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West of Orkney Windfarm

Offshore Ornithology Additional Information

Appendix 6 - HRA: Calculation of mortalities and change in survival rate at SPA population scales for Project alone and in-combination impacts

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1 INTRODUCTION

1.1 Project summary

1. Offshore Wind Power Limited (OWPL) ('the Applicant') is proposing the development of the West of Orkney Windfarm ('the Project'), an Offshore Wind Farm (OWF), located at least 23 kilometres (km) from the north coast of Scotland and 28 km from the west coast of Hoy, Orkney (**Figure 1-1**).

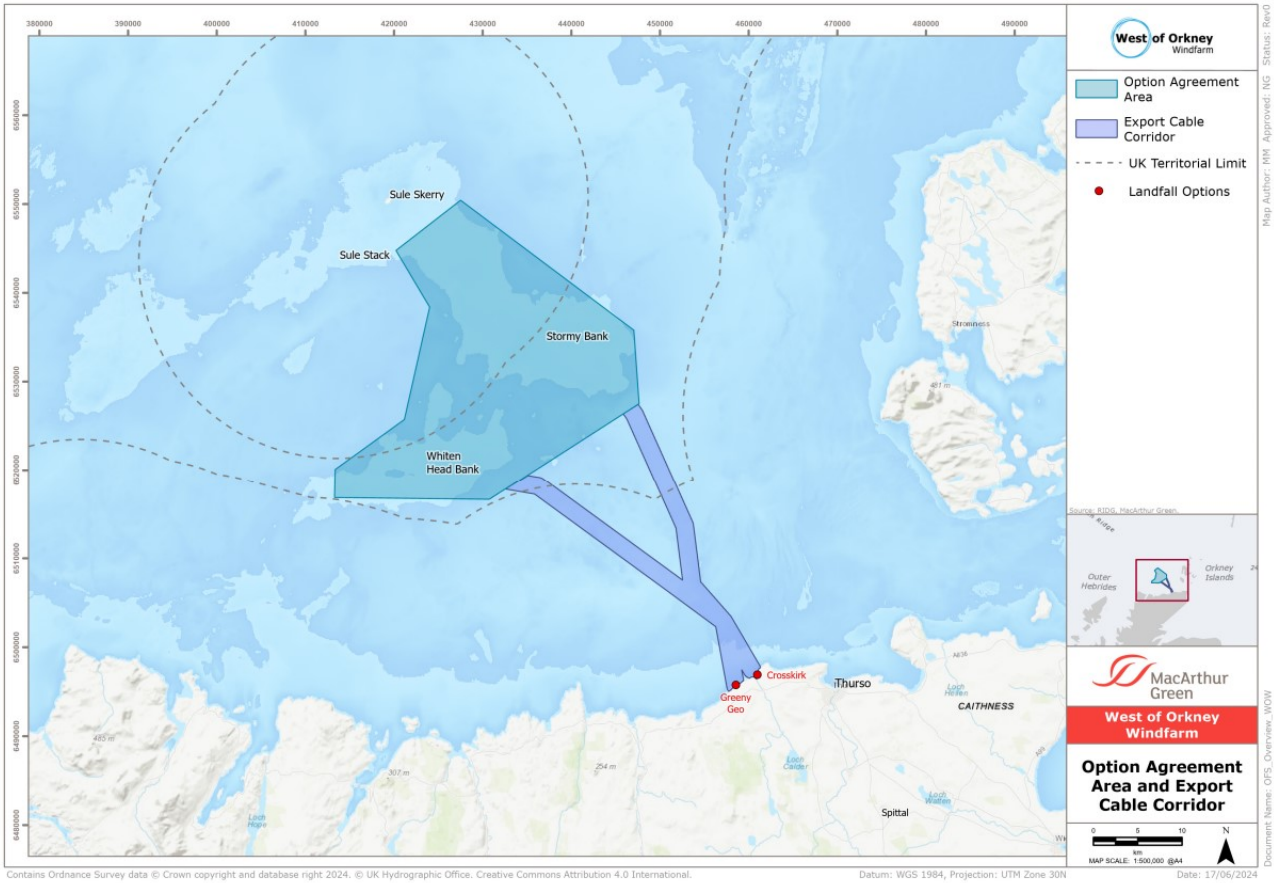

Figure 1-1. Map showing location of the West of Orkney Windfarm Option Agreement Area (OAA) and Export Cable Corridor (ECC) which together, comprise the Offshore Project Area.

2. The Offshore Project will comprise up to 125 wind turbine generators (WTGs) with fixed-bottom foundations and up to five Offshore Substation Platforms (OSPs). The area within which the WTGs, OSPs and associated infrastructure will be located is the Option Agreement Area (OAA). The OAA covers an area of 657 km^2. The export cables will be located within the Export Cable Corridor (ECC), with landfall options at Greeny Geo and/or Crosskirk in Caithness (**Figure 1-1**). The OAA and ECC together comprise the offshore Project area.

3. The Applicant submitted an application for consent under Section 36 of the Electricity Act 1989 and Marine Licences under Part 4 of the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 to Scottish Ministers in September 2023 for the offshore components of the Project seaward of Mean High Water Springs (MHWS).

4. In accordance with relevant EIA Regulations[1], an Offshore Environmental Impact Assessment (EIA) Report was submitted to Marine Directorate – Licensing Operations Team (MD-LOT) as part of the Applicant's consent application (the 'Offshore EIA Report'). A Report to Information Appropriate Assessment (RIAA) was also submitted as part of the Offshore Application to provide the Competent Authority (MD-LOT) with the information required to assist them in undertaking an Appropriate Assessment (AA) for the offshore Project as required under the Conservation (Natural Habitats & c.) Regulations 1994 (as amended), the Conservation of Marine Habitats and Species Regulations 2017 and The Conservation of Habitats and Species Regulations 2017 (as amended) (hereafter referred to as the 'Habitats Regulations').

5. Following the review of the Applicant's application, and upon receipt of representations from consultees, MD-LOT issued a request for Additional Information on offshore ornithology. This report is part of the Ornithology Additional Information (OAI).

1.2 Relationship between the original application and the OAI

6. The Ornithology Additional Information (OAI) (see **Introduction to the Additional Ornithology Information** for structure of OAI and list of all reports) includes:

   - an **Addendum to the Offshore EIA Report** in the form of a revised EIA chapter for Offshore and Intertidal Ornithology. All ornithology information in this report should be read in place of information in the original EIA chapter;
   - an **Addendum to the RIAA**. All ornithology information in this report should be read in place of information in the original RIAA (with the exception of information on pre-application consultation);
   - a set of nine technical appendices. This Appendix 6 HRA - Calculation of mortalities and change in survival rate at SPA population scales for Project alone and in-combination impacts is one of the nine technical appendices. These reports entirely replace the original Supporting Study 12: Offshore Ornithology Technical Supporting Study.

7. NatureScot's pre- and post-application Project-specific advice and online guidance notes[2] were followed throughout the OAI. To demonstrate this, reference to NatureScot's guidance and advice is made throughout the OAI, either in the text or in separate text boxes.

1.3 Purpose of the Report

8. This report apportions estimated collision and displacement mortality, from the Project and from other OWFs, to SPA populations. Collision estimates (see **Appendix 2 - HRA: HRA Screening Technical Report**) and displacement estimates (see **Appendix 4 - EIA and HRA: Displacement Technical Report**) were apportioned to SPAs using apportioning weightings

[1] *The relevant EIA Regulations include the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017, the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017, and the Marine Works (Environmental Impact Assessment) Regulations 2007.*

[2] Guidance Note 1: Guidance to support Offshore Wind Applications: Marine Ornithology - Overview | NatureScot

calculated for each SPA population for the breeding and non-breeding season, for the Project and other OWF's impacts (see **Appendix 5 - HRA: Apportioning Technical Report**).

9. An SPA population is described in terms of numbers of breeding birds at the colony whereas the Project's estimate collision and displacement mortality is calculated for all birds using the OAA, including immature and non-breeding birds. Thus, to apportion impacts to an SPA, firstly the proportion of immature birds in the total Project mortality needs to be removed. Additionally, adult birds are known to take a year off breeding occasionally, known as a 'sabbatical'. The proportion of sabbatical birds in the estimated breeding season Project mortality also needs to be removed.

10. The next stage is to multiply the remaining adult breeding bird mortality by the apportioning weightings for each SPA. This gives an estimated collision and displacement mortality, by season, for each SPA population. The change to baseline annual adult survival rate, in response to the additional collision and displacement mortality, is then calculated.

11. Where impacts are higher, above a pre-determined threshold, the population response to the predicted change in survival is assessed using a population viability analysis (PVA) model. Where impacts are lower, no PVA is required and it can be concluded that the mortality is sufficiently small to not undermine the site's conservation objectives.

12. As this report focusses on impacts to SPA populations, the content of this report is only relevant to HRA and not to EIA.

1.4 Terminology

13. The following terminology is used in this report:

- Option Agreement Area (OAA): this is the area within which WTGs and other offshore Project infrastructure will be installed;
- Export Cable Corridor (ECC) is the area from the OAA to the landfall site in which the export cable will be placed;
- Offshore Project area comprises the OAA and ECC;
- OAA plus 2 km buffer: This includes a 2 km wide 'zone of influence' around the OAA, allowing for changes in bird behaviour (e.g. disturbance/displacement) in the vicinity of the OAA;
- OAA plus 4 km buffer: the OAA plus 4 km buffer was the area used for characterising baseline seabird numbers and distribution for the Project (see **Appendix 1 - EIA and HRA: Baseline Site Characterisation Technical Report**);
- WTG: Wind Turbine Generator.

2 METHODS

14. A list of OWFs to be considered for in-combination assessment was derived from The Crown Estate[3] and Crown Estate Scotland[4] websites. The original Project application was submitted on 26 September 2023. As this Ornithology Additional Information is additional to the original application, initially no OWF projects that had submitted applications since the original assessment were added to the list for in-combination assessment. However, some projects had submitted an application since the Project application submission. Consequently, any project that had submitted an application prior to 31 December 2023 was included in the in-combination assessment. Advice was then sought from both NatureScot and MD-LOT on whether the proposed list was complete.

MD-LOT (email dated 10 June 2024):

Having considered the list provided, we identify that consented projects Green Volt and Seagreen Phase 1A, have not been included on the list. Projects which have been consented must be assessed quantitatively. This includes projects which have been consented elsewhere in the UK which may impact on the same protected sites/species as West of Orkney.

The established MD-LOT position is that projects which are reasonably foreseeable should be included in the in-combination assessment. This includes projects which have received a scoping opinion. MD-LOT therefore advises that other offshore wind projects in Scotland where a scoping opinion has been adopted to date must be included in the in-combination assessment – this may be a qualitative assessment.

15. Following this advice, GreenVolt and Seagreen Phase 1A were added to the list of OWFs (i.e. additional to those identified for Offshore EIA Report and RIAA) for in-combination impact assessments. Additionally, Salamander was also added to the list as another Scottish OWF for which an application had recently been submitted.

16. A dual approach to in-combination assessment was developed, where (a) consented projects and projects for which an application had been submitted were assessed quantitatively and, (b) projects for which a Scoping Opinion had been adopted (as of 19 June 2024) were assessed qualitatively. Details of each approach are given below. Although there is a theoretical potential for projects other than OWFs to contribute to in-combination effects, these are typically of much smaller scale, not found in offshore locations and are not assessed using the same methods (e.g. Collision Risk Mortality (CRM)). Therefore, only OWFs have been assessed here.

17. The first step was to list all OWFs which had been consented and those OWFs for which a Scoping Opinion had been adopted. Additionally, other OWFs that were earlier in the

[3] https://opendata-thecrownestate.opendata.arcgis.com/datasets/thecrownestate::wind-site-agreements-england-wales-ni-the-crown-estate/about.
[4] https://crown-estate-scotland-spatial-hub-coregis.hub.arcgis.com/datasets/b9c7d514362f40ceb3fe299b47aeb8b3_0/explore?location=56.656616%2C-2.570552%2C7.55.

planning process, and had not yet had a Scoping Opinion adopted, were also listed. Therefore, the list comprised OWFs that:

- Have a seabed option agreement;
- Have submitted a Scoping Report;
- Have a Scoping Opinion;
- Have submitted an application;
- Have been consented;
- Are under construction; or
- Are operational.

18. In assessment of in-combination impacts, a three-tiered system has been used, in relation to the certainty associated with project impacts and whether or not the project will actually be consented and built. This three-tiered system has been adapted from advice on cumulative effects assessment for nationally significant infrastructure projects from the Planning Inspectorate[5].

19. The definition of each of the three tiers is explained below:

Tier 1 Tier 1 projects include those OWFs: • which are operational; • which are under construction; • which are consented; • for which an application has been submitted.
Tier 2 Tier 2 projects include those OWFs: • for which a Scoping Opinion has been adopted.
Tier 3 Tier 3 projects include those OWFs: • for which a Scoping Report has been submitted; • for which a seabed option agreement is in place (e.g ScotWind and INTOG projects that have yet to submit a Scoping Report).

[5] *Nationally Significant Infrastructure Projects - Advice Note Seventeen: cumulative effects assessment relevant to nationally significant infrastructure projects - GOV.UK (www.gov.uk).*

20. **Table 2-1** lists all OWFs included in the in-combination impact assessments, under each of the three tiers, according to the stage of the planning process/development the project has reached.

Table 2-1. List of OWFs included in in-combination impact assessments with the Project

OWF	Current project status
Tier 1 – application submitted, consented, under construction, operational	
Berwick Bank	Application submitted
Blyth Demo	Operational
Beatrice Offshore Wind Farm	Operational
Dudgeon Extension Project and Sheringham Extension Project	Consented
Dogger Bank Creyke Beck A and B	Under Construction
Dogger Bank Teesside A and Sofia (formerly Dogger Bank Teesside B)	Under Construction/consented
Dudgeon	Operational
East Anglia One	Operational
East Anglia ONE North	Consented
East Anglia Three	Under Construction
East Anglia TWO	Consented
EOWDC	Operational
Forthwind	Consented
Galloper	Operational
Greater Gabbard	Operational
Greenvolt	Consented
Gunfleet Sands (I and II)	Operational
Hornsea Project Four	Consented
Hornsea Project One	Operational
Hornsea Project Three	Under Construction
Hornsea Project Two	Operational
Humber Gateway	Operational
Hywind	Operational
Inchcape	Under construction
Kentish Flats & Extension	Operational
Kincardine	Operational
Lincs, Lynn & Inner Dowsing	Operational
London Array	Operational
Methil	Operational
Moray East	Operational
Moray West	Under construction

OWF	Current project status
Tier 1 – application submitted, consented, under construction, operational	
Neart na Gaoithe	Under construction
Norfolk Boreas	Consented
Norfolk Vanguard	Consented
PFOWF	Consented
Race Bank	Operational
Rampion	Operational
Salamander	Application submitted
Seagreen Alpha & Bravo (including Phase 1A)	Operational (Phase 1A consented)
Sheringham Shoal	Operational
Teesside	Operational
Thanet	Operational
Triton Knoll	Operational
Westermost Rough	Operational
Broadshore Hub, including Scaraben and Sinclair	Scoping Opinion
Buchan	Scoping Opinion
Caledonia	Scoping Opinion
Cenos	Scoping Opinion
Culzean	Scoping Opinion
Marramwind	Scoping Opinion
Morven	Scoping Opinion
Muir Mhor	Scoping Opinion
Ossian	Scoping Opinion
Spiorad na Mara Limited	Scoping Opinion
Stromar	Scoping Opinion
Arven	Scoping Report submitted
Aspen	Seabed Option Agreement
Avalon	Seabed Option Agreement
Ayre	Seabed Option Agreement
Beech	Seabed Option Agreement
Bellrock	Scoping Report submitted
Bowdun	Seabed Option Agreement
CampionWind	Seabed Option Agreement
Cedar	Seabed Option Agreement

OWF	Current project status
Tier 1 – application submitted, consented, under construction, operational	
Flora	Seabed Option Agreement
Havbredaey	Seabed Option Agreement
Judy	Seabed Option Agreement
MachairWind	Seabed Option Agreement
Stoura	Seabed Option Agreement
Talisk	Seabed Option Agreement

21. Quantitative information on potential collision and displacement mortalities was available for OWFs listed under Tier 1. This information was obtained from project applications and Appropriate Assessments. As advised by MD-LOT (email dated 10 June 2024), a quantitative assessment was undertaken for OWFs listed under Tier 1 in-combination with Project impacts. See **section 2.2** below for more details.

22. OWFs listed under Tier 2 have the potential to add to in-combination impacts to SPAs which are also potentially impacted by the Project. A qualitative approach to assessing in-combination impacts for these Tier 2 OWFs was used (see **section 2.1** below for more details).

23. If constructed, the OWFs listed under Tier 3 would be expected to add further in-combination impacts to some SPAs also potentially impacted by the Project. However, there is limited or no information on which seabird populations could be impacted by these OWFs. There is a high degree of uncertainty about project designs and even whether these projects will reach determination. Consequently, it is not possible to use the very limited available information for Tier 3 projects in a quantitative or qualitative assessment.

2.1 Qualitative In-Combination Assessment Methods

24. MD-LOT advised (email dated 10 June 2024) that a qualitative in-combination assessment was required for all OWF projects for which a Scoping Opinion had been adopted but that had not yet submitted an application. 11 OWFs had an adopted Scoping Opinion but had not submitted an application (as of 19 June 2024).

25. Scoping Reports for these 11 OWFs were reviewed for information presented therein about:

- Species occurring more frequently and in higher abundance in the offshore project development areas; and
- SPAs which may have potential connectivity with the offshore project areas during the breeding season.

26. All but one (Caledonia) presented summaries of the most abundant seabird species recorded during digital aerial surveys. Seven OWFs identified specific SPAs with potential connectivity to their offshore project area.

27. This information was used to identify the qualifying features of each SPA that could be impacted by each OWF. None of the Scoping Reports contained any quantitative information

on impacts from the projects on SPAs. Therefore, it was only possible to acknowledge that these OWFs could add additional impacts to these qualifying features of SPAs with potential connectivity. Further assessment of the consequences of any additional impacts was not possible.

28. A summary of information in the Scoping Reports for each of the 11 OWFs considered under Tier 2 is given below. This is then summarised to identify the SPA qualifying features that could be impacted by these OWFs. Finally, it is explained how this information is used in the Addendum to the RIAA.

2.1.1 Summary of Scoping Reports for Tier 2 OWF

2.1.1.1 Broadshore, Scaraben and Sinclair

29. The Broadshore, Scaraben and Sinclair Scoping Report (RHDHV, 2024[6]) identified six species as the most abundant, presented in decreasing order of abundance: guillemot, kittiwake, fulmar, puffin, gannet and razorbill. This Scoping Report identifies Troup, Pennan and Lion's Heads SPA, Buchan Ness to Collieston Coast SPA, East Caithness Cliffs SPA and North Caithness Cliffs as the SPAs likely to be contributing most of the individuals from these six species, recorded in the project area.

2.1.1.2 Buchan

30. The Buchan Offshore Wind Scoping Report (Natural Power, 2023[7]) found guillemot to be the most abundant species in the Project Area, followed by kittiwake, fulmar, herring gull, razorbill and puffin. This Scoping Report identified the following SPAs as likely to be contributing a substantial number of individuals to the Project area in the breeding season: Buchan Ness to Collieston Coast SPA, East Caithness Cliffs SPA, North Caithness Cliffs SPA, Troup, Pennan & Lion's Heads SPA.

2.1.1.3 Caledonia

31. The Caledonia Offshore Wind Farm Scoping Report (GoBe, 2022[8]) did not present any digital aerial survey information but identified species of seabird that had been recorded in high abundance on surveys of other OWFs in the vicinity of the Caledonia Project area. SPAs that were identified as potentially contributing individuals to the Caledonia project area are: Copinsay SPA, Hoy SPA, North Caithness SPA, East Caithness SPA, Troup, Pennan and Lion's Heads SPA and Buchan Ness SPA.

2.1.1.4 Cenos

32. The Cenos Offshore Windfarm Scoping Report (Flotation Energy, 2023[9]) identified the following species as being the most abundant in the project area: guillemot, fulmar, kittiwake, gannet and puffin. This Scoping Report did not identify any SPAs with potential connectivity to the project area.

[6] 240108_-_broadshore_scaraben_and_sinclair_-_eia_scoping_-_scoping_report.pdf (marine.gov.scot).
[7] 230928-Buchan_Offshore_Wind-Scoping-Offshore_Scoping_Report.pdf (marine.gov.scot)
[8] pre-application_-_offshore_scoping_report_redacted.pdf (marine.gov.scot)
[9] flo-cen-rep-0010_cenos_scoping_report_document_-_redacted.pdf (marine.gov.scot).

2.1.1.5 *Culzean*

33. The Culzean Floating Wind Pilot EIA Scoping Report (Xodus, 2023[10]) noted guillemot, razorbill, great black-backed gull, herring gull and fulmar being recorded in the project area in autumn and winter. Breeding season numbers were low due to the distance of the project from the coast. The SPAs closest to the project area were Buchan Ness to Collieston Coast SPA, Troup, Pennan and Lion's Heads SPA, Fowlsheugh SPA, St Abb's to Fast Castle SPA and Farne Islands SPA although all of these were close to 300 km from the project area.

2.1.1.6 *MarramWind*

34. The MarramWind Offshore Wind Farm Environmental Impact Assessment Scoping Report (MarramWind, 2023[11]) identified guillemot as the most abundant species in the project area, followed by kittiwake, fulmar and gannet. This Scoping Report did not identify SPAs with potential connectivity to the project area.

2.1.1.7 *Morven*

35. The Morven Offshore Wind Array Project Environmental Impact Assessment Scoping Report (RPS, 2023[12]) notes the following species recorded in higher abundances: kittiwake, guillemot, razorbill, puffin, fulmar, gannet. This Scoping Report does not identify SPAs which have potential connectivity to the project area.

2.1.1.8 *Muir Mhor*

36. The Muir Mhòr Offshore Wind Farm Offshore EIA Scoping Report (GoBe, 2023[13]) identified the following species as being recorded in high abundance in the Project Area: fulmar, guillemot, gannet, kittiwake, puffin, razorbill. This Scoping Report identified the following SPAs with breeding seabird features as having potential connectivity with the project area: Buchan Ness to Collieston Coast SPA, Fowlsheugh SPA, Troup, Pennan & Lion's Heads SPA and Forth Islands SPA.

2.1.1.9 *Ossian*

37. The Ossian Array EIA Scoping Report (RPS, 2023[14]) identified the following species as the most abundant in the project area: guillemot, kittiwake, gannet, puffin, fulmar and razorbill. This Scoping Report identifies the following SPAs as being of particular importance: Forth Islands SPA, St Abb's Head to Fast Castle SPA, Fowlsheugh SPA.

2.1.1.10 *Spiorad na Mara*

38. The Spiorad na Mara Offshore Wind Farm Scoping Report (Spiorad na Mara, 2023[15]) identified the following species as being present in higher abundance in the project area: fulmar, puffin, guillemot, razorbill, gannet, European shag, kittiwake. This Scoping Report did not identify specific SPAs with potential connectivity with the project area.

[10] Scoping Report (marine.gov.scot).
[11] MarramWind Offshore Wind Farm Scoping Report (marine.gov.scot).
[12] Project Moven (marine.gov.scot).
[13] *Microsoft Word - Muir Mhòr Offshore Wind Farm Offshore Environmental Impact Assessment (EIA) Scoping Report CLEAN.docx (marine.gov.scot).*
[14] *ossian_wind_-_array_eia_scoping_report_-_eor0811a.pdf (marine.gov.scot).*
[15] *Spiorad na Mara - Scoping Report (marine.gov.scot).*

2.1.1.11 *Stromar*

39. The Stromar Offshore Wind Farm EIA Offshore Scoping Report (GoBe, 2024[16]) identified the following species as being recorded in high abundance in the project area: kittiwake, great black-backed gull, guillemot, razorbill, fulmar and gannet. The Scoping Report identified the following SPAs with breeding seabird features as having potential connectivity with the project area: Copinsay SPA, North Caithness Cliffs SPA, East Caithness Cliffs SPA, Hoy SPA, Calf of Eday SPA, Rousay SPA, Troup, Pennan and Lion's Heads SPA, Marwick Head SPA, West Westray SPA, Fair Isle SPA, Buchan Ness to Collieston Coast SPA, North Rona and Sula Sgeir SPA, Forth Islands SPA.

2.1.2 Summary of qualitative in-combination impacts

40. The information derived from each of the 11 Scoping Reports was summarised by qualifying feature of each SPA. Cenos, MarramWind, Morven and Spiorad na Mara did not identify any SPAs with potential connectivity to their offshore project area and Caledonia did not provide any information on species recorded during surveys of their offshore project area, so it was not possible to include these OWFs in the qualitative in-combination assessment. For the remaining six OWFs, the SPAs named in their Scoping Reports as having theoretical connectivity with their project were listed, with the qualifying features that were recorded in their offshore project area also indicated (**Table 2-2**).

Table 2-2. OWFs for which a Scoping Opinion had been adopted, that were included in the qualitative in-combination assessment and the SPA qualifying features identified in their Scoping Reports as having potential connectivity with their offshore project areas

	OWF					
SPA + qualifying feature	**Broadshare Hub**	**Buchan**	**Culzean**	**Muir Mhor**	**Ossian**	**Stromar**
Buchan Ness to Collieston Coast						
Black-legged kittiwake	Y			Y		Y
Common guillemot	Y	Y		Y		Y
Herring gull		Y				
Northern fulmar	Y	Y		Y		Y
Calf of Eday						
Black-legged kittiwake						Y
Common guillemot						Y
Great black-backed gull						Y
Northern fulmar						Y
Copinsay						
Black-legged kittiwake						Y
Common guillemot						Y
Great black-backed gull						Y
Northern fulmar						Y
East Caithness Cliffs						
Black-legged kittiwake	Y					Y
Common guillemot	Y	Y				Y
Great black-backed gull						Y

[16] *240110_-_scotwind_ne3_-_stromar_-_scoping_-_scoping_opinion_-_scoping_report.pdf (marine.gov.scot).*

	OWF					
SPA + qualifying feature	**Broadshare Hub**	**Buchan**	**Culzean**	**Muir Mhor**	**Ossian**	**Stromar**
Buchan Ness to Collieston Coast						
Herring gull		Y				
Northern fulmar	Y	Y				Y
Razorbill	Y	Y				Y
Fair Isle						
Black-legged kittiwake						Y
Common guillemot						Y
Northern fulmar						Y
Northern gannet						Y
Razorbill						Y
Farne Islands						
Common guillemot			Y			
Forth Islands						
Atlantic puffin				Y	Y	
Black-legged kittiwake				Y	Y	Y
Common guillemot				Y	Y	Y
Herring gull						
Northern gannet				Y	Y	Y
Razorbill				Y	Y	Y
Fowlsheugh						
Black-legged kittiwake				Y	Y	
Common guillemot			Y	Y	Y	
Herring gull			Y			
Northern fulmar			Y	Y	Y	
Razorbill			Y	Y	Y	
Hoy						
Black-legged kittiwake						Y
Common guillemot						Y
Great black-backed gull						Y
Northern fulmar						Y
Marwick Head						
Black-legged kittiwake						Y
Common guillemot						Y
North Caithness Cliffs						
Atlantic puffin	Y					
Black-legged kittiwake	Y					Y
Common guillemot	Y					Y
Northern fulmar	Y					Y
Razorbill	Y					Y
North Rona and Sula Sgeir						
Black-legged kittiwake						Y
Common guillemot						Y
Great black-backed gull						Y
Northern fulmar						Y
Northern gannet						Y

SPA + qualifying feature	OWF					
	Broadshare Hub	Buchan	Culzean	Muir Mhor	Ossian	Stromar
Buchan Ness to Collieston Coast						
Razorbill						Y
Rousay						
Black-legged kittiwake						Y
Common guillemot						Y
Northern fulmar						Y
St Abb's Head to Fast Castle						
Black-legged kittiwake					Y	
Common guillemot			Y		Y	
Herring gull			Y			
Razorbill			Y		Y	
Troup, Pennan and Lion's Heads						
Black-legged kittiwake				Y		Y
Common guillemot		Y	Y	Y		Y
Herring gull		Y	Y			
Northern fulmar		Y	Y	Y		Y
Razorbill		Y	Y	Y		Y
West Westray						
Black-legged kittiwake	Y					Y
Common guillemot	Y					Y
Northern fulmar	Y					Y
Razorbill	Y					Y

41. Any SPA qualifying feature listed in **Table 2-2** that was also impacted by Project was noted in the Addendum to the RIAA. Whilst detailed quantitative information about impacts from these OWFs is not yet available, these SPA qualifying features may be impacted by these developments, in-combination with Project.

2.2 Quantitative In-combination Assessment Methods

42. All OWFs listed under Tier 1 (**Table 2-1**) were included in a quantitative assessment of in-combination impacts. Information on OWF impacts were collated and then apportioned to SPAs using apportioning weights provided in **Appendix 5 - HRA: Apportioning Technical Report**. The in-combination impacts on each SPA population were then summed and change in adult annual survival rate calculated.

43. NatureScot requested (consultation meeting, 11 June 2024) that two in-combination scenarios were considered: with and without the inclusion of Berwick Bank Wind Farm impacts. Berwick Bank Wind Farm mortalities impact several seabird SPAs along the east coast of the Scottish mainland (see Berwick Bank RIAA[17]). Consequently, NatureScot requested an in-combination assessment both with and without Berwick Bank impacts included to accommodate the uncertainty around whether the project will be consented.

[17] *Report to Inform Appropriate Assessment - Berwick Bank Offshore Wind Farm - Firth of Forth | marine.gov.scot.*

Consequently, all in-combination scenarios consider impacts including Berwick Bank and excluding Berwick Bank.

44. Previously, neither NatureScot nor Natural England have required a displacement and barrier impact assessment for fulmar. However, NatureScot advised that this impact pathway required assessment for fulmar due to the proximity of the Project to several SPAs for this species. During a consultation meeting with NatureScot on 11 June 2024, NatureScot advised that no in-combination assessment was required for fulmar, as no other OWFs have assessed displacement for this species. Consequently, only Project alone impacts are considered for fulmar.

2.2.1 Collision and Displacement Scenarios

45. The **Appendix 3 - EIA and HRA: Collision Risk Modelling Technical Report** presents the Project estimated collisions for both the Worst Case Scenario (WCS) and the Most Likely Scenario (MLS). Annual collision mortalities were not substantially smaller under the MLS (**Table 2-3**). Therefore, only the WCS was considered for both the Project alone and in-combination/cumulative impact assessments (this was agreed with NatureScot in a consultation meeting on 18 June 2024). Note, Arctic tern collision mortality was also estimated but Arctic tern features of SPAs were not screened into the assessment to inform HRA due to a lack of theoretical connectivity between SPAs with Arctic tern features and the OAA plus 2 km buffer (see **Appendix 2 - HRA: HRA Screening Technical Report)**. However, Arctic tern collision and displacement impacts were assessed under EIA (see **Addendum to the Offshore EIA Report**).

NatureScot Consultation Meeting 18 June 2024*:*
Presentation of Worst Case and Most Likely Scenarios
NatureScot confirmed that for the collision assessment, the presentation of the Worst-Case Scenario (WCS) and the Most-Likely Scenario (MLS) is a Project decision. If the Project is willing to take the risk, NatureScot confirmed that basing the assessment on WCS is fine.

NatureScot Consultation Meeting 25 June 2024*:*
NatureScot confirmed that if the MLS were presented, they would use this for context, but NatureScot advice would be based on the WCS. Given that the MLS and WCS impacts are similar, including the MLS scenario is unlikely to substantially change NatureScot advice.

Table 2-3. Annual collision mortalities for the MLS and WCS. See Appendix 3 - EIA and HRA: Collision Risk Modelling Technical Report for more details.

Species	MLS	WCS
Gannet	42.69	45.06
Great black-backed gull	11.44	11.94
Great skua	0.36	0.38
Kittiwake	52.7	56.04

46. **Appendix 4 - EIA and HRA: Displacement Technical Report** presents estimated Project displacement mortalities for both high and low impact scenarios. These high and low impact scenarios are derived from assumptions about the proportion of displaced birds that die. These assumptions follow NatureScot advice (see NatureScot Guidance Note 8[18]). **Table 2-4** presents displacement mortalities for the high and low impact scenarios, as well assumed displacement rates and mortality of displaced birds.

47. NatureScot advised that both high and low impact scenarios should be considered in the impact assessment. In a consultation meeting (11 June 2024) NatureScot recommended that, "Both high/low displacement mortality rates are presented as we consider that the real rate will lie somewhere in between." Consequently, both high and low displacement impact scenarios were considered in the impact assessment.

[18] *Guidance Note 8: Guidance to support Offshore Wind Applications: Marine Ornithology Advice for assessing the distributional responses, displacement and barrier effects of Marine birds | NatureScot.*

Table 2-4. Annual displacement mortalities for high and low displacement impacts. See Appendix 4 - EIA and HRA: Displacement Technical Report for more details.

	Low impact scenario			High impact scenario		
Species	Displacement rate	Mortality rate for displaced birds	Mortality	Displacement rate	Mortality rate for displaced birds	Mortality
Kittiwake	30%	1%	7.0	30%	3%	21.0
Guillemot	60%	3% breeding season; 1% non-breeding season	169.9	60%	5% breeding season; 3% non-breeding season	318.3
Razorbill	60%	3% breeding season; 1% non-breeding season	3.3	60%	5% breeding season; 3% non-breeding season	6.6
Puffin	60%	3% breeding season; 1% non-breeding season	107.7	60%	5% breeding season; 3% non-breeding season	196.6
Fulmar	20%	1%	8.8	20%	3%	26.4
Gannet	70%	1%	14.2	70%	3%	42.5

2.2.2 Obtaining Impacts for Other OWFs

48. As is common practice, the collision and abundance estimates for other OWFs were primarily obtained from recent submissions made by other OWFs. Information was obtained from Outer Dowsing[19] and Berwick Bank[20]. For more recent projects (Greenvolt and Salamander), which were not included in the cumulative tables presented elsewhere, the figures were taken from the project applications themselves.

49. Each OWF application presented information on collision and displacement impacts in different ways and it was not always clear which were the correct apportioned impacts to use for each SPA. To ensure consistency and clarity in approach in the in-combination assessment, impacts were apportioned to SPAs using apportioning weightings derived using a single approach (see **Appendix 5 - HRA: Apportioning Technical Report** for more information). In other words, the assessment presented in the OAI did not rely on other project's apportioned mortalities presented in their applications but instead took mortalities from each OWF and apportioned them to SPAs using apportioning weightings calculated in **Appendix 5 - HRA: Apportioning Technical Report.**

50. Thus, each OWF's total number of collisions in each season were tabulated and the SPA apportioning weightings (as determined in **Appendix 5 - HRA: Apportioning Technical Report**) were applied to obtain the proportion of each OWF's collisions assigned to each SPA population.

51. For displacement, the total abundance of each species in each season within the OWF boundary plus its 2 km buffer were tabulated. These abundance rates were then multiplied by the NatureScot advised species- and season-specific displacement and mortality rates and then the SPA apportioning weightings given in the **Appendix 5 - HRA: Apportioning Technical Report** were applied. This approach ensured that a consistent approach to estimating impacts on SPA populations was applied to all OWFs' mortality.

52. NatureScot advise that kittiwakes should be assessed for both displacement and collision impacts (see NatureScot Guidance Note 7[21] and Guidance Note 8[22]). However, Natural England advise that displacement does not need assessed for this species (Parker *et al.*, 2022). Consequently, kittiwake displacement mortality was apportioned to SPAs for OWFs in Scotland but not for those in England (as agreed with NatureScot in a consultation meeting on 4 June 2024).

2.2.3 Estimating Seasonal and Annual Mortality for Each OWF

53. The seasonal and annual mortality that was predicted to occur to individuals from each SPA population, due to the Project alone and in-combination with other OWFs was calculated.

54. Seasonal mortality was calculated by summing all collision and displacement mortality from the Project and other OWFs in a particular season. **Section 3** and **ANNEX A** of this report

[19] *https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010130/EN010130-000354-6.1.12%20Chapter%2012%20Offshore%20and%20Intertidal%20Ornithology.pdf.*
[20] *https://berwickbank-eia.com/offshore-eia/vol2-ch11-ornithology/.*
[21] *Guidance Note 7: Guidance to support Offshore Wind Applications: Marine Ornithology - Advice for assessing collision risk of marine birds | NatureScot.*
[22] *Guidance Note 8: Guidance to support Offshore Wind Applications: Marine Ornithology Advice for assessing the distributional responses, displacement and barrier effects of Marine birds | NatureScot.*

present collision mortalities and displacement mortalities (derived from each OWFs' abundance estimates) for the Project and the 44 other OWFs included in the in-combination assessment. Mortality estimates for each OWF by season (NatureScot breeding and non-breeding seasons, as well as seasons defined in the Biologically Defined Minimum Population Scales (BDMPS) Furness (2015) report, i.e. spring migration, autumn migration and winter) are provided.

2.2.4 Removing Immature and Sabbatical Birds from Mortality Estimates

55. The Project's displacement and collision mortality was calculated using density or abundance estimates from the OAA (plus 2 km buffer for displacement mortality calculations). Birds using the OAA will include immature birds which have yet to start breeding at any particular SPA, as well as sabbatical birds, i.e. adults that are electing to take a year off breeding and so aren't associated with the SPA in that particular year. When apportioning impacts from the OAA to an SPA, it is necessary to remove sabbatical birds and immatures.

56. **Table 2-5** presents the estimated adult proportion of the populations of each species, used to determine the proportion of Project mortality that was likely to immature birds. These rates are taken from the BDMPS report (Furness, 2015). Furness (2015) derived an estimate of the adult component of seabird populations using a stable age structure from a species-specific PVA. NatureScot confirmed that they were content for the assessment to be based on stable age structures, in a letter to the Project, dated 27 March 2024.

57. **Table 2-5** also presents sabbatical rates for each species. These rates were presented to NatureScot in a consultation meeting (11 June 2024) where NatureScot confirmed that these rates are correct, with the exception of great skua. NatureScot advised for great skua that a case would need to be made to justify any sabbatical rates used. Given that great skua are a species of particular conservation concern, following steep population declines due to Highly Pathogenic Avian Influenza (HPAI), the Applicant decided to not apply any sabbatical rate correction to mortalities, thereby taking a precautionary approach to apportioning great skua mortalities.

Table 2-5. Sabbatical rates and adult proportion of the population, used for removing the immature and sabbatical component from estimated mortalities.

Species	Sabbatical rate	Adult proportion
Kittiwake	0.1	0.53
Great black-backed gull	0.35	0.44
Guillemot	0.07	0.57
Razorbill	0.07	0.53
Puffin	0.07	0.55
Fulmar	0	0.62
Gannet	0.1	0.55
Great skua	0	0.41

58. Breeding season mortalities were firstly multiplied by the adult proportion (**Table 2-5**) to estimate the number of adult mortalities occurring within the OAA (plus 2 km buffer for

displacement). This was then multiplied by [1-*sabbatical rate*] to obtain the number of mortalities that were adult breeding birds.

59. During the non-breeding season, all birds are non-breeders and so sabbatical birds do not need to be removed from estimated mortalities. However, as non-breeding season mortalities are apportioned to SPA populations, which comprise only adult birds, it is necessary to remove immatures from the non-breeding season mortality estimate. This step was incorporated into the apportioning weighting calculation, rather than subsequently removing the immature component of mortalities.

60. Non-breeding season apportioning weightings were calculated for each SPA, as the proportion of adults that SPA contributes to the total BDMPS population in that season. This was found by firstly, multiplying the SPA count of breeding adults by the proportion of adults that SPA contributes to that BDMPS to give the absolute number of adults that SPA contributes to the BDMPS. This was then divided by the BDMPS population size to give the relative contribution of adults to the BDMPS. This was the apportioning weighting for each SPA. See **Appendix 5 - HRA: Apportioning Technical Report Section 2.4: Project alone and in-combination non-breeding season apportioning** for more information.

61. Therefore, it was not necessary to remove immature birds from the Project mortality as the apportioning weightings accounted for this.

62. The approach presented here, of removing immature birds and sabbatical birds from the Project's estimated collision and displacement mortality, was also applied to the collision and displacement estimates for each of the other 44 OWFs included in the in-combination assessment.

2.2.5 Apportioning Seasonal and Annual Mortality to SPAs

63. Mortalities, with sabbatical and immature birds removed, were then apportioned to SPAs using the apportioning weightings calculated and presented in the **Appendix 5 - HRA: Apportioning Technical Report**. As these apportioned impacts create large tables, these are presented in **ANNEX A** of this report. The section below gives a worked example to illustrate how the numbers in tables in **ANNEX A** were derived.

64. Apportioning impacts is a simple process of multiplying impacts by apportioning weighting. However, this process becomes very complicated when considering each season, each type of mortality (collision, low displacement impacts, high displacement impacts), each SPA with breeding or non-breeding season connectivity with the Project and the 44 other OWFs included in the in-combination assessment.

65. For example, for kittiwake, there are three seasons (breeding, spring migration and autumn migration), three types of impact (collision, low displacement, high displacement), 33 SPAs that are potentially impacted by the Project and 45 OWFs (including the Project) in the in-combination impact assessment. This gives 13,365 different apportioned mortalities to consider and this is only for one of the six species for which in-combination impacts are apportioned.

2.2.6 Estimating Change in Baseline Adult Annual Survival Rate

66. The change in baseline annual adult survival rate was found for each SPA population by dividing total annual mortality (either Project alone or in-combination) by the size of the SPA population, in individuals.

2.2.7 Determining Whether a PVA is Required

NatureScot Consultation Meeting 21 May 2024*:*
Thresholds for PVA
In response to a similar situation we have accepted that PVAs will be required for all sites and species where the combined breeding and non-breeding season threshold of 0.02 % point change was met or exceeded for project alone or in-combination impacts.

***But** a PVA of the in-combination effect is not required where the project alone impact is less than 0.2 birds/annum. In this instance a table should be provided that details by site and species what these proportions are and number of birds impacted per annum.*

67. The final step of the HRA impact assessment process is to assess how the SPA population will respond to the additional OWF mortality and consequent change in adult survival rate and whether this will have long-term impacts on population viability. This is done using a population model, also knowns as PVA. When predicted mortalities are very small, relative to the SPA population size, it is not necessary to run a PVA.

68. NatureScot advise using a threshold of a 0.02 percentage point change in adult annual survival rate to determine when a PVA was required (NatureScot Guidance Note 11[23]), i.e. when the change in adult annual survival rate is equal to or greater than 0.02%, a PVA should be run to assess population response to predicted impacts.

69. This consideration of whether a PVA is needed, is required for both Project alone impacts and in-combination impacts. NatureScot refined their online guidance during a consultation meeting (21 May 2024), with respect to when a PVA is required for in-combination impacts, such that when Project alone annual mortality was <0.2 birds per annum, an in-combination PVA was not required. Thus, the following approach was used for determining when a Project alone and/or in-combination PVA was required:

    1. Does the project alone or in-combination have a decrease in baseline adult annual survival that is equal to or greater than 0.02%?
        a. If no (i.e. < 0.02% decrease in adult survival) then a PVA is not required.
        b. If yes, then go to Step 2.
    2. If decrease in adult survival is equal to or > 0.02%, then consider mortalities from the Project alone – are they > or equal to 0.2 birds per annum?

[23] *Guidance Note 11: Guidance to support Offshore Wind Applications: Marine Ornithology - Recommendations for Seabird Population Viability Analysis (PVA) | NatureScot.*

c. If no (i.e. mortality is < 0.2 birds per annum), then a PVA is need for Project-alone impacts only, but not in-combination;

d. If yes, then a Project alone and in-combination PVA is needed.

70. The NatureScot advice on when to undertake a PVA for Project alone and in-combination impacts was applied to change in annual adult survival rate and Project alone mortalities. Tables in the species-specific sections in **Section 3** of this report indicate which SPA populations require a PVA, for either Project alone and/or in-combination.

71. Where an in-combination PVA was required, Project alone impact estimates were included as additional scenarios, irrespective of whether the project alone impact increased the mortality rate by 0.02%. These Project alone scenarios were included, even when change in adult survival rate was <0.02%, to provide context with interpreting the PVA metrics from the in-combination assessment, e.g. for reviewing the Project alone contribution to the in-combination impacts.

72. As requested by NatureScot (consultation meeting, 11 June 2024) in-combination impacts were considered with and without Berwick Bank Wind Farm impacts, i.e. the same assessment was made of whether a PVA was needed for each SPA population for Project alone, in-combination with Berwick Bank impacts and in-combination without Berwick Bank impacts.

2.2.8 Example to Illustrate the Process of Calculating SPA-specific Mortalities, Change to Adult Survival Rate and Determining Whether a PVA is Needed

73. The process of deriving Project alone and in-combination mortalities, the consequent change to adult survival rate and the assessment of whether a PVA was required, is complex. To assist with explaining this process, a worked example is provided below.

74. This example is for kittiwake impacts from the Project and Berwick Bank Wind Farm, apportioned to the Buchan Ness to Collieston Coast SPA. The Berwick Bank Wind Farm is just one of the 44 OWFs included in the in-combination and cumulative assessments. This single OWF is given as an example of the process used for all other OWFs in the in-combination assessment.

2.2.8.1 Step One: Collate Information on Seasonal Collision and Displacement Mortalities for all OWFs

75. **Table 3-1** in this report presents the kittiwake collision and displacement mortalities by breeding, autumn migration and spring migration seasons. Mortalities are given for each individual OWF, including the Project. Mortalities for the Project and Berwick Bank are presented in **Table 2-6** below. (Note, only the high displacement impact scenarios are presented, to reduce the volume of information presented in this example, but the low displacement mortalities were treated in the same way.)

Table 2-6. Total seasonal collision and displacement mortalities for the Project and Berwick Bank Wind Farm (pre-apportioning), obtained from Table 3-1 in this report.

	Collisions			Displacement		
OWF	**Breeding**	**Autumn**	**Spring**	**Breeding**	**Autumn**	**Spring**
The Project	17.86	16.31	21.87	10	7	11
Berwick Bank	393	121	114	190	101	124

2.2.8.2 *Step Two: Remove immature and non-breeding adult mortality*

76. The adult proportion of the kittiwake population is 0.53 and the sabbatical rate is 0.1 (**Table 2-5**). Breeding season collision and displacement mortalities were multiplied by 0.53 to obtain the adult mortalities, and then by 0.9 (i.e. [1-*sabbatical rate*]) to obtain the non-sabbatical mortalities. These adult breeding mortalities are presented in **Table 2-7**.

Table 2-7. Seasonal collision and displacement mortalities for the Project and Berwick Bank Wind Farm (pre-apportioning), with sabbatical and immature birds removed from mortality estimates.

	Collisions			Displacement		
OWF	**Breeding**	**Autumn**	**Spring**	**Breeding**	**Autumn**	**Spring**
The Project	8.5	16.3	21.9	4.8	7	11
Berwick Bank	187	121	114	90.6	101	124

2.2.8.3 *Step Three: Apportion Mortalities to SPAs*

77. These seasonal mortalities were then multiplied by the apportioning weights for that species, season and OWF. The apportioning weights for kittiwake are provided in **Appendix 5 - HRA: Apportioning Technical Report: Table 3-4** (breeding season for the Project); **Table 3-5** to **Table 3-7** (breeding season for other OWFs); **Table 3-8** (spring and autumn migration seasons for all OWFs including the Project). The particular, apportioning weights for the Project's and Berwick Bank's mortalities, for apportioning impacts to the Buchan Ness to Collieston Coast SPA are given in **Table 2-8** below.

Table 2-8 Apportioning rates for kittiwakes at the Buchan Ness to Collieston Coast SPA, for the Project and Berwick Bank Wind Farm, for each season, obtained from Appendix 5 - HRA: Apportioning Technical Report.

OWF	Breeding season	Autumn migration	Spring migration
The Project	0.0125[1]	0.018[3]	0.024[3]
Berwick Bank	0.079[2]	0.018[3]	0.024[3]

1. From Table 3-4, Appendix 5 - HRA: Apportioning Technical Report.
2. From Table 3-5 (1/3), Appendix 5 - HRA: Apportioning Technical Report.
3. From Table 3-8, Appendix 5 - HRA: Apportioning Technical Report.

78. The mortalities for each OWF in each season, with sabbaticals and immatures removed, were multiplied by the apportioning rates for that OWF, SPA and season, to give the seasonal

mortalities from each OWF at each SPA. The apportioned mortalities for the Project and Berwick Bank are presented below in **Table 2-9**. OWF-specific collision and displacement annual mortalities for each SPA are presented in **ANNEX A** of this report. **Table 3-21** in this report has the kittiwake collision apportioned mortalities and **Table 3-27** has the kittiwake high displacement impact apportioned mortalities. (Note, in some cases, values presented in **Table 2-9** appear to not be identical to values presented in **Table 3-21** and **Table 3-27** due to rounding of numbers, i.e. the underlying values used in the assessments were identical and the small differences are only due to the way these numbers are presented in these tables.)

Table 2-9. Kittiwake collision and displacement mortalities for the Project and Berwick Bank Wind Farm apportioned to the Buchan Ness to Collieston Coast SPA, obtained from multiplying the mortalities (from Table 2-7) by the apportioning rates for Project and Berwick Bank impacts (from Table 2-8).

	Collisions				Displacement			
OWF	**Breeding**	**Autumn**	**Spring**	**Annual**	**Breeding**	**Autumn**	**Spring**	**Annual**
The Project	0.1	0.3	0.5	0.9	0.1	0.1	0.3	0.5
Berwick Bank	14.8	2.2	2.7	19.7	7.2	1.8	3	12.0

2.2.8.4 Step Four: Calculating Change in Baseline Annual Adult Survival Rate

79. Collision and displacement mortality for each SPA were then summed across all seasons to give a single apportioned annual mortality from each OWF on an SPA population. For Project alone impact assessments, only the Project total annual mortality was considered. For in-combination impacts, total annual mortalities from all OWFs were summed to give a total in-combination mortality at that SPA.

80. Total annual mortality was then divided by the Buchan Ness to Collieston Coast SPA adult kittiwake population size, of 22,590 individuals (from the Seabirds Count census, Burnell *et al.*, 2023), and multiplied by 100 to give a percentage change in baseline adult survival rate (**Table 2-10**).

Table 2-10. Percentage point change in kittiwake annual adult survival rates due to collision and displacement mortalities for the Project and Berwick Bank Wind Farm.

	Total collision + displacement mortality	**SPA adult population size (individuals)**	**Percentage point change in adult survival**
The Project	1.4	22,590	0.006%
Berwick Bank	31.7	22,590	0.14%

81. The Project values presented in **Table 2-10** are also presented in **Table 3-3** below. Note, Berwick Bank Wind Farm impacts are presented as part of the in-combination annual mortality estimate.

2.2.8.5 *Step Five: Determine if a PVA is Required*

82. The final step is to then assess whether a PVA is required for the Project alone and/or in-combination impacts. **Table 2-11** presents the Project alone and in-combination (with/without Berwick Bank) annual mortalities and percentage point change in annual adult survival rate for the Buchan Ness to Collieston Coast SPA kittiwake population. Note, the in-combination annual mortality is the sum of all OWF projects impacting this SPA. See **Table 3-3** for other SPAs.

Table 2-11. Assessing whether a PVA is required for the Buchan Ness to Collieston Coast SPA kittiwake population for Project alone and in-combination (with and without Berwick Bank) impacts.

OWF	Total annual mortality	Percentage point change in annual adult survival rate	PVA required?
The Project	1.4	0.006%	**No** (change in survival rate (0.006%) is <0.02%)
In-combination without Berwick Bank	67.1	0.30%	**Yes** (change in survival rate (0.30%) is >0.02% and Project annual mortality (1.4) is >0.2 birds)
In-combination with Berwick Bank	98.8	0.44%	**Yes** (change in survival rate (0.44%) is >0.02% and Project annual mortality (1.4) is >0.2 birds)

83. **Table 2-11** shows that a PVA is not required for the Project alone, due to the small change in adult survival rate (<0.02%). However, in-combination with other OWFs, a PVA is required for this population, due to both a change in adult survival rate of >0.02% and Project annual mortalities exceeding 0.2 birds per annum. Despite a PVA not being required for Project alone impacts, this scenario was included in the Buchan Ness to Collieston Coast SPA PVA, for context, to assist with understanding the Project contribution to the in-combination PVA metrics (see **Appendix 6 - HRA: Calculation of mortalities and change in survival rate at SPA population scales for Project alone and in-combination impacts** and **Section 6.3.2** of the **Addendum to the RIAA**).

3 OWF IMPACTS USED IN IN-COMBINATION IMPACT ASSESSMENT

84. Below are species accounts in which tables present seasonal collision mortality, abundance and displacement mortality for each OWF included in the in-combination assessment. (These tables correspond to Step One in the worked example presented above.)

85. **ANNEX A** presents the apportioned mortalities, broken down by impact pathway, i.e. collision or displacement. (These tables correspond to Step Two and Step Three, combined, in the worked example above.)

86. Finally, in the species accounts, a set of tables presents the annual mortalities, change in annual adult survival rate and whether a PVA is required, for each SPA. This is broken down by high/low displacement impact for Project alone impacts and in-combination, both with

and without Berwick Bank. (These tables correspond to Step Four and Step Five in the worked example above.)

3.1 Kittiwake

Impacts Assessed: Collision and Displacement

87. **Table 3-1** presents the estimated kittiwake collision and displacement mortalities for the Project and all other OWFs included in the in-combination assessment. NatureScot advise that displacement impacts should be considered for kittiwake (NatureScot Guidance Note 8) whereas Natural England do not advise that kittiwake displacement needs to be included in impact assessments (Parker *et al.*, 2022). Therefore, displacement was only considered for OWFs in Scotland. A displacement rate of 30% and mortality rates for displaced birds of 1% (low impact scenario) and 3% (high impact scenario) have been applied.

88. **Table 3-21**, **Table 3-22** and **Table 3-23** in **ANNEX A** present the apportioned kittiwake collision mortalities for all OWFs included in the in-combination assessment. **Table 3-24**, **Table 3-25** and **Table 3-26** in **ANNEX A** present the apportioned kittiwake displacement mortalities under the low impact scenario, for all OWFs included in the in-combination assessment. **Table 3-27, Table 3-28** and **Table 3-29** in **ANNEX A** present the apportioned kittiwake displacement mortalities under the high impact scenario, for all OWFs included in the in-combination assessment. These apportioned mortalities were derived by first adjusting mortality to include only adult only birds, then removing sabbatical birds (**Table 2-5**) and then multiplying the breeding adult proportion of mortalities from **Table 3-1** by apportioning weightings presented in Table 3-4 to Table 3-8 of the **Appendix 5 - HRA: Apportioning Technical Report**.

89. Finally, **Table 3-2** (low displacement impact scenario) and **Table 3-3** (high displacement impact scenario) in the species account below presents the apportioned combined annual collision and displacement mortality and change in annual adult survival rate for each SPA, identifying which SPA populations require a PVA. These tables are broken down by impacts from the Project alone, in-combination with and without Berwick Bank. Note, 'change in background mortality rate' is the same as change in annual adult survival rate.

90. Kittiwake collision mortalities were generally higher than displacement mortalities for Scottish OWFs (**Table 3-1**). Displacement impacts were not included for English projects, as agreed with NatureScot at a consultation meeting on 4 June 2024. In-combination, total annual collision mortality from all OWFs was estimated to be 3,188 collisions per annum. Total annual displacement mortality was estimated to be 268 and 799 mortalities per annum, for low and high impact scenarios, respectively.

91. Project apportioned mortality was greatest for kittiwake populations at East Caithness Cliffs SPA, followed by North Caithness Cliffs SPA and Flamborough & Filey Coast SPA. Although this latter SPA is in English waters and is far from the Project, Project impacts were higher in the non-breeding season, when SPAs throughout the BDMPS region have connectivity with the Project. The very large size of the Flamborough & Filey SPA kittiwake population means more mortalities are apportioned to this SPA. Other SPAs with Project mortalities greater than 1 were Cape Wrath SPA, Troup Pennan & Lion's Heads SPA, and West Westray SPA, all of which are relatively close to the Project.

92. Change in annual adult survival rate, from Project alone impacts, was greatest at Hoy SPA, North Caithness Cliffs SPA, Cape Wrath SPA, Rousay SPA, West Westray SPA and Marwick Head SPA (all >=0.02%). The large kittiwake population sizes at East Caithness Cliffs SPA and Flamborough & Filey SPA meant that the apportioned mortalities on these populations did not result in large (>=0.02%) changes in annual adult survival rate.

93. In-combination, the largest number of mortalities were apportioned to Flamborough & Filey Coast SPA, East Caithness Cliffs SPA and Fowlsheugh SPA, irrespective of whether Berwick Bank impacts were included (**Table 3-2** and **Table 3-3**). However, after accounting for the kittiwake population size at each SPA, change in annual adult survival rate was greatest at Rousay SPA, St Abb's Head to Fast Castle SPA and West Westray SPA, when Berwick Bank impacts were included. Without Berwick Bank impacts, the greatest change in adult survival was seen for kittiwake populations at Rousay SPA, West Westray SPA and East Caithness Cliffs SPA.

94. Project alone impacts exceeded the PVA threshold for Cape Wrath SPA, Hoy SPA, Marwick Head SPA, North Caithness Cliffs SPA, Rousay SPA, West Westray SPA (**Table 3-2** and **Table 3-3**). In-combination impacts exceed the PVA threshold for Buchan Ness to Collieston Coast SPA, Calf of Eday SPA, Cape Wrath SPA, East Caithness Cliffs SPA, Farne Islands SPA, Flamborough and Filey Coast, Forth Islands SPA, Fowlsheugh SPA, Handa SPA, Hoy SPA, Marwick Head SPA, North Caithness Cliffs SPA, St Abbs to Fast Castle SPA, Troup, Pennan and Lion's Head SPA, West Westray SPA. Excluding Berwick Bank impacts did not alter the SPAs for which a PVA is required.

Table 3-1. Kittiwake in-combination collisions, abundance and estimated displacement mortality. Displacement calculated using 30% displacement, and 1% or 3% mortality. Note that projects in English waters have not been assessed for kittiwake displacement. Empty cells indicate no data available (WoW = the Project).

Project	Collisions			Abundance			Displacement (30% x 1%)			Displacement (30% x 3%)		
	Breeding	Autumn	Spring	Breeding	Autumn	Spring	Breeding	Autumn	Spring	Breeding	Autumn	Spring
WoW	17.86	16.31	21.87	1112.7	798.7	1216.8	3	2	4	10	7	11
PFOWF	4	1	0	546	118	41	2	0	0	5	1	0
BOWL	69	8	29	1,430	1,112	1,112	4	3	3	13	10	10
Moray East	32	2	14	1,963	0	0	6	0	0	18	0	0
Moray West	57	17	5	6,902	1,470	1,074	21	4	3	62	13	10
Blyth Demonstration Site	1	2	1	591	740	740	0	0	0	0	0	0
Dogger Bank A & B	210	98	215	7,898	3,450	15,482	0	0	0	0	0	0
Dogger Bank C & Sofia	100	66	158	4,395	2,181	11,805	0	0	0	0	0	0
Dudgeon	0	0	0				0	0	0	0	0	0
Dudgeon & Sheringham Extension Project	7	4	1				0	0	0	0	0	0
East Anglia ONE	1	117	34	171	1,158	758	0	0	0	0	0	0
East Anglia ONE North	29	6	2	231	159	435	0	0	0	0	0	0
East Anglia THREE	4	50	27	345	3,419	1,309	0	0	0	0	0	0
East Anglia TWO	21	4	5	241	127	301	0	0	0	0	0	0
EOWDC	9	4	1	663	14	23	6	0	0	6	0	0
Galloper	5	20	23				0	0	0	0	0	0
Greater Gabbard	1	11	8				0	0	0	0	0	0
Gunfleet Sands	0	0	0				0	0	0	0	0	0
Hornsea Project Four	54	10	3	3,771	3,608	2,626	0	0	0	0	0	0
Hornsea Project One	32	41	15	2,946	31,481	767	0	0	0	0	0	0
Hornsea Project Two	12	6	2	2,903	1,449	1,975	0	0	0	0	0	0
Hornsea Project Three	56	28	6	5,320	2,550	3,795	0	0	0	0	0	0
Humber Gateway	1	2	1				0	0	0	0	0	0

Project	Collisions			Abundance			Displacement (30% x 1%)			Displacement (30% x 3%)		
	Breeding	Autumn	Spring	Breeding	Autumn	Spring	Breeding	Autumn	Spring	Breeding	Autumn	Spring
Hywind Scotland	12	1	1	112			0	0	0	1	0	0
Inch Cape	25	16	4	3,866	1,069	1,069	12	3	3	35	10	10
Kentish Flats Extension	0	0	3				0	0	0	0	0	0
Kincardine	16	6	1	229			1	0	0	2	0	0
Lincs, Lynn & Inner Dowsing	1	1	0				0	0	0	0	0	0
London Array	1	2	1				0	0	0	0	0	0
Levenmouth Demonstration Turbine	0	0	0	184			1	0	0	2	0	0
Neart na Gaoithe	11	5	1	2,164	2,016	139	6	6	0	19	18	1
Norfolk Boreas	10	23	9	575	2,576	949	0	0	0	0	0	0
Norfolk Vanguard	16	12	14	519	916	1,294	0	0	0	0	0	0
Race Bank	1	17	4				0	0	0	0	0	0
Rampion	40	27	22				0	0	0	0	0	0
Seagreen (Phase 1)	71	95	55	3,235	2,286	2,286	10	7	7	29	21	21
Sheringham Shoal	0	0	0				0	0	0	0	0	0
Teesside	28	17	2				0	0	0	0	0	0
Thanet	0	1	0				0	0	0	0	0	0
Triton Knoll	18	101	33	290	332	226	0	0	0	0	0	0
Westermost Rough	0	0	0				0	0	0	0	0	0
Forthwind	0	0	0				0	0	0	0	0	0
Berwick Bank	393	121	114	21,141	11,190	13,766	63	34	41	190	101	124
Greenvolt	5.2	5.4	3.3	183	149	83	1	0	0	2	1	1
Salamander	14	0	0	3,718	220	0	11	1	0	33	2	0
Total	**1385.1**	**963.7**	**839.2**	**25042.0**	**11559.0**	**13849.0**	**147.0**	**60.0**	**61.0**	**427.0**	**184.0**	**188.0**

Table 3-2. Kittiwake WoW alone and in-combination summed collision and low displacement mortality (30% x 1%), resultant percentage change in background mortality and determination of need for PVA (highlighted cells; alone: change in mortality >=0.02%; in-combination: change in mortality >=0.02% & WoW annual mortality >=0.2). Pop. size is number of adult individuals from Burnell *et al.* (2023). WoW = the Project. Annual mortality = birds per annum.

SPA		WoW		In-combination (inc. Berwick Bank)		In-combination (exc. Berwick Bank)		PVA required for:		
	Pop. size	Annual mortality	Change in background mortality rate (%)	Annual mortality	Change in background rate (%)	Annual mortality	Change in background mortality rate (%)	WoW alone	In-combination (inc. Berwick Bank)	In-combination (exc. Berwick Bank)
Ailsa Craig	980	0.00	0.0001	0.25	0.0256	0.06	0.0066			
Buchan Ness to Collieston Coast SPA	22,590	1.08	0.0048	78.32	0.3467	54.59	0.2416		X	X
Calf of Eday SPA	672	0.08	0.0121	2.48	0.3686	2.09	0.3108			
Canna and Sanday SPA	2,842	0.01	0.0005	0.37	0.0130	0.13	0.0045			
Cape Wrath SPA	7,244	2.47	0.0340	3.52	0.0485	3.43	0.0473	X	X	X
Copinsay SPA	1,910	0.13	0.0070	2.71	0.1421	2.21	0.1158			
East Caithness Cliffs SPA	48,958	5.16	0.0105	222.63	0.4547	194.96	0.3982		X	X
Fair Isle SPA	896	0.07	0.0074	2.53	0.2823	2.13	0.2375			
Farne Islands	8,804	0.26	0.0030	50.94	0.5786	16.97	0.1927		X	X
Flamborough and Filey Coast	91,008	2.86	0.0031	419.02	0.4604	381.98	0.4197		X	X
Flannan Isles SPA	1,650	0.01	0.0007	0.09	0.0057	0.08	0.0050			
Forth Islands	9,084	0.26	0.0029	49.06	0.5401	23.84	0.2624		X	X
Foula SPA	850	0.03	0.0036	1.07	0.1263	0.90	0.1063			
Fowlsheugh SPA	28,078	0.83	0.0029	138.28	0.4925	71.59	0.2550		X	X
Handa SPA	7,498	0.50	0.0067	1.61	0.0215	1.05	0.0140		X	X
Hermaness, Saxa Vord and Valla Field SPA	354	0.03	0.0086	1.26	0.3547	1.05	0.2972			
Hoy SPA	532	0.23	0.0423	1.61	0.3029	1.36	0.2558	X	X	X
Marwick Head SPA	1,812	0.35	0.0193	2.16	0.1192	1.89	0.1041	X	X	X
Mingulay and Berneray SPA	4,176	0.01	0.0003	0.15	0.0035	0.13	0.0030			

SPA	Pop. size	WoW		In-combination (inc. Berwick Bank)		In-combination (exc. Berwick Bank)		PVA required for:		
		Annual mortality	Change in background mortality rate (%)	Annual mortality	Change in background rate (%)	Annual mortality	Change in background mortality rate (%)	WoW alone	In-combination (inc. Berwick Bank)	In-combination (exc. Berwick Bank)
North Caithness Cliffs SPA	11,142	4.11	0.0369	44.37	0.3982	37.97	0.3408	X	X	X
North Colonsay and Western Cliffs	6,694	0.01	0.0001	1.27	0.0190	0.45	0.0068			
North Rona and Sula Sgeir SPA	1,424	0.04	0.0031	0.13	0.0094	0.12	0.0087			
Noss SPA	358	0.04	0.0111	1.63	0.4561	1.37	0.3824			
Rousay SPA	660	0.19	0.0285	5.76	0.8731	4.84	0.7341	X		
Rum SPA	1,400	0.01	0.0006	0.23	0.0161	0.09	0.0061			
Shiant Isles SPA	2,150	0.02	0.0011	0.12	0.0058	0.12	0.0056			
St Abbs Head to Fast Castle	10,300	0.26	0.0025	68.05	0.6607	16.91	0.1642		X	X
St Kilda SPA	840	0.00	0.0004	0.05	0.0064	0.05	0.0054			
Sumburgh Head SPA	1,932	0.03	0.0014	0.74	0.0385	0.64	0.0329			
Troup, Pennan and Lions Head	21,232	1.27	0.0060	60.99	0.2873	47.20	0.2223		X	X
West Westray SPA	5,510	1.26	0.0228	39.40	0.7150	33.13	0.6012	X	X	X

Table 3-3. Kittiwake WoW alone and in-combination summed collision and high displacement mortality (30% x 3%), resultant percentage change in background mortality and determination of need for PVA (highlighted cells; alone: change in mortality >=0.02%; in-combination: change in mortality >=0.02% & WoW annual mortality >=0.2) (WoW = the Project). Pop. size is number of adult individuals from Burnell *et al.* (2023). WoW = the Project. Annual mortality = birds per annum.

SPA	Pop. size	WoW		In-combination (inc. Berwick Bank)		In-combination (exc. Berwick Bank)		PVA required for:		
		Annual mortality	Change in background mortality rate (%)	Annual mortality	Change in background rate (%)	Annual mortality	Change in background mortality rate (%)	WoW alone	In-combination (inc. Berwick Bank)	In-combination (exc. Berwick Bank)
Ailsa Craig	980	0.00	0.0001	0.32	0.0324	0.08	0.0081			
Buchan Ness to Collieston Coast SPA	22,590	1.38	0.0061	98.77	0.4372	67.05	0.2968		X	X
Calf of Eday SPA	672	0.11	0.0156	2.82	0.4196	2.24	0.3334			
Canna and Sanday SPA	2,842	0.02	0.0007	0.48	0.0168	0.16	0.0058			
Cape Wrath SPA	7,244	3.29	0.0455	4.61	0.0637	4.48	0.0618	X	X	X
Copinsay SPA	1,910	0.18	0.0092	3.18	0.1663	2.46	0.1288			
East Caithness Cliffs SPA	48,958	6.70	0.0137	269.40	0.5503	229.55	0.4689		X	X
Fair Isle SPA	896	0.09	0.0095	2.87	0.3205	2.27	0.2538			
Farne Islands	8,804	0.33	0.0038	62.02	0.7045	18.21	0.2068		X	X
Flamborough and Filey Coast	91,008	3.63	0.0040	440.45	0.4840	388.94	0.4274		X	X
Flannan Isles SPA	1,650	0.01	0.0009	0.11	0.0067	0.09	0.0057			
Forth Islands	9,084	0.33	0.0037	65.14	0.7171	32.56	0.3584		X	X
Foula SPA	850	0.04	0.0046	1.22	0.1436	0.97	0.1137			
Fowlsheugh SPA	28,078	1.06	0.0038	173.98	0.6196	87.68	0.3123		X	X
Handa SPA	7,498	0.67	0.0090	2.13	0.0283	1.41	0.0188		X	X
Hermaness, Saxa Vord and Valla Field SPA	354	0.04	0.0110	1.42	0.4016	1.12	0.3159			
Hoy SPA	532	0.30	0.0562	1.89	0.3558	1.53	0.2873	X	X	X

SPA		WoW		In-combination (inc. Berwick Bank)		In-combination (exc. Berwick Bank)		PVA required for:		
	Pop. size	Annual mortality	Change in background mortality rate (%)	Annual mortality	Change in background rate (%)	Annual mortality	Change in background mortality rate (%)	WoW alone	In-combination (inc. Berwick Bank)	In-combination (exc. Berwick Bank)
Marwick Head SPA	1,812	0.46	0.0256	2.54	0.1403	2.13	0.1178	X	X	X
Mingulay and Berneray SPA	4,176	0.02	0.0005	0.17	0.0041	0.14	0.0034			
North Caithness Cliffs SPA	11,142	5.45	0.0489	53.04	0.4760	43.73	0.3925	X	X	X
North Colonsay and Western Cliffs	6,694	0.01	0.0001	1.60	0.0240	0.55	0.0082			
North Rona and Sula Sgeir SPA	1,424	0.06	0.0042	0.16	0.0116	0.15	0.0104			
Noss SPA	358	0.05	0.0142	1.85	0.5167	1.46	0.4068			
Rousay SPA	660	0.24	0.0367	6.55	0.9918	5.18	0.7844	X	X	X
Rum SPA	1,400	0.01	0.0008	0.29	0.0205	0.11	0.0077			
Shiant Isles SPA	2,150	0.03	0.0014	0.17	0.0077	0.16	0.0074			
St Abbs Head to Fast Castle	10,300	0.33	0.0032	85.63	0.8313	19.87	0.1929		X	X
St Kilda SPA	840	0.00	0.0006	0.06	0.0073	0.05	0.0058			
Sumburgh Head SPA	1,932	0.03	0.0018	0.85	0.0439	0.69	0.0355			
Troup, Pennan and Lions Head	21,232	1.63	0.0077	70.88	0.3338	51.61	0.2431		X	X
West Westray SPA	5,510	1.62	0.0294	44.71	0.8115	35.36	0.6417	X	X	X

3.2 Gannet

Impacts Assessed: Collision and Displacement

95. **Table 3-4** presents the estimated gannet collision and displacement mortalities for the Project and all other OWFs included in the in-combination assessment. A displacement rate of 70% and mortality rates for displaced birds of 1% (low impact scenario) and 3% (high impact scenario) have been applied.

96. **Table 3-30**, **Table 3-31** and **Table 3-32** in ANNEX A present the apportioned gannet collision mortalities, low impact scenario displacement mortalities and high impact scenario displacement mortalities, respectively, for all OWFs included in the in-combination assessment. These apportioned mortalities were derived by firstly removing immature and sabbatical birds (**Table 2-5**) and then multiplying the breeding adult proportion of mortalities from **Table 3-4** by apportioning rates presented in Table 3-1 to Table 3-3 of the Appendix 5 - HRA: Apportioning Technical Report.

97. Finally, **Table 3-5** (low displacement impact scenario) and **Table 3-6** (high displacement impact scenario) in the species account below presents the gannet apportioned annual mortality and change in annual adult survival rate for each SPA, identifying which SPA populations require a PVA. These tables are broken down by impacts from Project alone, in-combination with Berwick Bank and in-combination without Berwick Bank. Note, 'change in background mortality rate' is the same as change in annual adult survival rate.

98. Gannet collision mortalities were generally higher than displacement mortalities, although not for all OWFs (**Table 3-4**). In-combination, total annual collision mortality from all OWFs was estimated to be 2,068 collisions per annum. Total annual displacement mortality was estimated to be 416 and 1,246 mortalities per annum, for low and high impact scenarios, respectively.

99. Project apportioned mortality was greatest for gannet populations at Sule Stack & Sule Skerry SPA, followed by Forth Islands SPA (**Table 3-5** and **Table 3-6**). This is due to all Project alone breeding season mortality being apportioned to Sule Stack & Sule Skerry SPA, as this SPA boundary overlaps with the Project OAA plus 2 km buffer.

100. Change in annual adult survival rate, from Project alone impacts, was greatest at Sule Skerry & Sule Stack SPA. For all other SPAs, the change in adult survival rate was <0.02% (**Table 3-5** and **Table 3-6**).

101. In-combination, the largest number of mortalities were apportioned to Forth Islands SPA, followed by Flamborough & Filey Coast SPA and Hermaness Saxa Vord and Valla Field SPA, irrespective of whether Berwick Bank impacts were included (**Table 3-5** and **Table 3-6**). Change in annual adult survival rate was greatest at Flamborough & Filey Coast SPA, followed by Forth Islands SPA.

102. Project alone impacts exceeded the PVA threshold for Sule Skerry & Sule Stack SPA (**Table 3-5** and **Table 3-6**). In-combination impacts exceed the PVA threshold for Fair Isle SPA, Flamborough and Filey Coast SPA, Forth Islands SPA, Hermaness, Saxa Vord and Valla Field

SPA, Noss SPA, St Kilda SPA, Sule Skerry and Sule Stack SPA. Excluding Berwick Bank impacts did not alter the SPAs for which a PVA is required.

Table 3-4. Gannet in-combination collisions, abundance and estimated displacement. Displacement calculated using 70% displaced and 1% and 3% mortality. Blank cells indicate no data available (WoW = the Project).

Project	Collisions			Abundance			Displacement (70% x 1%)			Displacement (70% x 3%)		
	Breeding	Autumn	Spring	Breeding	Autumn	Spring	Breeding	Autumn	Spring	Breeding	Autumn	Spring
WoW	35.29	8	1.76	851.7	1368	139.5	6.0	9.6	1.0	17.9	28.7	2.9
PFOWF	2	0	0				1.0	0.0	0.0	1.0	0.0	0.0
BOWL	37	49	10	151	0	0	1.1	0.0	0.0	3.2	0.0	0.0
Moray East	81	35	9	564	292	27	3.9	2.0	0.2	11.8	6.1	0.6
Moray West	10	2	1	2,827	439	144	19.8	3.1	1.0	59.4	9.2	3.0
Blyth Demonstration Site	4	2	3	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Dogger Bank A & B	81	84	54	1,155	2,048	394	8.1	14.3	2.8	24.3	43.0	8.3
Dogger Bank C & Sofia	15	10	11	2,250	887	464	15.8	6.2	3.2	47.3	18.6	9.7
Dudgeon	22	39	19	53	25	11	0.4	0.2	0.1	1.1	0.5	0.2
Dudgeon & Sheringham Extension Project	0	1	0	440	638	58	3.1	4.5	0.4	9.2	13.4	1.2
East Anglia ONE	3	131	6	161	3,638	76	1.1	25.5	0.5	3.4	76.4	1.6
East Anglia ONE North	5	29	8	412	1,269	524	2.9	8.9	3.7	8.7	26.6	11.0
East Anglia THREE	12	11	1	149	468	44	1.0	3.3	0.3	3.1	9.8	0.9
East Anglia TWO	13	23	4	192	891	192	1.3	6.2	1.3	4.0	18.7	4.0
EOWDC	4	5	0	35	5	0	0.2	0.0	0.0	0.7	0.1	0.0
Galloper	18	31	13	360	907	276	2.5	6.3	1.9	7.6	19.0	5.8
Greater Gabbard	14	9	5	252	69	105	1.8	0.5	0.7	5.3	1.4	2.2
Gunfleet Sands	0	0	0	0	12	9	0.0	0.1	0.1	0.0	0.3	0.2
Hornsea Project Four	19	5	2	976	790	401	6.8	5.5	2.8	20.5	16.6	8.4
Hornsea Project One	3	7	5	671	694	250	4.7	4.9	1.8	14.1	14.6	5.3
Hornsea Project Two	7	14	6	457	1,140	124	3.2	8.0	0.9	9.6	23.9	2.6
Hornsea Project Three	10	5	5	1,333	984	524	9.3	6.9	3.7	28.0	20.7	11.0
Humber Gateway	2	1	2	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0

Project	Collisions			Abundance			Displacement (70% x 1%)			Displacement (70% x 3%)		
	Breeding	Autumn	Spring	Breeding	Autumn	Spring	Breeding	Autumn	Spring	Breeding	Autumn	Spring
Hywind Scotland	6	1	1	10	0	4	0.1	0.0	0.0	0.2	0.0	0.1
Inch Cape	108	5	4	2,398	703	212	16.8	4.9	1.5	50.4	14.8	4.5
Kentish Flats Extension	3	0	0	120	0	0	0.8	0.0	0.0	2.5	0.0	0.0
Kincardine	1	1	1	0	13	0	0.0	0.1	0.0	0.0	0.3	0.0
Lincs, Lynn & Inner Dowsing	2	1	2	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
London Array	2	1	2	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Levenmouth Demonstration Turbine	6	0	0	23	0	0	0.2	0.0	0.0	0.5	0.0	0.0
Neart na Gaoithe	89	7	7	1,987	552	281	13.9	3.9	2.0	41.7	11.6	5.9
Norfolk Boreas	14	13	4	1,229	1,723	526	8.6	12.1	3.7	25.8	36.2	11.0
Norfolk Vanguard	8	19	5	271	2,453	437	1.9	17.2	3.1	5.7	51.5	9.2
Race Bank	34	12	4	92	32	29	0.6	0.2	0.2	1.9	0.7	0.6
Rampion	36	64	2	0	590	0	0.0	4.1	0.0	0.0	12.4	0.0
Seagreen (Phase 1)	159	8	9	2,956	664	332	20.7	4.6	2.3	62.1	13.9	7.0
Sheringham Shoal	14	4	0	47	31	2	0.3	0.2	0.0	1.0	0.7	0.0
Teesside	5	2	0	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Thanet	1	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Triton Knoll	27	64	30	211	15	24	1.5	0.1	0.2	4.4	0.3	0.5
Westermost Rough	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Forthwind	1	0	0	64	26	44	0.4	0.2	0.3	1.3	0.5	0.9
Berwick Bank	170	18	3	4,735	1,500	269	33.1	10.5	1.9	99.4	31.5	5.6
Greenvolt	15	1	2	198	24	102	1.4	0.2	0.7	4.2	0.5	2.1
Salamander	4	1	1	442	369	0	3.1	2.6	0.0	9.3	7.7	0.0
Total	**1102.2**	**722.2**	**243.2**	**28073.7**	**25259.0**	**6024.5**	**197.5**	**176.8**	**42.2**	**590.5**	**530.4**	**126.5**

Table 3-5. Gannet WoW alone and in-combination summed collision and low displacement mortality (70% x 1%), resultant percentage change in background mortality and determination of need for PVA (highlighted cells; alone: change in mortality >=0.02%; in-combination: change in mortality >=0.02% & WoW annual mortality >=0.2). Pop. size is number of adult individuals from Burnell *et al.* (2023). WoW = the Project. Annual mortality = birds per annum.

SPA	Pop size	WoW		In-combination (inc. Berwick Bank)		In-combination (exc. Berwick Bank)		PVA required for:		
		Annual mortality	Change in background mortality rate (%)	Annual mortality	Change in background rate (%)	Annual mortality	Change in background mortality rate (%)	WoW alone	In-combination (inc. Berwick Bank)	In-combination (exc. Berwick Bank)
Ailsa Craig	66,452	0.00	0.0000	31.59	0.0475	29.11	0.0438			
Fair Isle	9,942	0.3	0.003	22.75	0.2288	22.33	0.2246		X	X
Flamborough and Filey Coast	26,784	1.02	0.0038	206.87	0.7724	204.77	0.7645		X	X
Forth Islands	150,518	5.13	0.0034	711.18	0.4725	626.95	0.4165		X	X
Hermaness, Saxa Vord and Valla Field	59,124	1.88	0.0032	122.02	0.2064	119.8	0.2026		X	X
North Rona and Sula Sgeir	24,542	0.07	0.0003	9.52	0.0388	9.25	0.0377			
Noss	27,530	0.75	0.0027	51.23	0.1861	50.27	0.1826		X	X
St Kilda	120,580	0.46	0.0004	34.71	0.0288	33.49	0.0278		X	X
Sule Skerry and Sule Stack	18,130	20.46	0.1128	32.8	0.1809	32.55	0.1796	X	X	X

Table 3-6. Gannet WoW alone and in-combination summed collision and high displacement mortality (70% x 3%), resultant percentage change in background mortality and determination of need for PVA (highlighted cells; alone: change in mortality >=0.02%; in-combination: change in mortality >=0.02% & WoW annual mortality >=0.2). Pop. size is number of adult individuals from Burnell *et al.* (2023). WoW = the Project. Annual mortality = birds per annum.

SPA	Pop size	WoW		In-combination (inc. Berwick Bank)		In-combination (exc. Berwick Bank)		PVA required for:		
		Annual mortality	Change in background mortality rate (%)	Annual mortality	Change in background rate (%)	Annual mortality	Change in background mortality rate (%)	WoW alone	In-combination (inc. Berwick Bank)	In-combination (exc. Berwick Bank)
Ailsa Craig	66,452	0.00	0.0000	42.67	0.0642	40.19	0.0605			
Fair Isle	9,942	0.61	0.0061	30.55	0.3073	30.14	0.3031		X	X
Flamborough and Filey Coast	26,784	2.07	0.0077	272.16	1.0161	270.07	1.0083		X	X
Forth Islands	150,518	10.4	0.0069	945.77	0.6283	861.54	0.5724		X	X
Hermaness, Saxa Vord and Valla Field	59,124	3.78	0.0064	165.52	0.28	163.3	0.2762		X	X
North Rona and Sula Sgeir	24,542	0.15	0.0006	12.76	0.052	12.48	0.0509			
Noss	27,530	1.52	0.0055	69.3	0.2517	68.34	0.2482		X	X
St Kilda	120,580	0.96	0.0008	47.53	0.0394	46.3	0.0384		X	X
Sule Skerry and Sule Stack	18,130	26.4	0.1456	42.39	0.2338	42.14	0.2325	X	X	X

3.3 Great Black-backed Gull

Impacts Assessed: Collision Only

103. **Table 3-7** presents the estimated great black-backed gull collision mortalities for the Project and all other OWFs included in the in-combination assessment.

104. **Table 3-33** in ANNEX A and **Table 3-8** presents the apportioned great black-backed gull collision mortalities for all OWFs included in the in-combination assessment. These apportioned mortalities were derived by firstly removing immature and sabbatical birds (**Table 2-5**) and then multiplying the breeding adult proportion of mortalities from **Table 3-7** by apportioning rates presented in Table 3-9 to Table 3-11 of Appendix 5 - HRA: Apportioning Technical Report.

105. Finally, **Table 3-8** in the species account below presents the great black-backed gull apportioned annual mortality and change in annual adult survival rate for each SPA, identifying which SPA populations require a PVA. This table is broken down by impacts from Project alone and in-combination with other OWFs. Note, 'change in background mortality rate' is the same as change in annual adult survival rate.

106. Great black-backed gull collision mortalities, in-combination with all OWFs included in the assessment, were estimated to be 1,003 collisions per annum (**Table 3-7**). 82% of collisions occurred in the non-breeding season. Berwick Bank reported zero collisions.

107. Project apportioned collision mortality was small for all SPAs. The largest impact was on great black-backed gull populations at Calf of Eday SPA, followed by Copinsay SPA and East Caithness Cliffs SPA (**Table 3-8**).

108. Change in annual adult survival rate, from Project alone impacts, was greatest at Calf of Eday SPA, Copinsay SPA and Hoy SPA. Despite an apportioned collision mortality of just 0.01 birds per annum at Hoy SPA, the change in adult survival rate, of 0.02% was sufficient to warrant a PVA being run, due to the small size of the Hoy SPA population (64 individuals) (**Table 3-8**).

109. In-combination, the largest number of mortalities were also apportioned to Calf of Eday SPA. As Berwick Bank reported zero great black-backed gull collisions, there is no in-combination scenario that excludes this project's impacts. Change in annual adult survival rate was greatest at Calf of Eday SPA, but exceeded 1% for all four SPAs with connectivity to the Project (**Table 3-8**).

110. Project alone impacts exceeded the PVA threshold for Calf of Eday SPA, Copinsay SPA and Hoy SPA. Whilst change in survival rate exceeded 0.02% in-combination for all four SPAs with connectivity to the Project, the Project alone mortality did not exceed 0.2 birds and so no in-combination PVA was required for any SPAs (**Table 3-8**).

Table 3-7. Great black-backed gull in-combination collisions (WoW = the Project).

Project	Collisions	
	Breeding	Non-breeding
WoW	0.81	11
PFOWF	0	0
BOWL	14	31
Moray East	23	12
Moray West	4	5
Blyth Demonstration Site	3	5
Dogger Bank A & B	5	28
Dogger Bank C & Sofia	8	29
Dudgeon	0	0
Dudgeon & Sheringham Extension Project	6	0
East Anglia ONE	2	122
East Anglia ONE North	5	37
East Anglia THREE	4	1
East Anglia TWO	4	3
EOWDC	1	2
Galloper	1	21
Greater Gabbard	15	60
Gunfleet Sands	0	0
Hornsea Project Four	15	71
Hornsea Project One	5	18
Hornsea Project Two	8	28
Hornsea Project Three	1	5
Humber Gateway	2	4
Hywind Scotland	0	5
Inch Cape	0	37
Kentish Flats Extension	0	0
Kincardine	0	0
Lincs, Lynn & Inner Dowsing	0	0
London Array	0	0
Levenmouth Demonstration Turbine	1	1
Neart na Gaoithe	1	7
Norfolk Boreas	7	29
Norfolk Vanguard	5	21
Race Bank	0	0
Rampion	5	21
Seagreen (Phase 1)	13	54
Sheringham Shoal	0	0
Teesside	9	35
Thanet	0	0
Triton Knoll	16	106
Westermost Rough	0	0
Forthwind	0	0

Project	Collisions	
	Breeding	Non-breeding
Berwick Bank	0	0
Greenvolt	0.1	7
Salamander	0	3
Total	**183.9**	**819.0**

Table 3-8. Great black-backed gull WoW alone and in-combination collision mortality, resultant percentage change in background mortality and determination of need for PVA (highlighted cells; alone: change in mortality >=0.02%; in-combination: change in mortality >=0.02% & WoW annual mortality >=0.2) (WoW = the Project). Pop. size is number of adult individuals from Burnell *et al.* (2023). WoW = the Project. Annual mortality = birds per annum.

SPA	Pop size	WoW		In-combination (inc. Berwick Bank)		PVA required for:	
		Annual mortality	Change in background mortality rate (%)	Annual mortality	Change in background rate (%)	WoW alone	In-combination
Calf of Eday SPA	116	0.08	0.0700	5.05	4.3500	X	
Copinsay SPA	134	0.07	0.0600	4.35	3.2400	X	
East Caithness Cliffs SPA	532	0.15	0.0300	15.11	2.8400	X	
Hoy SPA	64	0.1	0.1600	1.46	2.2800	X	

3.4 Guillemot

Impacts Assessed: Displacement Only

111. **Table 3-9** presents the estimated guillemot displacement mortalities for the Project and all other OWFs included in the in-combination assessment. A displacement rate of 60% with mortality rates for displaced birds of 3% (low impact scenario) and 5% (high impact scenario) for the breeding season, and 1% (low impact scenario) and 3% (high impact scenario) for the non-breeding season, were applied.

112. **Table 3-34** and **Table 3-35** (low displacement impact scenario) and **Table 3-36** and **Table 3-37** (high displacement impact scenario), in ANNEX A and **Table 3-10** and **Table 3-11** present the apportioned guillemot mortalities for all OWFs included in the in-combination assessment. These apportioned mortalities were derived by firstly removing immature and sabbatical birds (**Table 2-5**) and then multiplying the breeding adult proportion of mortalities from **Table 3-9** by apportioning weightings presented in Table 3-12 to Table 3-14 of Appendix 5 - HRA: Apportioning Technical Report.

113. Finally, **Table 3-10** (low displacement impact scenario) and **Table 3-11** (high displacement impact scenario), in the species account below, present the apportioned annual mortality and change in annual adult survival rate for each SPA, identifying which SPA populations require a PVA. These tables are broken down by impacts from Project alone and in-combination with other OWFs included in the in-combination assessment. As guillemots are assumed to remain close to their breeding colonies during the non-breeding season, only OWFs that impacted SPAs within foraging of the Project were included in the in-combination assessment. Berwick Bank did not impact any of the same SPAs as the Project and is therefore excluded from the in-combination assessment. Note, 'change in background mortality rate' is the same as change in annual adult survival rate.

114. Guillemot displacement mortalities from the Project alone were 170 – 318 per annum, under the low and high displacement impact scenarios, respectively (**Table 3-9**). In-combination with all other OWFs included in the assessment, annual displacement mortality was 7,020 – 14,314 guillemots per annum, under the low and high displacement impact scenarios, respectively. Generally, breeding season mortality was higher than non-breeding season.

115. The Project apportioned mortality was greatest for guillemot populations at Sule Stack & Sule Skerry SPA, due to all breeding season mortality being apportioned to this SPA (**Table 3-10** and **Table 3-11**). This was because the boundary of the SPA overlapped with the Project OAA plus 2 km buffer. Change in adult survival rate was greatest at Sule Stack & Sule Skerry SPA.

116. In-combination, the largest number of mortalities were apportioned to East Caithness Cliffs SPA, followed by North Caithness Cliffs SPA and Sule Skerry & Sule Stack SPA (**Table 3-10** and **Table 3-11**). However, the smaller population size of Sule Skerry & Sule Stack SPA meant that the change in adult survival rate was greatest for this SPA population, followed by East Caithness Cliffs SPA and North Caithness Cliffs SPA.

117. Project alone impacts exceeded the PVA threshold for only Sule Skerry & Sule Stack SPA. In-combination impacts exceed the PVA threshold for Calf of Eday SPA, Cape Wrath SPA,

Copinsay SPA, East Caithness Cliffs SPA, Fair Isle SPA (high displacement impact scenario only), Handa SPA, Hoy SPA, Marwick Head SPA, North Caithness Cliffs SPA, Rousay SPA, Sule Skerry and Sule Stack SPA and West Westray SPA.

Table 3-9. Guillemot in-combination abundance and estimated displacement. Displacement calculated using 60% displaced and 5%/3% (breeding season) and 3%/1% (non-breeding season) mortality (WoW = the Project).

Project	Abundance		Low Displacement Scenario (60% x 3%/1%)		High Displacement Scenario (60% x 5%/3%)	
	Breeding	Non-breeding	Breeding	Non-breeding	Breeding	Non-breeding
WoW	7972.5	4392.9	143.5	26.4	239.2	79.1
PFOWF	1146	650	20.6	3.9	34.4	11.7
BOWL	13610	2755	245.0	16.5	408.3	49.6
Moray East	9820	547	176.8	3.3	294.6	9.8
Moray West	24426	38174	439.7	229.0	732.8	687.1
Blyth Demonstration Site	1220	1321	22.0	7.9	36.6	23.8
Dogger Bank A & B	14886	16763	267.9	100.6	446.6	301.7
Dogger Bank C & Sofia	8494	5969	152.9	35.8	254.8	107.4
Dudgeon	334	542	6.0	3.3	10.0	9.8
Dudgeon & Sheringham Extension Project	3576	8671	64.4	52.0	107.3	156.1
East Anglia ONE	274	640	4.9	3.8	8.2	11.5
East Anglia ONE North	4183	1888	75.3	11.3	125.5	34.0
East Anglia THREE	1744	2859	31.4	17.2	52.3	51.5
East Anglia TWO	2077	1675	37.4	10.1	62.3	30.2
EOWDC	547	225	9.8	1.4	16.4	4.1
Galloper	305	593	5.5	3.6	9.2	10.7
Greater Gabbard	345	548	6.2	3.3	10.4	9.9
Gunfleet Sands	0	363	0.0	2.2	0.0	6.5
Hornsea Project Four	15245	69555	274.4	417.3	457.4	1252.0
Hornsea Project One	9836	8097	177.0	48.6	295.1	145.7
Hornsea Project Two	7735	13164	139.2	79.0	232.1	237.0
Hornsea Project Three	13374	17772	240.7	106.6	401.2	319.9

Project	Abundance		Low Displacement Scenario (60% x 3%/1%)		High Displacement Scenario (60% x 5%/3%)	
	Breeding	Non-breeding	Breeding	Non-breeding	Breeding	Non-breeding
Humber Gateway	99	138	1.8	0.8	3.0	2.5
Hywind Scotland	249	2136	4.5	12.8	7.5	38.4
Inch Cape	4371	3177	78.7	19.1	131.1	57.2
Kentish Flats Extension	0	7	0.0	0.0	0.0	0.1
Kincardine	632	0	11.4	0.0	19.0	0.0
Lincs, Lynn & Inner Dowsing	582	814	10.5	4.9	17.5	14.7
London Array	192	377	3.5	2.3	5.8	6.8
Levenmouth Demonstration Turbine	25	0	0.5	0.0	0.8	0.0
Neart na Gaoithe	1755	3761	31.6	22.6	52.7	67.7
Norfolk Boreas	7764	13777	139.8	82.7	232.9	248.0
Norfolk Vanguard	4320	4776	77.8	28.7	129.6	86.0
Race Bank	361	708	6.5	4.2	10.8	12.7
Rampion	10887	15536	196.0	93.2	326.6	279.6
Seagreen (Phase 1)	24724	8800	445.0	52.8	741.7	158.4
Sheringham Shoal	390	715	7.0	4.3	11.7	12.9
Teesside	267	901	4.8	5.4	8.0	16.2
Thanet	18	124	0.3	0.7	0.5	2.2
Triton Knoll	425	746	7.7	4.5	12.8	13.4
Westermost Rough	347	486	6.2	2.9	10.4	8.7
Forthwind	417	401	7.5	2.4	12.5	7.2
Berwick Bank	74154	44171	1334.8	265.0	2224.6	795.1
Greenvolt	4429	16105	79.7	96.6	132.9	289.9
Salamander	3616	11779	65.1	70.7	108.5	212.0
Total	**281173.5**	**326598.9**	**5061.3**	**1959.7**	**8435.6**	**5878.8**

Table 3-10. Guillemot WoW alone and in-combination low displacement mortality (60% x 3%/1%), resultant percentage change in background mortality and determination of need for PVA (highlighted cells; alone: change in mortality >=0.02%; in-combination: change in mortality >=0.02% & WoW annual mortality >=0.2) Pop. size is number of adult individuals from Burnell *et al.* (2023). WoW = the Project. Annual mortality = birds per annum.

SPA	Pop size	WoW		In-combination		PVA required for:	
		Annual mortality	Change in background mortality rate (%)	Annual mortality	Change in background rate (%)	WoW alone	In-combination
Calf of Eday	4,680	0.13	0.0028	2.04	0.0435		
Cape Wrath	51,066	1.46	0.0029	18.3	0.0358		X
Copinsay	24,761	0.71	0.0028	29.44	0.1189		X
East Caithness Cliffs	199,965	5.7	0.0028	662.77	0.3314		X
Fair Isle	24,515	0.7	0.0028	2.64	0.0108		
Handa	73,249	2.09	0.0029	26.16	0.0357		X
Hoy	12,389	0.35	0.0029	6.59	0.0532		X
Marwick Head	16,059	0.46	0.0029	7.11	0.0443		X
North Caithness Cliffs	52,123	1.49	0.0029	92.49	0.1774		X
North Rona and Sula Sgeir	10,354	0.29	0.0028	0.34	0.0033		
Rousay	7,920	0.23	0.0029	3.49	0.0441		X
The Shiant Isles	12,132	0.35	0.0028	0.35	0.0028		
Sule Skerry and Sule Stack	12,060	76.39	0.6334	81	0.6717	X	X
West Westray	38,453	1.1	0.0028	15.32	0.0398		X

Table 3-11. Guillemot WoW alone and in-combination high displacement mortality (60% x 5%/3%), resultant percentage change in background mortality and determination of need for PVA (highlighted cells; alone: change in mortality >=0.02%; in-combination: change in mortality >=0.02% & WoW annual mortality >=0.2) Pop. size is number of adult individuals from Burnell *et al.* (2023). WoW = the Project. Annual mortality = birds per annum.

SPA	Pop size	WoW		In-combination		PVA required for:	
		Annual mortality	Change in background mortality rate (%)	Annual mortality	Change in background rate (%)	WoW alone	In-combination
Calf of Eday	4,680	0.40	0.0085	5.82	0.1243		X
Cape Wrath	51,066	4.37	0.0086	54.73	0.1072		X
Copinsay	24,761	2.12	0.0085	80.81	0.3264		X
East Caithness Cliffs	199,965	17.09	0.0085	1427.37	0.7138		X
Fair Isle	24,515	2.09	0.0085	7.38	0.0301		X
Handa	73,249	6.26	0.0085	78.34	0.1069		X
Hoy	12,389	1.06	0.0086	17.39	0.1404		X
Marwick Head	16,059	1.37	0.0086	20.17	0.1256		X
North Caithness Cliffs	52,123	4.46	0.0086	237.96	0.4565		X
North Rona and Sula Sgeir	10,354	0.88	0.0085	1.02	0.0099		
Rousay	7,920	0.68	0.0085	9.93	0.1253		X
The Shiant Isles	12,132	1.04	0.0085	1.04	0.0085		
Sule Skerry and Sule Stack	12,060	127.78	1.0595	140.72	1.1669	X	X
West Westray	38,453	3.29	0.0085	45.45	0.1182		X

3.5 Razorbill

Impacts Assessed: Displacement Only

118. **Table 3-12** presents the estimated razorbill displacement mortalities for the Project and all other OWFs included in the in-combination assessment. A displacement rate of 60% with mortality rates for displaced birds of 3% (low impact scenario) and 5% (high impact scenario) for the breeding season and 1% (low impact scenario) and 3% (high impact scenario) for the non-breeding season, were applied.

119. **Table 3-38** and **Table 3-39** (low displacement impact scenario) and **Table 3-40** and Table **3-41** (high displacement impact scenario), in ANNEX A present the apportioned razorbill mortalities for all OWFs included in the in-combination assessment. These apportioned mortalities were derived by firstly removing immature and sabbatical birds (**Table 2-5**) and then multiplying the breeding adult proportion of mortalities from **Table 3-12** by apportioning weightings presented in Table 3-15 to Table 3-18 of Appendix 5 - HRA: Apportioning Technical Report.

120. Finally, **Table 3-13** (low displacement impact scenario) and **Table 3-14** (high displacement impact scenario) in the species account below presents the apportioned annual mortality and change in annual adult survival rate for each SPA, identifying which SPA populations require a PVA. These tables are broken down by impacts from Project alone, in-combination with Berwick Bank and in-combination without Berwick Bank. Note, 'change in background mortality rate' is the same as change in annual adult survival rate.

121. Razorbill displacement mortalities from the Project were low, at 5 – 9 birds per annum for the low and high displacement impact scenarios, respectively (**Table 3-12**). In combination total annual displacement mortality was estimated to be 1,428 and 3,362 mortalities per annum, for low and high impact scenarios, respectively.

122. The Project apportioned mortality was greatest for razorbill populations at East Caithness Cliffs SPA, followed by Cape Wrath SPA and North Caithness Cliffs SPA. However, apportioned impacts were small in all cases (<1 bird per annum) (**Table 3-13** and **Table 3-14**). Change in baseline adult survival rate was greatest for Cape Wrath SPA but was still <0.02%.

123. In-combination, the largest number of mortalities were apportioned to Flamborough & Filey Coast SPA, East Caithness Cliffs SPA and Fowlsheugh SPA, irrespective of whether Berwick Bank impacts were included or excluded (**Table 3-13** and **Table 3-14**). However, after accounting for the razorbill population size at each SPA, change in annual adult survival rate was greatest at Forth Islands SPA, Fowlsheugh SPA, St Abb's Head to Fastcastle SPA (with Berwick Bank impacts) and Flamborough & Filey Coast SPA (without Berwick Bank impacts).

124. Project alone impacts did not exceeded the PVA threshold for any SPAs (**Table 3-13** and **Table 3-14**). In-combination impacts exceeded the PVA threshold for Cape Wrath SPA, East Caithness Cliffs SPA, Handa SPA and North Caithness Cliffs SPA. Excluding Berwick Bank impacts did not alter the SPAs exceeding the PVA threshold.

Table 3-12. Razorbill cumulative abundance and estimated displacement. Displacement calculated using 60% displaced and 5%/3% (breeding season) and 3%/1% (non-breeding season) mortality (WoW = the Project).

Project	Abundance				Displacement (60% x 3%/1%)				Displacement (60% x 5%/3%)			
	Breeding	Autumn	Winter	Spring	Breeding	Autumn	Winter	Spring	Breeding	Autumn	Winter	Spring
WoW	141	112	19	132	3	1	0	1	4	2	0	2
PFOWF	134	16	17	14	2	0	0	0	4	0	0	0
BOWL	873	833	555	833	16	5	3	5	26	15	10	15
Moray East	2423	1103	30	168	44	7	0	1	73	20	1	3
Moray West	2808	3544	184	3585	51	21	1	22	84	64	3	65
Blyth Demonstration Site	121	91	61	91	2	1	0	1	4	2	1	2
Dogger Bank A & B	2788	3673	3871	9268	50	22	23	56	84	66	70	167
Dogger Bank C & Sofia	1987	902	2385	4872	36	5	14	29	60	16	43	88
Dudgeon	256	346	745	346	5	2	4	2	8	6	13	6
Dudgeon & Sheringham Extension Project	1239	4500	1531	464	22	27	9	3	37	81	28	8
East Anglia ONE	16	26	155	336	0	0	1	2	0	0	3	6
East Anglia ONE North	403	85	54	207	7	1	0	1	12	2	1	4
East Anglia THREE	1807	1122	1499	1524	33	7	9	9	54	20	27	27
East Anglia TWO	281	44	136	230	5	0	1	1	8	1	2	4
EOWDC	161	64	7	26	3	0	0	0	5	1	0	0
Galloper	44	43	106	394	1	0	1	2	1	1	2	7
Greater Gabbard	0	0	387	84	0	0	2	1	0	0	7	2
Gunfleet Sands	0	0	30	0	0	0	0	0	0	0	1	0
Hornsea Project Four	386	4311	455	449	7	26	3	3	12	78	8	8
Hornsea Project One	1109	4812	1518	1803	20	29	9	11	33	87	27	32
Hornsea Project Two	2511	4221	720	1668	45	25	4	10	75	76	13	30
Hornsea Project Three	630	2020	3649	2105	11	12	22	13	19	36	66	38
Humber Gateway	27	20	13	20	0	0	0	0	1	0	0	0

Project	Abundance				Displacement (60% x 3%/1%)				Displacement (60% x 5%/3%)			
	Breeding	Autumn	Winter	Spring	Breeding	Autumn	Winter	Spring	Breeding	Autumn	Winter	Spring
Hywind Scotland	30	719	10	0	1	4	0	0	1	13	0	0
Inch Cape	1436	2870	651	0	26	17	4	0	43	52	12	0
Kentish Flats Extension	0	0	0	0	0	0	0	0	0	0	0	0
Kincardine	22	0	0	0	0	0	0	0	1	0	0	0
Lincs, Lynn & Inner Dowsing	45	34	22	34	1	0	0	0	1	1	0	1
London Array	14	20	14	20	0	0	0	0	0	0	0	0
Levenmouth Demonstration Turbine	4	0	0	0	0	0	0	0	0	0	0	0
Neart na Gaoithe	331	5492	508	0	6	33	3	0	10	99	9	0
Norfolk Boreas	630	263	1065	345	11	2	6	2	19	5	19	6
Norfolk Vanguard	879	866	839	924	16	5	5	6	26	16	15	17
Race Bank	28	42	28	42	1	0	0	0	1	1	1	1
Rampion	630	66	1244	3327	11	0	7	20	19	1	22	60
Seagreen (Phase 1)	9574	0	2375	0	172	0	14	0	287	0	43	0
Sheringham Shoal	106	1343	211	30	2	8	1	0	3	24	4	1
Teesside	16	61	2	20	0	0	0	0	0	1	0	0
Thanet	3	0	14	21	0	0	0	0	0	0	0	0
Triton Knoll	40	254	855	117	1	2	5	1	1	5	15	2
Westermost Rough	91	121	152	91	2	1	1	1	3	2	3	2
Forthwind	57	81	58	81	1	0	0	0	2	1	1	1
Berwick Bank	4040	8849	1399	7480	73	53	8	45	121	159	25	135
Greenvolt	457	0	58	0	8	0	0	0	14	0	1	0
Salamander	334	0	484	0	6	0	3	0	10	0	9	0
Total	**38912**	**52969**	**28116.0**	**41151.0**	**701.0**	**316.0**	**163**	**248**	**1166**	**954**	**505.0**	**740.0**

Table 3-13. Razorbill WoW alone and in-combination low displacement mortality (60% x 3%/1%), resultant percentage change in background mortality and determination of need for PVA (highlighted cells; alone: change in mortality >0.02%; in-combination: change in mortality >0.02% & WoW annual mortality >0.2). Pop. size is number of adult individuals from Burnell *et al.* (2023). WoW = the Project. Annual mortality = birds per annum.

SPA		WoW		In-combination (inc. Berwick Bank)		In-combination (exc. Berwick Bank)		PVA required for:		
	Pop size	Annual mortality	Change in background mortality rate (%)	Annual mortality	Change in background rate (%)	Annual mortality	Change in background mortality rate (%)	WoW alone	In-combination (inc. Berwick Bank)	In-combination (exc. Berwick Bank)
Cape Wrath SPA	4,350	0.38	0.0087	0.91	0.0209	0.88	0.0202		X	X
East Caithness Cliffs SPA	40,373	0.59	0	82.37	0.204	77.95	0.1931		X	X
Fair Isle SPA	2,580	0.01	0.0004	2.12	0.0821	1.81	0.0702			
Flamborough and Filey Coast	37,476	0.07	0.0002	63.3	0.1689	59.77	0.1595			
Flannan Isles SPA	1,532	0	0	0.2	0.0128	0.18	0.0119			
Forth Islands	7,631	0.02	0.0002	41.66	0.5459	28.77	0.377			
Foula SPA	635	0	0.0005	0.85	0.1334	0.72	0.1136			
Fowlsheugh SPA	18,844	0.02	0.0001	99.71	0.5291	82.44	0.4375			
Handa SPA	10,997	0.21	0.0019	1.36	0.0124	1.29	0.0117			
Mingulay and Berneray SPA	26,787	0	0	1.89	0.0071	1.75	0.0065			
North Caithness Cliffs SPA	4,796	0.36	0.0075	6.41	0.1337	5.84	0.1217		X	X
North Rona and Sula Sgeir SPA	531	0	0.0007	0.21	0.0391	0.19	0.0363			
Shiant Isles SPA	10,759	0	0	0.8	0.0074	0.74	0.0068			
St Abbs Head to Fast Castle	3,928	0.01	0.0002	14.81	0.3771	6.38	0.1624			
St Kilda SPA	1,099	0	0	0.32	0.029	0.29	0.0268			
Troup, Pennan and Lions Head	6,054	0.01	0.0002	11.89	0.1964	11.28	0.1863			
West Westray SPA	2,893	0.04	0.0013	1.36	0.0471	1.18	0.0407			

Table 3-14. Razorbill WoW alone and in-combination high displacement mortality (60% x 5%/3%), resultant percentage change in background mortality and determination of need for PVA (highlighted cells; alone: change in mortality >=0.02%; in-combination: change in mortality >=0.02% & WoW annual mortality >=0.2). Pop. size is number of adult individuals from Burnell *et al.* (2023). WoW = the Project. Annual mortality = birds per annum.

SPA	Pop size	WoW		In-combination (inc. Berwick Bank)		In-combination (exc. Berwick Bank)		PVA required for:		
		Annual mortality	Change in background mortality rate (%)	Annual mortality	Change in background rate (%)	Annual mortality	Change in background mortality rate (%)	WoW alone	In-combination (inc. Berwick Bank)	In-combination (exc. Berwick Bank)
Cape Wrath SPA	4,350	0.50	0.0116	1.94	0.0447	1.85	0.0426		X	X
East Caithness Cliffs SPA	40,373	0.84	0	175.82	0.4355	162.54	0.4026		X	X
Fair Isle SPA	2,580	0.02	0.0007	6.32	0.245	5.39	0.2091			
Flamborough and Filey Coast	37,476	0.14	0.0004	137.33	0.3664	126.71	0.3381			
Flannan Isles SPA	1,532	0	0	0.61	0.0396	0.56	0.0366			
Forth Islands	7,631	0.04	0.0005	77.81	1.0196	55.2	0.7233			
Foula SPA	635	0.01	0.001	2.56	0.4031	2.18	0.3433			
Fowlsheugh SPA	18,844	0.05	0.0003	177.79	0.9435	147.49	0.7827			
Handa SPA	10,997	0.28	0.0025	3.56	0.0324	3.34	0.0304		X	X
Mingulay and Berneray SPA	26,787	0	0	5.83	0.0218	5.4	0.0201			
North Caithness Cliffs SPA	4,796	0.48	0.0101	16.01	0.3338	14.29	0.2979		X	X
North Rona and Sula Sgeir SPA	531	0.01	0.001	0.63	0.1193	0.59	0.1105			
Shiant Isles SPA	10,759	0	0	2.45	0.0228	2.27	0.0211			
St Abbs Head to Fast Castle	3,928	0.02	0.0004	28.56	0.7271	14	0.3564			
St Kilda SPA	1,099	0	0	0.98	0.0892	0.91	0.0826			
Troup, Pennan and Lions Head	6,054	0.02	0.0004	25.65	0.4237	23.8	0.3931			
West Westray SPA	2,893	0.05	0.0018	3.93	0.136	3.38	0.1167			

3.6 Puffin

Impacts Assessed: Displacement Only

125. **Table 3-15** presents the estimated puffin displacement mortalities for the Project and all other OWFs included in the in-combination assessment. A displacement rate of 60% with mortality rates for displaced birds of 3% (low impact scenario) and 5% (high impact scenario) for the breeding season and 1% (low impact scenario) and 3% (high impact scenario) for the non-breeding season, were applied.

126. **Table 3-42** and **Table 3-43** (low displacement impact scenario) and **Table 3-44** and **Table 3-45** (high displacement impact scenario), in ANNEX A present the apportioned puffin mortalities for all OWFs included in the in-combination assessment. These apportioned mortalities were derived by firstly removing immature and sabbatical birds (**Table 2-5**) and then multiplying the breeding adult proportion of mortalities from **Table 3-15** by apportioning rates presented in Table 3-19 to Table 3-22 of Appendix 5 - HRA: Apportioning Technical Report.

127. Finally, **Table 3-16** (low displacement impact scenario) and **Table 3-17** (high displacement impact scenario), in the species account below, presents the apportioned annual mortality and change in annual adult survival rate for each SPA, identifying which SPA populations require a PVA. These tables are broken down by impacts from Project alone, in-combination with and without Berwick Bank. Note, 'change in background mortality rate' is the same as change in annual adult survival rate.

128. Puffin displacement mortalities from the Project alone were 107.7 to 196.6 per annum, under the low and high displacement impact scenarios, respectively (**Table 3-15**). In-combination with all other OWFs included in the assessment, annual displacement mortality was 804 to 1,618 puffins per annum, under the low and high displacement impact scenarios, respectively.

129. The Project apportioned mortality was greatest for puffin populations at Sule Stack & Sule Skerry SPA, due to all breeding season mortality being apportioned to this SPA (**Table 3-16** and **Table 3-17**). This was because the boundary of the SPA overlapped with the Project OAA plus 2 km buffer. Change in adult survival rate was greatest at Sule Stack & Sule Skerry SPA.

130. In-combination, the largest number of mortalities were apportioned to Forth Islands SPA, Farne Islands SPA and Sule Skerry & Sule Stack SPA (**Table 3-16** and **Table 3-17**). Change in annual adult survival rate was greatest for Forth Island SPA, followed by Sule Skerry & Sule Stack SPA.

131. Project alone impacts exceeded the PVA threshold for only Sule Skerry & Sule Stack SPA (**Table 3-16** and **Table 3-17**). In-combination impacts exceed the 0.02% change in adult survival threshold for some SPA populations but a PVA was not required due to Project mortality being <0.2 birds per annum. Farne Islands SPA, Forth Islands SPA, Foula SPA, Hermaness Saxa Vord and Valla Field SPA and Sule Skerry & Sule Stack SPA all exceeded the PVA threshold for in-combination impacts.

Table 3-15. Puffin cumulative abundance and estimated displacement. Displacement calculated using 60% displaced and 5%/3% (breeding season) and 3%/1% (non-breeding season) mortality (WoW = the Project).

Project	Abundance		Displacement (60% x 3%/1%)		Displacement (60% x 5%/3%)	
	Breeding	Autumn	Breeding	Autumn	Breeding	Autumn
WoW	5272	2136	94.9	12.8	158.2	38.4
PFOWF	1211	2	21.8	0.0	36.3	0.0
BOWL	2858	2435	51.4	14.6	85.7	43.8
Moray East	2795	656	50.3	3.9	83.9	11.8
Moray West	1115	3966	20.1	23.8	33.5	71.4
Blyth Demonstration Site	235	123	4.2	0.7	7.1	2.2
Dogger Bank A & B	139	1038	2.5	6.2	4.2	18.7
Dogger Bank C & Sofia	69	602	1.2	3.6	2.1	10.8
Dudgeon	1	3	0.0	0.0	0.0	0.1
Dudgeon & Sheringham Extension Project	0	28	0.0	0.2	0.0	0.5
East Anglia ONE	16	32	0.3	0.2	0.5	0.6
East Anglia ONE North	0	0	0.0	0.0	0.0	0.0
East Anglia THREE	181	307	3.3	1.8	5.4	5.5
East Anglia TWO	15	0	0.3	0.0	0.5	0.0
EOWDC	42	82	0.8	0.5	1.3	1.5
Galloper	0	1	0.0	0.0	0.0	0.0
Greater Gabbard	0	1	0.0	0.0	0.0	0.0
Gunfleet Sands	0	0	0.0	0.0	0.0	0.0
Hornsea Project Four	203	1257	3.7	7.5	6.1	22.6
Hornsea Project One	1070	2039	19.3	12.2	32.1	36.7
Hornsea Project Two	468	67	8.4	0.4	14.0	1.2
Hornsea Project Three	253	442	4.6	2.7	7.6	8.0
Humber Gateway	15	10	0.3	0.1	0.5	0.2
Hywind Scotland	119	85	2.1	0.5	3.6	1.5

Project	Abundance		Displacement (60% x 3%/1%)		Displacement (60% x 5%/3%)	
	Breeding	Autumn	Breeding	Autumn	Breeding	Autumn
Inch Cape	2956	2688	53.2	16.1	88.7	48.4
Kentish Flats Extension	3	6	0.1	0.0	0.1	0.1
Kincardine	19	0	0.3	0.0	0.6	0.0
Lincs, Lynn & Inner Dowsing	3	6	0.1	0.0	0.1	0.1
London Array	0	1	0.0	0.0	0.0	0.0
Levenmouth Demonstration Turbine	8	0	0.1	0.0	0.2	0.0
Neart na Gaoithe	2562	2103	46.1	12.6	76.9	37.9
Norfolk Boreas	0	23	0.0	0.1	0.0	0.4
Norfolk Vanguard	67	112	1.2	0.7	2.0	2.0
Race Bank	1	10	0.0	0.1	0.0	0.2
Rampion	7	0	0.1	0.0	0.2	0.0
Seagreen (Phase 1)	6154	5389	110.8	32.3	184.6	97.0
Sheringham Shoal	4	26	0.1	0.2	0.1	0.5
Teesside	35	18	0.6	0.1	1.1	0.3
Thanet	0	0	0.0	0.0	0.0	0.0
Triton Knoll	23	71	0.4	0.4	0.7	1.3
Westermost Rough	61	35	1.1	0.2	1.8	0.6
Forthwind	0	0	0.0	0.0	0.0	0.0
Berwick Bank	4513	8892	81.2	53.4	135.4	160.1
Greenvolt	250	41	4.5	0.2	7.5	0.7
Salamander	357	0	6.4	0.0	10.7	0.0
Total	**33100**	**34733**	**595.8**	**208.1**	**993.3**	**625.1**

Table 3-16. Puffin WoW alone and in-combination low displacement mortality (60% x 3%/1%), resultant percentage change in background mortality and determination of need for PVA (highlighted cells; alone: change in mortality >=0.02%; in-combination: change in mortality >=0.02% & WoW annual mortality >=0.2) Pop. size is number of adult individuals from Burnell *et al.* (2023). WoW = the Project. Annual mortality = birds per annum.

SPA	Pop size	WoW		In-combination (inc. Berwick Bank)		In-combination (exc. Berwick Bank)		PVA required for:		
		Annual mortality	Change in background mortality rate (%)	Annual mortality	Change in background rate (%)	Annual mortality	Change in background mortality rate (%)	WoW alone	In-combination (inc. Berwick Bank)	In-combination (exc. Berwick Bank)
Canna and Sanday	9,926	0.00	0.0000	0.78	0.0078	0.78	0.0078			
Cape Wrath	4,488	0.00	0.0000	1.34	0.0298	1.34	0.0298			
Coquet Island SPA	50,058	0.68	0.0014	28.46	0.0569	21.37	0.0427		X	X
Fair Isle	13,332	0.18	0.0013	5.08	0.0381	4.34	0.0326			
Farne Islands	87,504	2.21	0.0025	75.98	0.0868	45.04	0.0515		X	X
Flannan Isles	98,944	0.00	0.0000	2.72	0.0027	2.71	0.0027			
Forth Islands	85,846	3.44	0.0040	172.87	0.2014	143.05	0.1666		X	X
Foula	8,468	0.37	0.0044	6.72	0.0793	5.16	0.061		X	X
Hermaness, Saxa Vord and Valla Field	28,750	0.39	0.0014	6.43	0.0223	4.79	0.0167		X	X
Hoy	860	0.06	0.0067	1.94	0.2252	1.7	0.1971			
Mingulay and Berneray	4,642	0.00	0.0000	0.01	0.0001	0	0.0001			
North Caithness Cliffs	6,078	0.02	0.0003	31.16	0.5126	31.05	0.5108			
North Rona and Sula Sgeir	6,602	0.00	0.0000	0.11	0.0016	0.11	0.0016			
Noss	2,348	0.01	0.0006	0.4	0.0171	0.35	0.0147			
The Shiant Isles	129,390	0.01	0.0000	10.8	0.0083	10.77	0.0083			
St Kilda	197,586	0.02	0.0000	16.59	0.0084	16.52	0.0084			
Sule Skerry and Sule Stack	95,484	48.54	0.0508	48.65	0.0509	48.62	0.0509	X	X	X

Table 3-17. Puffin WoW alone and in-combination high displacement mortality (60% x 5%/3%), resultant percentage change in background mortality and determination of need for PVA (highlighted cells; alone: change in mortality >=0.02%; in-combination: change in mortality >=0.02% & WoW annual mortality >=0.2) Pop. size is number of adult individuals from Burnell *et al.* (2023). WoW = the Project. Annual mortality = birds per annum.

SPA	Pop size	WoW		In-combination (inc. Berwick Bank)		In-combination (exc. Berwick Bank)		PVA required for:		
		Annual mortality	Change in background mortality rate (%)	Annual mortality	Change in background rate (%)	Annual mortality	Change in background mortality rate (%)	WoW alone	In-combination (inc. Berwick Bank)	In-combination (exc. Berwick Bank)
Canna and Sanday	9,926	0.00	0.0000	1.30	0.0131	1.30	0.0131			
Cape Wrath	4,488	0.00	0.0000	2.23	0.0497	2.23	0.0497			
Coquet Island SPA	50,058	2.05	0.0041	62.22	0.1243	46.61	0.0931		X	X
Fair Isle	13,332	0.53	0.0040	12.32	0.0924	10.1	0.0758		X	X
Farne Islands	87,504	6.62	0.0076	174.51	0.1994	110.68	0.1265		X	X
Flannan Isles	98,944	0.01	0.0000	4.57	0.0046	4.55	0.0046			
Forth Islands	85,846	10.31	0.0120	362.67	0.4225	293.88	0.3423		X	X
Foula	8,468	1.12	0.0132	19.28	0.2277	14.62	0.1727		X	X
Hermaness, Saxa Vord and Valla Field	28,750	1.18	0.0041	19.21	0.0668	14.31	0.0498		X	X
Hoy	860	0.17	0.0198	4.49	0.5216	3.76	0.4374			
Mingulay and Berneray	4,642	0.00	0.0000	0.02	0.0004	0.01	0.0003			
North Caithness Cliffs	6,078	0.05	0.0008	52.28	0.8601	52.01	0.8557			
North Rona and Sula Sgeir	6,602	0.00	0.0000	0.19	0.0029	0.18	0.0028			
Noss	2,348	0.04	0.0017	0.96	0.0408	0.79	0.0337			
The Shiant Isles	129,390	0.02	0.0000	18.15	0.0140	18.06	0.014			
St Kilda	197,586	0.05	0.0000	27.99	0.0142	27.79	0.0141			
Sule Skerry and Sule Stack	95,484	80.92	0.0847	81.22	0.0851	81.14	0.085	X	X	X

3.7 Fulmar

Impacts Assessed: Displacement Only

132. **Table 3-18** presents the estimated fulmar displacement mortalities for the Project, apportioned to SPAs. NatureScot advised that no in-combination assessment was required for fulmar (consultation meeting of 11 June 2024). A displacement rate of 20% with mortality rates for displaced birds of 1% (low impact scenario) and 3% (high impact scenario) were applied.

133. The apportioned mortalities (**Table 3-18**) were calculated by removing immature and sabbatical birds from these mortalities (**Table 2-5)** and then multiplying the breeding adult proportion of Project mortalities (8.8 and 26.4 fulmars per annum for low and high impact scenarios, respectively) by apportioning weightings presented in Table 3-23 and Table 3-24 of **Appendix 5 - HRA: Apportioning Technical Report**.

134. **Table 3-18** also presents the change in annual adult survival rate for each SPA, identifying which SPA populations require a PVA. Apportioned mortality was greatest for Hoy SPA, followed by North Caithness Cliffs SPA, but impacts were small in all cases (maximum of 4.3 birds per annum). Change in annual adult survival rate was also greatest for Hoy SPA but this did not exceed the 0.02% threshold due to the large fulmar population on Hoy (41,082 individuals from Seabirds Count, Burnell *et al.,* 2023). Therefore, no PVAs were required for assessing the response of fulmar populations to these small impacts. Note, 'change in background mortality rate' is the same as change in annual adult survival rate.

Table 3-18. Fulmar WoW low (20% x 1%) and high (20% x 3%) displacement mortalities and percentage change in background mortality. Pop. size is number of adult individuals from Burnell *et al.* (2023). WoW = the Project. Annual mortality = birds per annum. No PVA was required due to change in adult survival rate not exceeding 0.02%

SPA	Pop size	WoW low displacement		WoW high displacement		PVA required for:
		Annual mortality (20% x 1%)	Change in background mortality rate (%)	Annual mortality (20% x 3%)	Change in background mortality rate (%)	Project alone
Buchan Ness to Collieston Coast SPA	2,734	0.036	0.002	0.109	0.007	
Calf of Eday SPA	3,684	0.057	0.001	0.171	0.004	
Cape Wrath SPA	4,230	0.062	0.002	0.187	0.006	
Copinsay SPA	3,260	0.050	0.002	0.149	0.005	
East Caithness Cliffs SPA	28,404	0.455	0.002	1.366	0.005	
Fair Isle SPA	59,298	0.759	0.001	2.277	0.004	
Fetlar	17,824	0.218	0.001	0.653	0.004	
Flamborough and Filey Coast	1,756	0.023	0.001	0.069	0.004	
Flannan Isles SPA	14,656	0.003	0.000	0.010	0.000	
Foula SPA	39,516	0.485	0.002	1.454	0.007	
Fowlsheugh SPA	386	0.005	0.001	0.016	0.002	
Handa SPA	3,740	0.007	0.000	0.020	0.001	
Hermaness, Saxa Vord and Valla Field SPA	14,000	0.173	0.001	0.520	0.002	
Hoy SPA	39,172	1.444	0.004	4.331	0.011	
Mingulay and Berneray SPA	18,092	0.039	0.000	0.116	0.001	
North Caithness Cliffs SPA	25,800	0.917	0.003	2.751	0.009	
North Rona and Sula Sgeir SPA	10,000	0.029	0.001	0.088	0.002	
Noss SPA	10,496	0.129	0.001	0.388	0.004	
Rousay SPA	2,060	0.051	0.001	0.152	0.003	
Shiant Isles SPA	8,774	0.020	0.001	0.059	0.002	

SPA	Pop size	WoW low displacement		WoW high displacement		PVA required for:
		Annual mortality (20% x 1%)	Change in background mortality rate (%)	Annual mortality (20% x 3%)	Change in background mortality rate (%)	Project alone
St Kilda SPA	66,055	0.144	0.000	0.433	0.001	
Sumburgh Head SPA	466	0.011	0.000	0.034	0.000	
Troup, Pennan and Lions Head	3,590	0.049	0.001	0.148	0.004	
West Westray SPA	1354	0.026	0.001	0.078	0.003	

3.8 Great Skua

Impacts Assessed: Collision Only

135. **Table 3-19** presents the estimated great skua collision mortalities for the Project. Most other OWFs did not assess impacts on great skua due to the species being rarely or never recorded within the development area.

136. Moray West did not assess great skua impacts due to being recorded so infrequently in the area. No quantitative numbers were available for Moray East and Beatrice. GreenVolt recorded a single great skua during surveys and so did not undertake any impact assessment for this species[24]. Digital aerial surveys recorded no great skuas in the project development area, plus 2 km buffer, of Pentland Floating Offshore Wind Farm[25] and Salamander Wind Farm[26].

137. The only OWF with a quantitative assessment of great skua mortality was Berwick Bank. For this OWF, collision mortality was estimated to be 0.35 birds per annum (based on the Scoping Approach). This was unapportioned mortality, i.e. for all age classes. Following apportioning of impacts to SPAs, there was an estimated annual collision mortality to the Hoy SPA of 0.05 great skua per annum (see page 319 of Part 3: Special Protection Areas of the Berwick Bank RIAA[27]).

138. **Table 3-19** in the species account below presents the great skua apportioned annual mortality. The Project mortalities firstly had immature birds removed (no sabbatical birds were removed for great skua) (**Table 2-5**). Breeding adult mortalities were then apportioned to SPAs using apportioning rates presented in Table 3-25 and Table 3-26 of **Appendix 5 - HRA: Apportioning Technical Report**.

139. **Table 3-19** also presents change in annual adult survival rate for each. All SPAs have Project alone apportioned mortality, as no other OWFs have apportioned great skua mortality to SPAs. The single exception to this is Berwick Bank Wind Farm, which apportioned great skua mortality to Hoy SPA and an in-combination apportioned mortality is presented for this SPA. Note, 'change in background mortality rate' is the same as change in annual adult survival rate.

140. The Project great skua apportioned collision mortality was small for all SPAs. The greatest in-combination impact (with Berwick Bank) was on Hoy SPA. However, change in annual adult survival rate was small (0.002%) due to the relatively large size of the Hoy SPA population, as counted during Seabirds Count (Burnell *et al.*, 2023). Using the more recent count from 2023 (Tremlett *et al.*, 2024), change in adult survival was estimated to be 0.0198% (**Table 3-19**).

141. No PVAs were required for any SPAs as all Project alone impacts resulted in a change in adult survival of <0.02%. In-combination impacts for Hoy SPA did almost reach the 0.02% threshold, when change in annual adult survival rate was calculated using the most recent RSPB counts

[24] Green Volt Offshore Wind Farm Offshore Habitats Regulations Assessment (marine.gov.scot.)
[25] habitat_regulation_assessment_report_redacted.pdf (marine.gov.scot).
[26] 3.12_-_offshore_and_intertidal_ornithology.pdf (marine.gov.scot).
[27] 221220_-_eor0766_berwick_bank_wind_farm_-_riaa_part_3_spa_assessment_-_signed.pdf (marine.gov.scot).

from 2023 (Tremlett *et al.*, 2024) but Project alone mortalities for Hoy SPA did not reach the 0.2 birds per annum threshold (**Table 3-19**).

Table 3-19. Great skua WoW collision mortality and percentage change in background mortality. Change in mortality was considered in relation to Seabirds Count population estimates (Burnell *et al.*, 2023) and more recent counts conducted by the RSPB (Tremlett *et al.*, 2024). In-combination collision mortality is also presented for Hoy SPA, the only SPA to which any other OWF apportioned great skua collision mortality (WoW = the Project).

SPA	Annual mortality	Seabirds count	Change in background mortality rate (%) against Seabirds count	RSPB 2023	Change in background mortality rate (%) against RSPB counts (2023)
Fair Isle SPA	0.006	860	0.00071	306	0.00199
Fetlar	0.013	1708	0.00076	506	0.00258
Foula SPA	0.037	3692	0.00101	616	0.00605
Handa SPA	0.001	566	0.00015	168	0.00050
Hermaness, Saxa Vord and Valla Field SPA	0.022	2060	0.00106	448	0.00486
Hoy SPA – West of Orkney OWF	0.052	2810	0.00185	514	0.01014
Hoy SPA – West of Orkney OWF + Berwick Bank OWF	0.102	2810	0.00363	514	0.01984
Noss SPA	0.010	952	0.00109	138	0.00752
St Kilda SPA	0.000	422	0.00001	158	0.00002
Ronas Hill	0.004	380	0.00111	194	0.00217

3.9 Summary of Information that is taken forward to next stage (PVA)

142. A summary of which species and SPAs require further assessment using PVA is provided in **Table 3-20**.

Table 3-20. SPAs and species for which a PVA has been undertaken for West of Orkney (WoW) alone and in-combination ('In-comb'). Note that if an in-combination PVA was run then project alone impact(s) have also been included as additional scenarios.

SPA	Kittiwake		Gannet		Great black-backed gull		Guillemot		Razorbill		Puffin	
	WoW	In-comb	WoW	In-comb	WoW	In-comb	WoW	In-comb	WoW	In-comb	WoW	In-comb
Buchan Ness to Collieston Coast SPA		X										
Calf of Eday SPA					X			X				
Cape Wrath SPA	X	X						X		X		
Copinsay SPA					X			X				
Coquest Island SPA												X
East Caithness Cliffs SPA		X			X			X		X		
Fair Isle SPA				X				X				X
Farne Islands		X										X
Flamborough and Filey Coast		X		X								
Forth Islands		X		X								X
Foula SPA												X
Fowlsheugh SPA		X										
Handa SPA		X						X		X		
Hermaness, Saxa Vord and Valla Field SPA				X								X
Hoy SPA	X	X			X			X				
Marwick Head SPA	X	X						X				
North Caithness Cliffs SPA	X	X						X		X		
Noss SPA				X								
Rousay SPA	X	X						X				
St Abbs Head to Fast Castle		X										
St Kilda SPA				X								
Sule Skerry and Sule Stack			X	X			X	X			X	X

SPA	Kittiwake		Gannet		Great black-backed gull		Guillemot		Razorbill		Puffin	
	WoW	In-comb	WoW	In-comb	WoW	In-comb	WoW	In-comb	WoW	In-comb	WoW	In-comb
Troup, Pennan and Lions Head		X										
West Westray SPA	X	X						X				

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ANNEX A. APPORTIONED IMPACTS

Table 3-21. (1/3) Kittiwake annual collisions (birds per annum) apportioned to SPAs (WoW = the Project).

Project	Ailsa Craig	Buchan Ness to Collieston Coast	Calf of Eday	Canna and Sanday	Cape Wrath	Copinsay	East Caithness Cliffs	Fair Isle	Farne Islands	Flamborough and Filey Coast	Flannan Isles
WoW	0.00	0.93	0.07	0.01	2.11	0.12	4.44	0.06	0.23	2.46	0.01
PFOWF	0.00	0.02	0.00	0.00	0.01	0.00	0.16	0.00	0.00	0.05	0.00
BOWL	0.00	1.02	0.06	0.01	0.05	0.08	33.69	0.05	0.24	2.52	0.00
Moray East	0.00	0.71	0.03	0.01	0.06	0.07	13.77	0.03	0.12	1.12	0.00
Moray West	0.00	0.97	0.03	0.01	0.11	0.08	24.67	0.03	0.14	1.28	0.01
Blyth Demonstration Site	0.00	0.07	0.00	0.00	0.00	0.00	0.19	0.00	0.13	0.44	0.00
Dogger Bank A & B	0.00	6.93	0.41	0.01	0.10	0.37	22.33	0.43	4.79	114.01	0.01
Dogger Bank C & Sofia	0.00	4.98	0.30	0.01	0.07	0.26	16.06	0.31	3.54	60.47	0.01
Dudgeon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dudgeon & Sheringham Extension Project	0.00	0.10	0.01	0.00	0.00	0.01	0.31	0.01	0.03	3.63	0.00
East Anglia ONE	0.00	2.94	0.17	0.00	0.04	0.16	9.46	0.18	0.81	9.29	0.01
East Anglia ONE North	0.00	0.16	0.01	0.00	0.00	0.01	0.51	0.01	0.04	14.30	0.00
East Anglia THREE	0.00	1.55	0.09	0.00	0.02	0.08	5.01	0.10	0.43	6.57	0.00
East Anglia TWO	0.00	0.19	0.01	0.00	0.00	0.01	0.62	0.01	0.05	10.59	0.00
EOWDC	0.00	3.92	0.01	0.00	0.00	0.01	0.34	0.01	0.03	0.29	0.00
Galloper	0.00	0.91	0.05	0.00	0.01	0.05	2.95	0.06	0.25	5.13	0.00
Greater Gabbard	0.00	0.39	0.02	0.00	0.01	0.02	1.26	0.02	0.11	1.65	0.00
Gunfleet Sands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hornsea Project Four	0.00	0.25	0.02	0.00	0.00	0.01	0.82	0.02	0.27	26.15	0.00
Hornsea Project One	0.00	1.10	0.07	0.00	0.02	0.06	3.55	0.07	0.55	18.32	0.00
Hornsea Project Two	0.00	0.16	0.01	0.00	0.00	0.01	0.51	0.01	0.13	6.11	0.00
Hornsea Project Three	0.00	0.65	0.04	0.00	0.01	0.03	2.10	0.04	0.18	28.67	0.00

Project	Ailsa Craig	Buchan Ness to Collieston Coast	Calf of Eday	Canna and Sanday	Cape Wrath	Copinsay	East Caithness Cliffs	Fair Isle	Farne Islands	Flamborough and Filey Coast	Flannan Isles
Humber Gateway	0.00	0.06	0.00	0.00	0.00	0.00	0.19	0.00	0.02	0.65	0.00
Hywind Scotland	0.00	1.20	0.02	0.00	0.07	0.09	2.04	0.03	0.06	0.13	0.00
Inch Cape	0.01	1.13	0.02	0.01	0.03	0.03	1.53	0.02	0.38	1.51	0.00
Kentish Flats Extension	0.00	0.07	0.00	0.00	0.00	0.00	0.23	0.00	0.02	0.22	0.00
Kincardine	0.00	1.33	0.01	0.00	0.01	0.01	0.52	0.01	0.06	0.40	0.00
Lincs, Lynn & Inner Dowsing	0.00	0.02	0.00	0.00	0.00	0.00	0.06	0.00	0.01	0.53	0.00
London Array	0.00	0.06	0.00	0.00	0.00	0.00	0.19	0.00	0.02	0.66	0.00
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neart na Gaoithe	0.00	0.21	0.01	0.00	0.01	0.01	0.42	0.01	0.14	0.44	0.00
Norfolk Boreas	0.00	0.63	0.04	0.00	0.01	0.03	2.04	0.04	0.17	6.67	0.00
Norfolk Vanguard	0.00	0.55	0.03	0.00	0.01	0.03	1.78	0.03	0.15	9.29	0.00
Race Bank	0.00	0.40	0.02	0.00	0.01	0.02	1.30	0.02	0.12	1.68	0.00
Rampion	0.00	1.02	0.06	0.00	0.01	0.05	3.28	0.06	0.28	3.05	0.00
Seagreen (Alpha, Bravo and Phase1A)	0.02	5.63	0.19	0.03	0.09	0.18	10.55	0.19	1.48	10.07	0.01
Sheringham Shoal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Teesside	0.01	0.36	0.02	0.00	0.00	0.02	1.15	0.02	0.47	13.45	0.00
Thanet	0.00	0.02	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.05	0.00
Triton Knoll	0.00	2.62	0.16	0.00	0.04	0.14	8.45	0.16	0.79	16.38	0.00
Westermost Rough	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forthwind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Berwick Bank	0.16	19.75	0.29	0.21	0.07	0.40	21.60	0.30	29.09	29.83	0.01
Greenvolt	0.00	1.08	0.01	0.00	0.02	0.02	1.01	0.02	0.08	0.53	0.00
Salamander	0.00	3.97	0.00	0.00	0.02	0.01	0.50	0.00	0.04	0.00	0.00

Table 3-22. (2/3) Kittiwake annual collisions apportioned to SPAs (WoW = the Project).

Project	Forth Islands	Foula	Fowlsheugh	Handa	Hermaness, Saxa Vord and Valla Field	Hoy	Marwick Head	Mingulay and Berneray	North Caithness Cliffs	North Colonsay and Western Cliffs	North Rona and Sula Sgeir
WoW	0.22	0.03	0.71	0.43	0.03	0.19	0.30	0.01	3.53	0.01	0.04
PFOWF	0.01	0.00	0.02	0.01	0.00	0.00	0.00	0.00	1.77	0.00	0.00
BOWL	0.23	0.02	0.75	0.04	0.03	0.04	0.05	0.00	1.67	0.01	0.00
Moray East	0.12	0.01	0.47	0.04	0.01	0.03	0.04	0.00	1.34	0.01	0.00
Moray West	0.16	0.01	0.67	0.10	0.01	0.04	0.05	0.01	1.51	0.03	0.01
Blyth Demonstration Site	0.04	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
Dogger Bank A & B	3.35	0.18	5.16	0.02	0.22	0.22	0.29	0.02	5.61	0.05	0.01
Dogger Bank C & Sofia	1.23	0.13	3.71	0.01	0.16	0.16	0.21	0.01	4.03	0.04	0.01
Dudgeon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dudgeon & Sheringham Extension Project	0.02	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00
East Anglia ONE	0.73	0.08	2.19	0.01	0.09	0.09	0.12	0.01	2.38	0.02	0.00
East Anglia ONE North	0.04	0.00	0.12	0.00	0.00	0.00	0.01	0.00	0.13	0.00	0.00
East Anglia THREE	0.38	0.04	1.16	0.00	0.05	0.05	0.07	0.00	1.26	0.01	0.00
East Anglia TWO	0.05	0.01	0.14	0.00	0.01	0.01	0.01	0.00	0.16	0.00	0.00
EOWDC	0.03	0.00	0.42	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00
Galloper	0.23	0.02	0.68	0.00	0.03	0.03	0.04	0.00	0.74	0.01	0.00
Greater Gabbard	0.10	0.01	0.29	0.00	0.01	0.01	0.02	0.00	0.32	0.00	0.00
Gunfleet Sands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hornsea Project Four	0.06	0.01	0.19	0.00	0.01	0.01	0.01	0.00	0.20	0.00	0.00
Hornsea Project One	0.27	0.03	0.82	0.00	0.03	0.03	0.05	0.00	0.89	0.01	0.00
Hornsea Project Two	0.04	0.00	0.12	0.00	0.00	0.00	0.01	0.00	0.13	0.00	0.00
Hornsea Project Three	0.16	0.02	0.49	0.00	0.02	0.02	0.03	0.00	0.53	0.00	0.00
Humber Gateway	0.01	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00

Project	Forth Islands	Foula	Fowlsheugh	Handa	Hermaness, Saxa Vord and Valla Field	Hoy	Marwick Head	Mingulay and Berneray	North Caithness Cliffs	North Colonsay and Western Cliffs	North Rona and Sula Sgeir
Hywind Scotland	0.09	0.01	0.55	0.06	0.00	0.02	0.04	0.00	0.45	0.00	0.01
Inch Cape	2.89	0.01	6.39	0.02	0.01	0.01	0.02	0.00	0.36	0.04	0.00
Kentish Flats Extension	0.02	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00
Kincardine	0.10	0.00	6.08	0.01	0.00	0.00	0.01	0.00	0.12	0.01	0.00
Lincs, Lynn & Inner Dowsing	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
London Array	0.01	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neart na Gaoithe	3.72	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.10	0.01	0.00
Norfolk Boreas	0.16	0.02	0.47	0.00	0.02	0.02	0.03	0.00	0.51	0.00	0.00
Norfolk Vanguard	0.14	0.01	0.41	0.00	0.02	0.02	0.02	0.00	0.45	0.00	0.00
Race Bank	0.10	0.01	0.30	0.00	0.01	0.01	0.02	0.00	0.33	0.00	0.00
Rampion	0.25	0.03	0.76	0.00	0.03	0.03	0.04	0.00	0.82	0.01	0.00
Seagreen (Alpha, Bravo and Phase1A)	3.41	0.08	25.64	0.06	0.09	0.10	0.14	0.01	2.58	0.09	0.01
Sheringham Shoal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Teesside	0.23	0.01	0.47	0.00	0.01	0.01	0.01	0.00	0.29	0.00	0.00
Thanet	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Triton Knoll	0.65	0.07	1.95	0.01	0.08	0.08	0.11	0.01	2.12	0.02	0.00
Westermost Rough	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forthwind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Berwick Bank	21.56	0.13	56.96	0.48	0.15	0.19	0.21	0.01	4.95	0.70	0.01
Greenvolt	0.09	0.01	0.49	0.02	0.01	0.01	0.02	0.00	0.23	0.00	0.00
Salamander	0.07	0.00	0.71	0.02	0.00	0.00	0.01	0.00	0.09	0.00	0.00

Table 3-23. (3/3) Kittiwake annual collisions apportioned to SPAs (WoW = the Project).

Project	Noss SPA	Rousay SPA	Rum SPA	Shiant Isles SPA	St Abbs Head to Fast Castle	St Kilda SPA	Sumburgh Head SPA	Troup, Pennan and Lions Head	West Westray SPA
WoW	0.03	0.16	0.01	0.02	0.22	0.00	0.02	1.09	1.08
PFOWF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02
BOWL	0.03	0.12	0.00	0.01	0.24	0.00	0.02	1.35	0.85
Moray East	0.02	0.06	0.00	0.01	0.12	0.00	0.01	1.20	0.41
Moray West	0.02	0.07	0.01	0.01	0.16	0.00	0.01	1.71	0.49
Blyth Demonstration Site	0.00	0.01	0.00	0.00	0.06	0.00	0.00	0.08	0.06
Dogger Bank A & B	0.28	0.97	0.01	0.01	4.31	0.01	0.12	8.23	6.66
Dogger Bank C & Sofia	0.20	0.70	0.01	0.00	1.35	0.01	0.08	5.92	4.79
Dudgeon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dudgeon & Sheringham Extension Project	0.00	0.01	0.00	0.00	0.03	0.00	0.00	0.11	0.09
East Anglia ONE	0.12	0.41	0.00	0.00	0.80	0.00	0.05	3.49	2.82
East Anglia ONE North	0.01	0.02	0.00	0.00	0.04	0.00	0.00	0.19	0.15
East Anglia THREE	0.06	0.22	0.00	0.00	0.42	0.00	0.03	1.85	1.49
East Anglia TWO	0.01	0.03	0.00	0.00	0.05	0.00	0.00	0.23	0.18
EOWDC	0.00	0.01	0.00	0.00	0.03	0.00	0.00	0.18	0.09
Galloper	0.04	0.13	0.00	0.00	0.25	0.00	0.02	1.09	0.88
Greater Gabbard	0.02	0.06	0.00	0.00	0.11	0.00	0.01	0.46	0.38
Gunfleet Sands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hornsea Project Four	0.01	0.04	0.00	0.00	0.24	0.00	0.00	0.30	0.24
Hornsea Project One	0.04	0.16	0.00	0.00	0.30	0.00	0.02	1.31	1.06
Hornsea Project Two	0.01	0.02	0.00	0.00	0.04	0.00	0.00	0.19	0.15
Hornsea Project Three	0.03	0.09	0.00	0.00	0.18	0.00	0.01	0.77	0.63
Humber Gateway	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.07	0.06

Project	Noss SPA	Rousay SPA	Rum SPA	Shiant Isles SPA	St Abbs Head to Fast Castle	St Kilda SPA	Sumburgh Head SPA	Troup, Pennan and Lions Head	West Westray SPA
Hywind Scotland	0.01	0.02	0.00	0.01	0.08	0.00	0.03	1.06	0.17
Inch Cape	0.02	0.06	0.01	0.01	1.07	0.00	0.01	0.71	0.38
Kentish Flats Extension	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.09	0.07
Kincardine	0.01	0.02	0.00	0.00	0.08	0.00	0.00	0.32	0.13
Lincs, Lynn & Inner Dowsing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
London Array	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.07	0.06
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neart na Gaoithe	0.00	0.02	0.00	0.00	0.75	0.00	0.00	0.18	0.11
Norfolk Boreas	0.03	0.09	0.00	0.00	0.17	0.00	0.01	0.75	0.61
Norfolk Vanguard	0.02	0.08	0.00	0.00	0.15	0.00	0.01	0.66	0.53
Race Bank	0.02	0.06	0.00	0.00	0.11	0.00	0.01	0.48	0.39
Rampion	0.04	0.14	0.00	0.00	0.28	0.00	0.02	1.21	0.98
Seagreen (Alpha, Bravo and Phase1A)	0.12	0.43	0.02	0.02	2.51	0.00	0.05	4.38	2.96
Sheringham Shoal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Teesside	0.01	0.05	0.00	0.00	0.34	0.00	0.01	0.42	0.34
Thanet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02
Triton Knoll	0.11	0.37	0.00	0.00	0.71	0.00	0.04	3.11	2.52
Westermost Rough	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forthwind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Berwick Bank	0.20	0.69	0.12	0.00	43.89	0.01	0.08	11.05	4.74
Greenvolt	0.01	0.03	0.00	0.00	0.10	0.00	0.01	0.65	0.20
Salamander	0.00	0.00	0.00	0.00	0.07	0.00	0.00	1.11	0.02

Table 3-24. (1/3) Kittiwake annual low displacement (30% x 1%) apportioned to SPAs (WoW = the Project).

Project	Ailsa Craig	Buchan Ness to Collieston Coast	Calf of Eday	Canna and Sanday	Cape Wrath	Copinsay	East Caithness Cliffs	Fair Isle	Farne Islands	Flamborough and Filey Coast	Flannan Isles
WoW	0.00	0.15	0.01	0.00	0.35	0.02	0.73	0.01	0.04	0.40	0.00
PFOWF	0.00	0.00	0.00	0.00	0.01	0.00	0.05	0.00	0.00	0.00	0.00
BOWL	0.00	0.14	0.01	0.00	0.00	0.01	2.20	0.01	0.04	0.38	0.00
Moray East	0.00	0.06	0.00	0.00	0.01	0.01	2.36	0.00	0.00	0.00	0.00
Moray West	0.00	0.34	0.01	0.00	0.04	0.03	9.05	0.01	0.05	0.43	0.00
EOWDC	0.00	0.85	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Hywind Scotland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Inch Cape	0.00	0.48	0.01	0.00	0.01	0.01	0.54	0.01	0.17	0.55	0.00
Kincardine	0.00	0.08	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00
Neart na Gaoithe	0.00	0.16	0.01	0.00	0.00	0.01	0.38	0.01	0.09	0.38	0.00
Seagreen (Alpha, Bravo and Phase1A)	0.00	0.66	0.02	0.00	0.01	0.02	1.06	0.02	0.17	1.02	0.00
Forthwind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Berwick Bank	0.03	3.98	0.10	0.03	0.02	0.11	6.07	0.10	4.89	7.21	0.00
Greenvolt	0.00	0.17	0.00	0.00	0.00	0.00	0.08	0.00	0.01	0.00	0.00
Salamander	0.00	3.14	0.00	0.00	0.02	0.01	0.45	0.00	0.04	0.05	0.00

Table 3-25. (2/3) Kittiwake annual low displacement (30% x 1%) apportioned to SPAs (WoW = the Project).

Project	Forth Islands	Foula SPA	Fowlsheugh SPA	Handa SPA	Hermaness, Saxa Vord and Valla Field SPA	Hoy SPA	Marwick Head SPA	Mingulay and Berneray SPA	North Caithness Cliffs SPA	North Colonsay and Western Cliffs	North Rona and Sula Sgeir SPA
WoW	0.04	0.00	0.12	0.07	0.00	0.03	0.05	0.00	0.59	0.00	0.01
PFOWF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00
BOWL	0.03	0.00	0.10	0.00	0.00	0.00	0.01	0.00	0.16	0.00	0.00
Moray East	0.01	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.20	0.00	0.00
Moray West	0.06	0.00	0.24	0.04	0.00	0.01	0.02	0.00	0.55	0.01	0.00
EOWDC	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hywind Scotland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Inch Cape	1.37	0.00	3.02	0.01	0.00	0.00	0.01	0.00	0.12	0.02	0.00
Kincardine	0.00	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.37	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neart na Gaoithe	2.04	0.00	0.31	0.00	0.00	0.00	0.00	0.00	0.09	0.01	0.00
Seagreen (Alpha, Bravo and Phase1A)	0.45	0.01	3.51	0.01	0.01	0.01	0.01	0.00	0.26	0.01	0.00
Forthwind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Berwick Bank	3.66	0.04	9.73	0.08	0.05	0.06	0.07	0.00	1.45	0.12	0.00
Greenvolt	0.01	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
Salamander	0.06	0.00	0.57	0.02	0.00	0.00	0.01	0.00	0.09	0.00	0.00

Table 3-26. (3/3) Kittiwake annual low displacement (30% x 1%) apportioned to SPAs (WoW = the Project).

Project	Noss SPA	Rousay SPA	Rum SPA	Shiant Isles SPA	St Abbs Head to Fast Castle	St Kilda SPA	Sumburgh Head SPA	Troup, Pennan and Lions Head	West Westray SPA
WoW	0.01	0.03	0.00	0.00	0.04	0.00	0.00	0.18	0.18
PFOWF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BOWL	0.01	0.02	0.00	0.00	0.04	0.00	0.00	0.17	0.12
Moray East	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.01
Moray West	0.01	0.02	0.00	0.00	0.06	0.00	0.01	0.62	0.17
EOWDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Hywind Scotland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Inch Cape	0.01	0.02	0.00	0.00	0.50	0.00	0.00	0.27	0.13
Kincardine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00
Neart na Gaoithe	0.00	0.02	0.00	0.00	0.42	0.00	0.00	0.15	0.10
Seagreen (Alpha, Bravo and Phase1A)	0.01	0.04	0.00	0.00	0.32	0.00	0.00	0.46	0.29
Forthwind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Berwick Bank	0.06	0.22	0.02	0.00	7.25	0.00	0.03	2.73	1.54
Greenvolt	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.09	0.01
Salamander	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.89	0.04

Table 3-27. (1/3) Kittiwake annual high displacement (30% x 3%) apportioned to SPAs (WoW = the Project).

Project	Ailsa Craig	Buchan Ness to Collieston Coast	Calf of Eday	Canna and Sanday	Cape Wrath	Copinsay	East Caithness Cliffs	Fair Isle	Farne Islands	Flamborough and Filey Coast	Flannan Isles
WoW	0.00	0.45	0.04	0.01	1.18	0.06	2.26	0.03	0.11	1.17	0.01
PFOWF	0.00	0.02	0.00	0.00	0.02	0.00	0.19	0.00	0.00	0.05	0.00
BOWL	0.00	0.46	0.03	0.00	0.01	0.03	7.19	0.03	0.12	1.26	0.00
Moray East	0.00	0.19	0.00	0.00	0.03	0.03	7.07	0.00	0.01	0.00	0.00
Moray West	0.00	1.06	0.04	0.01	0.13	0.09	26.86	0.04	0.16	1.43	0.01
EOWDC	0.00	2.55	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00
Hywind Scotland	0.00	0.10	0.00	0.00	0.01	0.01	0.16	0.00	0.00	0.00	0.00
Inch Cape	0.01	1.46	0.03	0.01	0.03	0.03	1.75	0.03	0.50	1.75	0.00
Kincardine	0.00	0.15	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.02	0.00
Neart na Gaoithe	0.00	0.52	0.02	0.00	0.01	0.02	1.22	0.02	0.28	1.22	0.00
Seagreen (Alpha, Bravo and Phase1A)	0.01	1.94	0.05	0.01	0.03	0.05	3.16	0.05	0.51	3.04	0.00
Forthwind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Berwick Bank	0.08	11.97	0.29	0.10	0.07	0.32	18.25	0.30	14.73	21.68	0.01
Greenvolt	0.00	0.39	0.00	0.00	0.01	0.01	0.30	0.00	0.02	0.13	0.00
Salamander	0.00	9.40	0.01	0.00	0.06	0.03	1.28	0.01	0.11	0.11	0.00

Table 3-28. (2/3) Kittiwake annual high displacement (30% x 3%) apportioned to SPAs (WoW = the Project).

Project	Forth Islands	Foula SPA	Fowlsheugh SPA	Handa SPA	Hermaness, Saxa Vord and Valla Field SPA	Hoy SPA	Marwick Head SPA	Mingulay and Berneray SPA	North Caithness Cliffs SPA	North Colonsay and Western Cliffs	North Rona and Sula Sgeir SPA
WoW	0.11	0.01	0.35	0.24	0.01	0.11	0.16	0.01	1.92	0.00	0.02
PFOWF	0.01	0.00	0.02	0.01	0.00	0.00	0.00	0.00	2.21	0.00	0.00
BOWL	0.11	0.01	0.34	0.01	0.01	0.02	0.02	0.00	0.53	0.00	0.00
Moray East	0.02	0.00	0.11	0.02	0.00	0.01	0.01	0.00	0.59	0.01	0.00
Moray West	0.18	0.02	0.74	0.11	0.02	0.04	0.05	0.01	1.65	0.03	0.01
EOWDC	0.01	0.00	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hywind Scotland	0.01	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00
Inch Cape	4.01	0.01	8.86	0.03	0.01	0.02	0.02	0.00	0.40	0.05	0.00
Kincardine	0.01	0.00	0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.74	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neart na Gaoithe	6.46	0.01	0.98	0.01	0.01	0.01	0.01	0.00	0.30	0.02	0.00
Seagreen (Alpha, Bravo and Phase1A)	1.30	0.02	10.21	0.03	0.03	0.03	0.04	0.00	0.76	0.04	0.00
Forthwind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Berwick Bank	11.02	0.13	29.34	0.24	0.15	0.17	0.20	0.01	4.35	0.36	0.01
Greenvolt	0.03	0.00	0.17	0.01	0.00	0.00	0.00	0.00	0.07	0.00	0.00
Salamander	0.18	0.00	1.71	0.05	0.00	0.01	0.02	0.00	0.24	0.00	0.00

Table 3-29. (3/3) Kittiwake annual high displacement (30% x 3%) apportioned to SPAs (WoW = the Project).

Project	Noss SPA	Rousay SPA	Rum SPA	Shiant Isles SPA	St Abbs Head to Fast Castle	St Kilda SPA	Sumburgh Head SPA	Troup, Pennan and Lions Head	West Westray SPA
WoW	0.02	0.08	0.00	0.01	0.11	0.00	0.01	0.53	0.54
PFOWF	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02
BOWL	0.02	0.06	0.00	0.00	0.12	0.00	0.01	0.57	0.41
Moray East	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.43	0.03
Moray West	0.02	0.08	0.01	0.01	0.18	0.00	0.02	1.88	0.55
EOWDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00
Hywind Scotland	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.08	0.01
Inch Cape	0.02	0.06	0.01	0.01	1.46	0.00	0.01	0.85	0.42
Kincardine	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.01	0.00
Neart na Gaoithe	0.01	0.05	0.00	0.00	1.34	0.00	0.01	0.48	0.34
Seagreen (Alpha, Bravo and Phase1A)	0.04	0.13	0.01	0.01	0.93	0.00	0.01	1.36	0.86
Forthwind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Berwick Bank	0.19	0.68	0.06	0.00	21.87	0.01	0.08	8.22	4.62
Greenvolt	0.00	0.01	0.00	0.00	0.03	0.00	0.00	0.22	0.05
Salamander	0.00	0.01	0.00	0.01	0.17	0.00	0.01	2.66	0.09

Table 3-30. Gannet annual collisions apportioned to SPAs (WoW = the Project).

Project	Ailsa Craig	Fair Isle	Flamborough and Filey Coast	Forth Islands	Hermaness, Saxa Vord and Valla Field	North Rona and Sula Sgeir	Noss	St Kilda	Sule Skerry and Sule Stack
WoW	0.00	0.15	0.50	2.50	0.92	0.03	0.37	0.21	17.48
PFOWF	0.05	0.02	0.00	0.17	0.04	0.11	0.03	0.10	0.47
BOWL	1.76	1.69	3.32	22.86	6.66	1.44	3.10	3.33	2.45
Moray East	3.94	2.40	2.97	29.70	6.59	2.57	3.58	5.10	4.55
Moray West	0.51	0.22	0.25	3.11	0.57	0.32	0.32	0.62	0.53
Blyth Demonstration Site	0.24	0.10	0.59	2.85	0.58	0.01	0.23	0.05	0.01
Dogger Bank A & B	4.85	2.35	25.16	54.84	14.59	0.34	5.85	2.20	0.17
Dogger Bank C & Sofia	1.12	0.38	3.47	9.88	2.36	0.04	0.95	0.26	0.02
Dudgeon	1.38	0.96	9.23	18.78	5.94	0.16	2.38	1.02	0.08
Dudgeon & Sheringham Extension Project	0.02	0.01	0.15	0.20	0.05	0.00	0.02	0.02	0.00
East Anglia ONE	0.00	1.94	8.21	33.73	12.01	0.53	4.82	3.42	0.27
East Anglia THREE	0.00	0.58	4.38	9.55	3.57	0.12	1.43	0.76	0.06
East Anglia ONE North	0.00	0.17	3.29	6.24	1.08	0.04	0.43	0.29	0.02
East Anglia TWO	0.00	0.40	7.80	6.84	2.51	0.09	1.01	0.60	0.05
EOWDC	0.14	0.08	0.27	2.81	0.46	0.05	0.19	0.21	0.04
Galloper	0.00	0.71	11.22	11.60	4.43	0.13	1.78	0.81	0.06
Greater Gabbard	0.00	0.23	7.68	3.75	1.45	0.04	0.58	0.24	0.02
Gunfleet Sands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hornsea Project Four	0.59	0.11	7.40	3.62	0.70	0.02	0.28	0.13	0.01
Hornsea Project One	0.17	0.21	1.47	3.76	1.28	0.03	0.51	0.18	0.01
Hornsea Project Two	0.37	0.33	3.08	6.35	2.02	0.06	0.81	0.37	0.03
Hornsea Project Three	0.66	0.18	2.94	4.68	1.11	0.02	0.45	0.13	0.01
Humber Gateway	0.05	0.06	1.00	0.98	0.36	0.00	0.14	0.03	0.00
Hywind Scotland	0.25	0.32	0.18	1.82	0.52	0.12	0.36	0.26	0.18

Project	Ailsa Craig	Fair Isle	Flamborough and Filey Coast	Forth Islands	Hermaness, Saxa Vord and Valla Field	North Rona and Sula Sgeir	Noss	St Kilda	Sule Skerry and Sule Stack
Inch Cape	0.53	0.18	0.61	54.93	1.03	0.06	0.42	0.29	0.05
Kentish Flats Extension	0.00	0.00	1.49	0.00	0.00	0.00	0.00	0.00	0.00
Kincardine	0.03	0.04	0.12	0.98	0.23	0.01	0.09	0.04	0.01
Lincs, Lynn & Inner Dowsing	0.11	0.06	0.80	1.12	0.36	0.00	0.14	0.03	0.00
London Array	0.00	0.06	1.16	0.87	0.36	0.00	0.14	0.03	0.00
Levenmouth Demonstration Turbine	0.01	0.00	0.00	2.95	0.00	0.00	0.00	0.00	0.00
Neart na Gaoithe	0.09	0.25	0.80	47.79	1.57	0.03	0.63	0.21	0.02
Norfolk Boreas	0.00	0.27	4.15	8.07	1.66	0.05	0.67	0.34	0.03
Norfolk Vanguard	0.00	0.37	3.21	8.17	2.31	0.08	0.93	0.50	0.04
Race Bank	1.78	0.25	11.63	8.42	1.57	0.05	0.63	0.31	0.02
Rampion	0.00	0.92	21.05	16.19	5.74	0.26	2.30	1.67	0.13
Seagreen (Alpha, Bravo and Phase1A)	1.76	0.39	1.42	79.85	2.13	0.20	0.91	0.81	0.19
Sheringham Shoal	0.91	0.06	4.09	3.10	0.34	0.02	0.14	0.10	0.01
Teesside	0.25	0.03	1.44	1.37	0.17	0.01	0.07	0.05	0.00
Thanet	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00
Triton Knoll	1.09	1.54	14.54	27.65	9.58	0.26	3.84	1.67	0.13
Westermost Rough	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forthwind	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00
Berwick Bank	2.48	0.41	2.10	84.23	2.22	0.27	0.96	1.23	0.24
Greenvolt	0.69	0.32	0.39	5.11	0.85	0.21	0.51	0.52	0.27
Salamander	0.18	0.08	0.16	1.89	0.30	0.05	0.15	0.15	0.06

Table 3-31. Gannet annual low displacement (70% x 1%) apportioned to SPAs (WoW = the Project).

Project	Ailsa Craig	Fair Isle	Flamborough and Filey Coast	Forth Islands	Hermaness, Saxa Vord and Valla Field	North Rona and Sula Sgeir	Noss	St Kilda	Sule Skerry and Sule Stack
WoW	0.00	0.15	0.53	2.63	0.95	0.04	0.38	0.25	2.97
PFOWF	0.03	0.01	0.00	0.08	0.02	0.05	0.02	0.05	0.24
BOWL	0.05	0.02	0.01	0.22	0.03	0.04	0.02	0.06	0.07
Moray East	0.19	0.12	0.15	1.45	0.32	0.13	0.17	0.26	0.22
Moray West	1.02	0.40	0.38	5.64	0.91	0.63	0.56	1.20	1.06
Blyth Demonstration Site	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dogger Bank A & B	0.48	0.26	2.64	6.10	1.60	0.06	0.64	0.37	0.03
Dogger Bank C & Sofia	1.17	0.16	2.92	6.73	0.98	0.03	0.39	0.16	0.01
Dudgeon	0.02	0.00	0.12	0.12	0.03	0.00	0.01	0.00	0.00
Dudgeon & Sheringham Extension Project	0.18	0.07	1.15	1.65	0.44	0.02	0.18	0.12	0.01
East Anglia ONE	0.00	0.36	1.83	6.36	2.25	0.10	0.90	0.67	0.05
East Anglia THREE	0.00	0.20	2.09	3.31	1.26	0.04	0.51	0.23	0.02
East Anglia ONE North	0.00	0.05	0.41	1.18	0.32	0.01	0.13	0.09	0.01
East Anglia TWO	0.00	0.12	1.05	1.94	0.72	0.03	0.29	0.16	0.01
EOWDC	0.01	0.00	0.00	0.11	0.01	0.00	0.00	0.01	0.00
Galloper	0.00	0.13	1.68	2.15	0.81	0.03	0.32	0.17	0.01
Greater Gabbard	0.00	0.02	0.94	0.35	0.14	0.00	0.06	0.01	0.00
Gunfleet Sands	0.00	0.00	0.01	0.04	0.02	0.00	0.01	0.00	0.00
Hornsea Project Four	0.21	0.14	2.97	2.86	0.86	0.02	0.34	0.14	0.01
Hornsea Project One	0.27	0.11	1.63	2.49	0.66	0.02	0.26	0.13	0.01
Hornsea Project Two	0.17	0.13	1.37	2.70	0.80	0.03	0.32	0.21	0.02
Hornsea Project Three	0.62	0.18	2.79	4.59	1.09	0.03	0.44	0.18	0.01

Project	Ailsa Craig	Fair Isle	Flamborough and Filey Coast	Forth Islands	Hermaness, Saxa Vord and Valla Field	North Rona and Sula Sgeir	Noss	St Kilda	Sule Skerry and Sule Stack
Humber Gateway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hywind Scotland	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00
Inch Cape	0.08	0.10	0.35	9.81	0.63	0.03	0.26	0.15	0.02
Kentish Flats Extension	0.00	0.00	0.42	0.00	0.00	0.00	0.00	0.00	0.00
Kincardine	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00
Lincs, Lynn & Inner Dowsing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
London Array	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00
Neart na Gaoithe	0.01	0.10	0.31	8.41	0.60	0.02	0.24	0.10	0.01
Norfolk Boreas	0.00	0.25	2.82	6.33	1.54	0.05	0.62	0.32	0.02
Norfolk Vanguard	0.00	0.30	1.49	5.60	1.89	0.07	0.76	0.45	0.04
Race Bank	0.03	0.01	0.23	0.20	0.05	0.00	0.02	0.01	0.00
Rampion	0.00	0.06	0.20	1.00	0.35	0.02	0.14	0.11	0.01
Seagreen (Alpha, Bravo and Phase1A)	0.23	0.13	0.43	11.63	0.74	0.04	0.31	0.20	0.03
Sheringham Shoal	0.02	0.00	0.10	0.11	0.02	0.00	0.01	0.01	0.00
Teesside	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thanet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton Knoll	0.06	0.01	0.54	0.23	0.03	0.00	0.01	0.00	0.00
Westermost Rough	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forthwind	0.00	0.01	0.03	0.36	0.06	0.00	0.02	0.00	0.00
Berwick Bank	0.48	0.21	0.83	18.53	1.21	0.08	0.50	0.42	0.06
Greenvolt	0.07	0.04	0.07	0.67	0.16	0.02	0.08	0.05	0.03
Salamander	0.14	0.07	0.17	1.66	0.28	0.05	0.14	0.16	0.05

Table 3-32. Gannet annual high displacement (70% x 3%) apportioned to SPAs (WoW = the Project).

Project	Ailsa Craig	Fair Isle	Flamborough and Filey Coast	Forth Islands	Hermaness, Saxa Vord and Valla Field	North Rona and Sula Sgeir	Noss	St Kilda	Sule Skerry and Sule Stack
WoW	0.00	0.46	1.58	7.90	2.86	0.12	1.15	0.75	8.91
PFOWF	0.03	0.01	0.00	0.08	0.02	0.05	0.02	0.05	0.24
BOWL	0.15	0.07	0.03	0.67	0.09	0.11	0.07	0.18	0.20
Moray East	0.58	0.35	0.44	4.35	0.95	0.38	0.52	0.77	0.67
Moray West	3.06	1.21	1.15	16.91	2.74	1.90	1.67	3.60	3.17
Blyth Demonstration Site	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dogger Bank A & B	1.45	0.77	7.91	18.29	4.81	0.17	1.93	1.12	0.09
Dogger Bank C & Sofia	3.51	0.47	8.76	20.20	2.93	0.08	1.17	0.49	0.04
Dudgeon	0.07	0.01	0.35	0.37	0.08	0.00	0.03	0.01	0.00
Dudgeon & Sheringham Extension Project	0.54	0.21	3.45	4.95	1.31	0.05	0.53	0.35	0.03
East Anglia ONE	0.00	1.09	5.48	19.08	6.74	0.31	2.70	2.00	0.16
East Anglia THREE	0.00	0.61	6.26	9.92	3.79	0.11	1.52	0.70	0.05
East Anglia ONE North	0.00	0.16	1.24	3.53	0.97	0.04	0.39	0.26	0.02
East Anglia TWO	0.00	0.35	3.15	5.81	2.15	0.08	0.86	0.49	0.04
EOWDC	0.03	0.00	0.01	0.32	0.02	0.01	0.01	0.02	0.01
Galloper	0.00	0.39	5.03	6.44	2.42	0.08	0.97	0.50	0.04
Greater Gabbard	0.00	0.07	2.83	1.04	0.43	0.01	0.17	0.04	0.00
Gunfleet Sands	0.00	0.01	0.02	0.12	0.05	0.00	0.02	0.01	0.00
Hornsea Project Four	0.64	0.41	8.92	8.59	2.57	0.07	1.03	0.43	0.03
Hornsea Project One	0.81	0.32	4.90	7.48	1.97	0.06	0.79	0.38	0.03
Hornsea Project Two	0.51	0.39	4.10	8.10	2.40	0.10	0.96	0.63	0.05
Hornsea Project Three	1.86	0.53	8.37	13.78	3.28	0.08	1.31	0.54	0.04
Humber Gateway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hywind Scotland	0.01	0.01	0.01	0.07	0.02	0.00	0.01	0.01	0.01

Project	Ailsa Craig	Fair Isle	Flamborough and Filey Coast	Forth Islands	Hermaness, Saxa Vord and Valla Field	North Rona and Sula Sgeir	Noss	St Kilda	Sule Skerry and Sule Stack
Inch Cape	0.25	0.31	1.05	29.44	1.90	0.08	0.77	0.46	0.05
Kentish Flats Extension	0.00	0.00	1.25	0.00	0.00	0.00	0.00	0.00	0.00
Kincardine	0.00	0.00	0.01	0.07	0.02	0.00	0.01	0.01	0.00
Lincs, Lynn & Inner Dowsing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
London Array	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.24	0.00	0.00	0.00	0.00	0.00
Neart na Gaoithe	0.04	0.29	0.94	25.24	1.80	0.05	0.72	0.31	0.03
Norfolk Boreas	0.00	0.74	8.47	19.00	4.61	0.15	1.85	0.95	0.07
Norfolk Vanguard	0.00	0.91	4.48	16.81	5.66	0.21	2.27	1.35	0.11
Race Bank	0.10	0.02	0.68	0.60	0.14	0.00	0.06	0.02	0.00
Rampion	0.00	0.17	0.60	3.01	1.06	0.05	0.42	0.32	0.03
Seagreen (Alpha, Bravo and Phase1A)	0.69	0.38	1.30	34.89	2.23	0.12	0.92	0.60	0.10
Sheringham Shoal	0.06	0.01	0.31	0.32	0.06	0.00	0.02	0.02	0.00
Teesside	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Thanet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton Knoll	0.18	0.02	1.62	0.68	0.10	0.00	0.04	0.01	0.00
Westermost Rough	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forthwind	0.00	0.03	0.08	1.08	0.17	0.00	0.07	0.01	0.00
Berwick Bank	1.45	0.62	2.49	55.58	3.63	0.24	1.49	1.26	0.18
Greenvolt	0.20	0.13	0.22	2.00	0.47	0.06	0.24	0.16	0.08
Salamander	0.42	0.20	0.50	4.98	0.85	0.14	0.41	0.49	0.16

Table 3-33. Great black-backed gull annual collisions apportioned to SPAs (WoW = the Project).

Project	Calf of Eday SPA	Copinsay SPA	East Caithness Cliffs SPA	Hoy SPA
WoW	0.08	0.07	0.15	0.10
PFOWF	0.00	0.00	0.00	0.00
BOWL	0.19	0.53	3.48	0.30
Moray East	0.07	0.09	6.56	0.04
Moray West	0.03	0.02	1.15	0.02
Blyth Demonstration Site	0.03	0.02	0.88	0.01
Dogger Bank A & B	0.17	0.13	0.11	0.04
Dogger Bank C & Sofia	0.18	0.14	0.11	0.04
Dudgeon	0.00	0.00	0.00	0.00
Dudgeon & Sheringham Extension Project	0.00	0.00	0.00	0.00
East Anglia ONE	0.75	0.58	0.47	0.16
East Anglia ONE North	0.01	0.00	0.00	0.00
East Anglia THREE	0.23	0.18	0.14	0.05
East Anglia TWO	0.02	0.01	0.01	0.00
EOWDC	0.01	0.01	0.01	0.00
Galloper	0.13	0.10	0.08	0.03
Greater Gabbard	0.37	0.29	0.23	0.08
Gunfleet Sands	0.00	0.00	0.00	0.00
Hornsea Project Four	0.03	0.02	0.02	0.01
Hornsea Project One	0.44	0.34	0.27	0.09
Hornsea Project Two	0.11	0.09	0.07	0.02
Hornsea Project Three	0.17	0.13	0.11	0.04
Humber Gateway	0.02	0.02	0.02	0.01
Hywind Scotland	0.03	0.02	0.02	0.01

Project	Calf of Eday SPA	Copinsay SPA	East Caithness Cliffs SPA	Hoy SPA
Inch Cape	0.23	0.18	0.14	0.05
Kentish Flats Extension	0.00	0.00	0.00	0.00
Kincardine	0.00	0.00	0.00	0.00
Lincs, Lynn & Inner Dowsing	0.00	0.00	0.00	0.00
London Array	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.01	0.00	0.00	0.00
Neart na Gaoithe	0.04	0.03	0.03	0.01
Norfolk Boreas	0.18	0.14	0.11	0.04
Norfolk Vanguard	0.13	0.10	0.08	0.03
Race Bank	0.00	0.00	0.00	0.00
Rampion	0.13	0.10	0.08	0.03
Seagreen (Alpha, Bravo and Phase1A)	0.33	0.26	0.21	0.07
Sheringham Shoal	0.00	0.00	0.00	0.00
Teesside	0.22	0.17	0.13	0.05
Thanet	0.00	0.00	0.00	0.00
Triton Knoll	0.65	0.51	0.41	0.14
Westermost Rough	0.00	0.00	0.00	0.00
Forthwind	0.00	0.00	0.00	0.00
Berwick Bank	0.00	0.00	0.00	0.00
Greenvolt	0.04	0.03	0.03	0.01
Salamander	0.02	0.01	0.01	0.00

Table 3-34. (1/2) Guillemot annual low displacement (60% x 3%/1%) apportioned to SPAs (WoW = the Project).

Project	Calf of Eday	Cape Wrath	Copinsay	East Caithness Cliffs	Fair Isle	Handa	Hoy
WoW	0.13	1.46	0.71	5.70	0.70	2.09	0.35
PFOWF	0.02	0.34	0.13	1.48	0.11	0.40	0.13
BOWL	0.13	1.13	0.90	128.95	0.60	1.62	0.52
Moray East	0.07	0.21	0.85	83.26	0.22	0.30	0.50
Moray West	1.49	15.16	8.65	272.46	0.00	21.75	4.57
EOWDC	0.00	0.00	0.00	0.93	0.00	0.00	0.00
Hywind Scotland	0.19	0.00	1.15	6.52	1.01	0.00	0.51
Greenvolt	0.00	0.00	17.05	114.61	0.00	0.00	0.00
Salamander	0.00	0.00	0.00	48.85	0.00	0.00	0.00

Table 3-35. (2/2) Guillemot annual low displacement (60% x 3%/1%) apportioned to SPAs (WoW = the Project).

Project	Marwick Head	North Caithness Cliffs	North Rona and Sula Sgeir	Rousay	The Shiant Isles	Sule Skerry and Sule Stack	West Westray
WoW	0.46	1.49	0.29	0.23	0.35	76.39	1.10
PFOWF	0.10	10.04	0.05	0.04	0.00	0.10	0.19
BOWL	0.46	4.83	0.00	0.22	0.00	0.35	0.90
Moray East	0.27	6.53	0.00	0.13	0.00	0.20	0.24
Moray West	5.21	25.29	0.00	2.56	0.00	3.96	11.64
EOWDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hywind Scotland	0.61	1.70	0.00	0.32	0.00	0.00	1.25
Greenvolt	0.00	29.88	0.00	0.00	0.00	0.00	0.00
Salamander	0.00	12.73	0.00	0.00	0.00	0.00	0.00

Table 3-36. (1/2) Guillemot annual high displacement (60% x 5%/3%) apportioned to SPAs (WoW = the Project).

Project	Calf of Eday	Cape Wrath	Copinsay	East Caithness Cliffs	Fair Isle	Handa	Hoy
WoW	0.40	4.37	2.12	17.09	2.09	6.26	1.06
PFOWF	0.06	0.86	0.36	3.59	0.32	1.08	0.28
BOWL	0.35	3.40	2.24	220.83	1.72	4.87	1.23
Moray East	0.14	0.62	1.55	139.84	0.50	0.89	0.91
Moray West	4.34	45.48	24.23	533.26	0.00	65.24	12.53
EOWDC	0.00	0.00	0.00	2.80	0.00	0.00	0.00
Hywind Scotland	0.52	0.00	2.99	19.57	2.75	0.00	1.38
Greenvolt	0.00	0.00	47.34	343.84	0.00	0.00	0.00
Salamander	0.00	0.00	0.00	146.55	0.00	0.00	0.00

Table 3-37. (2/2) Guillemot annual high displacement (60% x 5%/3%) apportioned to SPAs (WoW = the Project).

Project	Marwick Head	North Caithness Cliffs	North Rona and Sula Sgeir	Rousay	The Shiant Isles	Sule Skerry and Sule Stack	West Westray
WoW	1.37	4.46	0.88	0.68	1.04	127.78	3.29
PFOWF	0.25	17.03	0.14	0.12	0.00	0.23	0.53
BOWL	1.24	9.59	0.00	0.61	0.00	0.93	2.64
Moray East	0.54	11.16	0.00	0.26	0.00	0.40	0.61
Moray West	15.04	62.79	0.00	7.39	0.00	11.38	34.62
EOWDC	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hywind Scotland	1.72	5.10	0.00	0.87	0.00	0.00	3.76
Greenvolt	0.00	89.63	0.00	0.00	0.00	0.00	0.00
Salamander	0.00	38.20	0.00	0.00	0.00	0.00	0.00

Table 3-38. (1/2) Razorbill annual low displacement (60% x 3%/1%) apportioned to SPAs (WoW = the Project).

Project	Cape Wrath SPA	East Caithness Cliffs SPA	Fair Isle SPA	Flamborough and Filey Coast	Flannan Isles SPA	Forth Islands	Foula SPA	Fowlsheugh SPA	Handa SPA
WoW	0.38	0.59	0.01	0.07	0.00	0.02	0.00	0.02	0.21
PFOWF	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.01
BOWL	0.01	8.26	0.04	0.42	0.00	0.11	0.02	0.15	0.02
Moray East	0.05	20.72	0.04	0.27	0.00	0.07	0.01	0.10	0.00
Moray West	0.08	25.70	0.14	1.48	0.00	0.39	0.05	0.52	0.19
Blyth Demonstration Site	0.00	0.08	0.01	0.89	0.00	0.02	0.00	0.02	0.00
Dogger Bank A & B	0.05	4.08	0.29	3.27	0.03	0.86	0.12	1.15	0.14
Dogger Bank C & Sofia	0.03	1.92	0.14	1.53	0.02	0.40	0.06	0.54	0.08
Dudgeon	0.01	0.31	0.02	0.24	0.00	0.06	0.01	0.09	0.02
Dudgeon & Sheringham Extension Project	0.02	1.58	0.11	12.10	0.01	0.33	0.05	0.44	0.05
East Anglia ONE	0.00	0.12	0.01	0.10	0.00	0.02	0.00	0.03	0.01
East Anglia ONE North	0.00	0.08	0.01	0.07	0.00	0.02	0.00	0.02	0.00
East Anglia THREE	0.02	0.98	0.07	0.79	0.01	0.21	0.03	0.28	0.05
East Anglia TWO	0.00	0.08	0.01	0.06	0.00	0.02	0.00	0.02	0.01
EOWDC	0.00	0.00	0.00	0.00	0.00	0.06	0.00	1.29	0.00
Galloper	0.00	0.12	0.01	0.10	0.00	0.02	0.00	0.03	0.01
Greater Gabbard	0.00	0.11	0.01	0.09	0.00	0.02	0.00	0.03	0.01
Gunfleet Sands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hornsea Project Four	0.01	1.33	0.09	4.51	0.00	0.28	0.04	0.37	0.02
Hornsea Project One	0.02	2.00	0.14	1.60	0.01	0.42	0.06	0.56	0.06
Hornsea Project Two	0.01	1.62	0.11	23.47	0.01	0.34	0.05	0.46	0.03
Hornsea Project Three	0.05	1.81	0.13	1.45	0.02	0.38	0.05	0.51	0.11
Humber Gateway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hywind Scotland	0.00	0.53	0.02	0.14	0.00	0.04	0.00	0.05	0.00

Project	Cape Wrath SPA	East Caithness Cliffs SPA	Fair Isle SPA	Flamborough and Filey Coast	Flannan Isles SPA	Forth Islands	Foula SPA	Fowlsheugh SPA	Handa SPA
Inch Cape	0.01	0.86	0.06	0.68	0.01	5.87	0.02	6.60	0.02
Kentish Flats Extension	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kincardine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lincs, Lynn & Inner Dowsing	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00
London Array	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neart na Gaoithe	0.01	1.50	0.10	1.20	0.01	2.95	0.04	0.57	0.03
Norfolk Boreas	0.01	0.37	0.03	0.30	0.01	0.08	0.01	0.11	0.03
Norfolk Vanguard	0.01	0.64	0.04	0.51	0.01	0.13	0.02	0.18	0.03
Race Bank	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00
Rampion	0.02	1.08	0.08	0.87	0.01	0.23	0.03	0.31	0.04
Seagreen (Alpha, Bravo and Phase1A)	0.03	0.48	0.04	0.38	0.01	14.77	0.01	66.11	0.07
Sheringham Shoal	0.00	0.37	0.03	0.30	0.00	0.08	0.01	0.10	0.01
Teesside	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thanet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton Knoll	0.01	0.30	0.02	0.73	0.01	0.06	0.01	0.08	0.02
Westermost Rough	0.00	0.12	0.01	1.08	0.00	0.02	0.00	0.03	0.01
Forthwind	0.00	0.00	0.00	0.00	0.00	0.47	0.00	0.01	0.00
Berwick Bank	0.03	4.41	0.31	3.53	0.01	12.88	0.13	17.26	0.07
Greenvolt	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salamander	0.01	0.10	0.01	0.08	0.00	0.02	0.00	1.64	0.01

Table 3-39. (2/2) Razorbill annual low displacement (60% x 3%/1%) apportioned to SPAs (WoW = the Project).

Project	Mingulay and Berneray SPA	North Caithness Cliffs SPA	North Rona and Sula Sgeir SPA	Shiant Isles SPA	St Abbs Head to Fast Castle	St Kilda SPA	Troup, Pennan and Lions Head	West Westray SPA
WoW	0.00	0.36	0.00	0.00	0.01	0.00	0.01	0.04
PFOWF	0.00	0.84	0.00	0.00	0.00	0.00	0.00	0.00
BOWL	0.03	0.17	0.00	0.01	0.05	0.01	0.11	0.03
Moray East	0.01	0.77	0.00	0.00	0.03	0.00	0.52	0.05
Moray West	0.04	0.75	0.00	0.02	0.18	0.01	0.74	0.11
Blyth Demonstration Site	0.00	0.01	0.00	0.00	0.17	0.00	0.01	0.00
Dogger Bank A & B	0.27	0.53	0.03	0.11	0.40	0.04	0.57	0.17
Dogger Bank C & Sofia	0.15	0.25	0.02	0.06	0.19	0.03	0.27	0.08
Dudgeon	0.04	0.04	0.00	0.02	0.03	0.01	0.04	0.01
Dudgeon & Sheringham Extension Project	0.10	0.21	0.01	0.04	0.15	0.02	0.22	0.07
East Anglia ONE	0.01	0.02	0.00	0.00	0.01	0.00	0.02	0.01
East Anglia ONE North	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00
East Anglia THREE	0.09	0.13	0.01	0.04	0.10	0.02	0.14	0.04
East Anglia TWO	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.00
EOWDC	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.00
Galloper	0.01	0.02	0.00	0.00	0.01	0.00	0.02	0.01
Greater Gabbard	0.02	0.01	0.00	0.01	0.01	0.00	0.02	0.00
Gunfleet Sands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hornsea Project Four	0.05	0.17	0.01	0.02	0.13	0.01	0.19	0.06
Hornsea Project One	0.11	0.26	0.01	0.05	0.19	0.02	0.28	0.08
Hornsea Project Two	0.06	0.21	0.01	0.03	0.16	0.01	0.23	0.07
Hornsea Project Three	0.22	0.24	0.02	0.09	0.18	0.04	0.25	0.08
Humber Gateway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hywind Scotland	0.00	0.06	0.00	0.00	0.02	0.00	0.10	0.02

Project	Mingulay and Berneray SPA	North Caithness Cliffs SPA	North Rona and Sula Sgeir SPA	Shiant Isles SPA	St Abbs Head to Fast Castle	St Kilda SPA	Troup, Pennan and Lions Head	West Westray SPA
Inch Cape	0.05	0.11	0.01	0.02	0.71	0.01	0.26	0.04
Kentish Flats Extension	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kincardine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lincs, Lynn & Inner Dowsing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
London Array	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neart na Gaoithe	0.05	0.19	0.01	0.02	0.31	0.01	0.21	0.06
Norfolk Boreas	0.06	0.05	0.01	0.02	0.04	0.01	0.05	0.02
Norfolk Vanguard	0.05	0.08	0.01	0.02	0.06	0.01	0.09	0.03
Race Bank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rampion	0.08	0.14	0.01	0.03	0.11	0.01	0.15	0.05
Seagreen (Alpha, Bravo and Phase1A)	0.13	0.07	0.01	0.05	3.02	0.02	1.23	0.02
Sheringham Shoal	0.01	0.05	0.00	0.01	0.04	0.00	0.05	0.02
Teesside	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thanet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton Knoll	0.05	0.04	0.01	0.02	0.03	0.01	0.04	0.01
Westermost Rough	0.01	0.02	0.00	0.00	0.01	0.00	0.02	0.01
Forthwind	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Berwick Bank	0.14	0.57	0.02	0.06	8.43	0.02	0.62	0.19
Greenvolt	0.00	0.00	0.00	0.00	0.00	0.00	3.94	0.00
Salamander	0.03	0.01	0.00	0.01	0.01	0.00	1.36	0.00

Table 3-40. (1/2) Razorbill annual high displacement (60% x 5%/3%) apportioned to SPAs (WoW = the Project).

Project	Cape Wrath SPA	East Caithness Cliffs SPA	Fair Isle SPA	Flamborough and Filey Coast	Flannan Isles SPA	Forth Islands	Foula SPA	Fowlsheugh SPA	Handa SPA
WoW	0.50	0.84	0.02	0.14	0.00	0.04	0.01	0.05	0.28
PFOWF	0.02	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.02
BOWL	0.03	14.18	0.12	1.29	0.01	0.34	0.05	0.45	0.06
Moray East	0.09	34.82	0.10	0.80	0.00	0.21	0.03	0.28	0.01
Moray West	0.14	44.84	0.41	4.44	0.01	1.17	0.16	1.57	0.34
Blyth Demonstration Site	0.00	0.20	0.01	1.81	0.00	0.04	0.01	0.06	0.01
Dogger Bank A & B	0.17	12.24	0.86	9.80	0.08	2.57	0.35	3.45	0.41
Dogger Bank C & Sofia	0.10	5.87	0.41	4.69	0.05	1.23	0.17	1.65	0.24
Dudgeon	0.03	0.95	0.07	0.76	0.01	0.20	0.03	0.27	0.07
Dudgeon & Sheringham Extension Project	0.07	4.72	0.33	22.01	0.03	0.99	0.14	1.33	0.16
East Anglia ONE	0.01	0.36	0.03	0.29	0.00	0.07	0.01	0.10	0.02
East Anglia ONE North	0.00	0.29	0.02	0.23	0.00	0.06	0.01	0.08	0.01
East Anglia THREE	0.06	2.91	0.21	2.33	0.03	0.61	0.08	0.82	0.14
East Anglia TWO	0.00	0.28	0.02	0.22	0.00	0.06	0.01	0.08	0.01
EOWDC	0.00	0.04	0.00	0.03	0.00	0.11	0.00	2.16	0.00
Galloper	0.00	0.41	0.03	0.33	0.00	0.09	0.01	0.11	0.01
Greater Gabbard	0.01	0.32	0.02	0.26	0.01	0.07	0.01	0.09	0.03
Gunfleet Sands	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01	0.00
Hornsea Project Four	0.03	3.91	0.27	9.04	0.01	0.82	0.11	1.10	0.07
Hornsea Project One	0.07	5.95	0.42	4.76	0.03	1.25	0.17	1.68	0.17
Hornsea Project Two	0.04	4.92	0.34	40.91	0.02	1.03	0.14	1.39	0.10
Hornsea Project Three	0.14	5.39	0.38	4.31	0.07	1.13	0.16	1.52	0.34
Humber Gateway	0.00	0.00	0.00	0.49	0.00	0.00	0.00	0.00	0.00
Hywind Scotland	0.00	0.91	0.05	0.44	0.00	0.12	0.02	0.15	0.00

Project	Cape Wrath SPA	East Caithness Cliffs SPA	Fair Isle SPA	Flamborough and Filey Coast	Flannan Isles SPA	Forth Islands	Foula SPA	Fowlsheugh SPA	Handa SPA
Inch Cape	0.03	2.61	0.18	2.09	0.02	9.95	0.07	11.26	0.07
Kentish Flats Extension	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kincardine	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.47	0.00
Lincs, Lynn & Inner Dowsing	0.00	0.08	0.01	0.56	0.00	0.02	0.00	0.02	0.00
London Array	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neart na Gaoithe	0.03	4.49	0.31	3.59	0.02	5.34	0.13	1.52	0.08
Norfolk Boreas	0.04	1.12	0.08	0.89	0.02	0.23	0.03	0.31	0.09
Norfolk Vanguard	0.03	1.91	0.13	1.53	0.02	0.40	0.06	0.54	0.08
Race Bank	0.00	0.12	0.01	0.59	0.00	0.02	0.00	0.03	0.01
Rampion	0.05	3.33	0.23	2.67	0.03	0.70	0.10	0.94	0.13
Seagreen (Alpha, Bravo and Phase1A)	0.08	1.48	0.11	1.18	0.04	24.79	0.04	110.49	0.20
Sheringham Shoal	0.01	1.19	0.08	0.95	0.01	0.25	0.03	0.34	0.03
Teesside	0.00	0.04	0.00	0.03	0.00	0.01	0.00	0.01	0.00
Thanet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton Knoll	0.03	0.81	0.06	1.14	0.01	0.17	0.02	0.23	0.07
Westermost Rough	0.01	0.27	0.02	1.70	0.00	0.06	0.01	0.08	0.02
Forthwind	0.00	0.12	0.01	0.10	0.00	0.96	0.00	0.06	0.01
Berwick Bank	0.09	13.28	0.93	10.62	0.04	22.61	0.38	30.30	0.22
Greenvolt	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01	0.00
Salamander	0.02	0.31	0.02	0.25	0.01	0.06	0.01	2.77	0.04

Table 3-41. (2/2) Razorbill annual high displacement (60% x 5%/3%) apportioned to SPAs (WoW = the Project).

Project	Mingulay and Berneray SPA	North Caithness Cliffs SPA	North Rona and Sula Sgeir SPA	Shiant Isles SPA	St Abbs Head to Fast Castle	St Kilda SPA	Troup, Pennan and Lions Head	West Westray SPA
WoW	0.00	0.48	0.01	0.00	0.02	0.00	0.02	0.05
PFOWF	0.00	1.69	0.00	0.00	0.00	0.00	0.00	0.00
BOWL	0.11	0.38	0.01	0.05	0.16	0.02	0.28	0.08
Moray East	0.02	1.34	0.00	0.01	0.10	0.00	0.93	0.10
Moray West	0.12	1.56	0.01	0.05	0.54	0.02	1.56	0.29
Blyth Demonstration Site	0.01	0.03	0.00	0.01	0.34	0.00	0.03	0.01
Dogger Bank A & B	0.81	1.60	0.09	0.34	1.19	0.14	1.71	0.52
Dogger Bank C & Sofia	0.47	0.77	0.05	0.20	0.57	0.08	0.82	0.25
Dudgeon	0.13	0.13	0.01	0.05	0.09	0.02	0.13	0.04
Dudgeon & Sheringham Extension Project	0.32	0.62	0.03	0.13	0.46	0.05	0.66	0.20
East Anglia ONE	0.03	0.05	0.00	0.01	0.03	0.01	0.05	0.02
East Anglia ONE North	0.01	0.04	0.00	0.01	0.03	0.00	0.04	0.01
East Anglia THREE	0.28	0.38	0.03	0.12	0.28	0.05	0.41	0.12
East Anglia TWO	0.02	0.04	0.00	0.01	0.03	0.00	0.04	0.01
EOWDC	0.00	0.01	0.00	0.00	0.00	0.00	0.23	0.00
Galloper	0.02	0.05	0.00	0.01	0.04	0.00	0.06	0.02
Greater Gabbard	0.07	0.04	0.01	0.03	0.03	0.01	0.05	0.01
Gunfleet Sands	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hornsea Project Four	0.13	0.51	0.01	0.06	0.38	0.02	0.54	0.16
Hornsea Project One	0.33	0.78	0.04	0.14	0.58	0.06	0.83	0.25
Hornsea Project Two	0.19	0.64	0.02	0.08	0.48	0.03	0.69	0.21
Hornsea Project Three	0.66	0.71	0.07	0.28	0.53	0.11	0.75	0.23
Humber Gateway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hywind Scotland	0.01	0.10	0.00	0.00	0.05	0.00	0.15	0.03

Project	Mingulay and Berneray SPA	North Caithness Cliffs SPA	North Rona and Sula Sgeir SPA	Shiant Isles SPA	St Abbs Head to Fast Castle	St Kilda SPA	Troup, Pennan and Lions Head	West Westray SPA
Inch Cape	0.15	0.34	0.02	0.06	1.29	0.02	0.60	0.11
Kentish Flats Extension	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kincardine	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Lincs, Lynn & Inner Dowsing	0.00	0.01	0.00	0.00	0.01	0.00	0.01	0.00
London Array	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neart na Gaoithe	0.15	0.58	0.02	0.06	0.71	0.03	0.63	0.19
Norfolk Boreas	0.18	0.15	0.02	0.08	0.11	0.03	0.16	0.05
Norfolk Vanguard	0.16	0.25	0.02	0.07	0.19	0.03	0.27	0.08
Race Bank	0.01	0.02	0.00	0.00	0.01	0.00	0.02	0.01
Rampion	0.25	0.44	0.03	0.10	0.32	0.04	0.46	0.14
Seagreen (Alpha, Bravo and Phase1A)	0.40	0.20	0.04	0.17	5.11	0.07	2.15	0.06
Sheringham Shoal	0.05	0.16	0.01	0.02	0.12	0.01	0.17	0.05
Teesside	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00
Thanet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton Knoll	0.14	0.11	0.02	0.06	0.08	0.02	0.11	0.04
Westermost Rough	0.03	0.04	0.00	0.01	0.03	0.01	0.04	0.01
Forthwind	0.01	0.02	0.00	0.00	0.04	0.00	0.02	0.01
Berwick Bank	0.43	1.72	0.05	0.18	14.56	0.07	1.85	0.56
Greenvolt	0.01	0.00	0.00	0.00	0.00	0.00	6.91	0.00
Salamander	0.08	0.04	0.01	0.03	0.03	0.01	2.29	0.01

Table 3-42. (1/2) Puffin annual low displacement (60% x 3%/1%) apportioned to SPAs (WoW = the Project).

Project	Canna and Sanday	Cape Wrath	Coquet Island SPA	Fair Isle	Farne Islands	Flannan Isles	Forth Islands	Foula	Hermaness, Saxa Vord and Valla Field
WoW	0.00	0.00	0.68	0.18	2.21	0.00	3.44	0.37	0.39
PFOWF	0.01	0.09	0.00	0.03	0.00	0.11	0.00	0.01	0.00
BOWL	0.27	0.47	0.78	0.92	2.52	1.73	7.16	0.65	0.45
Moray East	0.31	0.47	0.21	0.89	0.68	0.00	5.12	0.37	0.12
Moray West	0.15	0.23	1.27	0.61	4.10	0.86	8.10	0.78	0.73
Blyth Demonstration Site	0.00	0.00	1.65	0.01	0.59	0.00	0.28	0.02	0.02
Dogger Bank A & B	0.00	0.00	0.83	0.09	1.85	0.00	1.67	0.18	0.19
Dogger Bank C & Sofia	0.00	0.00	0.83	0.05	0.62	0.00	0.97	0.11	0.11
Dudgeon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dudgeon & Sheringham Extension Project	0.00	0.00	0.01	0.00	0.03	0.00	0.05	0.00	0.01
East Anglia ONE	0.00	0.00	0.01	0.00	0.03	0.00	0.05	0.01	0.01
East Anglia ONE North	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East Anglia THREE	0.00	0.00	0.10	0.03	0.32	0.00	0.49	0.05	0.06
East Anglia TWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EOWDC	0.00	0.00	0.06	0.01	0.17	0.00	0.33	0.01	0.02
Galloper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greater Gabbard	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gunfleet Sands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hornsea Project Four	0.00	0.00	1.17	0.10	2.40	0.00	2.02	0.22	0.23
Hornsea Project One	0.00	0.00	0.65	0.17	2.11	0.00	3.28	0.36	0.37
Hornsea Project Two	0.00	0.00	4.33	0.01	0.07	0.00	0.11	0.01	0.01
Hornsea Project Three	0.00	0.00	0.14	0.04	0.46	0.00	0.71	0.08	0.08
Humber Gateway	0.00	0.00	0.06	0.00	0.09	0.00	0.02	0.00	0.00
Hywind Scotland	0.00	0.01	0.03	0.13	0.09	0.00	0.39	0.04	0.06

Project	Canna and Sanday	Cape Wrath	Coquet Island SPA	Fair Isle	Farne Islands	Flannan Isles	Forth Islands	Foula	Hermaness, Saxa Vord and Valla Field
Inch Cape	0.03	0.00	1.58	0.22	5.20	0.00	28.33	0.47	0.49
Kentish Flats Extension	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00
Kincardine	0.00	0.00	0.02	0.00	0.04	0.00	0.11	0.00	0.00
Lincs, Lynn & Inner Dowsing	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00
London Array	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.00
Neart na Gaoithe	0.01	0.00	0.85	0.17	2.86	0.00	26.10	0.37	0.39
Norfolk Boreas	0.00	0.00	0.01	0.00	0.02	0.00	0.04	0.00	0.00
Norfolk Vanguard	0.00	0.00	0.04	0.01	0.12	0.00	0.18	0.02	0.02
Race Bank	0.00	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.00
Rampion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seagreen (Alpha, Bravo and Phase1A)	0.00	0.00	4.98	0.45	16.21	0.00	51.24	0.94	0.99
Sheringham Shoal	0.00	0.00	0.01	0.00	0.03	0.00	0.04	0.00	0.00
Teesside	0.00	0.00	0.15	0.00	0.15	0.00	0.08	0.00	0.00
Thanet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton Knoll	0.00	0.00	0.23	0.01	0.07	0.00	0.11	0.01	0.01
Westermost Rough	0.00	0.00	0.25	0.00	0.36	0.00	0.06	0.01	0.01
Forthwind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Berwick Bank	0.00	0.00	7.09	0.74	30.94	0.01	29.82	1.55	1.63
Greenvolt	0.00	0.02	0.01	0.11	0.61	0.00	0.86	0.04	0.01
Salamander	0.00	0.03	0.42	0.11	1.01	0.00	1.59	0.00	0.00

Table 3-43. (2/2) Puffin annual low displacement (60% x 3%/1%) apportioned to SPAs (WoW = the Project).

Project	Hoy	Mingulay and Berneray	North Caithness Cliffs	North Rona and Sula Sgeir	Noss	The Shiant Isles	St Kilda	Sule Skerry and Sule Stack
WoW	0.06	0.00	0.02	0.00	0.01	0.01	0.02	48.54
PFOWF	0.05	0.00	10.33	0.00	0.01	0.15	0.37	0.00
BOWL	0.46	0.00	9.46	0.00	0.09	3.64	6.12	0.01
Moray East	0.40	0.00	8.57	0.00	0.08	4.18	6.59	0.00
Moray West	0.23	0.00	2.13	0.00	0.06	1.50	3.25	0.01
Blyth Demonstration Site	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dogger Bank A & B	0.03	0.00	0.01	0.00	0.01	0.00	0.01	0.00
Dogger Bank C & Sofia	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dudgeon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dudgeon & Sheringham Extension Project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East Anglia ONE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East Anglia ONE North	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East Anglia THREE	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East Anglia TWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EOWDC	0.00	0.00	0.01	0.00	0.00	0.00	0.06	0.00
Galloper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greater Gabbard	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gunfleet Sands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hornsea Project Four	0.03	0.00	0.01	0.00	0.01	0.00	0.01	0.00
Hornsea Project One	0.06	0.00	0.02	0.00	0.01	0.01	0.02	0.01
Hornsea Project Two	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hornsea Project Three	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Humber Gateway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Project	Hoy	Mingulay and Berneray	North Caithness Cliffs	North Rona and Sula Sgeir	Noss	The Shiant Isles	St Kilda	Sule Skerry and Sule Stack
Hywind Scotland	0.01	0.00	0.08	0.00	0.00	0.55	0.00	0.00
Inch Cape	0.08	0.00	0.04	0.02	0.02	0.01	0.02	0.01
Kentish Flats Extension	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kincardine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lincs, Lynn & Inner Dowsing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
London Array	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neart na Gaoithe	0.06	0.00	0.02	0.00	0.01	0.01	0.02	0.01
Norfolk Boreas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Norfolk Vanguard	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Race Bank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rampion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seagreen (Alpha, Bravo and Phase1A)	0.16	0.00	0.15	0.08	0.03	0.02	0.04	0.02
Sheringham Shoal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Teesside	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thanet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton Knoll	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Westermost Rough	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forthwind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Berwick Bank	0.24	0.00	0.11	0.00	0.06	0.03	0.07	0.03
Greenvolt	0.01	0.00	0.08	0.00	0.00	0.69	0.00	0.00
Salamander	0.01	0.00	0.11	0.00	0.00	0.00	0.00	0.00

Table 3-44. (1/2) Puffin annual high displacement (60% x 5%/3%) apportioned to SPAs (WoW = the Project).

Project	Canna and Sanday	Cape Wrath	Coquet Island SPA	Fair Isle	Farne Islands	Flannan Isles	Forth Islands	Foula	Hermaness, Saxa Vord and Valla Field
WoW	0.00	0.00	2.05	0.53	6.62	0.01	10.31	1.12	1.18
PFOWF	0.02	0.15	0.00	0.04	0.01	0.18	0.01	0.02	0.00
BOWL	0.45	0.79	2.33	1.80	7.55	2.89	17.16	1.66	1.34
Moray East	0.52	0.79	0.63	1.55	2.03	0.00	9.94	0.78	0.36
Moray West	0.25	0.38	3.80	1.45	12.30	1.43	22.01	2.23	2.18
Blyth Demonstration Site	0.00	0.00	2.80	0.03	1.16	0.00	0.74	0.06	0.07
Dogger Bank A & B	0.00	0.00	1.83	0.26	4.52	0.00	5.01	0.54	0.57
Dogger Bank C & Sofia	0.00	0.00	1.64	0.15	1.87	0.00	2.91	0.32	0.33
Dudgeon	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00
Dudgeon & Sheringham Extension Project	0.00	0.00	0.03	0.01	0.09	0.00	0.14	0.01	0.02
East Anglia ONE	0.00	0.00	0.03	0.01	0.10	0.00	0.15	0.02	0.02
East Anglia ONE North	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East Anglia THREE	0.00	0.00	0.29	0.08	0.95	0.00	1.48	0.16	0.17
East Anglia TWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EOWDC	0.00	0.00	0.13	0.03	0.40	0.00	0.73	0.04	0.05
Galloper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greater Gabbard	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gunfleet Sands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hornsea Project Four	0.00	0.00	2.49	0.31	5.73	0.00	6.07	0.66	0.69
Hornsea Project One	0.00	0.00	1.95	0.51	6.32	0.00	9.85	1.07	1.12
Hornsea Project Two	0.00	0.00	7.25	0.02	0.21	0.00	0.32	0.04	0.04
Hornsea Project Three	0.00	0.00	0.42	0.11	1.37	0.00	2.13	0.23	0.24
Humber Gateway	0.00	0.00	0.11	0.00	0.16	0.00	0.05	0.01	0.01
Hywind Scotland	0.00	0.02	0.08	0.23	0.26	0.00	0.83	0.09	0.13

Project	Canna and Sanday	Cape Wrath	Coquet Island SPA	Fair Isle	Farne Islands	Flannan Isles	Forth Islands	Foula	Hermaness, Saxa Vord and Valla Field
Inch Cape	0.05	0.00	3.79	0.67	12.37	0.01	52.98	1.41	1.48
Kentish Flats Extension	0.00	0.00	0.01	0.00	0.02	0.00	0.03	0.00	0.00
Kincardine	0.00	0.00	0.03	0.00	0.07	0.00	0.19	0.00	0.00
Lincs, Lynn & Inner Dowsing	0.00	0.00	0.01	0.00	0.02	0.00	0.03	0.00	0.00
London Array	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.00	0.00
Neart na Gaoithe	0.01	0.00	2.31	0.52	7.66	0.01	48.01	1.10	1.16
Norfolk Boreas	0.00	0.00	0.02	0.01	0.07	0.00	0.11	0.01	0.01
Norfolk Vanguard	0.00	0.00	0.11	0.03	0.35	0.00	0.54	0.06	0.06
Race Bank	0.00	0.00	0.01	0.00	0.03	0.00	0.05	0.01	0.01
Rampion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seagreen (Alpha, Bravo and Phase1A)	0.00	0.00	10.59	1.34	34.45	0.01	96.96	2.82	2.97
Sheringham Shoal	0.00	0.00	0.02	0.01	0.08	0.00	0.13	0.01	0.01
Teesside	0.00	0.00	0.26	0.00	0.27	0.00	0.17	0.01	0.01
Thanet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton Knoll	0.00	0.00	0.42	0.02	0.22	0.00	0.34	0.04	0.04
Westermost Rough	0.00	0.00	0.43	0.01	0.64	0.00	0.17	0.02	0.02
Forthwind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Berwick Bank	0.00	0.00	15.60	2.22	63.83	0.02	68.79	4.66	4.90
Greenvolt	0.00	0.04	0.04	0.19	1.08	0.00	1.53	0.08	0.02
Salamander	0.00	0.06	0.71	0.18	1.68	0.00	2.65	0.00	0.00

Table 3-45. (2/2) Puffin annual high displacement (60% x 5%/3%) apportioned to SPAs (WoW = the Project).

Project	Hoy	Mingulay and Berneray	North Caithness Cliffs	North Rona and Sula Sgeir	Noss	The Shiant Isles	St Kilda	Sule Skerry and Sule Stack
WoW	0.17	0.00	0.05	0.00	0.04	0.02	0.05	80.92
PFOWF	0.08	0.00	17.22	0.00	0.01	0.24	0.61	0.00
BOWL	0.86	0.00	15.80	0.00	0.16	6.08	10.23	0.02
Moray East	0.70	0.00	14.30	0.00	0.14	6.97	10.99	0.01
Moray West	0.52	0.00	3.59	0.00	0.13	2.51	5.45	0.04
Blyth Demonstration Site	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dogger Bank A & B	0.08	0.00	0.02	0.00	0.02	0.01	0.02	0.01
Dogger Bank C & Sofia	0.05	0.00	0.01	0.00	0.01	0.01	0.01	0.01
Dudgeon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dudgeon & Sheringham Extension Project	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East Anglia ONE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East Anglia ONE North	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
East Anglia THREE	0.03	0.00	0.01	0.00	0.01	0.00	0.01	0.00
East Anglia TWO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EOWDC	0.01	0.00	0.01	0.00	0.00	0.00	0.09	0.00
Galloper	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Greater Gabbard	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gunfleet Sands	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hornsea Project Four	0.10	0.00	0.03	0.00	0.02	0.01	0.03	0.01
Hornsea Project One	0.17	0.00	0.05	0.00	0.04	0.02	0.05	0.02
Hornsea Project Two	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hornsea Project Three	0.04	0.00	0.01	0.00	0.01	0.00	0.01	0.00
Humber Gateway	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Project	Hoy	Mingulay and Berneray	North Caithness Cliffs	North Rona and Sula Sgeir	Noss	The Shiant Isles	St Kilda	Sule Skerry and Sule Stack
Hywind Scotland	0.02	0.00	0.13	0.00	0.00	0.92	0.00	0.00
Inch Cape	0.22	0.00	0.10	0.03	0.05	0.03	0.06	0.02
Kentish Flats Extension	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kincardine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lincs, Lynn & Inner Dowsing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
London Array	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Levenmouth Demonstration Turbine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Neart na Gaoithe	0.17	0.00	0.05	0.01	0.04	0.02	0.05	0.02
Norfolk Boreas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Norfolk Vanguard	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Race Bank	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rampion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seagreen (Alpha, Bravo and Phase1A)	0.46	0.00	0.30	0.13	0.10	0.05	0.12	0.05
Sheringham Shoal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Teesside	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Thanet	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Triton Knoll	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Westermost Rough	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Forthwind	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Berwick Bank	0.72	0.00	0.27	0.01	0.17	0.09	0.20	0.08
Greenvolt	0.02	0.00	0.13	0.00	0.00	1.14	0.00	0.00
Salamander	0.02	0.00	0.19	0.00	0.00	0.00	0.00	0.00