the matrix approach are presented in Table A3.12 to Table A3.13, these tables replace Table 3-11 to Table 3-13 of Appendix 15.5 of the 2024 EIAR.

Table A3.11 – Mean peak bio-season counts for puffin in the PFI plus 2 km buffer, with upper and lower 95% confidence intervals (replaces Table 3.11 of Appendix 15.5 of the 2024 EIAR).

Bio-season	Mean peak count	Lower 95% CI	Upper 95% CI
Breeding (Apr-Jul)	17	2	31
Non-breeding (Aug-Mar)	14	3	40

Table A3.12 – Puffin breeding season displacement matrix (PFI plus 2 km buffer) (replaces Table 3.12 of Appendix 15.5 of the 2024 EIAR). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	1	1	1	1	1	1	2	2
20	0	0	0	0	0	1	1	1	2	2	2	3	3	3
30	0	0	0	0	1	1	2	2	3	3	4	4	5	5
40	0	0	0	0	1	1	2	3	3	4	5	5	6	7
50	0	0	0	0	1	2	3	3	4	5	6	7	8	9
60	0	0	0	1	1	2	3	4	5	6	7	8	9	10
70	0	0	0	1	1	2	4	5	6	7	8	10	11	12
80	0	0	0	1	1	3	4	5	7	8	10	11	12	14
90	0	0	0	1	2	3	5	6	8	9	11	12	14	15
100	0	0	1	1	2	3	5	7	9	10	12	14	15	17

Table A3.13 – Puffin nonbreeding season displacement matrix (PFI plus 2 km buffer) (replaces Table 3.13 of Appendix 15.5 of the 2024 EIAR). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	1	1	1	1	1	1	1
20	0	0	0	0	0	1	1	1	1	2	2	2	3	3
30	0	0	0	0	0	1	1	2	2	3	3	3	4	4
40	0	0	0	0	1	1	2	2	3	3	4	4	5	6
50	0	0	0	0	1	1	2	3	4	4	5	6	6	7
60	0	0	0	0	1	2	3	3	4	5	6	7	8	8
70	0	0	0	0	1	2	3	4	5	6	7	8	9	10
80	0	0	0	1	1	2	3	4	6	7	8	9	10	11
90	0	0	0	1	1	3	4	5	6	8	9	10	11	13
100	0	0	0	1	1	3	4	6	7	8	10	11	13	14

3.4 Manx shearwater

3.4.1 In Response to RFI Section 1 (b), and as a result of the additional 12 month DAS data, confidence intervals for mean peak bio-season counts for Manx shearwater are presented in Table A3.14, and the full range of potential impacts based on the matrix approach are presented in Table A3.14 to Table A3.17, these tables replace Table 3-14 to Table 3-17 of Appendix 15.5 of the 2024 EIAR.

Table A3.14 – Mean peak bio-season counts for Manx shearwater in the PFI plus 2 km buffer, with upper and lower 95% confidence intervals (replaces Table 3.14 of Appendix 15.5 of the 2024 EIAR).

Bio-season	Mean peak count	Lower 95% CI	Upper 95% CI
Spring (Jan-Mar)	0	0	0
Breeding (Apr-Jul)	3,975	2,165	5,940
Autumn (Sep-Oct)	458	211	759

Table A3.15 – Manx shearwater spring migration season displacement matrix (PFI plus 2 km buffer) (replaces Table 3.15 of Appendix 15.5 of the 2024 EIAR).

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A3.16– Manx shearwater breeding season displacement matrix (PFI plus 2 km buffer) (replaces Table 3.16 of Appendix 15.5 of the 2024 EIAR).

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	4	8	12	20	40	80	119	159	199	239	278	318	358	398
20	8	16	24	40	80	159	239	318	398	477	557	636	716	795
30	12	24	36	60	119	239	358	477	596	716	835	954	1,073	1,193
40	16	32	48	80	159	318	477	636	795	954	1,113	1,272	1,431	1,590
50	20	40	60	99	199	398	596	795	994	1,193	1,391	1,590	1,789	1,988
60	24	48	72	119	239	477	716	954	1,193	1,431	1,670	1,908	2,147	2,385
70	28	56	83	139	278	557	835	1,113	1,391	1,670	1,948	2,226	2,504	2,783
80	32	64	95	159	318	636	954	1,272	1,590	1,908	2,226	2,544	2,862	3,180
90	36	72	107	179	358	716	1,073	1,431	1,789	2,147	2,504	2,862	3,220	3,578
100	40	80	119	199	398	795	1,193	1,590	1,988	2,385	2,783	3,180	3,578	3,975

Table A3.17– Manx shearwater autumn migration season displacement matrix (PFI plus 2 km buffer) (replaces Table 3.17 of Appendix 15.5 of the 2024 EIAR).

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	1	1	2	5	9	14	18	23	27	32	37	41	46
20	1	2	3	5	9	18	27	37	46	55	64	73	82	92
30	1	3	4	7	14	27	41	55	69	82	96	110	124	137
40	2	4	5	9	18	37	55	73	92	110	128	147	165	183
50	2	5	7	11	23	46	69	92	115	137	160	183	206	229
60	3	5	8	14	27	55	82	110	137	165	192	220	247	275
70	3	6	10	16	32	64	96	128	160	192	224	256	289	321
80	4	7	11	18	37	73	110	147	183	220	256	293	330	366
90	4	8	12	21	41	82	124	165	206	247	289	330	371	412
100	5	9	14	23	46	92	137	183	229	275	321	366	412	458

3.5 Gannet

3.5.1 In Response to RFI Section 1 (b), and as a result of the additional 12 month DAS data, confidence intervals for mean peak bio-season counts for gannet are presented in Table A3.18, and the full range of potential impacts based on the matrix approach in Table A3.19 to Table A3.21, these tables replace Table 3-18 to Table 3-21 of Appendix 15.5 of the 2024 EIAR.

Table A3.18– Mean peak bio-season counts for gannet in the PFI plus 2 km buffer, with upper and lower 95% confidence intervals (replaces Table 3.18 of Appendix 15.5 of the 2024 EIAR).

Bio-season	Mean peak count	Lower 95% CI	Upper 95% CI
Spring (Dec–Feb)	9	2	19
Breeding (Mar–Sep)	270	130	446
Autumn (Oct–Nov)	135	65	213

Table A3.19 - Gannet return migration season displacement matrix (PFI plus 2 km buffer) (replaces Table 3.19 of Appendix 15.5 of the 2024 EIAR). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	0	0	1	1	1	1	1
20	0	0	0	0	0	0	1	1	1	1	1	1	2	2
30	0	0	0	0	0	1	1	1	1	2	2	2	2	3
40	0	0	0	0	0	1	1	1	2	2	2	3	3	3
50	0	0	0	0	0	1	1	2	2	3	3	3	4	4
60	0	0	0	0	1	1	2	2	3	3	4	4	5	5
70	0	0	0	0	1	1	2	2	3	4	4	5	5	6
80	0	0	0	0	1	1	2	3	3	4	5	6	6	7
90	0	0	0	0	1	2	2	3	4	5	5	6	7	8
100	0	0	0	0	1	2	3	3	4	5	6	7	8	9

Table A3.20 – Gannet breeding season displacement matrix (PFI plus 2 km buffer) (replaces Table 3.20 of Appendix 15.5 of the 2024 EIAR). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	1	1	1	3	5	8	11	14	16	19	22	24	27
20	1	1	2	3	5	11	16	22	27	32	38	43	49	54
30	1	2	2	4	8	16	24	32	41	49	57	65	73	81
40	1	2	3	5	11	22	32	43	54	65	76	86	97	108
50	1	3	4	7	14	27	41	54	68	81	95	108	122	135
60	2	3	5	8	16	32	49	65	81	97	114	130	146	162
70	2	4	6	9	19	38	57	76	95	114	132	151	170	189
80	2	4	6	11	22	43	65	86	108	130	151	173	195	216
90	2	5	7	12	24	49	73	97	122	146	170	195	219	243
100	3	5	8	14	27	54	81	108	135	162	189	216	243	270

Table A3.21– Gannet post-breeding migration season displacement matrix (PFI plus 2 km buffer) (replaces Table 3.21 of Appendix 15.5 of the 2024 EIAR). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	1	1	3	4	5	7	8	9	11	12	14
20	0	1	1	1	3	5	8	11	14	16	19	22	24	27
30	0	1	1	2	4	8	12	16	20	24	28	32	36	41
40	1	1	2	3	5	11	16	22	27	32	38	43	49	54
50	1	1	2	3	7	14	20	27	34	41	47	54	61	68
60	1	2	2	4	8	16	24	32	41	49	57	65	73	81
70	1	2	3	5	9	19	28	38	47	57	66	76	85	95
80	1	2	3	5	11	22	32	43	54	65	76	86	97	108
90	1	2	4	6	12	24	36	49	61	73	85	97	109	122
100	1	3	4	7	14	27	41	54	68	81	95	108	122	135

3.6 Red-Throated Diver

3.6.1 In Response to RFI Section 8 (a) (ii), RFI Section 1 (b), and as a result of the additional 12 month DAS data, confidence intervals for mean peak bio-season counts for red-throated diver are presented in Table A3.22 and Table A3.23, and the full range of potential impacts based on the matrix approach in Table A3.24 to Table A3.29. These are additional tables and do not replace any within Appendix 15.5 of the 2024 EIAR.

Table A3.22– Mean peak bio-season counts for red-throated diver in the PFI plus 4km buffer, with upper and lower 95% confidence intervals.

Bio-season	Mean peak count	Lower 95% CI	Upper 95% CI
Spring (Feb-Apr)	0	0	0
Autumn (Sep-Nov)	7	1	20
Winter (Dec-Jan)	14	1	35

Table A3.23– Mean peak bio-season counts for red-throated diver in the PFI plus 10km buffer, with upper and lower 95% confidence intervals. Note the matrices display the displacement in the 4-10km buffer.

Bio-season	Mean peak count	Lower 95% CI	Upper 95% CI
Spring (Feb-Apr)	117	43	207
Autumn (Sep-Nov)	170	66	290
Winter (Dec-Jan)	99	23	189

Table A3.24 – Red-throated diver autumn migration season displacement matrix (PFI plus 4 km buffer).

Displaced (%)	Mortality Rate (%)													
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	0	0	0	0	1	1	1
20	0	0	0	0	0	0	0	1	1	1	1	1	1	1
30	0	0	0	0	0	0	1	1	1	1	1	2	2	2
40	0	0	0	0	0	1	1	1	1	2	2	2	3	3
50	0	0	0	0	0	1	1	1	2	2	2	3	3	4
60	0	0	0	0	0	1	1	2	2	3	3	3	4	4
70	0	0	0	0	0	1	1	2	2	3	3	4	4	5
80	0	0	0	0	1	1	2	2	3	3	4	4	5	6
90	0	0	0	0	1	1	2	3	3	4	4	5	6	6
100	0	0	0	0	1	1	2	3	4	4	5	6	6	7

Table A3.25 – Red-throated diver migration-free winter season displacement matrix (PFI plus 4 km buffer).

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	1	1	1	1	1	1	1
20	0	0	0	0	0	1	1	1	1	2	2	2	3	3
30	0	0	0	0	0	1	1	2	2	3	3	3	4	4
40	0	0	0	0	1	1	2	2	3	3	4	4	5	6
50	0	0	0	0	1	1	2	3	4	4	5	6	6	7
60	0	0	0	0	1	2	3	3	4	5	6	7	8	8
70	0	0	0	0	1	2	3	4	5	6	7	8	9	10
80	0	0	0	1	1	2	3	4	6	7	8	9	10	11
90	0	0	0	1	1	3	4	5	6	8	9	10	11	13
100	0	0	0	1	1	3	4	6	7	8	10	11	13	14

Table A3.26– Red-throated diver spring migration season displacement matrix (PFI plus 4 km buffer).

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A3.27 – Red-throated diver autumn migration season displacement matrix (4 km to 10 km buffer).

Displaced (%)	Mortality Rate (%)													
	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	1	2	3	5	7	8	10	11	13	15	16
20	0	1	1	2	3	7	10	13	16	20	23	26	29	33
30	0	1	1	2	5	10	15	20	24	29	34	39	44	49
40	1	1	2	3	7	13	20	26	33	39	46	52	59	65
50	1	2	2	4	8	16	24	33	41	49	57	65	73	82
60	1	2	3	5	10	20	29	39	49	59	68	78	88	98
70	1	2	3	6	11	23	34	46	57	68	80	91	103	114
80	1	3	4	7	13	26	39	52	65	78	91	104	117	130
90	1	3	4	7	15	29	44	59	73	88	103	117	132	147
100	2	3	5	8	16	33	49	65	82	98	114	130	147	163

Table A3.28 – Red-throated diver migration-free winter season displacement matrix (4 km to 10 km buffer).

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	1	2	3	3	4	5	6	7	8	9
20	0	0	1	1	2	3	5	7	9	10	12	14	15	17
30	0	1	1	1	3	5	8	10	13	15	18	20	23	26
40	0	1	1	2	3	7	10	14	17	20	24	27	31	34
50	0	1	1	2	4	9	13	17	21	26	30	34	38	43
60	1	1	2	3	5	10	15	20	26	31	36	41	46	51
70	1	1	2	3	6	12	18	24	30	36	42	48	54	60
80	1	1	2	3	7	14	20	27	34	41	48	54	61	68
90	1	2	2	4	8	15	23	31	38	46	54	61	69	77
100	1	2	3	4	9	17	26	34	43	51	60	68	77	85

Table A3.29 – Red-throated diver spring migration season displacement matrix (4 km to 10 km buffer).

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	1	1	2	4	5	6	7	8	9	11	12
20	0	0	1	1	2	5	7	9	12	14	16	19	21	23
30	0	1	1	2	4	7	11	14	18	21	25	28	32	35
40	0	1	1	2	5	9	14	19	23	28	33	37	42	47
50	1	1	2	3	6	12	18	23	29	35	41	47	53	59
60	1	1	2	4	7	14	21	28	35	42	49	56	63	70
70	1	2	2	4	8	16	25	33	41	49	57	66	74	82
80	1	2	3	5	9	19	28	37	47	56	66	75	84	94
90	1	2	3	5	11	21	32	42	53	63	74	84	95	105
100	1	2	4	6	12	23	35	47	59	70	82	94	105	117

3.7 Kittiwake

3.7.1 **In response to RFI Section 8 (c) (ii), this is a new section which has been added to Appendix A15.5. Tables A3.30 to A3.33 are new and do not replace any tables from the 2024 EIAR. The following text has been added:**

3.7.2 Confidence intervals (CIs) for mean peak bio-season counts for kittiwake are presented in Table A3.30, and the full range of potential impacts based on the matrix approach in Table A3.31 to Table A3.33.

Table A3.30 - Mean peak bio-season counts for kittiwake in the PFI plus 2 km buffer, with upper and lower 95% confidence intervals.

Bio-season	Mean peak count	Lower 95% CI	Upper 95% CI
Furness Approach			
Spring (Jan-Feb)	498	211	1,047
Breeding (Mar-Aug)	903	425	1,406
Autumn (Sep-Dec)	486	228	865
Project Approach			
Spring (Jan-Apr)	612	297	1,183
Breeding (May-Jul)	594	291	980
Autumn (Aug-Dec)	930	338	1,583

Table A3.31 - Kittiwake return migration season displacement matrix – Furness Approach (PFI plus 2 km buffer). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	1	1	2	5	10	15	20	25	30	35	40	45	50
20	1	2	3	5	10	20	30	40	50	60	70	80	90	100
30	1	3	4	7	15	30	45	60	75	90	105	120	134	149
40	2	4	6	10	20	40	60	80	100	120	139	159	179	199
50	2	5	7	12	25	50	75	100	125	149	174	199	224	249
60	3	6	9	15	30	60	90	120	149	179	209	239	269	299
70	3	7	10	17	35	70	105	139	174	209	244	279	314	349
80	4	8	12	20	40	80	120	159	199	239	279	319	359	398
90	4	9	13	22	45	90	134	179	224	269	314	359	403	448
100	5	10	15	25	50	100	149	199	249	299	349	398	448	498

Table A3.32 - Kittiwake breeding season displacement matrix – Furness Approach (PFI plus 2 km buffer). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	1	2	3	5	9	18	27	36	45	54	63	72	81	90
20	2	4	5	9	18	36	54	72	90	108	126	144	163	181
30	3	5	8	14	27	54	81	108	135	163	190	217	244	271
40	4	7	11	18	36	72	108	144	181	217	253	289	325	361
50	5	9	14	23	45	90	135	181	226	271	316	361	406	452
60	5	11	16	27	54	108	163	217	271	325	379	433	488	542
70	6	13	19	32	63	126	190	253	316	379	442	506	569	632
80	7	14	22	36	72	144	217	289	361	433	506	578	650	722
90	8	16	24	41	81	163	244	325	406	488	569	650	731	813
100	9	18	27	45	90	181	271	361	452	542	632	722	813	903

Table A3.33 - Kittiwake post-breeding migration season displacement matrix – Furness Approach (PFI plus 2 km buffer). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	1	1	2	5	10	15	19	24	29	34	39	44	49
20	1	2	3	5	10	19	29	39	49	58	68	78	87	97
30	1	3	4	7	15	29	44	58	73	87	102	117	131	146
40	2	4	6	10	19	39	58	78	97	117	136	156	175	194
50	2	5	7	12	24	49	73	97	122	146	170	194	219	243
60	3	6	9	15	29	58	87	117	146	175	204	233	262	292
70	3	7	10	17	34	68	102	136	170	204	238	272	306	340
80	4	8	12	19	39	78	117	156	194	233	272	311	350	389
90	4	9	13	22	44	87	131	175	219	262	306	350	394	437
100	5	10	15	24	49	97	146	194	243	292	340	389	437	486

Table A3.34 - Kittiwake-return migration season displacement matrix – Project Approach (PFI plus 2 km buffer). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	1	1	2	3	6	12	18	24	31	37	43	49	55	61
20	1	2	4	6	12	24	37	49	61	73	86	98	110	122
30	2	4	6	9	18	37	55	73	92	110	129	147	165	184
40	2	5	7	12	24	49	73	98	122	147	171	196	220	245
50	3	6	9	15	31	61	92	122	153	184	214	245	275	306
60	4	7	11	18	37	73	110	147	184	220	257	294	330	367
70	4	9	13	21	43	86	129	171	214	257	300	343	386	428
80	5	10	15	24	49	98	147	196	245	294	343	392	441	490
90	6	11	17	28	55	110	165	220	275	330	386	441	496	551
100	6	12	18	31	61	122	184	245	306	367	428	490	551	612

Table A3.35 - Kittiwake-breeding season displacement matrix – Project Approach (PFI plus 2 km buffer). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	1	1	2	3	6	12	18	24	30	36	42	48	53	59
20	1	2	4	6	12	24	36	48	59	71	83	95	107	119
30	2	4	5	9	18	36	53	71	89	107	125	143	160	178
40	2	5	7	12	24	48	71	95	119	143	166	190	214	238
50	3	6	9	15	30	59	89	119	149	178	208	238	267	297
60	4	7	11	18	36	71	107	143	178	214	249	285	321	356
70	4	8	12	21	42	83	125	166	208	249	291	333	374	416
80	5	10	14	24	48	95	143	190	238	285	333	380	428	475
90	5	11	16	27	53	107	160	214	267	321	374	428	481	535
100	6	12	18	30	59	119	178	238	297	356	416	475	535	594

Table A3.36 - Kittiwake-post-breeding season displacement matrix – Project Approach (PFI plus 2 km buffer). The developer (green) and guidance (blue) approach have been highlighted.

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	1	2	3	5	9	19	28	37	47	56	65	74	84	93
20	2	4	6	9	19	37	56	74	93	112	130	149	167	186
30	3	6	8	14	28	56	84	112	140	167	195	223	251	279
40	4	7	11	19	37	74	112	149	186	223	260	298	335	372
50	5	9	14	23	47	93	140	186	233	279	326	372	419	465
60	6	11	17	28	56	112	167	223	279	335	391	446	502	558
70	7	13	20	33	65	130	195	260	326	391	456	521	586	651
80	7	15	22	37	74	149	223	298	372	446	521	595	670	744
90	8	17	25	42	84	167	251	335	419	502	586	670	753	837
100	9	19	28	47	93	186	279	372	465	558	651	744	837	930

4 Results (ECC)

4.1.1 The following section has been updated in response to RFI Section 1 (b), to reflect the use of the Applicants DAS campaign carried out between September 2024 to August 2025. The DAS campaign provided density and abundance data for ornithological species within the boundaries of the NWIS cSPA, which includes both the ECC and PFI. As such, all tables in this section present updated results that replace results presented within Appendix 15.5 of the 2024 EIAR. Therefore, these have not all been highlighted by grey shading.

4.1 Common scoter

Table A4.1–Common scoter non-breeding season displacement matrix (ECC) (replaces Table 4.1 of Appendix 15.5 of the 2024 EIAR).

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	1	2	2	4	8	15	23	30	38	45	53	60	68	75
20	2	3	5	8	15	30	45	60	75	90	106	121	136	151
30	2	5	7	11	23	45	68	90	113	136	158	181	204	226
40	3	6	9	15	30	60	90	121	151	181	211	241	271	302
50	4	8	11	19	38	75	113	151	188	226	264	302	339	377
60	5	9	14	23	45	90	136	181	226	271	317	362	407	452
70	5	11	16	26	53	106	158	211	264	317	369	422	475	528
80	6	12	18	30	60	121	181	241	302	362	422	482	543	603
90	7	14	20	34	68	136	204	271	339	407	475	543	611	678
100	8	15	23	38	75	151	226	302	377	452	528	603	678	754

4.2 Red-throated diver

Table A4.2– Red-throated diver spring migration season displacement matrix (ECC) (replaces Table 4.2 of Appendix 15.5 of the 2024 EIAR).

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	1	1	1	1	2	2	2	3	3
20	0	0	0	0	1	1	2	2	3	3	4	4	5	6
30	0	0	0	0	1	2	3	3	4	5	6	7	8	8
40	0	0	0	1	1	2	3	4	6	7	8	9	10	11
50	0	0	0	1	1	3	4	6	7	8	10	11	13	14
60	0	0	1	1	2	3	5	7	8	10	12	13	15	17
70	0	0	1	1	2	4	6	8	10	12	14	16	18	20
80	0	0	1	1	2	4	7	9	11	13	16	18	20	22
90	0	1	1	1	3	5	8	10	13	15	18	20	23	25
100	0	1	1	1	3	6	8	11	14	17	20	22	25	28

Table A4.3– Red-throated diver autumn migration season displacement matrix (ECC) (replaces Table 4.3 of Appendix 15.5 of the 2024 EIAR).

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	1	1	2	3	3	4	5	5	6	7
20	0	0	0	1	1	3	4	5	7	8	9	11	12	13
30	0	0	1	1	2	4	6	8	10	12	14	16	18	20
40	0	1	1	1	3	5	8	11	13	16	19	21	24	27
50	0	1	1	2	3	7	10	13	17	20	23	27	30	33
60	0	1	1	2	4	8	12	16	20	24	28	32	36	40
70	0	1	1	2	5	9	14	19	23	28	33	37	42	46
80	1	1	2	3	5	11	16	21	27	32	37	42	48	53
90	1	1	2	3	6	12	18	24	30	36	42	48	54	60
100	1	1	2	3	7	13	20	27	33	40	46	53	60	66

Table A4.4– Red-throated diver migration-free winter season displacement matrix (ECC) (replaces Table 4.4 of Appendix 15.5 of the 2024 EIAR).

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	1	1	2	2	3	3	4	4	4
20	0	0	0	0	1	2	3	4	4	5	6	7	8	9
30	0	0	0	1	1	3	4	5	7	8	9	11	12	13
40	0	0	1	1	2	4	5	7	9	11	13	14	16	18
50	0	0	1	1	2	4	7	9	11	13	16	18	20	22
60	0	1	1	1	3	5	8	11	13	16	19	21	24	27
70	0	1	1	2	3	6	9	13	16	19	22	25	28	31
80	0	1	1	2	4	7	11	14	18	21	25	29	32	36
90	0	1	1	2	4	8	12	16	20	24	28	32	36	40
100	0	1	1	2	4	9	13	18	22	27	31	36	40	45

4.3 Great northern diver

Table A4.5– Great northern diver non-breeding season displacement matrix (ECC) (replaces Table 4.5 of Appendix 15.5 of the 2024 EIAR).

	Mortality Rate (%)													
Displaced (%)	1	2	3	5	10	20	30	40	50	60	70	80	90	100
10	0	0	0	0	0	0	0	0	0	1	1	1	1	1
20	0	0	0	0	0	0	1	1	1	1	1	2	2	2
30	0	0	0	0	0	1	1	1	1	2	2	2	3	3
40	0	0	0	0	0	1	1	2	2	2	3	3	4	4
50	0	0	0	0	0	1	1	2	2	3	3	4	4	5
60	0	0	0	0	1	1	2	2	3	4	4	5	5	6
70	0	0	0	0	1	1	2	3	3	4	5	6	6	7
80	0	0	0	0	1	2	2	3	4	5	6	6	7	8
90	0	0	0	0	1	2	3	4	4	5	6	7	8	9
100	0	0	0	0	1	2	3	4	5	6	7	8	9	10

5 References

This section has been updated with multiple references and therefore fully replaces Section 5 within Appendix 15.5 of the 2024 EIAR.

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