

Offshore ornithology supporting information in line with SNCB advice

F01_F02 (CleanTracked)



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Glossary

Term	Meaning
Applicant	Mona Offshore Wind Limited.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for one or more Nationally Significant Infrastructure Project (NSIP).
Mona Offshore Wind Project	The Mona Offshore Wind Project is comprised of both the generation assets, offshore and onshore transmission assets, and associated activities.
The Planning Inspectorate	The agency responsible for operating the planning process for Nationally Significant Infrastructure Projects.

Ac**r**onyms

Ac r onym	Description
AEoSI <u>AoSI</u>	Adverse effect on site integrity
BDMPS	Biologically Defined Minimum Population Scales
CGR	CGR
CPS	CPS
EIA	Environmental Impact Assessment
ExA	Examining Authority
HRA	Habitats Regulations Assessment
JNCC	Joint Nature Conservation Committee
LCI	Lower confidence interval
NRW	Natural Resources Wales
PVA	Population Viability Analysis
SNCB	Statutory Nature Conservation Body
SPAs	Special Protection Areas
SSSI	Site of Special Scientific Interest
UCI	Upper confidence interval
UK	United Kingdom

Units

Unit	Description
%	Percentage
km²	Square kilometres
km	Kilometres
m	Metres



1 OFFSHORE ORNITHOLOGY SUPPORTING INFORMATION IN LINE WITH SNCB ADVICE

1.1 Introduction

- 1.1.1.1 The Applicant notes that Natural Resources Wales (Advisory) (NRW(A)) and the Joint Nature Conservation Committee (JNCC) have made relevant representations (RR-011 and RR-033, respectively) and written representations (REP1-056; REP1-066/REP1-067, respectively) regarding their ability to follow the assessment approach presented in the Habitat Regulations Assessment (HRA) and Environmental Impact Assessment (EIA) application materials. For example, NRW(A) (RR-011, page 6) stated that "Whilst we consider that the likely significant effects from the project alone will not result in Adverse Effect on Site Integrity (AEoSI), the assessment and process of reaching the predicted Document Reference: S_D2_2 5 impacts in the HRA Stage 1 Screening Report [APP-034] and HRA Stage 2 Information to Support an Appropriate Assessment (ISAA) Special Protection Areas (SPAs) and Ramsars [APP-033] is currently difficult to follow and unclear in places." The Applicant appreciates that the information supporting the HRA and EIA is distributed across several application documents.
- 1.1.1.2 Furthermore, the Applicant notes that NRW(A) and the JNCC have highlighted in their relevant representations (RR-011 and RR-033, respectively) and written representations (REP1-056; REP1-066/REP1-067, respectively) several instances where they do not consider the Applicant's EIA and HRA to have been undertaken in accordance with their advice with respect to the methodologies and input parameters used. The Applicant has responded to specific points raised by NRW(A) and the JNCC in the Applicant's Response to Relevant Representations (PDA-008; see rows RR-011.13 and RR-033.5) and the Applicant's Response to NRW (A) Written Representations (REP2-080; see rows REP1-056.89 REP1-056.101) and JNCC Written Representations (REP2-081: see rows REP1-066.2, REP1-066.39 REP1-066.41).
- 1.1.1.3 Under Rule 17 of the Infrastructure Planning (Examination Procedure) Rules 2010 (as amended), the Examining Authority (ExA) has requested that an assessment of effects on ornithological features (for both the EIA and HRA) using the methods and parameters highlighted by NRW(A) and JNCC during pre-application consultation, and in their relevant representation (RR-011; RR-033) and written representations (REP1-056; REP1-066/REP1-067) should be submitted by Deadline 3.
- 1.1.1.4 The Applicant wishes to highlight that extensive consultation was undertaken with NRW, the JNCC and Natural England during the pre-application phase via the Evidence Plan Process (EPP), including on methodological approaches and input parameters to seek agreement on the Applicant's approach where possible. This is detailed in the Technical Engagement Plan (APP-041) and Annex D of the Technical Engagement Plan Appendices Part 1 (A to E) (APP-042). Through these discussions, it was not possible to discuss and agree on all aspects of the methodologies.
- 1.1.1.5 In response to the Examining Authority's Rule 17 (PD-012) letter and NRW's and the JNCC's relevant representations (RR-011 and RR-033, respectively) and written representations (REP1-056; REP1-066/REP1-067, respectively), the Applicant has sought to present the EIA and HRA requested information in accordance with the SNCBs' advice alongside the Applicant's identified approach (based on an assessment of available evidence and those approaches used by other recently



- consented offshore wind farms) for determining impacts in the Environmental Statement and the HRA.
- 1.1.1.6 This technical note brings together the key assessment information provided in the Development Consent Order (DCO) application, with clear signposting to the source of this information and where further supporting details can be found within the application documents. In addition, this technical note provides supporting information requested in NRW's and the JNCC's representations made in the examination of the Mona Offshore Wind Project to date.
- 1.1.1.7 This supporting information is provided to give the SNCBs the information requested and to provide confidence that the EIA and HRA conclusions are robust. It is also intended to provide sufficient understanding of the potential impacts of the Mona Offshore Wind Project (alone and cumulatively/in-combination with other plans and projects) for the SNCBs to confirm their position with respect to a conclusion of no significant effects and AEoSI beyond reasonable scientific doubt.
- 1.1.1.8 A version of this note was submitted at Deadline 3 (REP3-059). Since Deadline 3, the Applicant has sought to engage with NRW (A) and the JNCC on the information provided to understand whether this sufficiently addresses the SNCB's concerns and to ensure any outstanding matters can be resolved as soon as possible. In light of feedback received from the JNCC and NRW (A) following the submission of this note at Deadline 3, the Applicant has provided an update version (this note) into Examination at Deadline 4. The main changes include:
 - the inclusion of the gap-filled projects (method and detailed results presented in Offshore Ornithology Cumulative Effects Assessment and In-combination Gapfilling Historical Projects Technical Note (S D3 12 F02)) within the incombination assessment.
 - The provision of additional information to clarify what abundances and impacts
 have been used within the in-combination assessment for each of the other
 offshore wind projects.
 - The provision of additional information to clarify what age-class apportionment for each bioseason has been used as part of the assessment. It should be noted that the Applicant maintains that due to the spatial scales covered by the incombination projects the stable-age structure from Furness (2015) is the most appropriate approach as it is considered to represent the best available evidence and is consistent with the approach taken for other consented offshore wind projects and the Round 4 Plan Level HRA. Assuming 100% of birds are adults in the absence of site-specific data (which the vast majority of the projects considered within the in-combination and cumulative assessments do not have) would lead to artificially and disproportionately high impact figures and has therefore not been adopted in the in-combination and cumulative assessments.

A summary of relevant representations and written representations post-application consultation and feedback received from the SNCBs since Deadline 3 is presented in Table 1-1 alongside how the comments have been considered by the Applicant.



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Table 1-1: Post-application consultation and engagement relevant to the supporting information presented within this technical note

Consultee and reference to comment	Comment summary	Response to issue raised and/or where considered in this technical note
NRW (A) relevant representations (Applicant's Response to Relevant Representations (PDA-088); see row RR-011.13)	NRW(A) notes that the Applicant's approach and presentation of apportionment of predicted impacts is, in places, difficult to follow and unclear. NRW(A) require clarification (potentially to include a full worked example for a species and site of all apportioning (age classes and apportionment of impacts)) and/or updates to the assessment are required.	This supporting information technical note brings together the key assessment information in a single document, with clear signposting to the source of this information and where further supporting details can be found within the application documents.
JNCC relevant representations (Applicant's Response to Relevant Representations (PDA-088); see row RR-033.5)	JNCC notes that many aspects of the assessment are difficult to follow, what has been done, or where values have come from.	
NRW (A) written representations (Appendix to Response to WRs: NRW (REP2-080); see rows REP1-056.88 - REP1-056.101)	NRW (A) highlighted that they would base their advice and conclusions on assessments that consider the full range of advised displacement and mortality rates that follow SNCB guidance. As the apportioned impacts across the full range of advised displacement and mortality rates are currently not available for each designated site in the HRA Stage 1 Screening Report (REP2-012) or HRA Stage 2 Information to Support Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010), they therefore suggest that the Applicant provides this information into the examination as soon as possible. NRW (A) highlighted that they are not advising that the HRA be based solely on the upper end of the % displacement and % mortality rates advised (e.g. 70% displacement and 10% mortality for auks), but advises that in order to account for the large degree of uncertainty regarding displacement rates and effects that the assessments consider a range of potential rates and effects rather than focussing on a single figure as the Applicant has done in their HRA application documents.	This technical note (section 1.5.1) includes presentation of displacement impacts apportioned to designated sites for the full range of displacement and mortality rates recommended by the SNCBs (including those outlined in REP1-056.88 to REP1-056.101) to aid the SNCB's interpretation of the apportioned impacts on individual SPAs.
JNCC written representations (Appendix to Response to WRs: JNCC (REP2-081); see row REP-066.2)	JNCC notes that some aspects of JNCC advice also appear to have been taken on board in some circumstances but not in others, despite agreement during pre-application meetings and correspondence. For instance, specific displacement rates being used in the HRA and EIA.	
JNCC written representations (Appendix to	JNCC do not agree that single values of displacement and mortality should be used for analysis of population impacts. JNCC advises	

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Consultee and reference to comment	Comment summary	Response to issue raised and/or where considered in this technical note
Response to WRs: JNCC (REP2-081(; REP1-066.39 - REP1- 066.41)	that a range of displacement mortality values are taken through to the assessment of population impacts (SNCBs, 2022).	
Meeting with NRW, the JNCC and Natural England on 29 August 2024	Request from Natural England for the project to consider the updated reference populations and parameters in the NRW and Natural England interim advice note (advice letter provided to Morgan Generation Assets by Natural England and NRW on 21 March 2024, post submission of the Mona Offshore Wind Project DCO application), particularly in relation to great black-backed gull.	The Applicant has used the updated reference population for great black-backed gull within Table 1-6 to define the annual population. See paragraphs 1.1.2.5 to 1.1.2.10 in Offshore Ornithology Cumulative Effects Assessment and In-combination Gap-filling Historical Projects Technical Note (S_D3_19 F02) submitted at Deadline 4 for further information.
NRW's written feedback following a meeting on 9 September 2024 (received via email on 18 September 2024)	NRW (A) advised that the presentation of apportioned impact should include the following: - age class apportioning as well as apportioning value to colony. - the mortality rate and data source (assume will be based on adult survival rates from Horswill and Robinson 2015)). - the figures for the annual summed total impacts as well as per season.	These parameters are presented for each species and SPA in section 1.5.1 and section 1.5.2.
	NRW (A) advise that where the Mona Offshore Wind Project's predicted impact equates to greater than 0.05% baseline mortality at any point within the advised range of displacement and mortality rates, then the site/feature combination is taken through to in-combination assessment and not just based on the Applicant's identified % displacement and % mortality rates, as has been currently done.	The in-combination assessments based on the advised range of displacement and mortality rates are presented in Section 1.5.3.
	NRANRW (A) suggest for the apportioned impacts (when using the full range of displacement scenarios) the presentation of tables showing predicted impacts across range and highlighting where within the range 1% baseline mortality is exceeded.	The Applicant notes that this could be useful if multiple scenarios are being presented, however this note focuses on the range of displacement and mortality rates requested by the SNCBs. The worst-case scenario is presented in-combination and within the PVAs which show no detrimental impact on the assessed populations and therefore the tables are not presented as do not add additional clarity to this point.
JNCC's written feedback following a meeting on 4 September 2024 (received via email on 10 September 2024)	The JNCC recommends that the presentation of collision impacts within the EIA includes the following information: - Site - Population - Baseline mortality - Mean collision mortality (lower confidence interval (LCI) and upper	These parameters are presented for each species in section 1.4.1.

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Consultee and reference to comment	Comment summary	Response to issue raised and/or where considered in this technical note
	confidence interval (UCL)) (per bio- season) - Increase in baseline mortality mean (LCL, UCL) (per bio-season)	
	The JNCC recommends that the presentation of apportioned displacement impacts within the HRA includes the following information: Site Colony count (Year) Baseline mortality Un-apportioned mortalities (per bioseason) Age-class apportioning (per bioseason) Impact range (per bioseason) Increase in baseline mortality (per bioseason)	These parameters are presented for each species and SPA in section 1.5.1 for displacement impacts. The un-apportioned mortalities are presented fully within Table 1_3 and repeated before each results table in section 1.5.1.
	The JNCC recommend the presentation of apportioned collision impacts within the HRA includes the following information: - Site - Colony count (year) - Baseline mortality - Un-apportioned mean collision mortality (LCL, UCL) (per bio-season) - Age-class apportioning (per bio-season) - Apportioning value (per bio-season) - Apportioned mean collision mortality (LCL, UCL) (per bio-season) - Increase in baseline mortality mean (LCL, UCL) (per bio-season)	These parameters are presented for each species and SPA in section 1.5.2. The unapportioned mortalities are presented fully within Table 1 ₋ 3 and repeated before each results table in section 1.5.2.
	JNCC requested that the gap-filled projects be included within the in-combination assessments.	The Applicant has updated this note to include the in-combination assessments within section 1.5.3.
JNCC's written feedback received 24 October 2024 following meeting on 14 October 2024	JNCC provided multiple worked examples of how they tried to calculate the apportioned impact to individual SPAs but were unable to replicate the same apporioned impacts as the Applicant.	The Applicant has provided revised incombination tables in section 1.5.3 which provides JNCC with all the required parameters to enable them to replicate the Applicant's predicted impacts (unapportioned and apportioned) to each SPA for all species considered using the Applicant's methods as described within section 1.3.4.



an adult. all birds not able to be identified to a specific age as adults. However, with respect to the in-combination assessment, when considering the predicted impacts of the 17 offshore wind projects, it is not considered proportionate to assume that all individuals at all sites will be adults. This approach would hyperinflate the impact which is an overly precautionary presumption and not based on any scientific evidence. The Applicant maintains that using the stable-age structure within the incombination assessments has precedent as has been used within multiple other consented offshore wind farm applications and The Crown Estates' Plan Level HRAs (both Round 4 and Round 5) and is	Consultee and reference to comment	Comment summa r y	Response to issue raised and/or where considered in this technical note
Mona Offshore Wind Project's alone impacts differ from the alone assessment and the incombination assessment. Offshore Wind Project alone assessment impacts differ between the alone assessment. Offshore Wind Project alone assessment impacts differ between the alone assessment and the incombination. The alone assessment methodology and incombination assessment methodology is fully explained within sections 1.3.3 and 1.3.4, respectively. The rationale for the differences is also discussed within paragraph 1.5.3.3. The JNCC and NRW (A) verbal feedback received in meeting 29 October 2024 The JNCC repeated their written advice, with NRW (A) confirming they are of the same opinion. The Applicant welcomes JNCCs and NRW (A)'s comments, and refers to the specific responses above. The Applicant welcomes JNCCs and NRW (A)'s comments, and refers to the specific responses above. The Applicant welcomes JNCCs and NRW (A)'s comments, and refers to the specific responses above. The Applicant welcomes JNCCs and NRW (A)'s comments, and refers to the specific responses above. The Applicant welcomes JNCCs and NRW (A)'s comments, and refers to the specific responses above. The Applicant welcomes JNCCs and NRW (A)'s comments, and refers to the specific responses above. The Applicant welcomes JNCCs and NRW (A)'s comments, and refers to the specific responses above. The Applicant welcomes JNCCs and NRW (A)'s comments, and refers to the specific responses above. The Applicant welcomes JNCCs and NRW (A)'s comments, and refers to the specific responses above. The Applicant welcomes JNCCs and NRW (A)'s comments, and refers to the specific responses above. The Applicant welcomes JNCCs and NRW (A)'s comments, and refers to the specific responses above. The Applicant welcomes JNCCs and NRW (A)'s comments, and refers to the specific responses above.		should not be used within the in-combination assessment. The JNCC requested that where an individual can not be identified easily to a specific age-class, then it should be considered	JNCC and NRW for the Mona Offshore Wind Project alone assessment (as done within Volume 2, Chapter 5: Offshore Ornithology (F2.5 F03)) and has considered all birds not able to be identified to a specific age as adults. However, with respect to the in-combination assessment, when considering the predicted impacts of the 17 offshore wind projects, it is not considered proportionate to assume that all individuals at all sites will be adults. This approach would hyperinflate the impact which is an overly precautionary presumption and not based on any scientific evidence. The Applicant maintains that using the stable-age structure within the in- combination assessments has precedent as has been used within multiple other consented offshore wind farm applications and The Crown Estates' Plan Level HRAs (both Round 4 and Round 5) and is produced using the best available evidence
verbal feedback received in meeting 29 October 2024 1.1.1.5 In response to the Examining Authority's Rule 17 (PD-012) letter and NRW's and the JNCC's relevant representations (RR 011 and RR 033, respectively) and writter representations (REP1-056; REP1-066/REP1-067, respectively), the Applicant has sought to present the EIA and HRA requested information in accordance with the SNCBs' advice alongside the Applicant's identified approach (based on a assessment of available evidence and those approaches used by other recentle consented offshore wind farms) for determining impacts in the Environments Statement and the HRA. 1.1.1.6 This technical note brings together the key assessment information provided in the development consent order (DCO) application, with clear signposting to the source of this information and where further supporting details can be found within the		Mona Offshore Wind Project's alone impacts differ from the alone assessment and the in-	Offshore Wind Project alone assessment impacts differ between the alone assessment and the in-combination. The alone assessment methodology and incombination assessment methodology is fully explained within sections 1.3.3 and 1.3.4, respectively. The rationale for the differences is also discussed within
JNCC's relevant representations (RR 011 and RR 033, respectively) and writte representations (REP1-056; REP1-066/REP1-067, respectively), the Applicant has sought to present the EIA and HRA requested information in accordance with the SNCBs' advice alongside the Applicant's identified approach (based on a assessment of available evidence and those approaches used by other recently consented offshore wind farms) for determining impacts in the Environmental Statement and the HRA. 1.1.1.6 This technical note brings together the key assessment information provided in the development consent order (DCO) application, with clear signposting to the source of this information and where further supporting details can be found within the	verbal feedback received in meeting	NRW (A) confirming they are of the same	(A)'s comments, and refers to the specific
development consent order (DCO) application, with clear signposting to the source of this information and where further supporting details can be found within the	HU 1993 442 443 443 443 443 443 444 444 444 44	CC's relevant representations (RR 011 are presentations (REP1-056; REP1-066/REP1-0964) and HRA requested ICBs' advice alongside the Applicant's seesment of available evidence and those insented offshore wind farms) for determinatement and the HRA.	nd RR 033, respectively) and written 067, respectively), the Applicant has bed information in accordance with the identified approach (based on an approaches used by other recently ining impacts in the Environmental
	de thi	velopment consent order (DCO) application, s information and where further supporting	with clear signposting to the source of ng details can be found within the



requested in NRW's and the JNCC's representations made in the examination of the Mona Offshore Wind Project to date.

1.1.1.7 This supporting information is intended to give the SNCBs the information required to provide confidence that the EIA and HRA conclusions are robust. It is also intended to provide sufficient understanding of the potential impacts of the Mona Offshore Wind Project (alone and cumulatively/in combination with other plans and projects) for the SNCBs to confirm their position with respect to a conclusion of no significant effects and AEoSI beyond reasonable scientific doubt.

As outlined in Table 1.1 above, the Applicant has engaged with the JNCC and NRW on the scope and presentation of this supporting information note to ensure this sufficiently addresses the SNCBs concerns and the Examining Authority's Request for Further Information — Rule 17 (PD-012/PD-012a).

1.1.2 Considerations

- 1.1.2.1 The Applicant has worked to produce the numeric outputs requested by NRW(A) and the JNCC in relation to the ornithological assessments for the Mona Offshore Wind Project.
- 1.1.2.2 Available evidence suggests that the upper ranges of displacement and mortality rates (e.g. 70% displacement and 10% mortality) may be excessively precautionary (e.g. MacArthur Green, 2023; APEM, 2022; Peschko et al., 2020; Vanermen et al., 2016; Leopold et al., 2013). The use of both high levels of displacement and high levels of mortality results result in unrealistic outputs that are not supported by the available evidence. Assessments should be pragmatic and robust, but this is being compromised by the introduction of high levels of precaution and using of numbers at the most conservative end of the spectrum (e.g. 70% displacement and 10% mortality). This then compounds through addition, multiplication and modelling to produce modelling outputs that are -unrealistic. Given this, the Applicant feels that the viewing of the numbers in this document alone should be balanced with biological considerations and realistic scenarios.
- 1.1.2.3 The Applicant maintains that a scenario of 50% displacement and 1% mortality is both robust and precautionary for the purposes of the assessment. The Applicant does not consider that the most conservative scenarios presented (i.e. 70% displacement and 10% mortality rate) are a realistic worst-case scenario as this level of impact has not been evidenced at previous offshore wind projects such as Beatrice (reviewed by APEM, 2022). The Applicant also notes that in their written representations, both the JNCC and NRW have stated that they would not base their consideration of impact solely on the top of the range of potential impact.
- 1.1.2.4 Within the tables presented within this document the impacts have been rounded to one or two decimal places and therefore the 'annual total' shown within the table may not match equally to the sum of the bioseasonal impacts or individual projects due to this rounding.

1.1.3 Structure of this technical note

- 1.1.3.1 This technical note is set out in the following way, which, in the Applicant's view and following the advice from NRW(A) and the JNCC, provides the flow of information that the SNCBs require to have confidence in the assessments presented. This includes:
 - Section 1.1 provides the background to this technical note, its purpose and the
 consultation the Applicant has done to provide the SNCBs with the confidence
 that this technical note will provide them the clarity they require.



- Section 1.2 provides a brief summary of what has been included within the submitted EIA and HRA documents and where there is deviation from what the SNCBs have requested to be included. Section 1.2 also clarifies what is presented within the results section (section 1.4).
- Section 1.3 provides information which can be found in the application documents but has been represented within this technical note to show the flow of information required for the updated HRA apportioning. The following sections are included:
 - Section 1.3.2 presents the impacts from the displacement and collision assessments. This information is taken from Volume 6, Annex 5.2: Offshore Ornithology Displacement Technical Report (REP2-018F6.5.2 F03) and Volume 6, Annex 5.3: Offshore Ornithology Collision Risk Modelling Technical Report (REP2-020), respectively.
 - Section 1.3.3 presents the seasonal age-class apportioning taken from the site-specific DAS for the Mona Offshore Wind Project, which was used within the Mona Offshore Wind Project alone assessment. This information is taken from Volume 6, Annex 5.5: Offshore Ornithology Apportioning Technical Report (REP2-022).
 - Section 4.3.31.3.4 presents how the seasonal age-class apportioning has been undertaken for the in-combination and cumulative assessments.
 - Section 1.3.4.1 presents the baseline mortality rates required for each species.
 This information is taken from Volume 2, Chapter 5: Offshore Ornithology (REP2-016F2.5 F03).
 - Section 1.3.51.3.6 provides the method by which the <u>SPA</u> apportioning values for each <u>SPA</u> have been calculated. This information is taken from Volume 6, Annex 5.5: Offshore Ornithology Apportioning Technical Report (REP2-022). The SPA and species-specific apportioning values are presented in section 1.4.
- Section 1.4 provides the results of presenting the range of impacts from upper and lower confidence intervals at the EIA scale.
- Section 1.5 representspresents the apportioning results for all SPAs which are included within Appendix A of the HRA Stage 1 Screening Report (REP2-012). Section 1.5 replicates the tables from Appendix A of the HRA Stage 1 Screening Report (REP2-012) but with the added range of impacts as requested by the SNCBs.
 - Section 1.5.1 presents the displacement tables;
 - Section 1.5.2 presents the collision tables; and
 - Section 1.5.3 presents the in-combination tables (if required).
- Section 1.6 provides the PVAs which are required for the project alone or the project in-combination.
- Section 1.7 provides the conclusions when considering the full range of predicted impacts on species and undertaking PVAs when impacts predicted resulted in an increase in baseline mortality of >1%.



1.2 Summary of EIA / HRA information presented at application

1.2.1 **D**isplacement assessment

- 1.2.1.1 The full range (1 to 100% for both displacement and mortality rates) of predicted displacement impacts are presented within the individual species matrix tables for the project alone within Volume 6, Annex 5.2: Offshore Ornithology Displacement Technical Report (REP2 018F6.5.2 F03).
- 1.2.1.2 Within these matrix tables, the SNCBs advised displacement and mortality rates (Table 1-2) are included. The increase in mortality when using the SNCBsSNCB's advised displacement and mortality rates range are taken through to assessment in Volume 2, Chapter 5: Offshore Ornithology (REP2-016F2.5 F03) for both the project alone assessment and the cumulative assessment. The Applicant was able to conclude no significant impact alone and cumulatively when using the full range of displacement and mortality rates for all species included in the assessment (Table 5.116 of Volume 2, Chapter 5: Offshore Ornithology (REP2-016F2.5 F03)).
- 1.2.1.3 However, the proportion of the population which may undergo displacement and mortality presented in the HRA Stage 1 Screening (REP2-012) is based on the Applicant's identified displacement and mortality rates (50% displacement and 1% mortality for Atlantic puffin, black-legged kittiwake, common guillemot, Manx shearwater and razorbill and 70% displacement and 1% mortality for northern gannet).

 The values used within the Applicant's document replicated those adopted by recently consented windfarms in their consent applications.
- 1.2.1.4 The JNCC and NRW disagree with the use of the single value estimates in the HRA Stage 1 Screening (REP2-012) and the HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010) for analysis of likely significant effects and AEoSI (Table 1_1).
- 1.2.1.5 Therefore, the Applicant has presented further supporting information in this technical note and tabulated the apportioned impacts to SPAs in section 1.5.1 using the range of displacement and mortality values advised by SNCBs (as shown in Table 1-2).
- 1.2.1.6 The predicted displacement mortalities presented at application within Volume 6, Annex 5.2: Offshore Ornithology Displacement Technical Report (REP2-018F6.5.2 F03) are summarised in Table 1-3 using the range of displacement and mortality rates from Table 1-2. Table 1-9 to Table 1-13 present the apportioned displacement impacts for each SPA considered within the HRA Stage 1 Screening Report (REP2-012).
- 1.2.1.7 It should be noted that for the auk species (specifically common guillemot and razorbill) an alternative approach of 70% displacement and 2% mortality is presented alongside the minimum impact (30% displacement and 1%) and the maximum impact (70% displacement and 10% mortality), as these-parameters have recently been accepted and used by the Secretary of State within the HRAs for Hornsea Two/Three/Four, East Anglia One North, East Anglia Two, Norfolk Boreas, Norfolk Vanguard, Sheringham Shoal and Dudgeon Extension Projects (SEP and DEP).
- 1.2.1.8 The JNCC was the only SNCB involved in the Expert Working Groups for the Mona Offshore Wind Project that requested the Applicant provide a displacement assessment for black-legged kittiwake. Both NRW(A) and Natural England have stated there is insufficient evidence to undertake a displacement assessment for black-legged kittiwake. As requested by the JNCC, a displacement assessment for black-legged kittiwake is included in this technical note. The evidence that was presented



alongside the request for 30-70% displacement and 1-10% mortality (specifically, Peschko *et al.*, 2020; Vanermen *et al.*, 2016; Leopold *et al.*, 2013 within D.3.14 of Technical Engagement Plan Appendices - Part 1 (A to E) (APP-042)) does not -support the displacement and mortality rates suggested, with very high variability around the impacts (even some positive effects).

1.2.1.9 Therefore, for black-legged kittiwake, the Applicant is presenting an alternative approach of 30% displacement and 3% mortality which is in line with NatureScot guidance (NatureScot, 2023) and used for recent assessments within Scottish waters (e.g. Ossian Offshore Wind Farm and West of Orkney Wind Farm). Only if the incombination impact surpasses a >1% increase in baseline mortality when considering 30% displacement and 3% mortality, will a PVA then be presented (section 1.6).



Table 1-2: Displacement and mortality rates advised by the SNCBs and evidence of when this advice was received.

Species	SNCB advised displacement rate range and basis of the Applicant's EIA at application		SNCB advised mo and basis of the A application	ortality rates range applicant's EIA at	Specific request from the SNCBs to use these rates		
	JNCC	N R W	JNCC	NRW	JNCC	NRW	
Common guillemot	30 to 70%	30 to 70 %	1 to 10%	1 to 10%	JNCC did not disagree with using these	NRW confirmed that 30-70% displacement and 1-10% mortality	
Razorbill	30 to 70%	30 to 70 %	1 to 10%	1 to 10%	figures as presented in	for auks following EWG3 in	
Atlantic puffin	30 to 70%	30 to 70 %	1 to 10%	1 to 10%	D.3.9 of Technical Engagement Plan Appendices - Part 1 (A to E) (APP-042).	November 2022 (D.4.3 of Technical Engagement Plan Appendices - Part 1 (A to E) (APP-042)).	
Black- legged kittiwake	30 to 70%	No assessment required	1 to 10%	No assessment required	JNCC requested 30- 70% displacement and 1-10% mortality in June 2022 (D.3.14 of Technical Engagement Plan Appendices - Part 1 (A to E) (APP-042)).	NRW confirmed that no kittiwake assessment for displacement is required due to an insufficient evidence base (REP1-056).	
Manx shearwater	30 to 70%	30 to 70%	1 to 10%	1 to 10%	JNCC initially requested 1-10% displacement and 1-10% mortality in June 2022 (D.3.14 of Technical Engagement Plan Appendices - Part 1 (A to E) (APP-042)). This then changed to 'whole matrices' (D.4.4 in Technical Engagement Plan Appendices - Part 1 (A to E) (APP-042))	NRW initially stated 'there is currently no evidence for any particular range of displacement rates (1-10%, 30-70% or any other) for this species from offshore wind farms. NRW (A) welcome that the whole matrices will be presented in the PEIR. (D.4.3 of Technical Engagement Plan Appendices - Part 1 (A to E) (APP-042). Within their Written Representations (REP1-056), it was requested that 30-70% displacement and 1-10% mortality (as with auks) be used (REP1-056).	





Species	SNCB advised displacement rate range and basis of the Applicant's EIA at application		and basis of the Applicant's and basis of the Applicant's EIA at application			Specific request from the SNCBs to use these rates		
	JNCC	NRW	JNCC	N R W	JNCC	NRW		
Northern gannet	60 to 80%	1 to 10%	1 to 10%	1 to 10%	with using these	NRW confirmed that 60-80% displacement and 1-10% mortality for auks following EWG3 in November 2022 (D.4.3 of Technical Engagement Plan Appendices - Part 1 (A to E) (APP-042)) was appropriate.		



1.2.2 Collision risk assessment

- 1.2.2.1 Whilst the range of predicted collision impacts using 95% lower confidence interval (LCI) and upper confidence intervals (UCI) are presented within Volume 6, Annex 5.3: Offshore Ornithology Collision Risk Modelling Technical Report (REP2-020), the estimated increase in baseline mortalities in Volume 2, Chapter 5: Offshore Ornithology (REP2-016F2.5 F03) is solely based on the mean collision mortality.
- 1.2.2.2 Similarly to displacement, the collision mortalities presented in the HRA Stage 1 Screening (REP2-012) also used a single value estimate (mean collision mortality).
- 1.2.2.3 The JNCC and NRW disagree with the use of single value estimates in the HRA Stage 1 Screening (REP2-012) and HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010) for analysis of impacts on SPAs (Table 1-1).
- 1.2.2.4 Therefore, as recommended by the JNCC and NRW, the Applicant has presented further supporting information in this technical note. The range of predicted collision impacts presented at application (within Volume 6, Annex 5.3: Offshore Ornithology Collision Risk Modelling Technical Report (REP2-020)), at the EIA population scale, including the LCI and UCI, is presented in Table 1-6. The Applicant has populated the apportioned impacts to SPAs using the LCI and UCI in Table 1-13 to Table 1-18.
- 1.3 Information required to present impacts using a range-based approach
- 1.3.1.1 The following information is required to present impacts using a range-based approach including the apportioned impacts on SPAs (as presented within Appendix A of the HRA Stage 1 Screening Report (REP2-012)).

1.3.2 Project alone collision and displacement impacts

- 1.3.2.1 Table 1-3 presents the project alone predicted impacts from collision, displacement and collision and displacement combined (where required) for each species considered within this technical note. The information is taken from Volume 6, Annex 5.2: Offshore Ornithology Displacement Technical Report (REP2-018F6.5.2 F03) and Volume 6, Annex 5.3: Offshore Ornithology Collision Risk Modelling Technical Report (REP2-020), respectively.
- 1.3.2.2 The predicted mortalities from displacement are presented for the Applicant's identified rates (50% displacement and 1% mortality), followed by the SNCBs advised range of displacement and mortality rates in brackets (see Table 1-2 for further information).
- 1.3.2.3 The <u>modelled</u> mortalities from collisions are presented with the mean value outside the brackets and the <u>lower confidence interval (LCI)</u> and UCIsupper confidence interval (UCI) in brackets.
- 1.3.2.4 These predicted mortalitiesmortality estimates feed into the assessment tables presented in section 1.5.1 for displacement and section 1.4.1 and 1.5.2 for collisions.



Table 1-3: Predicted collision and displacement impacts during the operations and maintenance phase (all age classes).

Species	Season	Mortality - Collisions (using species- group avoidance rates) ¹	Mortality - Collisions (using species- specific avoidance rates) ²	Mortality - Displacement (see Table 1_2 for species-specific rates presented)3	Mortality - Combined (using species-group avoidance rates) ¹	Mortality - Combined (using species- specific avoidance rates) ²
Common guillemot	Breeding (March to July)	n/a -	n/a _	21 (13 to 295)	21 (13 to 295)	21 (13 to 295)
	Non-breeding (August to February)	n/a -	n/a -	19 (11 to 263)	19 (11 to 263)	19 (11 to 263)
Razorbill	Pre-breeding migration (January to March)	n/a -	n/a -	10 (6 to 135)	10 (6 to 135)	10 (6 to 135)
	Breeding (April to July)	n/a_	n/a_	0 (0 to 6)	0 (0 to 6)	0 (0 to 6)
	Post-breeding migration (August to October)	n/a -	n/a -	0 (0 to 6)	0 (0 to 6)	0 (0 to 6)
	Non-breeding (November to December)	n/a-	n/a-	2 (1 to 29)	2 (1 to 29)	2 (1 to 29)
Atlantic puffin	Breeding (April to August)	n/a_	n/a_	0 (0 to 1)	0 (0 to 1)	0 (0 to 1)
	Non-breeding (September to March)	n/a -	n/a -	0 (0 to 2)	0 (0 to 2)	0 (0 to 2)
Northern gannet (collisions corrected for	Pre-breeding (December to February)	0 (0 to 0)	n/a -	0 (0 to 2)	0 (0 to 2)	n/a -
70% macro avoidance ⁴)	Breeding (March to September)	1 (0 to 4)	n/a -	2 (2 to 20)	3 (2 to 24)	n/a _
	Post-breeding (October to November)	0 (0 to 0)	n/a -	0 (0 to 5)	0 (0 to 5)	n/a _
Northern fulmar	Pre-breeding (December)	0 (0 to 0)	n/a_	n/a <u>-</u>	0 (0 to 0)	n/a <u>-</u>





Species	Season	Mortality - Collisions (using species- group avoidance rates) ¹	Mortality - Collisions (using species- specific avoidance rates) ²	Mortality - Displacement (see Table 1 2 for species-specific rates presented) ³	Mortality - Combined (using species-group avoidance rates) ¹	Mortality - Combined (using species- specific avoidance rates) ²
	Breeding (January to August)	0 (0 to 2)	n/a_	n/a <u>-</u>	0 (0 to 2)	n/a_
	Post-breeding (September to October)	0 (0 to 0)	n/a _	n/a _	0 (0 to 0)	n/a -
	Non-breeding (November)	0 (0 to 0)	n/a_	n/a _	0 (0 to 0)	n/a _
Black-legged kittiwake	Pre-breeding (January to February)	9 (3 to 18)	3 (1 to 5)	3 (2 to 40)	12 (5 to 58)	6 (3 to 45)
	Breeding (March to August)	16 (6 to 32)	5 (2 to 9)	4 (2 to 51)	20 (8 to 83)	9 (4 to 60)
	Post-breeding (September to December)	8 (3 to 18)	3 (1 to 5)	3 (2 to 39)	12 (5 to 57)	6 (3 to 44)
Herring gull	Breeding (March to August)	0 (0 to 0)	0 (0 to 0)	n/a -	0 (0 to 0)	0 (0 to 0)
	Non-breeding (September to February)	1 (1 to 3)	1 (0 to 3)	n/a-	1 (1 to 3)	1 (0 to 3)
Lesser black-backed gull	Pre-breeding (March)	1 (0 to 2)	1 (0 to 1)	n/a_	1 (0 to 2)	1 (0 to 1)
	Breeding (April to August)	0 (0 to 1)	0 (0 to 1)	n/a_	0 (0 to 1)	0 (0 to 1)
	Post-breeding (September to October)	0 (0 to 0)	0 (0 to 0)	n/a <u>-</u>	0 (0 to 0)	0 (0 to 0)
	Non-breeding (November to February)	1 (0 to 2)	1 (0 to 1)	n/a -	1 (0 to 2)	1 (0 to 2)
Great black-backed gull	Breeding (March to August)	2 (1 to 3)	0 (0 to 1)	n/a_	2 (1 to 3)	0 (0 to 1)



Species	Season	Mortality - Collisions (using species- group avoidance rates) ¹	Mortality - Collisions (using species- specific avoidance rates) ²	Mortality - Displacement (see Table 1_2 for species-specific rates presented)3	Mortality - Combined (using species-group avoidance rates) ¹	Mortality - Combined (using species- specific avoidance rates) ²
	Non-breeding (September to February)	3 (1 to 7)	0 (0 to 1)	n/a_	3 (1 to 7)	0 (0 to 1)
Manx shearwater	Pre-breeding (March)	0 (0 to 0)	n/a_	0 (0 to 0)	0 (0 to 0)	0 (0 to 0)
	Breeding (April to August)	0 (0 to 0)	n/a_	6 (4 to 87)	6 (4 to 87)	6 (4 to 87)
	Post-breeding (September to October)	0 (0 to 0)	n/a -	0 (0 to 1)	0 (0 to 1)	0 (0 to 1)

¹ Species-group avoidance rates are 0.9928 for black-legged kittiwake, northern fulmar, northern gannet and Manx shearwater and 0.9939 for great black-backed gull, herring gull and lesser black-backed gull. The number outside the brackets is the mean predicted impact with the LCI and UCI presented in the brackets.

² Species-specific avoidance rates are 0.9952 for herring gull, 0.9954 for lesser black-backed gull, 0.9979 for black-legged kittiwake and 0.9991 for great black-backed gull. The number outside the brackets is the mean predicted impact with the LCI and UCI presented in the brackets.

³ The range of displacement rates used (within the brackets) is presented in Table 1-2. This is 30-70% displacement and 1-10% mortality for Atlantic puffin, common guillemot, razorbill, black-legged kittiwake and Manx shearwater and 60-80% displacement and 1-10% mortality for northern gannet. The figure outside the brackets uses the Applicant's identified rate, which is 50% displacement and 1% mortality for Atlantic puffin, common guillemot, razorbill, black-legged kittiwake and Manx shearwater and 70% displacement and 1% mortality for northern gannet.

⁴ The use of 70% macroavoidance has been agreed with the SNCBs (D3.13 of the Technical Engagement Plan Appendices – Part 1 (A to E) (APP-042)). The 70% macroavoidance has been applied to the inputted density estimates.



1.3.3 Seasonal age-class apportioning for the Mona Offshore Wind Project

- 1.3.3.1 The age-class apportioning values for the Mona Offshore Wind Project are presented in Table 1.4 of Volume 6, Annex 5.5: Offshore ornithology apportioning technical report (REP2-022). The Applicant has also submitted the Offshore Ornithology Apportioning Clarification Note (S D4 10) into Examination at Deadline 4. The Applicant confirms that during the breeding and non-breeding season, age-class was calculated from site-specific DAS, or if age-class identification was not possible from site-specific DAS then it was presumed that 100% of birds were adults.
- 1.3.3.2 The age-class apportioning values are represented in Table 1_4 to ensure a clear flow information and allow subsequent calculations of apportioned impacts from the Mona Offshore Wind Project in section 1.5.
- 1.3.3.3 The age-class apportioning values feed into the assessment tables presented in section 1.5.1 for displacement and section 1.4.1 and 1.5.2 for collisions.

Table 1--4: Seasonal age-class apportioning.

Species	Season	A d ult %	Immatures %
Atlantia muffin	Breeding (March to July)	<u>100%</u>	<u>0%</u>
Atlantic puffin	Non-breeding (August to February)	100%	<u>0%</u>
Comment willows	Breeding (March to July)	100%	0%
Common guillemot	Non-breeding (August to February)	100%	0%
Razorbill	Breeding (April to July)	100%	0%
Razorbili	Non-breeding (August to March)	100%	0%
Northern gennet	Breeding (March to September)	93.58%	6.42%
Northern gannet	Non-breeding (October to February)	96.43%	3.57%
Diagle language little color	Breeding (March to August)	95.36%	4.64%
Black-legged kittiwake	Non-breeding (September to February)	92.01%	7.99%
Handan of H	Breeding (March to August)	80.00%	20.00%
Herring gull	Non-breeding (September to February)	75.61%	24.39%
Larrantia di barta da III	Breeding (April to August)	81.82%	18.18%
Lesser black-backed gull	Non-breeding (September to March)	86.96%	13.04%
	Breeding (March to August)	83.33%	16.67%
Great black-backed gull	Non-breeding (September to February)	70.49%	29.51%
Managharanatan	Breeding (April to August)	100%	0%
Manx shearwater	Non-breeding (September to March)	100%	0%

1.3.4 Seasonal age-class apportioning for the cumulative and in-combination assessments

1.3.4.1 Within the cumulative and in-combination assessments the Applicant has used the proportions of immatures to adults within the Appendix A tables of Furness (2015) for all projects during the non-breeding season. As the impact occurs over a large spatial scale it is proportionate to undertake an assessment using these proportions. Furness (2015) covers the regional scale assessment and therefore these proportions are appropriate as they also cover the wider region. As presented within the Offshore



Ornithology Apportioning Clarification Note (S_D4_10), using the proportions of adults to immatures and a site apportioning value derived from the total adult population of a site divided by the total adult population of the BDMPS is in line with SNCB guidance on non-breeding season apportioning.

- 1.3.4.2 The SNCBs advised that when considering the age-class apportioning during the breeding season for all projects a precautionary approach would be to presume all birds are adults. However, the Applicant's preferred and more scientifically robust approach is to use the stable-age structure from Furness (2015). Use of the stable age structure from Furness (2015) has been used in multiple other consented offshore wind project assessments (e.g Awel y Môr, multiple Hornsea projects etc.), and is the basis for the Crown Estates' Round 4 Plan Level HRA.
- 1.3.4.3 The Applicant agrees with the SNCBs that the use of stable-age structure is not representative over the spatial scale of a single offshore wind project. However, as the spatial scale covered by the 17 projects within the in-combination and cumulative assessments covers a similar extent as the entire BDMPS (which Furness (2015) defined).
- 1.3.4.4 Stable-age structures have recently been used by both Natural England and NRW within their interim advice regarding demographic rates, EIA scale mortality rates and reference populations for use in offshore wind impact assessments using a similar method to Furness (2015) and therefore there is clear precedent for their use.
- 1.3.4.5 The Applicant does not consider it appropriate at this scale to consider all birds present at each site are adults within the in-combination and cumulative assessments. Where 100% of birds to be considered adults this would lead to inflated impacts, which provide no additional clarity on the risk to a specific site. No conclusion could be drawn as to the true, realistic impact on a population where this hyperinflated scenario is presented. Therefore, the Applicant has followed its preferred approach which is in line with all other offshore wind projects.

1.3.41.3.5 Baseline mortality rates used

4.3.4.1_1.3.5.1 Whilst the baseline mortality rates were presented in the application in Table 5.15 of Volume 2, Chapter 5: Offshore Ornithology (REP2_016F2.5 F03), the Applicant has again presented these rates in this supporting information technical note. This is to ensure a clear flow information and to allow for calculations of subsequent apportioned impacts in section 1.5.

1.3.4.21.3.5.2 These baseline mortality rates feed into the assessment tables presented in section 1.5.1 for displacement and section 1.4 and 1.5.2 for collisions.



Table 1-5: Baseline mortality rates (Horswill and Robinson, 2015).

Species	Age C	Age Class Survival Rate						A d ult
	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	su r vival r ate	mortality rate
Common guillemot	0.560	0.792	0.917	0.939	0.939	N/A-	0.939	0.061
Razorbill	0.630	0.630	0.895	0.895	N/A_	N/A-	0.895	0.105
Manx shearwater	0.870	0.870	0.870	0.870	0.870	N/A-	0.870	0.130
Northern gannet	0.424	0.829	0.891	0.895	0.895	N/A_	0.919	0.081
Black-legged kittiwake	0.790	0.854	0.854	0.854	N/A-	N/A-	0.854	0.146
European herring gull	0.798	0.834	0.834	0.834	0.834	N/A-	0.834	0.166
Lesser black-backed gull	0.820	0.885	0.885	0.885	0.885	N/A-	0.885	0.115
Great black-backed gull	0.798	0.930	0.930	0.930	0.930	N/A <u>-</u>	0.930	0.070

4.3.5 1.3.6 Apportioning values to individual SPAs

4.3.5.11.3.6.1 Whilst the apportioning values for each site and colony are presented in Volume 6, Annex 5.5: Offshore ornithology apportioning technical report (REP2-022), the Applicant has presented these values in this technical note for each SPA and species considered. This is to ensure a clear flow of information and to allow for calculations of apportioned impacts.

1.3.5.2 The apportioning values for each species, from each site during each bioseason are presented within the respective results table within section 1.5.

1.4 Additional EIA information as requested by the SNCBs

1.4.1 Inclusion of LCI and UCI collision impacts at the EIA population scale from the Mona Offshore Wind Project alone

- 1.4.1.1 Table 1_6 provides the UCI and LCI associated with the mean collision impacts which were presented in Volume 6, Annex 5.3: Offshore Ornithology Collision Risk Modelling Technical Report (REP2-020) but not subequentlysubsequently assessed within Volume 2, Chapter 5: Offshore Ornithology (REP2-016F2.5 F03) for the Mona Offshore Wind Project alone.
- 1.4.1.2 The population sizes presented Table 1-10 represent the smaller of the two population options, either the 'Foraging range breeding season population' or 'Regional breeding season population'; see Table 5.14 of Volume 2, Chapter 5: Offshore Ornithology (REP2-016F2.5 F03) for the differences between the two populations. The SNCBs advised that the 'Regional breeding season population' be presented; however it was agreed during the EPP that the smaller of the 'foraging range' or 'regional' populations could be used as a precaution. The Applicant can confirm that the smaller and, therefore most precautionary population is presented within Table 1-6. Whilst for Manx shearwater and northern gannet, the smallest population is the 'Regional breeding season population', for the rest of the species the 'Foraging range breeding season population' is the smallest population (Table 1-6).
- 1.4.1.3 Great black-backed gull during the breeding season is the only species which surpasses the >1% increase in baseline mortality (highlighted in bold text and yellow cell colour in Table 1-6) and therefore, a PVA has been presented within section 1.4.2.



1.4.1.4 When considering the range of LCI and UCI, the conclusions presented within Volume 2, Chapter 5: Offshore Ornithology (REP2-016F2.5 F03) remain valid with no change in magnitude of effect predicted, even when assessing the UCI, and therefore no change to the overall conclusions.



Table 1-6: Collision risk impacts at an EIA population scale (mean and 95% CIs presented in brackets).

Species	Season	Population	Baseline mo r tality	Mortality - Collisions when using species- group avoidance rates (LCL and UCI)	Mortality - Collisions when using species- specific avoidance rates (LCI-and-UCI)	Increase in baseline mortality (%) when using species-group avoidance rate (LCL and UCI)	Increase in baseline mortality (%) when using species-specific avoidance rate (LCL and UCI)
Northern gannet (collisions	Pre-breeding (December to February)	661,888	127,744	0.13 (0.04 to 0.33)	n/a_	0.000% (0.000% to 0.000%)	n/a _
corrected for 70% macro avoidance)	Breeding (March to September)	522,888	106,707 <u>1000,917</u>	1.42 (0.28 to 3.94)	n/a <u>-</u>	0.001% (0.000% to 0.004%)	n/a-
ŕ	Post-breeding (October to November)	545,954	105,369	0.15 (0.03 to 0.39)	n/a_	0.000% (0.000% to 0.000%)	n/a _
	Annual	661,888	127,744	1.70 (0.34 to 4.66)	n/a -	0.001% (0.000% to 0.004%)	n/a -
Northern fulmar	Breeding (January to August)	828,194	183,031	0.32 (0.00 to 1.94)	n/a_	0.000% (0.000% to 0.001%)	n/a_
	Pre-breeding (December)	54,403	12,023	0.03 (0 to 0.17)	n/a_	0.000% (0.000% to 0.001%)	n/a -
	Post-breeding (September to October)	828,194	183,031	No predicted collisions			
	Non-breeding (November)	556,367	122,957	0.01 (0.00 to 0.05)	n/a-	0.000% (0.000% to 0.000%)	n/a <u>-</u>
	Annual	828,194	183,031	0.36 (0.00 to 2.16)	n/a -	0.000% (0.000% to 0.001%)	n/a -
Black-legged kittiwake	Pre-breeding (January to February)	691,526	107,878	8.74 (3.09 to 18.15)	3.09 (0.93 to 5.44)	0.008% (0.003% to 0.017%)	0.003% (0.001% to 0.005%)



Species	Season	Population	Baseline mo r tality	Mortality - Collisions when using species- group avoidance rates (LC) and UCI)	Mortality - Collisions when using species- specific avoidance rates (LCI-and-UCI)	Increase in baseline mortality (%) when using species-group avoidance rate (LCL and UCL)	Increase in baseline mortality (%) when using species-specific avoidance rate (LCL-and-UCL)
	Breeding (March to August)	156,679	24,442	15.52 (5.68 to 31.60)	4.66 (1.70 to 9.48)	0.063% (0.023% to 0.129%)	0.019% (0.007% to 0.039%)
	Post-breeding (September to December)	911,586	142,207	8.41 (2.96 to 17.53)	2.52 (0.89 to 5.26)	0.006% (0.002% to 0.012%)	0.002% (0.001% to 0.004%)
	Annual	911,586	142,207	32.67 (11.73 to 67.27)	9.80 (3.52 to 20.18)	0.023% (0.008% to 0.047%)	0.007% (0.002% to 0.014%)
Herring gull	Breeding (March to August)	31,214	5,338	0.03 (0.01 to 0.06)	0.02 (0.1 to 0.05)	0.001% (0.000% to 0.001%)	0.000% (0.002% to 0.001%)
	Non-breeding (September to February)	173,299	29,634	1.48 (0.50 to 3.13)	1.18 (0.40 to 2.51)	0.005% (0.002% to 0.011%)	0.004% (0.001% to 0.008%)
	Annual	173,299	29,634	1.51 (0.51 to 3.91)	1.20 (0.41 to 2.55)	0.005% (0.002% to 0.013%)	0.004% (0.001% to 0.009%)
Lesser black- backed gull	Pre-breeding (March)	163,304	19,760	0.83 (0.26 to 1.94)	0.64 (0.20 to 1.49)	0.004% (0.001% to 0.010%)	0.003% (0.001% to 0.008%)
	Breeding (April to August)	109,785	13,284	0.33 (0.10 to 0.81)	0.25 (0.08 to 0.62)	0.002% (0.001% to 0.006%)	0.002% (0.001% to 0.005%)
	Post-breeding (September to October)	163,304	19,760	No predicted collisions			
	Non-breeding (November to February)	41,159	4,980	0.76 (0.23 to 1.69)	0.58 (0.18 to 1.30)	0.015% (0.005% to 0.034%)	0.012% (0.004% to 0.026%)





Species	Season	Population	Baseline mo r tality	Mortality - Collisions when using species- group avoidance rates (LCL and	Mortality - Collisions when using species- specific avoidance rates (LCI-and-UCI)	Increase in baseline mortality (%) when using species-group avoidance rate (LCL and UCL)	Increase in baseline mortality (%) when using species-specific avoidance rate (LCI and UCI)				
	Annual	163,304	19,760	1.92 (0.59 to 4.43)	1.47 (0.45 to 3.40)	0.010% (0.003% to 0.022%)	0.007% (0.002% to 0.017%)				
Great black- backed gull	Breeding (March to August)	1,496	142	1.67 (0.59 to 3.48)	0.25 (0.09 to 0.52)	1.1 76% (0 .4 1 5% to 2.45 1 %)	0.176% (0.063% to 0.366%)				
	Non-breeding (September to February)	17,742	1,685	3.16 (1.07 to 6.66)	0.47 (0.16 to 1.00)	0.188% (0.064% to 0.395%)	0.028% (0.009% to 0.059%)				
	Annual	17,742	1,685	4.83 (1.66 to 10.13)	0.72 (0.25 to 1.52)	0.287% (0.099% to 0.601%)	0.043% (0.015% to 0.090%)				
Manx	Pre-breeding (March)	1,580,895	205,516	No predicted collisions	No predicted collisions						
shearwater	Breeding (April to August)	1,821,544	236,800								
	Post-breeding (September to October)	1,580,895	205,516								
	Annual	2,372,485	308,423								



1.4.2 PVA for great black-backed gull from the **M**ona Offshore Win**d F**arm Project alone

- 1.4.2.1 When considering the mean and UCI of great black-backed gull collisions (Table 1_6), and the smaller 'foraging range' breeding season population, the increase in baseline mortality was >1% during the breeding season, and therefore, a PVA was undertaken (Table 1_7).
- 1.4.2.2 The PVA resulted in a predicted impact, which indicates that the median growth rate (and 95% confidence intervals) continues to be >1, and therefore, the population is predicted to increase in size under these modelled parameters for both impact scenarios (Table 1-7)-). As the PVA was run density independently, the counterfactual of growth rate (CGR) is a more useful metric than counterfactual of population size (CPS).
- 1.4.2.3 Given that the population is predicted to increase in size and the growth rate is not materially impacted when considering the mean and UCI collision estimates, there is no change to the magnitude of the impact on great black-backed gull during the breeding season. Therefore, the conclusions presented within Volume 2, Chapter 5: Offshore Ornithology (REP2-016F2.5 F03) remain valid.

Table 1:-7: PVA outputs for great black-backed gull during the breeding season.

Yea r	Impact scena r io	Simulated median Median adult population size	Percentage population Population change (%) since 2022	Median growth rate	2.5 percentile of simulated growth rate	97.5 percentile of simulated growth rate	Median counterfactu al of population sizeCPS	Median counterfa ctual of growth rateCGR
2030	Baseline	4,119	175%	1.1347	1.1171	1.1526	_	=
2030	Mean collisions	4,116	175%	1.1335	1.1155	1.1523	0. 9990<u>999</u>	0. 9988 <u>999</u>
2030	UCI collisions	4,108	175%	1.1317	1.1141	1.1495	0. 9976 <u>998</u>	0. 9974<u>997</u>
2065	Baseline	345,296	22,981%	1.1349	1.1339	1.1359		1
2065	Mean collisions	330,737	22,008%	1.1335	1.1324	1.1346	0. 9579 <u>958</u>	0. 9988 <u>999</u>
2065	UCI collisions	315,022	20,958%	1.1320	1.1309	1.1331	0. 9124<u>912</u>	0. 997 4 <u>997</u>

1.5 Additional HRA information as requested by the SNCBs

1.5.1 Apportioned displacement impacts from the Mona Offshore Wind Project alone

1.5.1.1 For ease of calculating the apportioning impact, when using the SNCB-advised displacement and mortality rates, the following steps have been taken using common guillemot from Cape Wrath SPA during the non-breeding season as an example. This uses the information presented in section 1.3, which replicates -previously submitted data that can be found in the relevant application documents (see section 1.3 for signposting to the relevant application documents).



- Take the total impact from Table 1₋3 which is 11 to 263 common guillemot from all age-classes.
- 2. Take the age-class apportioning percentage of adults from Table 1₋4. During non-breeding, it is assumed that 100% of birds are adults due to difficulties in identifying age classes from DAS for common guillemot.
- 3. Take the apportioning value from Table 1₋10 which is 7.92% of adult birds during the non-breeding season being from Cape Wrath SPA.
- Multiply steps 1, 2 and 3 to calculate the apportioned impact on common guillemot from Cape Wrath SPA. 11*100*0.0792 = 0.9 and 263*100*0.0792 = 20.8
- To calculate the increase in baseline mortality, take the colony size (from Table 1_10) and multiple by the average mortality rate (from Table 1_5) 54,718*0.061 = 3,338. Then divide the predicted impact (0.9 to 20.8) by the baseline mortality 3,338 = 0.03 to 0.62%.
- 1.5.1.2 The bio-seasons included within the following tables replicate the tables presented in Appendix A of the HRA Stage 1 Screening (REP2-012). Therefore, some sites do not have non-breeding season impacts apportioned as they represent less than 1% of the relevant Biologically Defined Minimum Population Scales (BDMPS) and were screened out of assessment during those periods (in line with SNCB advice following the fifth EWG meeting (see Technical Engagement Plan Appendices Part 1 (A to E) (APP-042)). However, within the in-combination tables (section 1.5.3) the complete annual impact is presented (including non-breeding impacts even when a site represents <1% of the BDMPS).



Atlantic puffin

- 1.5.1.3 When considering the full range of displacement impacts, the breeding season impact is 0 (0 to 1) birds and 0 (0 to 2) birds during the non-breeding season for all age-class birds (when considering the full range 30-70% displacement and 1-10% mortality). Apportioning one bird (the maximum impact during the breeding season) to the five SPAs considered in the HRA Stage 1 Screening (REP2-012) is not considered by the Applicant to be not proportionate to the potential risk posed to these SPAs as <1 bird per site would not equate to an AEoSI. Similarly, there were nine SPAs which represented more than >1% of the non-breeding BDMPS of Atlantic puffin. Apportioning two birds between nine SPAs again is not proportionate to the risk posed to these SPAs from the Mona Offshore Wind Project. Therefore, Atlantic puffin is not considered further in this document.
- As presented in Table 1-3, the breeding season impact for Atlantic puffin was 0 (0 to 1 birds) and during non-breeding season impact 0 (0 to 2) birds and the age-class apportioning is 100% of birds are considered adults (Table 1-4). The baseline mortality for Atlantic puffin is 0.094 (Table 1-5).

Table 1-8: Adult Atlantic puffin mortality due to displacement apportioned to SPAs.

<u>Site</u>	Colony count (year)	Baseline Mortality (0.094)	Bio season	Apportioning Value (%)	Predicted Impact (adult bird mortalities) ¹	Increase in baseline mortality ¹
Saltee Islands SPA	1,638 (2016/2021)	<u>154</u>	Breeding	<u>1.56%</u>	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.01%)
Lambay Island SPA	288 (2015)	27	Breeding	0.71%	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.03%)
Rathlin Island SPA	822 (2021)	<u>77</u>	Breeding	0.84%	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.01%)
Skomer, Skokholm and the Seas off	57,796 (2020/2021)	5,432	Breeding	63.70%	0.0 (0.0 to 0.7)	0.00% (0.00% to 0.01%)
Pembrokeshire/Sgomer. Sgogwm a Moroedd Penfro SPA			Non-breeding	3.47%	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.00%)
Hermaness, Saxa Vord and Valla Field SPA	47,322 (2002)	4.448	Non-breeding	1.51%	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00%)
Foula SPA	45,000 (2000)	4,230	Non-breeding	<u>1.44%</u>	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00%)
Forth Islands SPA	124,462 (2008/2010)	11.699	Non-breeding	3.49%	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00%)
Farne Islands SPA	79,924 (2013)	<u>7,513</u>	Non-breeding	2.24%	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00%)
Sule Kerry and Sule Stack	118,942 (1998)	11,181	Non-breeding	8.57%	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.00%)
St Kilda	284,528 (2000)	<u>26,746</u>	Non-breeding	20.49%	0.0 (0.0 to 0.3)	0.00% (0.00% to 0.00%)
Shiant Isles	130,340 (2000)	12,252	Non-breeding	9.39%	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.00%)



<u>Site</u>	Colony count (yea	<u>Paseline Mortality</u> (0.094)	<u>Bio season</u>	Apportioning Value (%)	Predicted Impact (adult bird mortalities) ¹	Increase in baseline mortality ¹
Flannan Isles	31,200 (2001)	2,933	Non-breeding	<u>2.25%</u>	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00%)

As the predicted project alone impact is predicted to increase the baseline mortality by <0.05% it is not deemed necessary to consider the Mona Offshore Wind Project within the in-combination assessment for all the SPAs considered (as set out in Figure 1.1 of HRA Stage 2 Information to Support an Appropriate Assessment. Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-10)).

Black-legged kittiwake

- 4.5.1.41.5.1.5

 As presented in Table 1-3, the breeding season impact for black-legged kittiwake was 4 (2 to 51), and the age-class apportioning was 95.36% of birds are adults (Table 1-4). During the spring migration season impact for black-legged kittiwake was 3 (2 to 40) birds and 3 (2 to 39) during the autumn migration season (Table 1-3). The age-class apportioning was 92.01% of birds are adults during both the spring and autumn migration seasons (Table 1-4). The baseline mortality for black-legged kittiwake is 0.146 (Table 1-5).
- 1.5.1.6 Table 1.8 Sites which are predicted to be impacted by an increase of >0.05%, and therefore require an in-combination assessment, are highlighted in yellow within Table 1-9.

<u>Table 1-9</u>: Adult black-legged kittiwake mortality due to displacement apportioned to SPAs.

Site	Colony count (year)	Baseline Mortality (0.146)	Bio season	Appo r tioning Value (%)	Predicted Impact (adult bird mortalities) ¹	Increase in baseline mortality ¹	Predicted impact (adult bird mortalities, 30% displacement and 3% mortality) ²	Increase in baseline mortality (30% and 3%)mortality²
Lambay Island SPA	6,640 (2015)	969.4	Breeding	3.78	0.1 (0.1 to 1.8)	0.01% (0.01% to 0.19%)	0.4	0.04%
Rathlin Island SPA	27,534 (2021)	4,020.0	Breeding	4.91	0.2 (0.1 to 2.4)	0.00% (0.00% to 0.06%)	0.5	0.01%

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Site	Colony count (yea r)	Baseline Mortality (0.146)	Bio season	Appo r tioning Value (%)	Predicted Impact (adult bird mortalities) ¹	Inc r ease in baseline mo r tality ¹	Predicted impact (adult bird mortalities, 30% displacement and 3% mortality).	Increase in baseline mortality (30% and 3%)mortality ²
			Post-breeding	1.91	0.1 (0.0 to 0.7)	0.00% (0.00% to 0.03%)	0.1	0.01%
			Pre-breeding	3.37	0.1 (0.1 to 1.2)	0.00% (0.00% to 0.05%)	0.3	0.01%
Ireland's Eye SPA	3,100 (2015)	4 52.6 453	Breeding	1.59	0.1 (0.0 to 0.8)	0.01% (0.01% to 0.17%)	0.2	0.04%
Howth Head Coast SPA	3,586 (2015)	523.6 <u>524</u>	Breeding	1.84	0.1 (0.0 to 0.9)	0.01% (0.01% to 0.17%)	0.2	0.04%
Wicklow Head SPA	1,348 (2022)	196.8 <u>197</u>	Breeding	0.56	0.0 (0.0 to 0.3)	0.01% (0.01% to 0.14%)	0.1	0.03%
Helvick Head to Ballyquin SPA	130 (2018)	19 .0	Breeding	0.01	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.03%)	0.0	0.01%
Saltee Islands SPA	1,690 (2013)	246.7 247	Breeding	0.22	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.04%)	0.0	0.01%
North Colonsay and Western Cliffs SPA	9,361 (2023)	1, 366.7 <u>367</u>	Breeding	0.85	0.0 (0.0 to 0.4)	0.00% (0.00% to 0.03%)	0.1	0.01%
Ailsa Craig SPA	980 (2021)	143.1	Breeding	0.30	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.10%)	0.0	0.02%
			Post-breeding	0.12	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.03%)	0.0	0.01%
			Pre-breeding	0.21	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.05%)	0.0	0.01%
Skomer, Skokholm and	2,014 (2022)	294.0	Breeding	0.30	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.05%)	0.0	0.01%
the Seas off Pembrokeshire/S			Post-breeding	0.25	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.03%)	0.0	0.01%
gomer, Sgogwm			Pre-breeding	0.45	0.0 (0.0 to 0.2)	0.00% (0.00% to 0.05%)	0.0	0.01%



Site	Colony count (yea r)	Baseline Mortality (0.146)	Bio season	Appo r tioning Value (%)	Predicted Impact (adult bird mortalities) ¹	Inc r ease in baseline mo r tality ¹	Predicted impact (adult bird mortalities, 30% displacement and 3% mortality)	Increase in baseline mortality (30% and 3%)mortality ²
a Moroedd Penfro SPA								
North Caithness Cliffs SPA	20,300 (2000)	2,964	Post-breeding	0.81	0.0 (0.0 to 0.3)	0.00% (0.00% to 0.01%)	0.1	0.00%
			Pre-breeding	1.62	0.1 (0.0 to 0.6)	0.00% (0.00% to 0.02%)	0.1	0.00%
East Caithness Cliffs SPA	80,820 (1999)	11,800	Post-breeding	3.24	0.1 (0.1 to 1.2)	0.00% (0.00% to 0.01%)	0.2	0.00%
			Pre-breeding	6.45	0.2 (0.1 to 2.4)	0.00% (0.00% to 0.02%)	0.5	0.00%
Troup, Pennan and Lions Heads	29,792 (2007)	4,350	Post-breeding	1.19	0.0 (0.0 to 0.4)	0.00% (0.00% to 0.01%)	0.1	0.00%
SPA			Pre-breeding	2.38	0.1 (0.0 to 0.9)	0.00% (0.00% to 0.02%)	0.2	0.00%
Buchan Ness to Collieston SPA	25,084 (2007)	3,662	Post-breeding	1.01	0.0 (0.0 to 0.4)	0.00% (0.00% to 0.01%)	0.1	0.00%
			Pre-breeding	2.00	0.1 (0.0 to 0.7)	0.00% (0.00% to 0.02%)	0.2	0.00%
Fowlsheugh SPA	18,674 (2012)	2,726	Post-breeding	0.75	0.0 (0.0 to 0.3)	0.00% (0.00% to 0.01%)	0.1	0.00%
			Pre-breeding	1.49	0.1 (0.0 to 0.5)	0.00% (0.00% to 0.02%)	0.1	0.00%
Flamborough and Filey Coast SPA	75,234 (2008)	10,984	Post-breeding	3.02	0.1 (0.1 to 1.1)	0.00% (0.00% to 0.01%)	0.2	0.00%
Ť			Pre-breeding	6.01	0.2 (0.1 to 2.2)	0.00% (0.00% to 0.02%)	0.5	0.00%
Cape Wrath SPA	20,688 (2000)	3,020	Post-breeding	2.49	0.1 (0.0 to 0.9)	0.00% (0.00% to 0.03%)	0.2	0.01%



Site	Colony count (yea r)	Baseline Mortality (0.146)	Bio season	Appo r tioning Value (%)	Predicted Impact (adult bird mortalities) ¹	Inc r ease in baseline mo r tality ¹	Predicted impact (adult bird mortalities: 30% displacement and-3% mortality:	Increase in baseline mortality (30% and 3%)mortality ²
			Pre-breeding	4.40	0.1 (0.1 to 1.6)	0.00% (0.00% to 0.05%)	0.4	0.01%
North Colonsay and Western	11,126 (2000)	1,624	Post-breeding	1.34	0.0 (0.0 to 0.5)	0.00% (0.00% to 0.03%)	0.1	0.01%
Cliffs SPA			Pre-breeding	2.37	0.1 (0.0 to 0.9)	0.00% (0.00% to 0.05%)	0.2	0.01%
West Westray SPA	24,110 (2007)	3,520	Post-breeding	1.93	0.1 (0.0 to 0.7)	0.00% (0.00% to 0.02%)	0.1	0.00%

¹ Values represent 50% displacement and 1% mortality (30% displacement and 1% mortality - 70% displacement and 10% mortality)

As the project alone impact is predicted to increase the baseline mortality by <0.05% it is not deemed necessary to consider the Mona Offshore Wind Project within the in-combination assessment for several of the SPAs considered. However the predicted impact on Ailsa Craig SPA, Rathlin Island SPA, Lambay Island SPA, Ireland's Eye SPA, Howth Head Coast SPA, Wicklow Head SPA, Cape Wrath SPA, North Colonsay and Western Cliffs SPA and Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA is >0.05% (when considering the highest displacement and mortality rates) and therefore these sites are considered as part of the in-combination assessments (section 1.5.3).

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² Values represent 30% displacement and 3% mortality which is in line with NatureScot guidance on black-legged kittiwake displacement assessment (NatureScot, 2023)



Common guillemot

- 4.5.1.51.5.1.8 As presented in Table 1-3, the non-breeding season impact for common guillemot was 19 (11 to 263) and the age-class apportioning is 100% of birds are considered adults (Table 1-4). The baseline mortality for common guillemot is 0.061 (Table 1-5).
- 4.5.1.61.5.1.9 Within Table 1-10, the displacement impact is also considered using a 70% displacement rate and a 2% mortality rate alongside the SNCBs advised range, which is in line with recent HRAs undertaken by the Secretary of State for offshore wind projects within the North Sea (e.g Hornsea Two/Three/Four, East Anglia One North, East Anglia Two, Norfolk Boreas, Norfolk Vanguard, SEP and DEP).
- 1.5.1.10 Sites which are predicted to be impacted by an increase of >0.05%, and therefore require an in-combination assessment, are highlighted in yellow within Table 1-10.

Table 1,-10: Adult non-breeding common guillemot mortality due to displacement apportioned to SPAs during the non-breeding bioseason.

SPA	Colony Count (year)	Baseline mortality (0.061)	Apportioning value (%)	Predicted Impact (adult bird mortalities) ¹	Inc r ease in baseline mo r tality ¹	Predicted Impact (adult bird mortalities, 70% displacement, 2% mortality)	Increase in baseline mortality (70% displacement, 2% mortality)mortali ty ²
Sule Skerry and Sule Stack SPA	15,266 (1998)	931	2.21	0.4 (0.2 to 5.8)	0.045% (0.03% to 0.62%)	1.17	0.13%
North Rona and Sula Sgeir SPA	10,000 (1998)	610	1.45	0.3 (0.2 to 3.8)	0.045% (0.03% to 0.62%)	0.77	0.13%
Cape Wrath SPA	54,718 (2000)	3,338	7.92	1.5 (0.9 to 20.8)	0.045% (0.03% to 0.62%)	4.20	0.13%
Handa SPA	75,986 (1998)	4,635	11.00	2.1 (1.2 to 28.9)	0.045% (0.03% to 0.62%)	5.83	0.13%
Shiant Isles SPA	10,296 (1999)	628	1.49	0.3 (0.2 to 3.9)	0.045% (0.03% to 0.62%)	0.79	0.13%
Flannan Isles SPA	19,614 (1998)	1,196	2.84	0.5 (0.3 to 7.5)	0.045% (0.03% to 0.62%)	1.51	0.13%
St Kilda SPA	31,400 (1999)	1,915	4.55	0.9 (0.5 to 12.0)	0.045% (0.03% to 0.62%)	2.41	0.13%



SPA	Colony Count (year)	Baseline mortality (0.061)	Apportioning value (%)	Predicted Impact (adult bird mortalities) ¹	Inc r ease in baseline mo r tality ¹	Predicted Impact (adult bird mortalities, 70% displacement, 12% mortality)	Increase in baseline mortality (70% displacement, 2% mortality)mortality²
Canna and Sanday SPA	7,826 (1999)	477	1.13	0.2 (0.1 to 3.0)	0.045% (0.03% to 0.62%)	0.60	0.13%
Mingulay and Berneray SPA	27,054 (2003)	1,650	3.92	0.7 (0.4 to 10.3)	0.045% (0.03% to 0.62%)	2.08	0.13%
North Colonsay and Western Cliffs SPA	27,000 (2000)	1,647	4.11	0.8 (0.5 to 10.8)	0.047% (0.03% to 0.66%)	2.18	0.13%
Ailsa Craig SPA	10,494 (2013)	640	1.60	0.3 (0.2 to 4.2)	0.047% (0.03% to 0.66%)	0.85	0.13%
Rathlin Island SPA	174,796 (2011)	10,663	26.64	5.1 (2.9 to 70.1)	0.047% (0.03% to 0.66%)	14.12	0.13%
Skomer, Skokholm and the Seas off Pembrokeshire/Sgo mer, Sgogwm a Moroedd Penfro SPA	32,600 (2013)	1,989	4.47	0.8 (0.5 to 11.8)	0.043% (0.02% to 0.59%)	2.37	0.12%

¹ Values represent 50% displacement and 1% mortality (30% displacement and 1% mortality – 70% displacement and 10% mortality) ² Values represent 70% displacement and 2% mortality

As the project alone impact is predicted to increase the baseline mortality by >0.05% it is deemed necessary to consider the Mona Offshore Wind Project within the in-combination assessment for all of the SPAs considered (section 1.5.3). 1.5.1.11



Northern Gannet

4.5.1.71.5.1.12 As presented in Table 1-3, the breeding season impact for northern gannet was 2 (2 to 20), and the age-class apportioning was 93.58% of birds are adults (Table 1-4). During post-breeding season, the impact for northern gannet was 0 (0 to 2) birds and 0 (0 to 5) birds for the pre-breeding season (Table 1-3). The age-class apportioning was 96.43% of birds are adults during both the pre-and post-breeding seasons (Table 1-4). The baseline mortality for northern gannet is 0.081 (Table 1-5).

1.5.1.13 Table 1.10 Sites which are predicted to be impacted by an increase of >0.05%, and therefore require an in-combination assessment, are highlighted in yellow within Table 1-11.

Table 1-11: Adult northern gannet mortality due to displacement apportioned to SPAs.

Site	Colony count (yea r)	Baseline Mortality (0.081)	Bio season	Appo r tioning Value (%)	Predicted Impact (adult bird mortalities, 60 % displacement and)1% mortality to 80%-displacement and 40% mortality)	Increase in baseline mortality (per bio season) mortality ¹
	00.450		Breeding	56.16	1.0 to 10.5	0.02% to 0.19%
Ailsa Craig SPA	66,452 (2014)	5, 382.6 383	Post-breeding	17.06	0.0 to 0.8	0.00% to 0.02%
	(2014)		Pre-breeding	13.86	0.0 to 0.3	0.00% to 0.01%
	70.000		Breeding	17.61	0.3 to 3.3	0.01% to 0.06%
Grassholm SPA	72,022 (2015)	5, 833.8 834	Post-breeding migration	24.71	0.0 to 1.2	0.00% to 0.02%
	(2013)		Pre-breeding	20.07	0.0 to 0.4	0.00% to 0.01%
Saltee Islands SPA	9,444 (2013)	765 .0	Breeding	2.82	0.1 to 0.5	0.01% to 0.07%
Skelligs SPA	70,588 (2014)	5, 717.6 718	Breeding	4.37	0.1 to 0.8	0.00% to 0.01%
	100.000		Breeding	5.04	0.1 to 0.9	0.00% to 0.01%
St Kilda SPA	120,636 (2014)	9, 771.5 772	Post-breeding migration	33.75	0.0 to 1.6	0.00% to 0.02%
	(2014)		Pre-breeding	30.46	0.0 to 0.6	0.00% to 0.01%
Hermaness, Saxa	48,706		Post-breeding migration	3.06	0.0 to 0.1	0.00% to 0.00%
Vord and Valla Field SPA	(2008)	3,945	Pre-breeding	3.73	0.0 to 0.1	0.00% to 0.00%
Noss SPA	19,534	1,582	Post-breeding migration	1.23	0.0 to 0.1	0.00% to 0.00%
11022 OF A	(2008)	1,502	Pre-breeding	1.50	0.0 to 0.0	0.00% to 0.00%

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Site	Colony count (yea r)	Baseline Mortality (0.081)	Bio season	Appo r tioning Value (%)	Predicted Impact (adult bird mortalities, 60 % displacement and 11% mortality to 80%-displacement and 10% mortality)	Increase in baseline mortality (per bio season) mortality
Sule Skerry and	0.350 (3004)	757	Post-breeding migration	2.65	0.0 to 0.1	0.00% to 0.02%
Sule Stack SPA	9,350 (2004)	151	Pre-breeding	2.39	0.0 to 0.0	0.00% to 0.01%
North Rona and	18,450	1,494	Post-breeding migration	5.22	0.0 to 0.3	0.00% to 0.02%
Sula Sgeir SPA	(2004)	1,434	Pre-breeding	4.71	0.0 to 0.1	0.00% to 0.01%

¹ Values represent 60 % displacement and 1% mortality to 80% displacement and 10% mortality

As the project alone impact is predicted to increase the baseline mortality by <0.05% it is not deemed necessary to consider the Mona Offshore Wind Project within the in-combination assessment for several of the SPAs considered. However, the predicted displacement impact on Ailsa Craig SPA, Grassholm SPA and Saltee Islands SPA is >0.05% (when considering the highest displacement and mortality rates) and therefore these sites are considered as part of the in-combination assessments (section 1.5.3).



Manx shearwater

4.5.1.81.5.1.15 As presented in Table 1-3, the breeding season impact for Manx shearwater was 6 (4 to 87), and the age-class apportioning was 100% of birds are adults (Table 1-4). During pre-breeding season, the impact for Manx shearwater was 0 (0 to 0) birds, and 0 (0 to 1) birds for the post-breeding season (Table 1-3). The age-class apportioning was 100% of birds are adults during both the pre- and post-breeding seasons (Table 1-4). The baseline mortality for Manx shearwater is 0.130 (Table 1-5).

1.5.1.16 Table 1.11. Sites which are predicted to be impacted by an increase of >0.05%, and therefore require an in-combination assessment, are highlighted in yellow within Table 1-12.

Table 1-12. Adult Manx shearwater mortality due to displacement apportioned to SPAs.

Site	Colony count (yea r)	Baseline Mortality (0.130)	Bio season	Appo r tioning Value (%)	Predicted Impact (adult bird mortalities) ¹	Increase in baseline mortality ¹
Glannau Aberdaron ac Ynys Enlli/Aberdaron	32,366 (2001)	4, 207.6 208	Breeding	11.34	0.7 (0.5 to 9.9)	0.02% (0.01% to 0.23%)
Coast and Bardsey Island SPA	32,300 (2001)	4, 201.0 200	Post-breeding	3.26	0.0 (0.0 to 0.4)	0. 0 00% (0.00% to 0.01%)
Copeland Islands SPA	9,700 (2007)	1,261 .0	Breeding	2.20	0.1 (0.1 to 1.9)	0.01% (0.01% to 0.15%)
Cruagh Island SPA	6,572 (2001)	854.4	Breeding	0.17	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.02%)
Blasket Islands SPA	39,068 (2001)	5, 078.8 <u>079</u>	Breeding	0.75	0.0 (0.0 to 0.7)	0.00% (0.00% to 0.01%)
Skelligs SPA	1,476 (2001)	191.9 <u>192</u>	Breeding	0.03	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.01%)
Deenish Island and Scariff Island SPA	4,622 (2000)	600.9 <u>601</u>	Breeding	0.09	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.01%)
			Breeding	7.01	0.4 (0.3 to 6.1)	0.00% (0.00% to 0.02%)
Rum SPA	240,000 (2001)	31,200 .0	Pre-breeding	24.19	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00%)
			Post-breeding	24.19	0.0 (0.2 to 3.1)	0.00% (0.00% to 0.01%)
Skomer, Skokholm and the Seas off	910,312 (2018)	118, 340.6<u>341</u>	Breeding	74.975	4.5 (3.0 to 65.2)	0.00% (0.00% to 0.06%)

Site	Colony count (yea r)	Baseline Mortality (0.130)	Bio season	Appo r tioning Value (%)	Predicted Impact (adult bird mortalities) ¹	Inc r ease in baseline mo r tality ¹
Pembrokeshire/Sgomer, Sgogwm a Moroedd			Pre-breeding	70.54	0,0 (0.0 to 0.0)	0.00% (0.00% to 0.00%)
Penfro SPA			Post-breeding	70.54	0.0 (0.7 to 9.2)	0.00% (0.00% to 0.01%)
St Kilda SPA	9,604 (1999)	1.249	Pre-breeding	0.97	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00%)
St Kilua SFA	9,604 (1999)	1,249	Post-breeding	0.97	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.01%)

¹ Values represent 50% displacement and 1% mortality (30% displacement and 1% mortality - 70% displacement and 10% mortality)

As the project alone impact is predicted to increase the baseline mortality by <0.05% it is not deemed necessary to consider the Mona Offshore Wind Project within the in-combination assessment for several of the SPAs considered. However the predicted impact on Glannau Aberdaron ac Ynys Enlli/Aberdaron Coast and Bardsey Island SPA, Copeland Islands SPA and Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA is >0.05% and therefore these sites are considered as part of the in-combination assessments (section 1.5.3).



Razorbill

- 4.5.1.91.5.1.18 As presented in Table 1-3, the migration season impact for razorbill was 10 (6 to 141) and 2 (1 to 29) during the winter. The age-class apportioning is 100% of birds are considered adults (Table 1-4). The baseline mortality for razorbill is 0.105 (Table 1-5).
- 4.5.1.10 Within Table 1-13, the displacement impact is also considered using a 70% displacement rate and a 2% mortality rate alongside the SNCBs advised range, which is in line with recent HRAs undertaken by the Secretary of State for offshore wind projects within the North Sea (e.g Hornsea Three/Four, DEP and SEP).
- 1.5.1.20 Table 1.12Sites which are predicted to be impacted by an increase of >0.05%, and therefore require an in-combination assessment, are highlighted in yellow within Table 1-13.

Table 1-13: Adult non-breeding razorbill mortality due to displacement apportioned to SPAs.

SPA	Colony count (year)	Baseline Mortality (0.105)	Bio season	Appo r tioning value (%)	Predicted Impact (adult bird mortalities) ¹	Increase in baseline mortality ¹	Predicted Impact (no.adult bird mortalities, 70% displacementand 2% mortality)	baseline mortality (70% displacement
Cape Wrath SPA	4,180	439	Migration seasons	1.29%	0.1 (0.1 to 1.8)	0.03% (0.02% to 0.42%)	0.18	0.04%
Cape Wiatii SFA	(2000)	439	Winter	0.93%	0.0 (0.0 to 0.3)	0.00% (0.00% to 0.06%)	0.13	0.03%
Handa SPA	10,330	1,085	Migration seasons	3.19%	0.3 (0.2 to 4.5)	0.03% (0.02% to 0.42%)	0.45	0.04%
naliua SPA	(2010)	1,000	Winter	2.31%	0.0 (0.0 to 0.7)	0.00% (0.00% to 0.06%)	0.32	0.03%
Shiant Isles SPA	8,496	892	Migration seasons	2.63%	0.3 (0.2 to 3.7)	0.03% (0.02% to 0.42%)	0.37	0.04%
SHIAIR ISIES SFA	(2008)	092	Winter	1.90%	0.0 (0.0 to 0.5)	0.00% (0.00% to 0.06%)	0.27	0.03%
Mingulay and Berneray	20,222	0.400	Migration seasons	6.25	0.6 (0.4 to 8.8)	0.03% (0.02% to 0.42%)	0.88	0.04%
SPA	(2009)	2,123	Winter	4.51%	0.1 (0.0 to 1.3)	0.00% (0.00% to 0.06%)	0.63	0.03%
Rathlin Island SPA	30,786 (2011)	3,233	Migration seasons	9.52%	1.0 (0.6 to 13.4)	0.03% (0.02% to 0.42%)	1.33	0.04%



SPA		Baseline Mortality (0.105)	Bio season	Appo r tioning value (%)	Predicted Impact (adult bird mortalities) ¹	Inc r ease in baseline mo r tality ¹	Predicted Impact (no.adult bird mortalities, 70% displacementand 12%-mortality)	baseline mortality (70% displacement
			Winter	6.87%	0.1 (0.1 to 2.0)	0.00% (0.00% to 0.06%)	0.96	0.03%
Skomer, Skokholm and the Seas off	12,002		Migration seasons	3.71%	0.4 (0.2 to 5.2)	0.03% (0.02% to 0.42%)	0.52	0.04%
Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA	(2013)	7 7 7611	Winter	2.01%	0.0 (0.0 to 0.6)	0.00% (0.00% to 0.05%)	0.28	0.02%
Flannon Jalos CDA	2,102	221	Migration seasons	0.65%	0.1 (0.0 to 0.9)	0.03% (0.02% to 0.42%)	0.09	0.04%
Flannan Isles SPA	(1998)		Winter	0.47%	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.06%)	0.09	0.03%

¹ Values represent 50% displacement and 1% mortality (30% displacement and 1% mortality — 70% displacement and 10% mortality)

1.5.1.21 As the project alone impact is predicted to increase the baseline mortality by >0.05% it is deemed necessary to consider the Mona Offshore Wind Project within the in-combination assessment for all of the SPAs considered (section 1.5.3).

² Values represent 70% displacement and 2% mortality



1.5.2 Apportioned collision impacts from the Mona Offshore Wind Project alone

1.5.2.1 The bio-seasons bioseasons included within following tables replicate the tables presented in Appendix A of the HRA Stage 1 Screening (REP2-012). Therefore, some Some sites do not have non-breeding season impacts apportioned as they represent less than 1% of the relevant BDMPS and were screened out of assessment during those periods (in line with SCNB advice during the EWG (see Technical Engagement Plan Appendices - Part 1 (A to E) (APP-042)). However, within the in-combination tables (section 1.5.3) the complete annual impact is presented (including non-breeding impacts even when a site is <1% of the BDMPS) to provide a complete annual of the impact.).

Black-legged kittiwake

- 1.5.2.2 As presented in Table 1_6 the breeding season impact for black-legged kittiwake was 15.52 (5.68 to 31.60) when using the species-group avoidance rate and the age-class apportioning was 95.36% of birds are adults (Table 1_4). During the spring migration season impact for black-legged kittiwake was 8.74 (3.09 to 18.15) birds and 8.41 (2.96 to 17.53) during the autumn migration season (Table 1-6). The age-class apportioning was 92.01% of birds are adults during both the spring and autumn migration seasons (Table 1-4).
- 1.5.2.3 Table 1.13 Sites which are predicted to be impacted by an increase of >0.05%, and therefore require an in-combination assessment, are highlighted in yellow within Table 1-14.

<u>Table</u> 1-14: Adult black-legged kittiwake apportioned expected SPA mortality due to collision using species-group avoidance rate-(0.9928).

Site	Colony count	Baseline M o r tality (0.146)	Bio season	Appo r tioning Value (%)	Mean (LCI and UCI) of collision impacts	Increase in baseline mortality mean (LCI and UCI) (%)
Lambay Island SPA	6,640 (2015)	969 .4	Breeding	3.78	0. <u>6 (</u> 0.2 to 0.2 1.1)	0.06% (0.02% to 0.12%%)
	07.504		Breeding	4.91	0.0 (0.0 to 0. 2 0)	0.01% (0.00% to 0. 04% 02%)
Rathlin Island SPA	27,534 (2021)	4,020 .0	Post-breeding	1.91	0.1 (0.1 to 0.3)	0.01% (0.00% to 0.01%%)
	(2021)		Pre-breeding	3.37	0.3 (0.1 to 0.6)	0.01% (0.00% to 0.02%%)
Ireland's Eye SPA	3,100 (2015)	452.6 <u>453</u>	Breeding	1.59	0. <u>2 (</u> 0 <u>.1</u> to 0.4 <u>5)</u>	0.05% (0.02% to 0.11%%)
Howth Head Coast SPA	3,586 (2015)	523.6 <u>524</u>	Breeding	1.84	0.3 (0.1 to 0.6)	<u>0.05% (</u> 0.02% to 0.11 <u>%%)</u>
Wicklow Head SPA	1,348 (2022)	196.8 <u>197</u>	Breeding	0.56	- <u>0.1 (</u> 0.0 to 0. 0 2)	<u>0.04% (</u> 0.02% to 0.09 <u>%%)</u>



Site	Colony count	Baseline Mortality (0.146)	Bio season	Apportioning Value (%)	Mean (LCI and UCI) of collision impacts	Increase in baseline mortality mean (LCI and UCI) (%)
Helvick Head to Ballyquin SPA	130 (2018)	19 .0	Breeding	0.01	<u>0.0 (</u> 0.0 to 0.0 <u>)</u>	0.01% (0.00% to 0.02%%)
Saltee Islands SPA	1,690 (2013)	246.7 <u>247</u>	Breeding	0.22	0.0 (0.0 to 0. 0 1)	0.01% (0.00% to 0.03%%)
North Colonsay and Western Cliffs SPA	9,361 (2023)	1, 366.7 <u>367</u>	Breeding	0.85	<u>0.1 (</u> 0.0 to 0. 0 3)	0.01% (0.00% to 0.02%%)
			Breeding	0.30	<u>0.0 (</u> 0.0 to 0. 0 1)	0.03% (0.01% to 0.06%%)
Ailsa Craig SPA	980 (2021)	143 .1	Post-breeding	0.12	<u>0.0 (</u> 0.0 to 0.0 <u>)</u>	0.01% (0.00% to 0.01%%)
			Pre-breeding	0.21	0.0 (0.0 to 0.0)	0.01% (0.00% to 0.02%%)
Skomer, Skokholm and the Seas off			Breeding	0.30	0.0 (0.0 to 0. 0 1)	0.02% (0.01% to 0.03%%)
Pembrokeshire/Sgomer, Sgogwm a Moroedd	2,014 (2022)	294 .0	Post-breeding	0.25	<u>0.0 (</u> 0.0 to 0.0 <u>)</u>	<u>0.01% (</u> 0.00% to 0.01% <u>%</u>)
Penfro SPA			Pre-breeding	0.45	<u>0.0 (</u> 0.0 to 0.1 <u>)</u>	<u>0.01% (</u> 0.00% to 0.02 <u>%%)</u>
North Caithness Cliffs SPA	20,300	2,964	Post-breeding	0.81	<u>0.1 (</u> 0.0 to 0.1)	<u>0.00% (</u> 0.00% to 0.00 <u>%%)</u>
Notifi Caltiffess Cliffs Of A	(2000)	2,304	Pre-breeding	1.62	<u>0.1 (</u> 0.0 to 0.3)	0.00% (0.00% to 0.01%%)
East Caithness Cliffs SPA	80,820	11,800	Post-breeding	3.24	<u>0.3 (</u> 0.1 to 0.5 <u>)</u>	0.00% (0.00% to 0.00%%)
Last Caltilless Cills of A	(1999)	11,000	Pre-breeding	6.45	<u>0.5 (</u> 0.2 to 1.1)	0.00% (0.00% to 0.01%%)
Troup, Pennan and Lions	29,792	4,350	Post-breeding	1.19	<u>0.1 (</u> 0.0 to 0.2 <u>)</u>	<u>0.00% (</u> 0.00% to 0.00 <u>%%)</u>
Heads SPA	(2007)	4,550	Pre-breeding	2.38	<u>0.2 (</u> 0.1 to 0.4 <u>)</u>	0.00% (0.00% to 0.01% <u>%</u>)
Buchan Ness to Collieston	25,084	3,662	Post-breeding	1.01	<u>0.1 (</u> 0.0 to 0.2 <u>)</u>	<u>0.00% (</u> 0.00% to 0.00 <u>%%)</u>
SPA	(2007)	0,002	Pre-breeding	2.00	<u>0.2 (</u> 0.1 to 0.3 <u>)</u>	0.00% (0.00% to 0.01%%)
Fowlsheugh SPA	18,674	2.726	Post-breeding	0.75	<u>0.1 (</u> 0.0 to 0.1)	0.00% (0.00% to 0.00%%)
	(2012)	2,720	Pre-breeding	1.49	<u>0.1 (</u> 0.0 to 0.2)	0.00% (0.00% to 0.01%%)
Flamborough and Filey	75,234	10,984	Post-breeding	3.02	<u>0.2 (</u> 0.1 to 0.5 <u>)</u>	0.00% (0.00% to 0.00%%)
Coast SPA	(2008)	10,504	Pre-breeding	6.01	<u>0.5 (</u> 0.2 to 1.0 <u>)</u>	0.00% (0.00% to 0.01%)
Cape Wrath SPA	20,688	3,020	Post-breeding	2.49	<u>0.2 (</u> 0.1 to 0.4 <u>)</u>	0.01% (0.00% to 0.01%%)
Oupo Wialli Of A	(2000)	0,020	Pre-breeding	4.40	<u>0.4 (</u> 0.1 to 0.7 <u>)</u>	<u>0.01% (</u> 0.00% to 0.02% <u>%)</u>
North Colonsay and	11,126	1,624	Post-breeding	1.34	<u>0.1 (</u> 0.0 to 0.2 <u>)</u>	<u>0.01% (</u> 0.00% to 0.01% <u>%)</u>
Western Cliffs SPA	(2000)	1,024	Pre-breeding	2.37	<u>0.2 (</u> 0.1 to 0.4 <u>)</u>	0.01% (0.00% to 0.02%%)
West Westray SPA	24,110 (2007)	3,520	PostPre-breeding	1.93	0.1 <u>(0.0</u> to 0. 3 2)	0.00% (0.00% to 0. 01% 00%)



As the project alone impact is predicted to increase the baseline mortality by <0.05% it is not deemed necessary to consider the Mona Offshore Wind Project within the in-combination assessment for several of the SPAs considered. However the predicted impact on Ailsa Craig SPA, Rathlin Island SPA, Lambay Island SPA, Ireland's Eye SPA, Howth Head Coast SPA, Wicklow Head SPA, Cape Wrath SPA, North Colonsay and Western Cliffs SPA and Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA is >0.05% and therefore these sites are considered as part of the in-combination assessments (section 1.5.3).

Herring gull

- 4.5.2.31.5.2.5 As presented in Table 1-6 the_ breeding season impact for herring gull was 0.03 (0.01 to 0.06) and the age-class apportioning was 80.0% of birds are adults (Table 1-4). During the non-breeding season impact on herring gull was 1.48 (0.50 to 3.13) birds (Table 1-6) and the age-class apportioning was 75.61% of birds are adults (Table 1-4).
- 4.5.2.41.5.2.6 Species-group and species-specific avoidance rates are presented in Table 1.14.for herring gull are 0.9939 and 0.9952, respectively.

Table 1-15: Adult herring gull apportioned expected SPA mortality due to collision.

Site	Colony count	Baseline M ortality (0.171)	Bio season	Appo r tioning Value (%)	Mean (LCI and UCI) of collision impacts using species-group avoidance (0.9939)	Increase in baseline mortality (%) using speciesgroup avoidance (0.9939)	Mean (LCI and UCI) of collision impacts using species-specific avoidance rates (0.9952)	Increase in baseline mortality (%) using species-specific avoidance rates (0.0052)
Morecambe	3,188	529 .2	Breeding	18.80%	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00% <u>%)</u>	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00%%)
Bay SPA	(2023)	329 .∠	Non- breeding	3.18%	0.0 (0.0 to 0.1)	0.00% to 0.01%	0.0 (0.0 to 0.01)	0.00% (0.00% to 0.01%%)

Document Reference: S_D3_19



1.5.2.7 As the predicted project alone impact is predicted to increase the baseline mortality by <0.05% it is not deemed necessary to consider the Mona Offshore Wind Project within the in-combination assessment for the Morecambe Bay SPA (as set out in Figure 1.1 of HRA Stage 2 Information to Support an Appropriate Assessment. Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-10)).

Great black-backed gull

- 1.5.2.5 As presented in section 1.4.1 Table 1_6, the non-breeding season impact for great black-backed gull was 3.16 (1.07 to 6.66) and the age-class apportioning was 70.49% of birds are adults (Table 1_4). Species-group and species-specific avoidance rates are presented in Table 1_16. Note that this species typically takes 5 years to be defined as an identifiable 'adult' in the field.
- 1.5.2.6 Species-group and species-specific avoidance rates are presented in Table 1.15
- 1.5.2.71.5.2.9 The predicted impact from the project alone is predicted to increase the baseline mortality by >1% when considering the UCI of collision impacts. No project alone PVA was undertaken because the predicted number of collisions is very small (1.4 birds) when considering the UCI. Furthermore, the increase in baseline mortality is only marginally above the 1.00% threshold and the Applicant used expert judgement to determine whether PVA was required. The Applicant has presented a PVA for the incombination impact on great black-backed gull from the Isles of Scilly SPA (section 1.6.5). The in-combination PVA predicts that with or without the impact the population of the Isles of Scilly SPA is expected to continue to grow.
- 1.5.2.10 Species-group and species-specific avoidance rates for great black-backed gull are 0.9939 and 0.9991, respectively.
- 1.5.2.11 Sites which are predicted to be impacted by an increase of >0.05%, and therefore require an in-combination assessment, are highlighted in yellow within Table 1-16.

Table 1-16. Adult great black-backed gull apportioned expected SPA mortality due to collision during the non-breeding bioseason.

Site	Colony count	Baseline Mortality (0.070)	Appo r tioning Value (%)	Mean (LCI and UCI) of collision impacts using species-group avoidance rates	Increase in baseline mortality (%) using species-group avoidance rates (0.9939)	Mean (LCI and UCI) of collision impacts using species-specific avoidance rates (0.9994)	(0.9991)
Isles of Scilly SPA	1,802 (2006)	126.0	28.85	0.6 (0.2 to 1.4)	0.51% (0.18% to 1.08%%)	0.1 (0.0 to 0. 02 2)	0.08% (0.03% to 0.16%%)

Document Reference: S_D3_19



As the alone impact is predicted to increase the baseline mortality by >0.05% it is deemed necessary to consider the Mona Offshore

Wind Project within the in-combination assessment for the Isles of Scilly SPA (as set out in Figure 1.1 of HRA Stage 2 Information to Support an Appropriate Assessment. Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-10)).

Lesser black-backed gull

4.5.2.81.5.2.13

As presented in Table 1₋6, the breeding season impact for lesser black-backed gull was 0.33 (0.10 to 0.81), and the age-class apportioning was 81.82% of birds are adults (Table 1₋4). During the pre-breeding season impact for lesser black-backed gull was 0.83 (0.26 to 1.94) birds, and 0.76 (0.23 to 1.69) during the winter season (Table 1₋4). The age-class apportioning was 86.96% of birds are adults during both the spring migration and winter seasons (Table 1-4).

4.5.2.91.5.2.14 Species-group and species-specific avoidance rates are presented in Table 1-16.or lesser black-backed gull are 0.9939 and 0.9954, respectively.

Table 1,-17. Adult lesser black-backed gull apportioned expected SPA mortality due to collision.

Site	Colony count	Baseline Mortality (0.121)	Bio season	Appo r tioning Value (%)	Mean (LCI and UCI) of collision impacts using species-group avoidance rates (0.9939)	Increase in baseline mortality (%) using speciesgroup avoidance rates (0.0000)	Mean (LCI and UCI) of collision impacts using species-specific avoidance rates (0.9954)	Increase in baseline mortality (%) using species-specific avoidance rates (0.0054)
			Breeding	26.78	0.1 (0.0 to 0.2)	0.01% (0.00% to 0.02%%)	<u>0.1 (</u> 0.0 to 0.1)	0.01% (0.00% to 0.01%%)
Ribble and Alt Estuaries	8,978		Post-breeding	7.30	No predicted collision	ns		
SPA	(2021)	1,032 .5	Winter	9.18	<u>0.0 (</u> 0.0 to 0.1)	0.00% (0.00% to 0.01%%)	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.01%%)
			Pre-breeding	7.47	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.01%%)	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.00% <u>%)</u>
			Breeding	12.72	<u>0.0 (</u> 0.0 to 0.1)	0.01% (0.00% to 0.01% 02%)	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.01%%)
Morecambe Bay and	4,874		Post-breeding	4.41	No predicted collision	ns		
Duddon Estuary SPA	(2023)	560.5 <u>561</u>	Winter	5.54	<u>0.0 (</u> 0.0 to 0.1)	0.00% (0.00% to 0.01%%)	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.01%%)
			Pre-breeding	4.50	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.01%%)	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.00%%)



Site	Colony count	Baseline Mortality (0.121)	Bio season	Appo r tioning Value (%)	Mean (LCI and UCI) of collision impacts using species-group avoidance rates (0.9939)	Increase in baseline mortality (%) using speciesgroup avoidance rates	Mean (LCI and UCI) of collision impacts using species-specific avoidance rates (0.8854)	Increase in baseline mortality (%) using species-specific avoidance rates
			Breeding	37.21	<u>0.1 (</u> 0.0 to 0.2 <u>)</u>	0.00% (0.00% to 0.01%%)	<u>0.1 (</u> 0.0 to 0.2 <u>)</u>	0.00% (0.00% to 0.01%%)
	29,254		Post-breeding	4.04	No predicted collision	*		
Bowland Fells	(2012)	3,364 .2	Winter	5.08	<u>0.0 (</u> 0.0 to 0.1)	0.00% (0.00% to 0.01% <u>%)</u>	<u>0.0 (</u> 0.0 to 0.1 <u>)</u>	0.00% (0.00% to 0.01%%)
			Pre-breeding	4.13	<u>0.0 (</u> 0.0 to 0.1)	0.00% (0.00% to 0.01%%)	<u>0.0 (</u> 0.0 to 0.1)	0.00% (0.00% to 0.00 % %)
Lambay Island SPA	952 (2010)	109 .5	Breeding	0.49	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00% <u>%)</u>	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00% <u>%)</u>
Ailsa Craig SPA	378 (2019)	43.5	Breeding	0.10	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00% <u>%)</u>	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00% <u>%)</u>
			Breeding	0.16	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00% <u>%</u>)	<u>0.0 (</u> 0.0 to 0.0 <u>)</u>	0.00% (0.00% to 0.00%%)
	1,038		Post-breeding	0.09	No predicted collision	ns		
Rathlin Island SPA	(2021)	119 .4	Winter	0.12	<u>0.0 (</u> 0.0 to 0.0)	0.00% (0.00% to 0.01%%)	<u>0.0 (</u> 0.0 to 0.0 <u>)</u>	0.00% (0.00% to 0.01%)
			Pre-breeding	0.10	<u>0.0 (</u> 0.0 to 0.0)	0.00% (0.00% to 0.01%%)	<u>0.0 (</u> 0.0 to 0.0 <u>)</u>	0.00% (0.00% to 0.00%%)
Skomer. Skokholm and			Breeding	1.95	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00%%)	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00%%)
the Seas off	16.214		Post-breeding	11.92	No predicted collision	ns		
Pembrokeshire/Sgomer, Sgogwm a Moroedd	(2023)	1, 864.6 <u>865</u>	Winter	10.70	<u>0.1 (</u> 0.0 to 0.2 <u>)</u>	0.00% (0.00% to 0.01%%)	<u>0.1 (</u> 0.0 to 0.1)	0.00% (0.00% to 0.01%%)
Penfro SPA			Pre-breeding	12.19	<u>0.1 (</u> 0.0 to 0.2 <u>)</u>	0.00% (0.00% to 0.01%%)	<u>0.1 (</u> 0.0 to 0.2 <u>)</u>	0.00% (0.00% to 0.01%%)
			Post-breeding	5.41	No predicted collision	ins	•	· · · · · · · · · · · · · · · · · · ·
Isles of Scilly SPA	6,800 (2006)	782	Winter	3.77	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.01%%)	0.0 (0.0 to 0. 0 1)	0.00% (0.00% to 0.01%%)
	(2000)		Pre-breeding	5.53	0.0 (0.0 to 0.1)	0.00% (0.00% to 0.01% <u>%)</u>	0.0 (0.0 to 0. 0 1)	0.00% (0.00% to 0.01%%)



As the project alone impact is predicted to increase the baseline mortality by <0.05% it is not deemed necessary to consider the Mona Offshore Wind Project within the in-combination assessment for all the SPAs considered (as set out in Figure 1.1 of HRA Stage 2 Information to Support an Appropriate Assessment. Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-10)).

Manx shearwater

1.5.2.10 There were no predicted collisions for Manx shearwater throughout the entire year and so no apportioning table is presented.

Northern fulmar

- 4.5.2.11 Within Table 1-6, the impact on northern fulmar was 0.32 (0.00 to 1.94) birds (when considering the LCI and UCI of the collision impacts) during the breeding season. It is not deemed necessary to undertake a full apportioning for this species for the 10 SPAs identified within the HRA Stage 1 Screening Report (REP2-01). Northern fulmar has an extensive foraging range, and therefore, a large number of SPAs could be included.
- 4.5.2.12 Using the apportioning values from Morgan Offshore Wind Farm as a proxy (Morgan Generation Assets, 2024), the St Kilda SPA represented the largest apportioned value during the breeding season (1.0%). The latest population of St Kilda SPA is 58,372 adult birds, and the baseline mortality is 3,736 (using a baseline mortality of 0.064, Horswill and Robinson, 2014). Therefore, the added mortality of up to 0.02 birds (1.94 multiplied by 1.0%) represents a 0.005% increase in baseline mortality. Given the minute numbers involved, a full apportioning is not considered by the Applicant to be proportionate to the potential risk.

Northern gannet

- 4.5.2.131.5.2.19 As presented in Table 1_6, the breeding season impact for northern gannet was 1.42 (0.28 to 3.94), and the age-class apportioning was 93.58% of birds are adults (Table 1_4). During post-breeding migration season, the impact for northern gannet was 0.15 (0.03 to 0.39) birds and 0.13 (0.04 to 0.33) birds for the return migration season (Table 1_6). The age-class apportioning was 96.43% of birds are adults during both the post-breeding and return migration seasons (Table 1_4). The baseline mortality for northern gannet is 0.081 (Table 1-5).
- 1.5.2.141.5.2.20 Only species-group avoidance rate (0.9928) is presented in Table 1-18 as using the species-group avoidance rates are rate is advised by the SNCBs.

Document Reference: S_D3_19

Table 1:-18: Adult northern gannet apportioned expected SPA mortality due to collision using species-group avoidance rate.

Site	Colony count (yea r)	Baseline Mortality (0.081)	Bio season	Apportioning Value (%)	Mean (LCI and UCI) of collision impacts	Increase in baseline mortality (%)
			Breeding	56.16	<u>0.7 (</u> 0.1 to 2.1)	<u>0.01% (</u> 0.00% to 0.04 <u>%%)</u>
Ailsa Craig SPA	66,452 (2014)	5,383	Post-breeding migration	17.06	0.4 <u>0 (0.0</u> to 0.1 <u>)</u>	<u>0.00% (</u> 0.00% to 0.00 <u>%%)</u>
			Pre-breeding migration	13.86	<u>0.0 (</u> 0.0 to 0.1)	0.00% (0.00% to 0.00%%)
			Breeding	17.61	<u>0.2 (</u> 0.0 to 0.6)	0.00% (0.00% to 0.01%%)
Grassholm SPA	72,022 (2015)	5,834	Post-breeding migration	24.71	0.4 <u>0 (0.0</u> to 0.1 <u>)</u>	0.00% (0.00% to 0.00%%)
			Pre-breeding migration	20.07	<u>0.0 (</u> 0.0 to 0.1)	0.00% (0.00% to 0.00%%)
Saltee Islands SPA	9,444 (2013)	765	Breeding	2.82	<u>0.0 (</u> 0.0 to 0.1)	0.00% (0.00% to 0.01%%)
Skelligs SPA	70,588 (2014)	5,718	Breeding	4.37	<u>0.1 (</u> 0.0 to 0.2)	0.00% (0.00% to 0.00%%)
			Breeding	5.04	<u>0.1 (</u> 0.0 to 0.2)	0.00% (0.00% to 0.00%%)
St Kilda SPA	120,636 (2014)	9,772	Post-breeding migration	33.75	0.4 <u>0 (0.0</u> to 0.1 <u>)</u>	0.00% (0.00% to 0.00%%)
			Pre-breeding migration	30.46	0.4 <u>0 (0.0</u> to 0.1 <u>)</u>	0.00% (0.00% to 0.00%%)
Hermaness, Saxa			Post-breeding migration	3.06	<u>0.0 (</u> 0.0 to 0.0)	0.00% (0.00% to 0.00%%)
Vord and Valla Field SPA	48,706 (2008)	3,945	Pre-breeding migration	3.73	0.0 (0.0 to 0.0)	0.00% (0.00% to 0.00%%)
Noss SPA	10 534 (2009)	1,582	Post-breeding migration	1.23	<u>0.0 (</u> 0.0 to 0.0)	0.00% (0.00% to 0.00%%)
NOSS SPA	19,534 (2008)	1,562	Pre-breeding migration	1.50	<u>0.0 (</u> 0.0 to 0.0 <u>)</u>	<u>0.00% (</u> 0.00% to 0.00 <u>%%)</u>
Sule Skerry and Sule	0.350 (3004)	757	Post-breeding migration	2.65	<u>0.0 (</u> 0.0 to 0.0 <u>)</u>	<u>0.00% (</u> 0.00% to 0.00 <u>%%)</u>
Stack SPA	9,350 (2004)	757	Pre-breeding migration	2.39	<u>0.0 (</u> 0.0 to 0.0 <u>)</u>	<u>0.00% (</u> 0.00% to 0.00 <u>%%)</u>
North Rona and Sula	18,450 (2004)	1 404	Post-breeding migration	5.22	<u>0.0 (</u> 0.0 to 0.0)	<u>0.00% (</u> 0.00% to 0.00 <u>%%)</u>
Sgeir SPA	10,450 (2004)	1,494	Pre-breeding migration	4.71	<u>0.0 (</u> 0.0 to 0.0)	0.00% (0.00% to 0.00%%)

As the project alone collision impact is predicted to increase the baseline mortality by <0.05% it is not deemed necessary to consider the Mona Offshore Wind Project within the in-combination assessment for all of the SPAs considered. However, the predicted combined displacement and collision impact on Ailsa Craig SPA, Grassholm SPA and Saltee Islands SPA is >0.05% (when considering the highest displacement and mortality rates) and therefore these sites are considered as part of the in-combination assessments (section 1.5.3).



1.5.3 In-combination assessments

1.5.3.1 As requested by the SNCB's SNCBs and following the Applicant's criteria (see Figure 1.1 of HRA Stage 2 Information to Support an Appropriate Assessment. Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-10) for inclusion of a SPA and qualifying feature to be taken through to in-combination assessment the following sites are considered below. The approach to the screening out of incombination assessments was deemed appropriate by NRW as part of their Relevant Representation for the Mona Offshore Wind Project (see row RR-011.20 in Applicant's Response to Relevant Representations from Natural Resources Wales (NRW) PDA-011). The threshold for inclusion within an in-combination assessment was if the Mona Offshore Wind Project alone impacted the designated site by a >0.05% increase in baseline mortality. An increase of <0.05% was considered non-material and within natural fluctuations of the population. The following species and SPAs require an incombination assessment when considering the SNCBs advised range of impacts:

- Black-legged kittiwake annually from:
 - Ailsa Craig SPA
 - Rathlin Island SPA
 - Lambay Island SPA
 - Ireland's Eye SPA
 - Howth Head Coast SPA
 - Wicklow Head SPA
 - Cape Wrath SPA
 - North Colonsay and Western Cliffs SPA
 - Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA
- Common guillemot during the non-breeding season from:
 - Sule Skerry and Sule Stack SPA
 - North Rona and Sula Sgeir SPA
 - Cape Wrath SPA
 - Handa SPA
 - Shiant Isles SPA
 - Flannan Isles SPA
 - St Kilda SPA
 - Canna and Sanday SPA
 - Mingulay and Berneray SPA
 - North Colonsay and western cliffs SPA
 - Ailsa Craig SPA
 - Rathlin Island SPA
 - Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA



- Great black-backed gull annually from the Isles of Scilly SPA
- Northern gannet annually from:
 - Ailsa Craig SPA
 - Grassholm SPA
 - Saltee Islands SPA
 - St Kilda SPA
- Manx shearwater annualannually from:
 - Glannau Aberdaron ac Ynys Enlli/Aberdaron Coast and Bardsey Island SPA
 - Copeland Islands SPA
 - Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA
- Razorbill during the non-breeding season from:
 - Cape Wrath SPA
 - Handa SPA
 - Shiant Isles SPA
 - Mingulay and Berneray SPA
 - Rathlin Island SPA
 - Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA
 - Flannan Isles SPA
- 1.5.3.2 Following the submission of this technical note at Deadline 3, the SNCBs provided written and verbal feedback (see Table 1-1) that the gap-filled projects (method and detailed results presented in Offshore Ornithology Cumulative Effects Assessment and In-combination Gap-filling Historical Projects Technical Note (S D3 12 F02)) should also be included within the in-combination assessments. As such, this note has been updated at Deadline 4 in the following tables to include the gap-filled projects alongside the previously presented in-combination projects.
- 1.5.3.3 Following the method set out in section 0 the Applicant has used the proportion of adult/immature birds within the Appendix tables of Furness (2015) for undertaking the age-class apportioning for all projects considered in-combination, including the Mona Offshore Wind Project during the non-breeding season. During the breeding season, for all projects, the Applicant maintains that using the stable-age structure from Furness (2015) and accepted on multiple consented projects and the Crown Estate Plan Level HRAs is a proportionate assessment.
- 1.5.3.4 Therefore, the impact from the Mona Offshore Wind Project as presented within the in-combination tables will differ from what is presented for the alone assessment.



Black-legged kittiwake

Ailsa Craig SPA

4.5.3.21.5.3.5 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline black-legged kittiwake from Alisa Craig SPA, an in-combination assessment is presented within Table 1-19 (30% displacement and 1% mortality to 70% displacement and 10% mortality) and Table 1-20 (30% displacement and 3% mortality).

Table 1-19: In-combination assessment for black-legged kittiwake from the Ailsa Craig SPA – when considering 30-70% displacement and 1-10% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the breeding period, 54.33% of birds are adults in the post-breeding season..

b – the apportioning value during the breeding season was taken from project specific documentation

c - the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.002.

d – the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.001.





Plan o r	Un-apr birds)	o <u>ortione</u> a -	ed abundances (adult	Un-apportion impacts (ac	oned co fult bird	llision s) ^a	-Appo r tio	ning values		values (30°	% d isplacem o 7 0 % d ispla	nent impact nent an d 1 % acement	Apportion ed collision values (species- group avoidance rate 99.28)		Inserted Cells Inserted Cells
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Awel y Môr Offshore Wind Farm	<u>162</u>	46	<u>45</u>	8.31	6.20	4.54	0.0021	0.001 <u>b</u>	0.0012	0.00 to 0.02	0.00 to 0.00	0.00 to 0.00	0.02		Inserted Cells Inserted Cells Inserted Cells

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Burbo Bank Extension Offshore Wind Farm	<u>27</u>	<u>376</u>	<u>25</u>	0.00	<u>12.26</u>	<u>0.00</u>	0.0021	0. 003 <u>002 °</u>	0.0012	0.00 to 0.00	0.00 to 0. 08 <u>05</u>	0.00 to 0.00	0.00
Erebus Floating Wind Demo	1	1076	<u>278</u>	6.80	<u>0.27</u>	<u>13.49</u>	0.0021	No connectivit y	0.0012	0.00 to 0.00	-	0.00 to 0.02	0.01
TwinHub (Wave Hub Floating Wind Farm)	<u>30</u>	2	103	0.00	<u>5.17</u>	0.00	0.0021	No connectivit y	0.0012	0.00 to 0.00	-	0.00 to 0.01	0.00
Mona Offshore Wind Project	312	<u>386</u>	307	4.75	8.26	4.60	0.0021	0.001 <u>b</u>	0.0012	0.00 to 0.04	0.00 to 0.03	0.00 to 0.03	0. 02<u>01</u>



Plan o r	Un-apportioned abundances (adult birds) •	<u>Un-apportic</u> <u>Impacts (ac</u>	med co lult bird	llision s) ^e	Apportion	ning values		Apportione values (30% mortality to an d 10 % mo	displacem 70% d ispla	ent an d 1 %	Apportion ed collision values (species-group avoidance rate 99.28)	Inserted Cells Inserted Cells
p r oject												Inserted Cells Inserted Cells
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	Pre- Breed B	P r e-	Breed	Post-		D	Post-	Pre-	Daniel	Post-	<u>Pre-</u>	Inserted Cells
	breed ing Post-breeding	b r ee d ing	ing	breed	b r ee d in g	B r ee d ing	b r ee d ing	b r ee d ing	B r ee d ing	b r ee d ing	b r ee d ing	Inserted Cells
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Plan or project	Un-app birds)	oortione a	ed abundances (adult	Un-apportioned collision impacts (adult birds) Apportioning values						Apportione values (30% mortality to and 10% mo	Apportion ed collision values (species-group avoidance rate 99.28)		
project	P r e- b r ee d ing	B r ee d ing	Post-breeding	Pre- breeding	Breed ing	Post- breed ing	Pre- breedin g	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- breeding	<u>Pre-</u> <u>breeding</u>
Morecambe Offshore Windfarm Generation Assets	<u>631</u>	2074	<u>2215</u>	2.90	8.00	6.37	0.0021	0.003 <u>b</u>	0.0012	0.00 to 0.09	0.02 to 0.44	0.01 to 0.18	0.01

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Plan or	Un-apr birds)	Oortione a -	id abundances (adult	Un-apportic impacts (ad	oned co lult bird	llision s) ^a	Apportio	ning values		Apportioned values (30% mortality to and 10% mo	Apportion ed collision values (species-group avoidance rate 99.28)		
project	Pre- breed ing	Breed ing	Post-b r ee d ing	Pre- breeding	Breed ing	Post- breed ing	Pre- breedin g	B r ee d ing	Post- breeding	Pre- breeding	B r ee d ing	Post- breeding	Pre- breeding
Morgan Offshore Wind Project Generation Assets	<u>350</u>	245	886	<u>7.16</u>	2.66	11.84	0.0021	0.002 <u></u>	0.0012	0.00 to 0.05	0.00 to 0.03	0.00 to 0.07	0.01

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Plan o r	Un-apr pirds)	oortione -	ed abundances (adult	Un-apportion impacts (ad	ned co lult bird	llision s) ^s	Apportio	ning values		Apportione values (30% mortality to and 10% mo	displacem 7 0% d ispla	nent impact ent an d 1 % icement	% values (species-group in avoidance in rate 99.28)	
p r oject	Pre- breed ing	Breed ing	Post-breeding	Pre- breeding	B reed ing	Post- breed ing	Pre- breedin g	B r ee d ing	Post- b r ee d ing	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing		
Ormonde Wind Farm	<u>12</u>	<u>32</u>	11	0.00	1.74	0.00	0.0021	0. 003 <u>002</u> °	0.0012	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00	

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Plan o r	Un-abi birds)	Oortione a -	id abundances (adult	Un-apportic impacts (an	oned co lult bird	llision s) ^a	Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)						Apportion ed collision values (species-group avoidance rate 99.28)
p r oject	Pre- breed ing	Breed ing	Post-b r ee d ing	Pre- breeding	Breed ing	Post- breed ing	Pre- breedin g	B r ee d ing	Post- breeding	Pre- breeding	B r ee d ing	Post- breeding	<u>Pre-</u> <u>breeding</u>
Rampion Offshore Wind Farm	<u>451</u>	<u>563</u>	<u>122</u>	22.69	37.54	8.67	0.0021	No connectivit y	0.0012	0.00 to 0.06	-	0.00 to 0.01	0.05

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Plan o r	Un-ap birds)	portions a	ed abundances (adult	Un-apportion	one d <u>co</u> lult bird	llision s) ^a	-Appo r tio	ning values		Apportione values (30% mortality to an d 10 % mo	6 d isplacem 7 0 % d ispla			Inserted Cells Inserted Cells
project	Pre- breed ing	Breed ing	Post-breeding	Pre- breeding	B reed ing	Post- breed ing	Pre- breedin g	B r ee d ing	Post- b r ee d ing	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	<u>Pre-</u> <u>breeding</u>	Inserted Cells
Rampion 2 Offshore Wind Farm	<u>155</u>	3	<u>53</u>	9.24	0.53	5.47	0.0021	No connectivit y	0.0012	0.00 to 0.02	-	0.00 to 0.00	0.02	

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Walney (3 and 4) Extension Offshore Wind Farm	<u>797</u>	170	<u>610</u>	<u>8.25</u>	10.00	47.30	0.0021	0. 003 <u>002 °</u>	0.0012	0.00 to 0.11	0.00 to 0. 04 <u>02</u>	0.00 to 0.05	0.02
West of Orkney Windfarm	<u>661</u>	367	437	11.40	9.08	9.00	0.0021	No connectivit y	0.0012	0.00 to 0.10	-	0.00 to 0.04	0.02
White Cross Offshore Windfarm	379	23	94	<u>5.03</u>	1.97	1.01	0.0021	No connectivit y	0.0012	0.00 to 0.05	-	0.00 to 0.01	0.01
Gap-fille d proj	<u>ects</u>	•	,										-111111
Burbo Bank	<u>12</u>	7	<u>11</u>	0.29	0.45	0.46	0.0021	0.001 ^d	0.0012	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00



Plan o r	Un-apr birds)	portioned abundances (adult	Un-apportions impacts (adult	<u>d collis</u> birds)	sion a	Apportion	ning values		Apportione values (30% mortality to an d 10 % mo	displacem 7 0 % d ispla	ent and 1%		Inserted Cells Inserted Cells
p r oject													Inserted Cells
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	Pre- breed	Breed Post-breeding		eeu 🖡	ost-	Pre- breedin	B r ee d ing	Post-	Pre-	B r ee d ing	Post-	Pre-	Inserted Cells
	ing	ing Tost-breeding	b r ee d ing in			g	breeding	b r ee d ing	b r ee d ing	breeding	b r ee d ing	<u>breeding</u>	Inserted Cells
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Plan or project	Un-apr pirds)	oortione	d abundances (adult	Un-apportic Impacts (ad	oned co ult bird	llision 8) °	Appo r tioning values			Apportioned values (30% mortality to an d 10% mo	Apportion ed collision values (species-group avoidance rate 99.28)		
project	Pre- breed ing	Breed ing	Post-b reed ing	Pre- breeding	Breed ing	Post- breed ing		B r ee d ing	Post- breeding	P r e- b r ee d ing	B r ee d ing	Post- breeding	<u>Pre-</u> <u>breeding</u>
Gwynt y Môr Offshore Wind Farm	<u>39</u>	<u>27</u>	<u>36</u>	0.46	0.77	0.73	0.0021	<u>0.001 ^d</u>	0.0012	0.00 to 0.01	0.00 to 0.00	0.00 to 0.00	0.00

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Plan or	Un-apr birds)	00Filone a =	d abundances (adult	Un-apportic impacts (ad	oned so ult bird	llision s) ^a	Apportio	ning values		Apportioned values (30% mortality to and 10% mo	displacem 7 0 % d ispla	ent an d 1 %	Apportion ed collision values (species-group avoidance rate 99.28)
p r oject	Pre- breed ing	Breed ing	Post-b reed ing	Pre- breeding	Breed ing	Post- breed ing	Pre- breedin g	B r ee d ing	Post- breeding	Pre- breeding	B r ee d ing	Post- breeding	<u>Pre-</u> <u>breeding</u>
Robin Rigg	<u>16</u>	<u>11</u>	<u>15</u>	0.40	0.71	0.70	0.0021	0.002 °	0.0012	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00

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Plan or project	Un-apportioned abundances (adult birds) ^a			Un-apportioned collision impacts (adult birds) ^a			Appo r tioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)			Apportion ed collision values (species-group avoidance rate 99.28)	
	Pre- breed ing	Breed ing	Post-b r ee d ing	P r e- b r ee d ing	Breed ing	Post- breed ing	Pre- breedin g	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	<u>Pre-</u> breeding	
Rhyl Flats Offshore Wind Farm	<u>12</u>	9	11	0.41	0.71	0.65	0.0021	0.001 ^d	0.0012	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00	

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Plan or project	Un-apportioned abundances (adult birds) ^a			Un-apportioned collision impacts (adult birds) ^a			Appo r tioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)			Apportion ed collision values (species-group avoidance rate 99.28)
	Pre- breed ing	Breed ing	Post-b r ee d ing	Pre- breeding	Breed ing	Post- breed ing	Pre- breedin g	B r ee d ing	Post- breeding	Pre- breeding	B r ee d ing	Post- breeding	<u>Pre-</u> <u>breeding</u>
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.63	0.96	1.02	0.0021	0.002°	0.0012	0.00 to 0.01	0.00 to 0.00	0.00 to 0.00	0.00

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Plan or	<u>Un-apr</u> birds)	oortion (ed abundances (adult	Un-apportion impacts (ac	oned co lult bird	llision s) ^a	-Appo r tio	ning values		Apportione values (30 ^o mortality to an d 10 % m	Apportion ed collision values (species-group avoidance rate 99.28)		
p r oject	Pre- breed ing	B r ee d ing	Post-bree d ing	Pre- breeding	Breed ing	Post- breed ing	Pre- breedin g	B r ee d ing	Post- b r ee d ing	Pre- bree d ing	B r ee d ing	Post- b r ee d ing	<u>Pre-</u> <u>breeding</u>
Walney 2	Include	ed above	2	0.30	1.73	0.39	0.0021	0.002 °	0.0012	Included ab	<u>oove</u>		0.00

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Plan or	Un-apr birds)	oortione a	ed abundances (adult	Un-apportic impacts (ad	Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality) Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)								
p r oject	Pre- breed ing	Breed ing	Post-b r ee d ing	Pre- breeding	B r ee d ing	Post- breed ing	Pre- breedin g	B r ee d ing	Post- breeding	Pre- breeding	B r ee d ing	Post- breeding	<u>Pre-</u> <u>breeding</u>
West of Duddon Sands Offshore Wind Farm	<u>37</u>	242	<u>34</u>	1.41	2.12	2.28	0.0021	0.002 °	0.0012	0.00 to 0.01	0.00 to 0.03	0.00 to 0.00	0.00

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WONA OFFSHORE WIND PROJECT											
Total p red icte d impact (a d ult bi rd s)						0. <u>0203</u> to 0. <u>5760</u>	0.03 to 0. 61 62	0.0 2 to 0 .4244	0. 18 <u>19</u>	A	Inserted Cells
Increase in baseline mortality (%)	0.02% to 0.40%	0.02% to 0.43%	0.01% to 0.29%	0.13%	0.08%	0.09%	0.15% to 0.52%	0.10 to 0.51%	0.10 to 0.39%		
											Inserted Cells Inserted Cells
Annual impact an d increase in baseline mortality fr lisplacement and 1% mortality to 7 0% d isplacemen	om the comb nt an d 10 % m	pined impac nortality)<u>Incr</u>	t (when cons rease in base	sidering 3 0% eline mo r talit	<u>v (%)</u>	0.02% to 0.42%	0.02% to 0.44%	0.01% to 0.30%	<u>0.13%</u>		Inserted Cells Inserted Cells Inserted Cells Inserted Cells Inserted Cells
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Document Reference: S_D3_19



MONA OFFSHORE WIND PROJECT		



4.5.3.31.5.3.6 As previously discussed (section 1.1.2), the Applicant is not proposing to undertake PVA on 70% displacement and 10% mortality as previously advised by the JNCC due to a lack of empirical evidence for this displacement and mortality rate scenario (see paragraph 1.2.1.8 for further justification). However, in accordance with NatureScot's guidance (NatureScot, 2023), the Applicant has presented 30% displacement and 3% mortality within Table 1-20.

Table 1-20: In-combination assessment for black-legged kittiwake from the Ailsa Craig SPA – when considering 30% and 3% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the breeding period, 54.33% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season.b – the apportioning value during the breeding season was taken from project specific documentation.

c - the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.002.

d - the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.001.

Document Reference: S_D3_19



	Un-apportioned abundances (adult collision impacts birds) * (adult birds) *						Apportioning values			Apportioned displacement impact values (30% displacement and 3% mortality)			Apportioned collision values (species-group avoidance rate 99.28)	Inserted Cells Inserted Cells		
an o r oject														Inserted Cells		
														Inserted Cells		
	Pre-	B r ee d			Breed	Post-		B r ee d i	Post-	Due broading	B r ee d i	Post-	Pre-breeding	Inserted Cells		
	b r ee d ing	ing	b r ee d ing	b r ee d ing	ing	ing	b r ee d i ng	ng	b r ee d i ng	Pre-breeding	ng	ng	Pre-breeding	Inserted Cells		
														Inserted Cells		
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el y Môr	162	<u>46</u>	<u>45</u>											Inserted Cells		
shore Wind				<u>8.14</u>	<u>6.20</u>	<u>4.41</u>	0.0021	0.001 <u>b</u>	0.0012	0.00	0.00	0.00	0.02	Inserted Cells		
														Inserted Cells		
ho Bank	<u>27</u>	<u>376</u>	<u>25</u>											Inserted Cells		
urbo Bank xtension offshore Wind arm				0.00	12 26	0.00	0.0021	0. 003 0	0.0012	0.00	0.01	0.00	0.00	Inserted Cells		
				0.00	12.26	3.00	0.0021	<u>02 °</u>	0.0012		3.01	3.00	0.00	Inserted Cells		





Plan o r	Un-ap abund birds)	portione lances (a	o <u>d</u> adult	Un-apportioned collision impacts (adult birds) Apportioning values						Apportioned displacement impact-values (30% displacement_and 3% mortality)			Apportioned collision values (species-group avoidance rate 99.28)		
Plan o r o r oject	Pre- breed ing	B r ee d ing	Post- breed ing	Pre- breed ing	B reed ing	Post- breed ing	Pre- breedi ng	B r ee d i ng	Post- b r ee d i ng	Pre-breeding	B r ee d i ng	Post- b r ee d i ng	<u>Pre-breeding</u>		
rebus loating Wind Demo	1	1076	<u>278</u>	6.66	0.27	13.11	0.0021	No connec tivity	0.0012	0.00		0.00	0.01		
winHub Wave Hub loating Wind arm)	<u>30</u>	2	103	0.00	<u>5.17</u>	0.00	0.0021	No connec tivity	0.0012	0.00		0.00	0.00		

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Plan or	e <mark>d</mark> aduli	Un-apr collisio (adult	oortione on impa birds) ^a	<u>əd</u> lot <u>s</u>	Apporti	oning va	lues	Appo r tione d d isplacement impact value d isplacement; and 3% mortality)	Apportioned collision values (species-group avoidance rate 99.28)				
project	Pre- bree d ing	Breed ing	Post- b reed ing	Pre- bree d ing	Breed ing	Post- breed ing	Pre- breedi ng	B r ee d i ng	Post- breedi ng	Pre-breeding	B r ee d i ng	Post- b r ee d i ng	<u>Pre-breeding</u>
Mona Offshore Wind Project	312	386	307	4.65	8.26	4.47	0.0021	0.001 <u>b</u>	0.0012	0.01	0.00	0.00	0. 0 2 <u>01</u>
Morecambe Offshore Windfarm Generation Assets	<u>631</u>	2074	2215	2.84	8.00	6.19	0.0021	0.003 <u>b</u>	0.0012	0.01	0.06	0.02	0.01

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Plan or	Un-apr abund birds)	ortione ances (a	d edult	Un-apr collisio (adult l	ortione on impa birds) °	ed icls	Apporti	oning va	lues	Appo r tione d d isplacement impact valu d isplacement- <u>and</u> 3% mo r tality)	Apportioned collision values (species-group avoidance rate 99.28)		
project	Pre- breed ing	Breed ing	Post- breed ing	Pre- breed ing	Breed ing	Post- breed ing	Pre- breedi ng	B r ee d i ng	Post- breedi ng	Pre-breeding	B reed i ng	Post- b r ee d i ng	<u>Pre-breeding</u>
Morgan Offshore Wind Project Generation Assets	<u>350</u>	<u>245</u>	886	7.01	2.66	11.51	0.0021	0.002 <u>b</u>	0.0012	0.01	0.00	0.01	0.01
Ormonde Wind Farm	12	<u>32</u>	<u>11</u>	0.00	1.74	0.00	0.0021	0. 003 <u>0</u> <u>02 °</u>	0.0012	0.00	0.00	0.00	0.00

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Plan or	Un-apr abund birds)	oortione ances (a	e <u>d</u> adult	Un-apportioned collision impacts (adult birds) *				oning va	lues	Apportione d d isplacement impact value displacement and 3% mortality)	Apportioned collision values (species-group avoidance rate 99.28)		
p r oject	Pre- breed ing	B reed ing	Post- breed ing	Pre- breed ing	B reed ing	Post- breed ing	Pre- breedi ng	B r ee d i ng	Post- b r ee d i ng	Pre-breeding	B r ee d i ng	Post- b r ee d i ng	<u>Pre-breeding</u>
Rampion Offshore Wind Farm	<u>451</u>	<u>563</u>	122	22.22	37.54	8.43	0.0021	No connec tivity	0.0012	0.01	-	0.00	0.05
ampion 2 Offshore Wind	<u>155</u>	3	<u>53</u>	9.04	0.53	<u>5.32</u>	0.0021	No connec tivity	0.0012	0.00	-	0.00	0.02

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Plan or project		ortions ances (a			oortione on impa birds) ^a	icts	Apportioning values			Apportione d d isplacement impact valu d isplacement ₋ <mark>and</mark> 3% mo r tality)	Apportioned collision values (species-group avoidance rate 99.28)		
	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breed ing	Breed ing	Post- breed ing	Pre- breedi ng	B r ee d i ng	Post- breedi ng	Pre-breeding	B r ee d i ng	Post- breedi ng	<u>Pre-breeding</u>
Walney (3 and 4) Extension Offshore Wind Farm	<u>797</u>	170	<u>610</u>	8.08	10.00	45.96	0.0021	0. 003 0 02 °	0.0012	0.01	0.00	0.01	0.02
West of Orkney Windfarm	<u>661</u>	<u>367</u>	437	11.17	9.08	<u>8.75</u>	0.0021	No connec tivity	0.0012	0.01	-	0.00	0.02

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Plan or project	<u>Un-apr</u> <u>abund</u> <u>birds)</u>	oortions ances (s -	<u>d</u> adult	Un-apportioned collision impacts App (adult birds) ^a				oning va	lues	Appo r tione d d isplacement impact valu d isplacement <u>and</u> 3% mortality)	Apportioned collision values (species-group avoidance rate 99.28)		
	P r e- b r ee d ing	ing	Post- b r ee d ing	Pre- breed ing	Breed ing	Post- breed ing		B r ee d i ng	Post- breedi ng	Pre-breeding	B r ee d i ng	Post- breedi ng	<u>Pre-breeding</u>
White Cross Offshore Windfarm	<u>379</u>	<u>23</u>	<u>94</u>	4.93	1.97	0.98	0.0021	No connec tivity	0.0012	0.01	-	0.00	0.01
Gap-fille d p r oj	ects												
<u>Burbo Bank</u>	<u>12</u>	<u>7</u>	<u>11</u>	0.29	0.45	0.45	0.0021	0.001 ^d	0.0012	0.00	0.00	0.00	0.00

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Plan or project	<u>Un-apr</u> abund birds)	oortions ances (i	od adul <u>t</u>	Un-apportioned collision impacts (adult birds) ^a Apportioning					lues	Appo r tione d d isplacement impact value d isplacement; and 3% mortality)	splacement impact values (3 0 % and 3% mortality)			
project	Pre- breed ing		Post- breed ing	Pre- breed ing	Breed ing	Post- breed ing	Pre- breedi ng	B r ee d i ng	Post- breedi ng	Pre-breeding	B r ee d i ng	Post- breedi ng	<u>Pre-breeding</u>	
Gwynt y Môr Offshore Wind Farm	<u>39</u>	<u>27</u>	<u>36</u>	0.45	0.77	0.71	0.0021	0.001 d	0.0012	0.00	0.00	0.00	0.00	
Robin Rigg	<u>16</u>	<u>11</u>	<u>15</u>	0.39	0.71	0.68	0.0021	0.002 °	0.0012	0.00	0.00	0.00	0.00	
Rhyl Flats Offshore Wind Farm	<u>12</u>	<u>9</u>	<u>11</u>	0.40	0.71	0.63	0.0021	0.001 d	0.0012	0.00	0.00	0.00	0.00	

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Plan or project	Un-apr abund: birds)	oortione ances (a	i <mark>d</mark> adul <u>t</u>	Un-app collisio (adult i	oortione on impa oirds) ^a	<u>d</u> 61 <u>5</u>	Apportioning values			Apportioned displacement impact valu displacement; and 3% mortality)	Apportioned collision values (species-group avoidance rate 99.28)		
	Pre- breed ing	B r ee d ing		Pre- breed ing	Breed ing		P r e- b r ee d i ng	B r ee d i ng	Post- breedi ng	Pre-breeding	B r ee d i ng	Post- breedi ng	<u>Pre-breeding</u>
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	0.96	0.99	0.0021	0.002 °	0.0012	0.00	0.00	0.00	0.00
Walney 2	Included above			0.30 1.73 0.38		0.38	0.0021 0.002 ° 0.0012		0.0012	Included above		0.00	
West of Duddon Sands Offshore Wind Farm	<u>37</u>	<u>242</u>	<u>34</u>	1.38	2.12	<u>2.21</u>	0.0021	0.002 °	0.0012	0.00	0.00	0.00	0.00

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Plan or	Un-apportioned abundances (adult birds) ^a			Un-ap collisi (adult	portions on impa birds) *	ed licts	Appo r ti	oning va	alues	Appo r tione d d isplacement impact valu d isplacement <u>and</u> 3% mo r tality)	es (3 0 %		Apportioned collision values (species-group avoidance rate 99.28)	Inserted Cells Inserted Cells	
project	nreed	ina	preea	Pre- breed ing	Breed ing	Post- breed ing	d breedi Breedi I		Post- breedi ng	P r e-b r ee d ing	B r ee d i ng	Post- breedi ng	<u>Pre-breeding</u>	Inserted Cells	
Total predicte	d impact	(a d ult	bi rd s)							0.07 <u>08</u>	0.08	0. 05 <u>06</u>	0.48 <u>19</u>	Inserted Cells	





lan o r roject	<u>Un-apr</u> <u>abund</u> birds)	oortione ances (i	ed adult	collisio	ortione on impa birds) ^a	ed ncis	Apporti	oning va	alues	Apportioned displacement impact we displacement and 3% mortality)	ralues (3 0 %		Apportioned collision values (species-group avoidance rate 99.28)		
roject	P r e- b reed ing	Breed ing	Post- breed ing	Pre- breed ing	Breed ing	Post- breed ing	Pre- breedi ng	B r ee d i ng	Post- b r ee d i ng	Pre-breeding	B r ee d i ng	Post- b r ee d i ng	<u>Pre-breeding</u>		
c r ease in b	aseline m	no r tality	· (%)							0.05%	0.06%	0.04%	0.13%		

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4.5.3.41.5.3.7 As the predicted impact on black-legged kittiwake from Ailsa Craig SPA is <1% increase in baseline mortality, which is likely to be undetectable against natural variation, the impact is not considered to hinder the conservation objectives of the site, and therefore, it is concluded beyond reasonable scientific doubt that there would be no AEoSI from the Mona Offshore Wind Project incombination with other plans and projects.



Rathlin Island SPA

4.5.3.51.5.3.8 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline black-legged kittiwake from Rathlin Island SPA, an in-combination assessment is presented within Table 1-21 (70% displacement and 10% mortality) and Table 1-22 (30% displacement and 3% mortality).

Table 1-21: In-combination assessment for black-legged kittiwake from the Rathlin Island SPA – when considering 30-70% displacement and 1-10% mortality).

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the breeding period, 54.33% of birds are adults in the post-breeding season.

b - the apportioning value during the breeding season was taken from project specific documentation.

c - the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.04.

d - the apportioning value during the breeding season has used that of Mona Offshore Wind Project, specifically 0.02.

Plan o r p r oject	-	oortione ances (a		collisio	oortione on impa oirds) *		Appo r ti	oning va	lues	values displac mortali	ement ir (3 0 % ement a ty to 7 0 % ement a	in d 1 % %	values	ione d co (species nce r ate	-g r oup	Combi	ne d im	pact	
	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breed ing	B r ee d ing	Post- b r ee d ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	<u>Pre-</u> breedi ng	Breedi na	Post- b r ee d i ng	Pre- bree ding	Bree ding	Post- bree ding	Annu al
Awel y Môr Offshore Wind Farm	<u>162</u>	<u>46</u>	<u>45</u>	<u>8.14</u>	<u>6.20</u>	<u>4.41</u>	0. 0337 0021	No connectivity 0.0 2 d	0. 0191 0012	0.02 to 0.37	0.00 to 0.06	0.00 to 0.06	0.27	<u>-0.12</u>	0.08	0.29 to 0.65	0.13 to 0.19	0.09 to 0.14	0.50 to 0.98
Burbo Bank Extension Offshore Wind Farm	0.033 7 <u>27</u>	0.063 376	<u>25</u>	0. 019 1 <u>00</u>	12.26	0.00	0.0021	0.02 d	0.0012	0.00 to 0.00 <u>06</u>		0.00 to 0. 00 <u>03</u>	0.00	0. 77 <u>25</u>	0.00	0.00 to 0.000 <u>6</u>	0.84 <u>2</u> 7 to 2.43 <u>0</u> .77	0.00 to 0.000 <u>3</u>	0.27 to 0.87
Erebus Floating Wind Demo	0.033 7 <u>1</u>	1076	<u>278</u>	6.66	0.27	<u>13.11</u>	0.0021	No connec tivity	0. 0191 0012	0.00 to 0.00	Ξ	0.02 to 0.36	0.22	-	0.25	0.22 to 0.23	<u>-</u>	0.27 to 0.61	0.49 to 0.84

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Plan or project		oortione ances (;		collisio	oortione on impa birds) ^a		Appo r ti	oning va	lues	values displac mortali	ement ir (3 0 % ement a ty to 7 0 % ement a	in d 1 % %	values	ione d co (species nce r ate	-g r oup	Combi	ine d im	pact	
	P r e- b r ee d ing	B r ee d ing	Post- breed ing	P r e- b r ee d ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post- bree ding	Annu al
TwinHub (Wave Hub Floating Wind Farm)	0.033 7 <u>30</u>	2	103	0.00	<u>5.17</u>	0.00	0.0021	No connec tivity	0. 0191 0012	0.00 to 0.07	=	0.01 to 0.13	0.00	-	0.00	0.00 to 0.07	=	0.01 to 0.13	0.01 to 0.20
Mona Offshore Wind Project	0.033 7 <u>312</u>	386	307	4.65	8.26	4.47	0.0021	0.02 <u>b</u>	0. 0191 0012	0.03 to 0.72	0.02 to 0.54	0.02 to 0.40	0. 27<u>16</u>	0. 10 <u>17</u>	0.09	0.30 <u>1</u> <u>9</u> to 0.99 <u>8</u> <u>8</u>	0. 12 1 9 to 0.64 <u>7</u> 1	0.10 to 0.48	0.48 to 2.07
Morecambe Offshore Windfarm Generation Assets	0.033 7 <u>631</u>	2074	<u>2215</u>	2.84	8.00	<u>6.19</u>	0.0021	0.063 <u>b</u>	0. 0191 <u>0012</u>	0.06 to 1.46	0.39 to 9.15	0.12 to 2.88	0.10	0.50	0.12	0.16 to 1.55	0.90 to 9.65	0.24 to 3.00	1.30 to 14.20
Morgan Offshore Wind Project Generation Assets	0.033 7 <u>350</u>	<u>245</u>	<u>886</u>	7.01	2.66	11.51	0.0021	0.04 <u>b</u>	0. 0191 <u>0012</u>	0.03 to 0.81	0.03 to 0.69	0.05 to 1.15	0.24	0.11	0.22	0.27 to 1.05	0.14 to 0.79	0.27 to 1.37	0.68 to 3.21
Ormonde Wind Farm	0.033 7 <u>12</u>	0.063 32	0.019 1 <u>11</u>	0.00 to 0.00	0.00 to 0.00 <u>1.</u> 74	0.00 to 0.00	0. <u>0000</u> <u>21</u>	0. 11 <u>04</u>	0. <u>0000</u> <u>12</u>	0.00 to 0. 00 <u>03</u>	0. 11 00 to 0. 11 09	0.00 to 0. 00 01	0.00	0.07	0.00	0.00 to 0.03	0.07 to 0.16	0.00 to 0.01	0.08 to 0.20
Rampion Offshore Wind Farm	0.033 7<u>451</u>	<u>563</u>	122	22.22	37.54	8.43	0.0021	No connec tivity	0. 0191 0012	0.04 to 1.04	<u>-</u>	0.01 to 0.16	0.75	-	0.16	0.79 to 1.79	<u>-</u>	0.17 to 0.32	0.96 to 2.11

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Plan or project	_	oortione ances (a		collisio	oortione on impa birds) ^a		Appo r ti	oning va	lues	values displac mortali	ement in (3 0 % ement a ty to 7 0 % ement a	n d 1 % %	values	ione d co (species nce r ate	-g r oup	Comb	ine d im	pact	
	P r e- b r ee d ing	B r ee d ing	Post- breed ing	P r e- b r ee d ing	Breed ing	Post- b r ee d ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post- bree ding	Annu al
Rampion 2 Offshore Wind Farm	0.033 7 <u>155</u>	<u>3</u>	<u>53</u>	9.04	0.53	<u>5.32</u>	0.0021	No connec tivity	0. 0191 0012	0.02 to 0.36	=	0.00 to 0.07	0.30	-	0.10	0.32 to 0.66	=	0.10 to 0.17	0.42 to 0.83
Walney (3 and 4) Extension Offshore Wind Farm	0.033 7 <u>797</u>	0.063 170	0.019 1 <u>610</u>	8.08	10.00	<u>45.96</u>	0.0021	0.04 °	0.0012	0.08 to 1.84	0. 03 <u>02</u> to 0. 75 <u>48</u>	0.03 to 0.79	0.27	0. 63 40	0.88	0.35 to 2.11	0.66 <u>4</u> <u>2</u> to 1.38 <u>0</u> <u>.88</u>	0.91 to 1.67	1.68 to 4.66
West of Orkney Windfarm	0.033 7 <u>661</u>	<u>367</u>	<u>437</u>	11.17	9.08	<u>8.75</u>	0.0021	No connec tivity	0. 0191 0012	0.07 to 1.53	=	0.02 to 0.57	0.38	-	0.17	0.44 to 1.90	=	0.19 to 0.74	0.63 to 2.64
White Cross Offshore Windfarm	0.033 7 <u>379</u>	<u>23</u>	94	4.93	1.97	0.98	0.0021	No connec tivity	0. 0191 0012	0.04 to 0.88	_	0.01 to 0.12	0.17	-	0.02	0.20 to 1.04	=	0.02 to 0.14	0.23 to 1.18
Gap-fille d p r oj	<u>ects</u>	1														1			
Burbo Bank	<u>12</u>	<u>7</u>	11	0.29	0.45	0.45	0.0021	0.02 d	0.0012	0.00 to 0.03	0.00 to 0.01	0.00 to 0.01	0.00	0.00	0.00	0.01 to 0.04	0.01 to 0.02	0.01 to 0.02	0.03 to 0.08
Gwynt y Môr Offshore Wind Farm	<u>39</u>	<u>27</u>	<u>36</u>	0.45	0.77	0.71	0.0021	0.02 d	0.0012	0.00 to 0.09	0.00 to 0.04	0.00 to 0.05	0.00	0.00	0.00	0.02 to 0.11	0.02 to 0.05	0.02 to 0.06	0.05 to 0.22
Robin Rigg	<u>16</u>	<u>11</u>	<u>15</u>	0.39	<u>0.71</u>	0.68	0.0021	<u>0.04 °</u>	0.0012	0.00 to 0.04	0.00 to 0.03	0.00 to 0.02	0.00	0.00	0.00	0.01 to 0.05	0.03 to 0.06	0.01 to 0.03	0.06 to 0.14

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Plan or project	Un-apr abun d birds)	oortione ances (a		collisio	ortione on impa oirds) ^a		Apporti	oning va	lues	values displac mortali	ement in (3 0 % ement a ty to 7 0 % ement a	in d 1 % %	values	breedi breedi bree ding				npact		
	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breed ing	B r ee d ing	Post- b r ee d ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	_				Post- bree ding	Annu al	
Rhyl Flats Offshore Wind Farm	<u>12</u>	9	<u>11</u>	0.40	<u>0.71</u>	0.63	0.0021	0.02 d	0.0012	0.00 to 0.03	0.00 to 0.01	0.00 to 0.01	0.00	0.00	0.00	0.01 to 0.04	0.01 to 0.03	0.01 to 0.03	0.04 to 0.09	
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	<u>0.96</u>	0.99	0.0021	<u>0.04 °</u>	0.0012	0.01 to 0.12	0.00 to 0.09	0.00 to 0.06	0.00	0.00	0.00	0.03 to 0.14	0.04 to 0.13	0.02 to 0.08	0.09 to 0.35	
Walney 2	Include	ed above				0.38	0.0021	<u>0.04 °</u>	0.0012	Include	d above		0.00	0.00	0.00	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	
West of Duddon Sands Offshore Wind Farm	<u>37</u>	242	<u>34</u>	<u>1.38</u>	2.12	2.21	0.0021	<u>0.04 °</u>	0.0012	0.00 to 0.09	0.03 to 0.68	0.00 to 0.04	0.00	0.00	0.00	0.05 to 0.13	0.11 to 0.76	0.04 to 0.09	0.21 to 0.98	
Total p red icte d												0. 29 30 to 6. 69 94	2. 97 <u>98</u>	2.22 <u>1.</u> 87	2. <mark>08<u>20</u></mark>	3. 363 <u>9</u> to 12. 05 <u>54</u>	2. 774 0 to 15.00 14.26	2. 37 <u>5</u> 0 to 8.78 <u>9</u> .14	8.29 to 35.94	
Inc r ease in bas	seline m	no r tality	(%)							0.01% to 0.23 <u>24</u> %	0.01% to 0.32 <u>31</u> %	0.01% to 0.17%	0.07%	0. 06 <u>05</u> %	0.05%	0.08 % to 0.303 <u>1</u> %	6% to	0.06 % to 0.222 3%	0.21 % to 0.89 %	
Annual impact considering 30										ity) 0.2	9 to 35.8 1% to 0 . rease in rtality)							

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4.5.3.61.5.3.9 As previously discussed (section 1.1.2) the Applicant is not proposing to undertaken PVA on the worst-case scenario as advised by JNCC, due to lack of empirical evidence for a displacement rate of 70% and a mortality rate of 10% therefore the applicant has presented the NatureScot guidance of 30% displacement and 3% mortality within Table 1-22.

Table 1-22: In-combination assessment for black-legged kittiwake from the Rathlin Island SPA – when considering 30% displacement and 3% mortality).

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the breeding period, 54.33% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season

b - the apportioning value during the breeding season was taken from project specific documentation.

c - the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.04.

d - the apportioning value during the breeding season has used that of Mona Offshore Wind Project, specifically 0.02.

Plan or project		oortione ances (a		collisio	oortione on impa oirds) ^a		Apportioning values			Apportioned displacement impact values (30% displacement and 3% mortality) Pre-					-g r oup					
	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	<u>Pre-</u> breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post- bree ding	Annu al	
Awel y Môr Offshore Wind Farm	<u>162</u>	<u>46</u>	<u>45</u>	<u>8.14</u>	<u>6.20</u>	<u>4.41</u>	0. 0337 0021	No connec tivity0.0 2 d	0. 0191 0012	0.05	0.01	0.01	0.27	<u>-0.12</u>	0.08	0.32	-0.13	0.09	0.55	
Burbo Bank Extension Offshore Wind Farm	<u>27</u>	<u>376</u>	<u>25</u>	0. 033 7 <u>00</u>	12.26	0. 063 <u>00</u>	0. 0191 <u>0021</u>	0. 00 <u>02</u>	0. 21 <u>00</u> <u>12</u>	0. 00<u>01</u>	0. 00<u>07</u>	0. 77 <u>00</u>	0.00	0.25	0.00	0. 99 0 1	0.31	0.00	0.33	
Erebus Floating Wind Demo	0.033 7 <u>1</u>	<u>1076</u>	<u>278</u>	6.66	0.27	13.11	0.0021	No connec tivity	0. 0191 0012	0.00		0.05	0.22	-	0.25	0.22	-	0.30	0.52	

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Plan or project	Un-app abund birds)	oortione ances (a	<u>d</u> adult	collisio	oortione on impa birds) *	e <u>d</u> cts	Appo r ti	oning va	lues	values	ement ir (3 0 % ement	npact	values	ortioned collision les (species-group Combined impact idance rate 99.28)					
	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post- breedi ng	Pre- bree ding	Bree ding	Post- bree ding	Annu <u>al</u>
TwinHub (Wave Hub Floating Wind Farm)	0.033 7 <u>30</u>	2	<u>103</u>	0.00	<u>5.17</u>	0.00	0.0021	No connec tivity	0. 0191 0012	0.01		0.02	0.00	-	0.00	0.01	-	0.02	0.03
Mona Offshore Wind Project	0.033 7 <u>312</u>	<u>386</u>	<u>307</u>	<u>4.65</u>	<u>8.26</u>	4.47	0.0021	0.02 <u>b</u>	0. 0191 <u>0012</u>	0.09	0.07	0.05	0. 27 16	0. 10 17	0.09	0. 36 2 5	0. 17 2 3	0.14	0.62
Morecambe Offshore Windfarm Generation Assets	0.033 7 <u>631</u>	2074	2215	2.84	8.00	<u>6.19</u>	0.0021	0.063 <u>b</u>	0. 0191 0012	0.19	1.18	0.37	0.10	0.50	0.12	0.28	1.68	0.49	2.45
Morgan Offshore Wind Project Generation Assets	0.033 7 <u>350</u>	<u>245</u>	886	7.01	2.66	11.51	0.0021	0.04 <u>b</u>	0. 0191 0012	0.10	0.09	0.15	0.24	0.11	0.22	0.34	0.19	0.37	0.90
Ormonde Wind Farm	0.033 7 <u>12</u>	0.063 32	0.019 4 <u>11</u>	0.00	1.74	0.00	0.0021	<u>0.04 °</u>	0.0012	0.00	0.01	0.00	0.1100	0.07	0.00	0.00	0. 11 0 <u>8</u>	0.00	0.09
Rampion Offshore Wind Farm	0.033 7 <u>451</u>	<u>563</u>	122	22.22	37.54	<u>8.43</u>	0.0021	No connec tivity	0. 0191 0012	0.13		0.02	0.75	-	0.16	0.88	-	0.18	1.06
Rampion 2 Offshore Wind Farm	0.033 7<u>155</u>	<u>3</u>	<u>53</u>	9.04	0.53	<u>5.32</u>	0.0021	No connec tivity	0. 0191 0012	0.05		0.01	0.30	-	0.10	0.35	-	0.11	0.46

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Plan or project	Un-apportioned abundances (adult birds) a			Un-apportioned collision impacts (adult birds) ^a			Apportioning values			Apportioned displacement impact values (30% displacement and 3% mortality)			Apportioned collision values (species-group avoidance rate 99.28)			Combine d impact			
	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post- bree ding	Annu al
Walney (3 and 4) Extension Offshore Wind Farm	0.033 7 <u>797</u>	0.063 170	0.019 1 <u>610</u>	8.08	10.00	<u>45.96</u>	0.0021	0.04 °	0.0012	0.24	0. 10 06	0.10	0.27	0. 63 <u>40</u>	0.88	0.51	0. 73 4 6	0.98	1.95
West of Orkney Windfarm	0.033 7 <u>661</u>	367	437	11.17	9.08	<u>8.75</u>	0.0021	No connec tivity	0. 0191 0012	0.20		0.07	0.38	-	0.17	0.57	-	0.24	0.81
White Cross Offshore Windfarm	0.033 7 <u>379</u>	<u>23</u>	94	4.93	1.97	0.98	0.0021	No connec tivity	0. 0191 0012	0.11		0.02	0.17	-	0.02	0.28	- <u>0.00</u>	0.03	0.31
Gap-filled proj	<u>ects</u>												•		•				
Burbo Bank	<u>12</u>	<u>7</u>	<u>11</u>	0.29	0.45	<u>0.45</u>	0.0021	0.02 d	0.0012	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.03
Gwynt y Môr Offshore Wind Farm	<u>39</u>	<u>27</u>	<u>36</u>	<u>0.45</u>	<u>0.77</u>	<u>0.71</u>	0.0021	0.02 d	0.0012	0.01	0.00	0.01	0.02	0.02	0.01	0.03	0.02	0.02	0.07
Robin Rigg	<u>16</u>	<u>11</u>	<u>15</u>	0.39	0.71	0.68	0.0021	<u>0.04 ^c</u>	0.0012	0.00	0.00	0.00	0.01	0.03	0.01	0.02	0.03	0.02	0.07
Rhyl Flats Offshore Wind Farm	<u>12</u>	9	<u>11</u>	0.40	<u>0.71</u>	0.63	0.0021	0.02 d	0.0012	0.00	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.01	0.05
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	0.96	0.99	0.0021	<u>0.04 °</u>	0.0012	0.02	0.01	0.01	0.02	0.04	0.02	0.04	0.05	0.03	0.11
Walney 2	Include	d above	1			0.38	0.0021	<u>0.04 °</u>	0.0012	Include	d above		0.01	0.07	0.01	0.01	0.07	0.01	0.09

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Plan o r p r oject	Un-apportioned abundances (adult collision impacts (adult birds) and Deet Dree Deet						Apporti	oning va	lues	mo r tality)			Apportioned collision values (species-group Combined impact avoidance rate 99.28)					pact	
	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	<u>Pre-</u> breedi ng	Breedi ng	<u>Post-</u> b r ee d i ng	Pre- bree ding	Bree ding	Post- bree ding	Annu al
West of Duddon Sands Offshore Wind Farm	<u>37</u>	<u>242</u>	<u>34</u>	1.38	<u>2.12</u>	2.21	0.0021	<u>0.04 °</u>	0.0012	0.01	0.09	0.01	0.05	0.08	0.04	0.06	0.17	0.05	0.28
Total predicted	impact	(a d ult	bi rd s)							1. 47 23	1. 64 <u>59</u>	0. 86 <u>89</u>	2. 97 <u>98</u>	2.22 <u>1.</u> 87	2. <mark>0820</mark>	4. 13 2 1	3. 86 <u>4</u> <u>7</u>	2.94 <u>3</u> . 0 9	10.77
Inc r ease in bas	seline m	o r tality	(%)							0.03%	0.04%	0.02%	0.07%	0. <u>06<u>05</u> %</u>	0.05%	0.10 %	0. <u>100</u> <u>9</u> %	0. <mark>070</mark> <u>8</u> %	<u>0.27</u> <u>%</u>

Annual impact and increase in baseline mortality from the combined impact (when considering 70% displacement and 10% mortality)

40.94 birds
0.27% increase in baseline mortality

4.5.3.71.5.3.10 As the predicted impact on black-legged kittiwake from Rathlin Island SPA is <1% increase in baseline mortality, which is likely to be undetectable against natural variation, the impact is not considered to hinder the conservation objectives of the site, therefore, it is concluded beyond reasonable scientific doubt that there would be no AEoSI from the Mona Offshore Wind Project incombination with other plans and projects..

Lambay Island SPA

4.5.3.81.5.3.11 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline black-legged kittiwake from Lambay Island SPA, an in-combination assessment is presented within Table 1-23 (30% displacement and 1% mortality to 70% displacement and 10% mortality) and Table 1-24 (30% displacement and 3% mortality).

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Table 1-23: In-combination assessment for black-legged kittiwake from the Lambay Island SPA- when considering 30-70% displacement and 1-10% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the breeding period, 54.33% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season

- b the apportioning value during the breeding season was taken from project specific documentation.
- c the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.033.
- d the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.022.
- e the apportioning value during the breeding season has used that of Erebus Floating Wind Demo, specifically 0.031.

Plan or project	_	oortione ances (a		collisio	oortione on impa oirds) ^a		Appo r ti	oning va	lues	values displac mortali	ement ir (3 0 % ement a ty to 7 0 % ement a	n d 1 % %	Apportioned collision values (species-group avoidance rate Combined impact 99.28)						
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	Pre- breedi ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post-breeding	Pre- bree ding	B r ee d ing	Post bree ding	
Awel y Môr Offshore Wind Farm	<u>162</u>	<u>46</u>	<u>.45</u>	<u>8.14</u>	<u>6.20</u>	<u>,4.41</u>	0. 006 0 065	0.022 <u>b</u>	0. <u>9040</u> 049	0.00 to 0.07	0.00 to 0.07	0.00 to 0.01	0.05	0.14	0.02	0.06 to 0.13	0.14 to 0.21	0.02 to 0.04	

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Plan or	Un-apr abund birds)	oortione ances (a -	e <mark>d</mark> adult	collisio	oortione on impa birds) ^a	cts	Apportioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)			Apportioned collision values (species-group avoidance rate Combined impact 99.28)					
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	<u>Breedi</u> ng	<u>Post-breeding</u>	Pre- bree ding	B r ee d ing	Post - bree ding
Burbo Bank Extension Offshore Wind Farm	0.006 27	<u>376</u>	<u>25</u>	0. 023 <u>00</u>	0.004 12.26	0.00	0.0065	<u>0.022 ^d</u>	0.0049	0. 03 00 to 0. 61 01	0.02 to 0.58	0.00 <u>to</u> 0.01	0.2800	0.27	0.00	0.00 to 0.000 1	0.312 9 to 0.908 5	0.00 to 0.00 01
Erebus Floating Wind Demo	0.006 1	<u>1076</u>	<u>278</u>	<u>6.66</u>	0.27	,13.11	0.0065	0.031 <u>b</u>	0. <u>0040</u> <u>049</u>	0.00 to 0.00	0.10 to 2.33	0.00 to 0.09	0.04	0.01	0.06	0.04 to 0.04	0.11 to 2.34	0.07 to 0.16

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Plan or		oortione ances (a -		collisio	oortione on impa birds) ^a	<u>cts</u>	Appo r tioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)			Apportioned collision values (species-group avoidance rate Combined impact 99.28)						
p r oject	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post- b reed i ng	Pre- breedi ng	B r ee d i ng	<u>Post-breeding</u>	Pre- bree ding	Breed ing	Post bree ding	
TwinHub (Wave Hub Floating Wind Farm)	0.006 <u>30</u>	2	<u>103</u>	0.00	<u>5.17</u>	0.00	0.0065	0.031 <u>°</u>	0. <u>9040</u> <u>049</u>	0.00 to 0.01	0.00 to 0.00	0.00 to 0.03	0.00	0.16	0.00	0.00 to 0.01	0.16 to 0.471 6	0.00 to 0.03	
Mona Offshore Wind Project	0.006 312	386	307	4.65	8.26	4.47	0.0065	0.038 <u>b</u>	0. <u>0040</u> 049	0.01 to 0.14	0.04 to 1.03	0.00 to 0.10	0.0403	0. 19 31	0.02	0.06 <u>0</u> <u>4</u> to 0. 19 1 <u>7</u>	0.23 <u>3</u> <u>6</u> to 1.22 <u>3</u> <u>4</u>	0.03 to 0.12	

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Plan or		oortione ances (a		collisio	portione on impa birds) ^a	cts	Apportioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)			Apportioned collision values (species-group avoidance rate Combined impact 99.28)						
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post-breeding	Pre- bree ding	Breed ing	Post bree ding	
Morecambe Offshore Windfarm Generation Assets	0.006 631	0.023 2074	0.004 2215	2.84	8.00	<u>6.19</u>	0.0065	0.0232 b	0.0049	0.01 to 0.28	0.14 to 3.37	0.03 to 0.74	0.02	0.19	0.03	0.03 to 0.30	0.33 to 3.55	0.06 to 0.77	
Morgan Offshore Wind Project Generation Assets	0.006 350	245	<u>.886</u>	7.01	2.66	11.51	0.0065	0.033 <u>b</u>	0. <u>0040</u> <u>049</u>	0.01 to 0.16	0.02 to 0.57	0.01 to 0.30	0.04 <u>05</u>	0.09	0. 05 <u>06</u>	0.05 to 0.20	0.11 to 0.65	0.07 to 0.35	

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Plan or project	Un-api abund birds)	oortione ances (a	ed adult	Un-apr collisio (adult l	oortione on impa birds) ^a	e <mark>d</mark> Cts	Apportioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)					ollision values avoi d ance r ate	Comb	ine d im	pact
project	Pre- breed ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post-breeding	Pre- bree ding	Breed ing	Post bree ding
Ormonde Wind Farm	0.002 4 <u>12</u>	0.023 2 <u>32</u>	0.001 2 <u>11</u>	0.00 to 0.00	0.00 to 0.001. 74	0.00 to 0.00		0.04 <u>03</u> <u>3 °</u>	0. 00 00 49	0.00 to 0. 00 01	0. 04 <u>00</u> to 0. 04 <u>07</u>	0.00 to 0.00	0.00	0.06	0.00	0.00 to 0.01	0.06 to 0.13	0.00 to 0.00
Rampion Offshore Wind Farm	0.006 451	<u>563</u>	122	22.22	37.54	8.43	0.0065	No connec tivity	0. 004 <u>0</u> <u>049</u>	0.01 to 0.20	_	0.00 to 0.04	0. 12 14	-	0.04	0.15 to 0.35	<u>-</u>	0.04 to 0.08

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Plan or project	Un-apr abund birds)	Un-apportioned un-apportioned ebundances (adult collision impacts birds) a (adult birds) a						Apportioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)				illision v avoi d an		Comb	ine d im	pact
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	<u>Breedi</u> ng	Post-br	ee d ing	Pre- bree ding	Breed ing	Post bree ding
Rampion 2 Offshore Wind Farm	0.006 155	3	<u>53</u>	9.04	0.53	<u>5.32</u>	0.0065	No connec tivity	0. 004 0 049	0.00 to 0.07	=	0.00 to 0.02	0. 05 <u>06</u>	-	0. 02 03		0.06 to 0.13	=	0.03 to 0.04
Walney (3 and 4) Extension Offshore Wind Farm	0.006 797	0.023 170	0.004 610	8.08	10.00	<u>45.96</u>	0.0065	0.033 °	0.0049	0.02 to 0.36	0. 01 <u>02</u> to 0.28 <u>39</u>	0.01 to 0.20	0.05	0.33	0.23	0.20	0.07 to 0.41	0.24 <u>3</u> <u>5</u> to 0.51 <u>7</u> <u>2</u>	0.23 to 0.43

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Plan or project	abund	Un-apportioned abundances (adult birds) a (adult birds) a						Apportioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)				ollision values avoi d ance r ate	Comb	ine d im	pact
project	Pre- breed ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post- breedi ng	Pre- breedi ng	B r ee d i ng	Post-breeding	Pre- bree ding	Breed ing	Post - bree ding
West of Orkney Windfarm	0.006 661	<u>367</u>	437	11.17	9.08	<u>8.75</u>	0.0065	No connec tivity	0. 004 <u>0</u> <u>049</u>	0.01 to 0.29	<u>-</u>	0.01 to 0.15	0. 06 07	_	0.04	0.09 to 0.37	<u>-</u>	0.05 to 0.19
White Cross Offshore Windfarm	0.006 379	23	94	4.93	1.97	0.98	0.0065	0.031 <u>e</u>	0. <u>0040</u> 049	0.01 to 0.17	0.00 to 0.05	0.00 to 0.03	0.03	0.06	0.00	0.04 to 0.20	0.06 to 0.11	0.01 to 0.04

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Plan or		oortione ances (a		Un-apportioned collision impacts (adult birds) a						Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)					ollision values avoi d ance r ate	Comb	ine d im	pact
p r oject	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post- breedi ng	Pre- breedi ng	B r ee d i ng	Post-breeding	Pre- bree ding	Breed ing	Post bree ding
<u>Burbo Bank</u>	12	7	<u>11</u>	0.29	0.45	0.45	0.0065	0.022 d	0.0049	0.00 to 0.01	0.00 to 0.01	0.00 to 0.00	0.00	0.01	0.00	0.00 to 0.01	0.01 to 0.02	0.00 to 0.01
Gwynt y Môr Offshore Wind Farm	<u>39</u>	27	<u>36</u>	0.45	0.77	0.71	0.0065	0.022 d	0.0049	0.00 to 0.02	0.00 to 0.04	0.00 to 0.01	0.00	0.02	0.00	0.00 to 0.02	0.02 to 0.06	0.00 to 0.02

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Plan o r p r oject		oortione ances (a a		collisio	portione on impa birds) ^a		Apportioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)					ollision values avoi d ance r ate	Comb	ine d im	pact
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post-breeding	Pre- bree ding	Breed ing	Post bree ding
<u>Robin Rigg</u>	<u>16</u>	11	<u>15</u>	0.39	0.71	0.68	0.0065	0.033 °	0.0049	0.00 to 0.01	0.00 to 0.03	0.00 to 0.01	0.00	0.02	0.00	0.00 to 0.01	0.02 to 0.05	0.00 to 0.01
Rhyl Flats Offshore Wind Farm	12	<u>9</u>	11	0.40	0.71	0.63	0.0065	0.022 d	0.0049	0.00 to 0.01	0.00 to 0.01	0.00 to 0.00	0.00	0.02	0.00	0.00 to 0.01	0.02 to 0.03	0.00 to 0.01

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Plan or project		oortione ances (a		collisio	oortione on impa oirds) ^a		Apporti	oning va	lues	Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)					ollision values avoi d ance r ate	Comb	ine d im	pact
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	Pre- breedi ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post- b reed i ng	Pre- breedi ng	Breedi ng	Post-breeding	Pre- bree ding	B r ee d ing	Post bree ding
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	0.96	0.99	0.0065	0.033 °	0.0049	0.00 to 0.02	0.00 to 0.08	0.00 to 0.02	0.00	0.03	0.00	0.00 to 0.03	0.04 to 0.11	0.01 to 0.02
Walney 2	Included above				0.38	0.0065 0.033 ° 0.0049		0.0049	Included above		0.00	0.06	0.00	0.00 to 0.00	0.06 to 0.06	0.00 to 0.00		

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Plan or project		oortione ances (a a		Un-apr collisio (adult	portione on impa birds) ^a	e <mark>d</mark> Ct <u>s</u>	Apportioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)					ollision values avoi d ance r ate	Comb	ine d im	pact
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	Breedi ng	Post-breeding	Pre- bree ding	Breed ing	Post - bree ding
West of Duddon Sands Offshore Wind Farm	<u>37</u>	242	<u>34</u>	1.38	2.12	2.21	0.0065	<u>0.033 °</u>	0.0049	0.00 to 0.02	0.02 to 0.56	0.00 to 0.01	0.01	0.07	0.01	0.01 to 0.03	0.09 to 0.63	0.01 to 0.02
Total p red icted	l impac	t (a d ult	bi rd s)							0.08 to 1. 75 <u>84</u>	0.3639 to 8.319. 19	0.97 <u>08</u> to 1. 72 78	0 .57 <u>58</u>	1.3983	0. 53 <u>56</u>	0.65 to 2.324 2	1.74 <u>2.</u> 2 <u>3</u> to 9.70 <u>1</u> 1.0 <u>3</u>	0.64 64 to 2.25 34

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Plan or	Un-api abund birds)	portione ances (s	e <u>d</u> adult	Un-apı collisid (adult	ortione on impa birds) ^a	<u>ed</u> icts	Appo r ti	oning va	alues	values displace mortali displace	cement i	ın d 1 % %		ione d co es-g r oup	Comb	Combine d impact		
p r oject	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breed ing	B r ee d ing	Post- b r ee d ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	<u>Breedi</u> ng	Post-breeding	Pre- bree ding	Breed ing	Post - bree ding
Inc r ease in ba	iseline n	nortality	(%)							0.01% to 0.48 <u>19</u> %	0.04% to 0.86 <u>95</u> %	0.01% to 0.18%	0. 06 <u>07</u> %	<u>0.05%</u>	<u>,0.05%</u>	0.07 % to 0.25 %	0.23 % to 1.14 %	0.0 7 % to 0 .24 %
	nnual impact and increase in baseline mortality from the combined impact (wi ensidering 30% displacement and 1% mortality to 70% displacement and 10% ortality)									0. 3	10 to 14.2 11% to 1. erease in ertality	4 7 %	e	ı		1	1	П

As previously discussed (section 1.1.21.1.2) the Applicant is not proposing to undertaken PVA on the worst-case scenario as advised by JNCC, due to lack of empirical evidence for a displacement rate of 70% and a mortality rate of 10% therefore the applicant has presented the NatureScot guidance of 30% displacement and 3% mortality within Table 1-24.

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Table 1-24: In-combination assessment for black-legged kittiwake from the Lambay Island SPA− when considering 30% displacement and 3% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the breeding period, 54.33% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season

- b the apportioning value during the breeding season was taken from project specific documentation.
- c the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.033.
- d the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.022.
- e the apportioning value during the breeding season has used that of Erebus Floating Wind Demo, specifically 0.031.

Plan or project		oortione ances (2		Un-apportioned collision impacts (adult birds) *			Apportioning values			Apportioned displacement impact values (30% displacement and 3% mortality)			values	ione d co (species nce r ate	s-g r oup	Combine d impact			
	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	Pre- breedi ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d ing	Post- b r ee d i ng	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post- bree ding	A n n u al
Awel y Môr Offshore Wind Farm	162	<u>46</u>	<u>45</u>	<u>8.14</u>	6.20	4.41	0.0065	0.022 b	0.0049	0.01	0.01	0.00	0.05	0.14	0.02	0.06	0.15	0.02	0 0 1 2 3
Burbo Bank Extension Offshore Wind Farm	<u>27</u>	<u>376</u>	<u>25</u>	0. 08 <u>0</u>	12.26	0.00	0. <u>2800</u> <u>65</u>	0. 00 02 2 d	0.0049	0.00	0.3611	0.00	0.00	0.0840	0.00	0.00	0.52	0.00	<u>0.</u> <u>5</u> <u>2</u>
Erebus Floating Wind Demo	1	<u>1076</u>	<u>278</u>	<u>6.66</u>	0.27	13.11	0.0065	0.031 b	0.0049	0.00	0.30	0.01	0.04	0.01	0.06	0.04	0.31	0.08	0 0 4 3

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Plan o r p r oject		oortione ances (a		collisio	oortione on impa birds) ^a		Apportioning values			Apportioned displacement impact values (30% displacement 3% mortality)			values	ione d co (species nce r ate	Combined impact					
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d in	ıg	Post- b r ee d i ng	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post- bree ding	A n n u al
TwinHub (Wave Hub Floating Wind Farm)	<u>30</u>	2	103	0.00	<u>5.17</u>	0.00	0.0065	0.031 °	0.0049	0.00	0.00	0. 16	0.00	0.00	0.16	0.00	0.00	0. 00 1 6	0.00	0. 1 7
Mona Offshore Wind Project	<u>312</u>	<u>386</u>	<u>307</u>	<u>4.65</u>	8.26	4.47	0.0065	0.038 b	0.0049	0.02	0.13		0.01	0. 05 <u>03</u>	0. 19 31	0.02	0. 07 <u>0</u> <u>5</u>	0. 32 4 5	0.04	0 0 2 5 3
Morecambe Offshore Windfarm Generation Assets	<u>631</u>	2074	2215	2.84	8.00	6.19	0.0065	0.0232 b	0.0049	0.04	0.43		0.09	0.02	0.19	0.03	0.05	0.62	0.13	0 0 4 8 0
Morgan Offshore Wind Project Generation Assets	<u>350</u>	<u>245</u>	<u>886</u>	7.01	2.66	11.51	0.0065	0.033 b	0.0049	0.02	0.07		0.04	0.05	0.09	0.06	0.07	0.16	0.09	0 . 0 2 3 2
Ormonde Wind Farm	0.00 <u>1</u> 2	<u>32</u>	<u>11</u>	0.00	0.00 <u>1.</u> 74	0.00	0. 04 <u>00</u> <u>65</u>	0. 00 03 3°	0. 00 <u>00</u> <u>49</u>	0.0400	0. 00 <u>01</u>		0.00	0.00	0.0006	0.00	0.00	0.07	0.00	<u>0.</u> <u>0</u> <u>7</u>

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Plan o r	Un-apportioned abundances (adult birds) ^a			collisio	oortione on impa oirds) ^a	<u>cts</u>	Apportioning values			Apportioned displacement impact values (30% displacement and 3% mortality)			values	ione d co (species nce r ate	Combine d impact				
p r oject	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breed ing	B r ee d ing	Post- b r ee d ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d ing	Post- b r ee d i ng	Pre- breedi ng	<u>Breedi</u> ng	Post- breedi ng	Pre- bree ding	Bree ding	Post- bree ding	A n n u al
Rampion Offshore Wind Farm	<u>451</u>	<u>563</u>	122	22.22	<u>37.54</u>	<u>8.43</u>	0.0065	No connec tivity	0.0049	0.03	-	0.01	0.14	-	0.04	0.17	-	0.05	0 4 3 2 2
Rampion 2 Offshore Wind Farm	<u>155</u>	<u>3</u>	<u>53</u>	9.04	0.53	<u>5.32</u>	0.0065	No connec tivity	0.0049	0.01	=	0.00	0.06	-	0.03	0.07	-	0.03	0 0 1 1 0
Walney (3 and 4) Extension Offshore Wind Farm	797	170	610	8.08	10.00	45.96	0.0065	0.033 °	0.0049	0.05	0. 04<u>05</u>	0.03	0.05	0. 23 <u>33</u>	0.23	0.10	0. 27 <u>3</u> <u>8</u>	0.25	0 0 5 7 3
West of Orkney Windfarm	<u>661</u>	<u>367</u>	437	11.17	9.08	8.75	0.0065	No connec tivity	0.0049	0.04	-	0.02	0.07	-	0.04	0.11	-	0.06	0 0 4 1 7

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Plan or	abund	Un-apportioned abundances (adult birds) ³			Un-apportioned collision impacts (adult birds) a			Apportioning values			Apportioned displacement impact values (30% displacement and 3% mortality)			ione d co (species nce r ate	·				
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d ing	Post- b r ee d i ng	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post- bree ding	A n n u a
White Cross Offshore Windfarm	<u>379</u>	<u>23</u>	94	4.93	1.97	0.98	0.0065	0.031 ^e	0.0049	0.02	0.01	0.00	0.03	0.06	0.00	0.05	0.07	0.01	0 0 2 1 3
Gap-filled proj	ects																		
Burbo Bank	<u>12</u>	<u>7</u>	<u>11</u>	0.29	<u>0.45</u>	0.45	0.0065	0.022 d	0.0049	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0. 0 2
Gwynt y Môr Offshore Wind Farm	39	<u>27</u>	<u>36</u>	0.45	0.77	0.71	0.0065	0.022 d	0.0049	0.00	0.01	0.00	0.00	0.02	0.00	<u>0.01</u>	0.02	0.00	<u>0.</u> <u>0</u> <u>3</u>
Robin Rigg	<u>16</u>	<u>11</u>	<u>15</u>	0.39	<u>0.71</u>	0.68	0.0065	0.033 °	0.0049	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.00	0. 0 3
Rhyl Flats Offshore Wind Farm	<u>12</u>	9	11	0.40	0.71	0.63	0.0065	0.022 d	0.0049	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0. 0 2
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	0.96	0.99	0.0065	0.033 °	0.0049	0.00	0.01	0.00	0.00	0.03	0.00	0.01	0.04	0.01	<u>0.</u> <u>0</u> <u>6</u>
Walney 2	Include	ed above	<u>9</u>			0.38	0.0065	0.033 °	0.0049	Include	d above	1	0.00	0.06	0.00	0.00	0.06	0.00	<u>0.</u> <u>0</u> <u>6</u>

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Plan o r	Un-apportioned abundances (adult birds) °			Un-apportioned collision impacts (adult birds) a			Apportioning values			Apportioned displacement impact values (30% displacement, and 3% mortality)			values	ione d co (species nce r ate	s-g r oup	Combine d impact			
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d ing	Post- b r ee d i ng	Pre- breedi ng	<u>Breedi</u> ng	Post- breedi ng	Pre- bree ding	Bree ding	Post- bree ding	A n n u a
West of Duddon Sands Offshore Wind Farm	Duddon Sands Offshore Wind 37 242 34 1.38 2.12 2.21 0.0065 0.033 ° 0.00									0.00	0.07	0.00	0.01	0.07	0.01	0.01	0.14	0.01	<u>0.</u> <u>1</u> <u>7</u>
Total predicted	i impac	t (a d ult	bi rd s)							0. 1. 23 07 24	0<u>1</u> .22	0. 57 23	<u>0.58</u>	1. 39 <u>97</u>	0. 53 <u>56</u>	0.8 <mark>0</mark> 8 1	2.46 <u>3</u> .19	0. 76 <u>7</u> 9	<u>4.</u> <u>7</u> <u>9</u>
Inc r ease in bas	Increase in baseline mortality (%)										0.44 <u>13</u> %	0.02%	0.06%	0.44 <u>20</u> %	0.06%	0.0 8 %	0. 25 <u>3</u> <u>3</u> %	0.0 8 %	<u>0.</u> <u>4</u> <u>9</u> <u>%</u>
	Annual impact and increase in baseline mortality from the combined impact (when considering 30% displacement and 3% mortality)										bi rds % inc r ease ir ality	h baselin	e	1	I	1	1	1	1

4.5.3.101.5.3.13 As the predicted impact on black-legged kittiwake from Ailsa Craig SPA is <1% increase in baseline mortality, which is likely to be undetectable against natural variation, the impact is note considered to hinder the conservation objectives of the site, and therefore, it is concluded beyond reasonable scientific doubt that there would be no AEoSI from the Mona Offshore Wind Project incombination with other plans and projects.

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Ireland's Eye SPA

1.5.3.11 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline black-legged kittiwake from Ireland's Eye SPA, an in-combination assessment is presented within Table 1-25 (30% displacement and 1% mortality to 70% displacement and 10% mortality) and Table 1-26 (30% displacement and 3% mortality).

Table 1-25: In-combination assessment for black-legged kittiwake from the Ireland's Eye SPA – when considering 30-70% displacement and 1-10% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the breeding period, 54.33% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season

b - the apportioning value during the breeding season was taken from project specific documentation.

c - the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.013.

d - the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.01.

e - the apportioning value during the breeding season has used that of Erebus Floating Wind Demo, specifically 0.016.





Plan o r	Un-apr abund birds)	oortione ances (a	e <u>d</u> adult	collisio	oortione on impa birds) ^a	<u>cts</u>	Apporti	oning va	lues	impact d isplac	values (ement a ty to 7 0 ° ement e	in d 1 %	values	one d co (species nce r ate	-g r oup	Comb	ine d im	pact
p r oject	P r e- b reed ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post-b r ee d ing	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post bree ding
	<u>162</u>	<u>46</u>	<u>45</u>															
Awel y Môr Offshore Wind Farm				<u>8.31</u>	<u>6.20</u>	<u>4.54</u>	0. 0013 0015	0.01 <u>b</u>	0. 001 0 <u>011</u>	0.00 to 0.02 <u>07</u>		0.00 to 0. 00 01	0.0105	0.0614	0. 00 02	0.01 to 0.03	0.06 to 0.09	0.00 to 0.01
Burbo Bank Extension Offshore Wind Farm	0.001 3 <u>27</u>	376	<u>25</u>	0. 010 <u>00</u>	0.001 12.26	0.00	<u>0.0015</u>	<u>0.01 ^d</u>	0.0011	0. 01 00 to 0. 27 01	0.02 to 0.58	0.00 <u>to 0.01</u>	0. 13 00	0.27	0.00	0.00 to 0.00	0.14 <u>1</u> <u>3</u> to 0.40 <u>3</u> <u>9</u>	0.00 to 0.00

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Plan o r	Un-apportioned abundances (adult birds) ^a			Un-apportioned collision impacts (adult birds) ^a			Appo r tioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 40and 16% mortality)			values	one d co (species nce r ate	Combine d impact			
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i	Pre- breedi ng	B r ee d i ng	Post-breeding	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post bree ding
Erebus Floating Wind Demo	0.001 3 <u>1</u>	1076	278	6.80	0.27	13.49	0.0015	0.016 <u>b</u>	0. 001 0 011	0.00 to 0.00	0.0510 to 1.202. 33	0.00 to 0. 02 09	0.0104	0.01	0.06	0.01 to 0.01	0.06 to 1.21	0.02 to 0.04
TwinHub (Wave Hub Floating Wind Farm)	0.001 3 <u>30</u>	2	103	0.00	5.17	0.00	0.0015	0.016 <u>°</u>	0. 001 0 011	0.00 to 0. 00 01		0.00 to 0. 01 <u>03</u>	0.00	0. 08 16	0.00	0.00 to 0.00	0.08 to 0.09	0.00 to 0.01

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Plan o r	Un-apportioned abundances (adult pirds) ^a			Un-apportioned collision impacts (adult birds) ^a			Apportioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 40 and 10% mortality)			values	one d co (species nce r ate	-g r oup	Combine d impact		
project	Pre- breed ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post-breeding	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post bree ding
Mona Offshore Wind Project	0.001 3 <u>312</u>	386	<u>307</u>	<u>4.75</u>	8.26	4.60	0.0015	0.016 <u>b</u>	0. 001 0 011	0.00 to 0.02	0.00 to 0.03	0.02 <u>00</u> to 0.43 <u>00</u>	0.03	<u>0.31</u>	0.00 to 0.02	0.01 to 0.04	0. 10 1 <u>5</u> to 0. 5 15 <u>6</u>	0.01 to 0.03
Morecambe Offshore Windfarm Generation Assets	0.001 3 <u>631</u>	0.010 2074	0.001 2215	0.00 to 0.062. 90	0.06 to 1.51 <u>8.</u> 00	6.37	<u>0.0015</u>	0.0104 b	<u>0.0011</u>	0.00 to 0.00	0.01 to 0. 17 26	0.00 to 0.00	0. 08 02	0. 01<u>19</u>	0.03	0.01 to 0.07	0.15 to 1.59	0.01 to 0.17

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Plan o r		portions ances (a		<u>collisi</u>	oortione on impa birds) ^a	<u>icts</u>	Apporti	oning va	lues	impact d isplac mo r tali	values (ement a ty to 7 0 ° ement e	in d 1 %	values	one d co (species nce r ate	-g r oup	Comb	ine d im	ıpact
project	Pre- breed ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post-breeding	Pre- breedi ng	B r ee d i ng	Post- breedi ng	Pre- bree ding	Bree ding	Post bree ding
Morgan Offshore Wind Project Generation Assets	0.001 3 <u>350</u>	<u>245</u>	<u>886</u>	<u>7.16</u>	2.66	11.84	0.0015	0.013 <u>b</u>	0. 001 0 011	0.00 to 0.04 <u>00</u>		0.00 to 0. 07 <u>02</u>	0. 01 05	0. 03 09	0.0106	0.01 to 0.05	0.04 to 0.26	0.02 to 0.08
Ormonde Wind Farm	<u>12</u>	<u>32</u>	11	0.00	1.74	0.00	0.0021	0. 0104 013 °	0.0012	0.00 to 0.00	0.00 to 0.00	0.00 to 0. 00 01	0.00	0.06	0.00	0.00 to 0.00	0.02 to 0.03	0.00 to 0.00

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Plan o r	Un-apportioned abundances (adult birds) ²			Un-apportioned collision impacts (adult birds) *			Apportioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 40and 10% mortality)			Apportioned collision values (species-group avoidance rate 99.28)			Combine d impact		
project	Pre- breed ing	B r ee d ing	Post- breed ing	Pre- breed ing	ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post-breeding	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post bree ding
Rampion Offshore Wind Farm	0.001 3 <u>451</u>	<u>563</u>	122	22.69	37.54	8.67	<u>0.0015</u>	No connec tivity	0. 001 0 011	0.00 to 0. 05 <u>03</u>	_	0.00 to 0. 01<u>02</u>	0. 01 14	-	0.0104	0.04 to 0.08	<u>-</u>	0.01 to 0.02
Rampion 2 Offshore Wind Farm	0.001 3 <u>155</u>	<u>3</u>	<u>53</u>	9.24	0.53	<u>5.47</u>	0.0015	No connec tivity	0. 001 0 011	0.00 to 0. 02 06	=	0.00 <u>01</u> to 0.00 <u>17</u>	0. 01 06	-	0. 01 <u>03</u>	0.01 to 0.03	_	0.01 to 0.01

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Plan o r	Un-ap abund birds)	portione lances (e <u>d</u> adult	Un-apportioned collision impacts (adult birds) ^a			Apportioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 40 and 16% mortality)			values	one d co (species nce r ate	-g r oup	Combine d impact			
project	Pre- breed ing	B r ee d ing	b r ee d	Pre- breed ing	B r ee d ing	b r ee d	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post-breeding	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post bree ding	
Walney (3 and 4) Extension Offshore Wind Farm	0.001 3 <u>797</u>	0.010 170	0.001 610	0.00 to 0.088. 25	0.01 to 0.12 <u>1</u> 0.00	0.00 to 0.05 <u>4</u> 7.30	0. 01 00 15	0. 10 01 3°	0.0011	0.00 to 0.04	0.01 to 0.22	<u>0.00 to 0.07</u>	0.05	<u>0.33</u>	0.23	0.02 to 0.09	0.11 <u>1</u> <u>4</u> to 0.23 <u>2</u> <u>8</u>	0.05 to 0.10	
West of Orkney Windfarm	0.001 3 <u>661</u>	<u>367</u>	<u>437</u>	11.40	9.08	9.00	0.0015	No connec tivity	0. 001 0 011	0.00 to 0.00	<u>-</u>	0.00 to 0.00	0.00 to 0.07		0.90 to 0.93 <u>04</u>	0.02 to 0.08	_	0.01 to 0.04	

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Plan o r	Un-api abund birds)	oortione ances (ed adult	Un-apportioned collision impacts (adult birds) ^a			Apportioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)				Apportioned collision values (species-group avoidance rate 99.28)				Combine d impact		
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	Breed ing	Post- breed ing	Pre- breedi ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post-br	ee d ing	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post bree ding	
White Cross Offshore Windfarm	0.001 3 <u>379</u>	23	94	5.03	1.97	1.01	0.0015	0.016 <u>°</u>	0. 001 <u>0</u> <u>011</u>	0.00 to 0. 04 <u>05</u>	0.00 to 0. 03 <u>00</u>		0.01	0.03	0.0006	0.00	0.01 to 0.05	0.03 to 0.06	0.00 to 0.01	
Gap-filled proj	<u>iects</u>																			
Burbo Bank	<u>12</u>	7	11	0.29	<u>0.45</u>	<u>0.46</u>	0.0015	0.01 ^d	0.0011	0.00 to 0.00	0.00 to 0.01	0.00 to	0.00	0.00	0.01	0.00	0.00 to 0.00	0.00 to 0.01	0.00 to 0.00	

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Plan o r	Un-apportioned abundances (adult birds) ^a			Un-apportioned collision impacts (adult birds) ^a			Apportioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 40 and 46% mortality)			Apportioned collision values (species-group avoidance rate 99.28)			Combine d impact		
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post-breeding	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post bree ding
Gwynt y Môr Offshore Wind Farm	<u>39</u>	<u>27</u>	<u>36</u>	<u>0.46</u>	0.77	0.73	0.0015	<u>0.01 ^d</u>	0.0011	0.00 to 0.00	0.00 to 0.02	0.00 to 0.00	0.00	0.02	0.00	0.00 to 0.00	0.01 to 0.03	0.00 to 0.00
Robin Rigg	<u>16</u>	11	<u>15</u>	0.40	0.71	0.70	0.0015	<u>0.013 °</u>	0.0011	0.00 to 0.00	0.00 to 0.01	0.00 to 0.00	0.00	0.02	0.00	0.00 to 0.00	0.01 to 0.02	0.00 to 0.00

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Plan o r		portione ances (a		Un-apportioned collision impacts (adult birds) ^a			Apportioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)			Apportioned collision values (species-group Combined impa avoidance rate 99.28)					npact
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- b r ee d ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	Pre- breedi ng	B r ee d i ng	Post-breeding	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post bree ding
Rhyl Flats Offshore Wind Farm	12	<u>9</u>	<u>11</u>	0.41	0.71	<u>0.65</u>	<u>0.0015</u>	0.01 ^d	0.0011	0.00 to 0.00	0.00 to 0.01	0.00 to 0.00	0.00	0.02	0.00	0.00 to 0.00	0.01 to 0.01	0.00 to 0.00
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.63	0.96	<u>1.02</u>	0.0015	<u>0.013 °</u>	0.0011	0.00 to 0.01	0.00 to 0.03	0.00 to 0.00	0.00	0.03	0.00	0.00 to 0.01	0.01 to 0.04	0.00 to 0.00

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MONA OFFSHORE WIND PROJECT

Plan o r	Un-apportioned abundances (adult birds) a (adult birds) a						Apportioning values				Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)			Apportioned collision values (species-group avoidance rate 99.28) Combined impact					
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- b reed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post-breeding	Pre- breedi ng	Breedi ng	Post- breedi ng	Pre- bree ding	Bree ding	Post bree ding	
Walney 2	Include	ed above	<u> </u>			0.39	0.0065	<u>0.013 °</u>	0.0015	Included	<u>d above</u>		0.00	0.06	0.00	0.00 to 0.00	0.02 to 0.02	0.00 to 0.00	
West of Duddon Sands Offshore Wind Farm	<u>37</u>	242	<u>34</u>	1.41	2.12	2.28	0.0015	<u>0.013 °</u>	0.0011	0.00 to 0.00	0.01 to 0.22	0.00 to 0.00	0.01	0.07	0.01	0.00 to 0.01	0.04 to 0.25	0.00 to 0.00	

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Plan o r	Un-apportioned Un-apportioned abundances (adult collision impacts (adult birds) a (adult birds) a							im Appo r tioning values mo d is			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 40and 10% mortality)			Apportioned collision values (species-group avoidance rate 99.28)			Combine d impact		
project	P r e- b r ee d ing	B r ee d ing	Post- breed ing	Pre- breed ing	B r ee d ing	Post- breed ing	P r e- b r ee d i ng	B r ee d i ng	Post- b r ee d i ng	P r e- b r ee d i ng	B r ee d i ng	Post-breeding	Pre- breedi ng	<u>Breedi</u> ng	Post- breedi ng	Pre- bree ding	Bree ding	Post bree ding	
Total p red icte	d impac	t (a d ult	bi rd s)							0.02 to 0.42	0.1 8 to 4.14	0.0 2 to 0.40	0.46 to 3.83 <u>13</u>	0.02 to 0.39 <u>80</u>	0.13	0.15 to 0.54 <u>5</u> <u>6</u>	0.79 <u>9</u> <u>8</u> to 4.46 <u>9</u> <u>4</u>	0.14 to 0.51 53	
Inc r ease in ba	seline n	no r tality	(%)							0.00% to 0.09%	0.04% to 0.85 <u>92</u> %	0.00 % to 0.09 %	0.03%	0.14<u>18</u> %	0.03%	0.03 % to 0.12 %	0.48 <u>2</u> 2% to 0.98 1 .09%	0.03 % to 0.44 12%	
Annual impact and increase in baseline mortality from the combined impact (wher considering 30% displacement and 1% mortality to 70% displacement and 10% mortality)								(0.1	8 to 5.50 1% to 1.2 seline m	2 <mark>1 % increase in</mark>								

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4.5.3.121.5.3.15 As previously discussed (section 1.1.2) the Applicant is not proposing to undertaken PVA on the worst-case scenario as advised by JNCC, due to lack of empirical evidence for a displacement rate of 70% and a mortality rate of 10% therefore the applicant has presented the NatureScot guidance of 30% displacement and 3% mortality within Table 1-25Table 1-19Table 1-26.



Table 1-26: In-combination assessment for black-legged kittiwake from the Ireland's Eye SPA – when considering 30% displacement and 3% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the breeding period, 54.33% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season

<u>b</u> – the apportioning value during the breeding season was taken from project specific documentation.

c – the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.013.

d - the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.01.

e - the apportioning value during the breeding season has used that of Erebus Floating Wind Demo, specifically 0.016.

Plan o r p r oject	Un-apport (adult bird	ioned abur s) ^a	n d ances	Un-apport impacts (a	ioned collis dult birds)	sion a	Appo r tionir	ng values			ne d d isplacer lues (3 0 % nent ₋ and 3%	ment mo r tality)		e d collision v roup avoi d ar		Combine	d impact		
Fian or project	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- breeding	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	<u>Breeding</u>	Post- breeding	<u>Pre-</u> breedin g	Breedin g	Post- breedin g	<u>Annual</u>
Awel y Môr Offshore Wind Farm	162	<u>46</u>	<u>45</u>	<u>8.14</u>	6.20	4.41	0. 0013 0015	0.01 <u>b</u>	0.0010011	0.00	0.00	0.00	0.01	0.06	0.00	0.01	0.07	0.01	0.09
Burbo Bank Extension Offshore Wind Farm	<u>27</u>	<u>376</u>	<u>25</u>	0. 0013<u>00</u>	12.26	0. 010 <u>00</u>	0. 001 <u>0015</u>	0.01 d	0.0011	0.00	0. 04 03	0.00	0.00	0. 13 12	0.00	0.00	0.16	0.00	0.16
Erebus Floating Wind Demo	0.0013 1	1076	278	6.66	0.27	13.11	0.0015	0.016 <u></u>	0.0010011	0.00	0.15	0.00	0.01	0.00	0.01	0.01	0.16	0.02	0.19
TwinHub (Wave Hub Floating Wind Farm)	0.001330	2	103	0.00	<u>5.17</u>	0.00	0.0015	0.016 <u>e</u>	0. 001 <u>0011</u>	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.08	0.00	0.08
Mona Offshore Wind Project	0.0013 <u>31</u> 2	386	307	4.65	8.26	4.47	0.0015	0.016 <u></u>	0. 001 <u>0011</u>	0.00	0.06	0.00	0.01	0.13	0.00	0.01	0.19	0.01	0.21
Morecambe Offshore Windfarm Generation Assets	0.0013 <u>63</u> 1	0.010 <u>207</u> <u>4</u>	0.001 <u>221</u> 5	2.84	8.00	6.19	0.0015	0.0104 b	0.0011	0.01	0.19	0.02	0.00	0.08	0.01	0.01	0.28	0.03	0.32
Morgan Offshore Wind Project Generation Assets	0.0013 <u>35</u> 0	<u>245</u>	886	7.01	2.66	11.51	0.0015	0.013 <u>b</u>	0. 001 <u>0011</u>	0.00	0.03	0.01	0.01	0.03	0.01	0.02	0.06	0.02	0.10
Ormonde Wind Farm	12	<u>32</u>	<u>11</u>	0.00	1.74	0.00	0.0021	0. 0104<u>013</u>	0.0012	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0. 02 03	0.00	0.03
Rampion Offshore Wind Farm	0.0013 <u>45</u> 1	<u>563</u>	122	22.22	<u>37.54</u>	8.43	0.0015	No connectivity	0. 001 <u>0011</u>	0.01	=	0.00	0.03	-	0.01	0.04	-	0.01	0.05
Rampion 2 Offshore Wind Farm	0.0013 <u>15</u> 5	<u>3</u>	<u>53</u>	9.04	0.53	5.32	0.0015	No connectivity	0. 001 <u>0011</u>	0.00	=	0.00	0.01	-	0.01	0.02	-	0.01	0.02
Walney (3 and 4) Extension Offshore Wind Farm	0.0013 <u>79</u> <u>7</u>	0.010170	0.001610	0.018.08	10.00	45.96	0.0015	0.013 °	0.0011	0.01	0.02	0.01	0.01	0. 10 13	0.05	0.02	0. 12 15	0.06	0.23
West of Orkney Windfarm	0.0013 <u>66</u> <u>1</u>	<u>367</u>	437	11.17	9.08	<u>8.75</u>	0.0015	No connectivity	0.0010011	0.01	-	0.00	0.02	-	0.01	0.03	-	0.01	0.04
White Cross Offshore Windfarm	0.0013 <u>37</u> <u>9</u>	<u>23</u>	94	4.93	1.97	0.98	0.0015	0.016 <u>e</u>	0. 001 0011	0.01	0.00	0.00	0.01	0.03	0.00	0.01	0.03	0.00	0.05
Gap-filled projects				1															
Burbo Bank	<u>12</u>	7	<u>11</u>	0.29	0.45	0.45	0.0015	0.01 d	0.0011	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
Gwynt y Môr Offshore Wind Farm	<u>39</u>	<u>27</u>	<u>36</u>	0.45	0.77	0.71	0.0015	0.01 d	0.0011	0.00	0.00	0.00	0.00	<u>0.01</u>	0.00	0.00	0.01	0.00	0.01

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Dianamaniant	Un-appor (adult bin	tioned abur ds) ^a	ndances	Un-apport impacts (a	ioned collis idult birds)	sion a	Appo r tionir	ng values		Appo r tion impact val d isplacem		ment mo r tality)		d collision voup avoidar		Combine	d impact		
Plan o r p r oject	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- breeding	Pre- breeding	B r ee d ing	Post- breeding	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	Breeding	Post- breeding	Pre- breedin g	Breedin g	Post- breedin g	Annual
Robin Rigg	<u>16</u>	11	<u>15</u>	0.39	0.71	0.68	0.0015	<u>0.013 °</u>	0.0011	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01
Rhyl Flats Offshore Wind Farm	12	9	11	0.40	0.71	0.63	0.0015	0.01 ^d	0.0011	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	0.96	0.99	0.0015	0.013 °	0.0011	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.02
Walney 2	Included a	above	1			0.38	0.0065	<u>0.013 °</u>	0.0015	Included al	bove		0.00	0.02	0.00	0.00	0.02	0.00	0.02
West of Duddon Sands Offshore Wind Farm	<u>37</u>	242	<u>34</u>	1.38	2.12	2.21	0.0015	0.013 °	0.0011	0.00	0.03	0.00	0.00	0.03	0.00	0.00	0.06	0.00	0.06
Total p red icte d impa	ct (a d ult bi ı	rds)	1	1	I	I	1	1	1	0.05	0 .49 <u>54</u>	0.05	0.13	0. 63 <u>80</u>	0.42 <u>13</u>	<u>0.19</u>	1.33	0.18	1.4270
Inc r ease in baseline	mo r tality (%	%)								0.01%	0. 11 <u>12</u> %	0.01%	0.03%	0. 14<u>18</u>%	0.03%	0.04%	0. 25 29%	0.04%	0.38%
Annual impact an d in	erease in b	oaseline mo	rtality from	the combi	ne d impact	(when con	sidering 30%	% displacem	ent and 3%	1.47	bi rd s								
mortality)										0.33	% increase i	n baseline i	mo r tality						

1.5.3.13 As the predicted impact on black-legged kittiwake from Ireland's Eye SPA is <1% increase in baseline mortality, which is likely to be undetectable against natural variation, the impact is not considered to hinder the conservation objectives of the site, and therefore, it is concluded beyond reasonable scientific doubt that there would be no AEoSI from the Mona Offshore Wind Project incombination with other plans and projects.

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Howth Head Coast SPA

1.5.3.141.5.3.17 __As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline black-legged kittiwake from Howth Head Coast SPA, an in-combination assessment is presented within Table 1-27 (30% displacement and 1% mortality to 70% displacement and 10% mortality) and Table 1-28 (30% displacement and 3% mortality).

Table 1.-27: In-combination assessment for black-legged kittiwake from the Howth Head Coast SPA - when considering 30-70% displacement and 1-10% mortality.

	Pre- breeding	B reed ing	Post- breeding	Pre-breeding	Breeding	Post-breeding	Pre-breeding	Breeding	Post-breeding	Pre- breeding	Breeding	Post- breeding
Awel y Môr Offshore Wind Farm	0.003	0.020	0.002	0.00 to 0.04	0.00 to 0.06	0.00 to 0.01	0.03	0.12	0.01	0.03 to 0.07	0.13 to 0.19	0.01 to 0.
Burbo Bank Extension Offshore Vind Farm	0.003	0.024	0.002		0.03 to 0.63		0.00	0.29	0.00	0.00 to 0.00	0.32 to 0.92	0.00 to 0
Frebus Floating Wind Demo	0.003	0.033	0.002	0.00 to 0.00	0.11 to 2.48	0.00 to 0.05	0.02	0.01	0.03	0.02 to 0.02	0.12 to 2.49	0.04 to 0.
FwinHub (Wave Hub Floating Wind Farm)	0.003	0.033	0.002	0.00 to 0.01	0.00 to 0.00	0.00 to 0.02	0.00	0.17	0.00	0.00 to 0.01	0.17 to 0.18	0.00 to 0.
Mona Offshore Wind Project	0.003	0.018	0.002	0.00 to 0.08	0.02 to 0.49	0.00 to 0.06	0.02	0.09	0.01	0.03 to 0.11	0.11 to 0.58	0.01 to 0
Morecambe Offshore Windfarm Seneration Assets	0.003	0.024	0.002	0.01 to 0.16	0.15 to 3.46	0.02 to 0.41	0.01	0.19	0.01	0.02 to 0.17	0.34 to 3.65	0.03 to 0.
Morgan Offshore Wind Project Seneration Assets	0.003	0.033	0.002	0.00 to 0.09	0.02 to 0.46	0.01 to 0.16	0.02	0.07	0.03	0.03 to 0.11	0.09 to 0.53	0.04 to 0
Ormonde Wind Farm	0.0021	0.0238	0.0012	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00	0.04	0.00	0.00 to 0.00	0.04 to 0.04	0.00 to 0
Rampion Offshore Wind Farm	0.003	No connectivity	0.002	0.00 to 0.11		0.00 to 0.02	0.07	-	0.02	0.08 to 0.19		0.02 to 0
Rampion 2 Offshore Wind	0.003	No connectivity	0.002	0.00 to 0.04		0.00 to 0.01	0.03	-	0.01	0.03 to 0.07		0.01 to 0
Walney (3 and 4) Extension Offshore Wind Farm	0.003	0.024	0.002	0.01 to 0.20	0.01 to 0.28	0.00 to 0.11	0.03	0.24	0.11	0.04 to 0.23	0.25 to 0.52	0.13 to 0
Vest of Orkney Windfarm	0.003	No connectivity	0.002	0.01 to 0.16		0.00 to 0.08	0.03	-	0.02	0.05 to 0.20		0.03 to 0
White Cross Offshore Vindfarm	0.003	0.033	0.002	0.00 to 0.09	0.00 to 0.05	0.00 to 0.02	0.02	0.06	0.00	0.02 to 0.11	0.07 to 0.12	0.00 to 0
Fotal predicted impact (adult t	oi rd s)		•	0.04 to 0.97	0.34 to 7.92	0.04 to 0.95	0.32	1.29	0.29	0.36 to 1.29	1.63 to 9.22	0.34 to 1
ncrease in baseline mortality	(%)			0.01% to 0.19%	0.06% to 1.51%	0.01% to 0.18%	0.06%	0.25%	0.06%	0.07% to 0.25%	0.31% to 1.76%	0.06% to 0.24%
nnual impact an d inc r ease ir	baseline m	ortality from t	he combine c	Limpact (when consi d e	ring 3 0% d isplacement a	n d 1 % mortality to 7 0 % dis	splacement an d 10 %	6 mortality)	·	2.33 to 11.74 0.44% to 2.2	4 bi rd s 24% inc r ease i	n baselin

As previously discussed (section 1.1.2) the Applicant is not proposing to undertaken PVA on the worst-case scenario as advised by JNCC, due to lack of empirical evidence for a displacement rate of 70% and a mortality rate of 10% therefore the applicant has presented the NatureScot guidance of 30% displacement and 3% mortality within Table 1-27. 1.5.3.15



Table 1.27: In-combination assessment for black-legged kittiwake from the Howth Head Coast SPA – when considering 30-70% displacement and 31-10% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the breeding period, 54.33% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season

<u>b – the apportioning value during the breeding season was taken from project specific documentation.</u>

c - the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.027.

d – the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.02.

e - the apportioning value during the breeding season has used that of Frebus Floating Wind Demo, specifically 0.033.

Plan or project	Un-appor (adult bir	tioned abu ds) ^a	ndances	Un-apportimpacts (a	ioned colli adult birds	sion) *	Appo r tioni	ng values		values (3)	ne d d isplac 0% d isplac tity to 70% mo r tality)	ement impact ement_3_and displacement		ne d collisio g r oup avo 3)		Combine	d impact			
	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post-breeding	Pre- breeding	B r ee d ing	Post-breeding	<u>Pre-</u> breeding	B r ee d ing	Post- breeding	<u>Pre-</u> breeding	Breeding	Post- breeding	<u>Annual</u>	
Awel y Môr Offshore Wind Farm	162	<u>46</u>	<u>45</u>	8.14	<u>6.20</u>	4.41	0. 003 0015	0. 020 02 b	0. 002 <u>0011</u>	0. 01 00 to 0.04	0.0100 to 0.06	0.00 <u>to 0.01</u>	0.03	0.12	0.01	0.03 <u>to</u> 0.07	0.13 <u>to</u> 0.19	0.01 <u>to</u> 0.02	0.17 to 0.28	
Burbo Bank Extension Offshore Wind Farm	0.003 <u>27</u>	0.024376	<u>25</u>	0. 002 <u>00</u>	<u>12.26</u>	0. 08 00	<u>0.0015</u>	0.02 ^d	<u>0.0011</u>	0.00 <u>to</u> 0.01	0. 29 02 to 0.53	0.00 to 0.00	0.00	0. 37 <u>25</u>	0.00	0.00 to 0.01	0.27 to 0.77	0.00 to 0.00	0.36 to 1.05	
Erebus Floating Wind Demo	0.003 1	1076	278	6.66	0.27	13.11	0.0015	0.033 <u>b</u>	0. 002 0011	0.00 to 0.00	0. 32 11 to 2.48	0. 01 <u>00 to 0.05</u>	0.02	0.01	0.04	0.02 to 0.02		0.04 <u>to</u> 0.09	0.18 to 2.60	
TwinHub (Wave Hub Floating Wind Farm)	0.003 <u>30</u>	0.033 2	0.002103	0.00	<u>5.17</u>	0.00	<u>0.0015</u>	0.033 e	0.0011	0.00 <u>to</u> 0.01	0.00 to 0.00	0.00 to 0.02	0.00	0.17	0.00	0.00 <u>to</u> 0.01	0.17 <u>to</u> 0.18	0.00 <u>to</u> 0.02	0.17 to 0.20	
Mona Offshore Wind Project	0.003312	386	307	<u>4.65</u>	<u>8.26</u>	<u>4.47</u>	<u>0.0015</u>	0.018 <u></u>	0. 002 0011	0. 01 00 to 0.08	0.02 to 0.49	0.00 to 0.06	0.02	0.15	0.01 0.03	0.02 to 0.09	0.17 to 0.64	0.01 <u>to</u> 0.07	0.04 <u>20</u> 0.14 to 0.80	5 0.02
Morecambe Offshore Windfarm Generation Assets	0.003 <u>631</u>	0.0242074	0.0022215	2.84	8.00	<u>6.19</u>	<u>0.0015</u>	0.0238 b	0.0011	0.01 to 0.16	0.15 to 3.46	0.02	0.01	0.19	0.02	0.02 to 0.17	0.34 to 3.65	0.03 <u>to</u> 0.42	0.6339 to 4.24).07
Morgan Offshore Wind Project Generation Assets	0.003350	0.033245	0.002886	0 7.01	0.06 2.66	<u>11.51</u>	<u>0.0015</u>	0.027 b	0.0011	0.00 to 0.09	0.02 <u>to</u> <u>0.46</u>	0.01 to 0.16	0.03	0.07	0.03	0.03 to 0.11	0.09 to 0.53	0.04 <u>to</u> 0.19	0. 13 16 to 0.84) .05
Ormonde Wind Farm	12	<u>32</u>	.11	0.00	1.74	0.00	0.0021	0. 0238 <u>027</u>	0.0012	0.00 to 0.00	0.00 <u>to</u> 0.01	0.00 to 0.00	0.00	0. 04 <u>05</u>	0.00	0.00 to 0.00	0. 04 05 to 0.05	0.00 to 0.00	0.05 to 0.06	
Rampion Offshore Wind Farm	0.003 <u>451</u>	<u>563</u>	122	22.22	<u>37.54</u>	8.43	0.0015	No connectivity	0. 002 0011	0. 01 00 to 0.11	0.00 to 0.00	0.00 <u>to 0.02</u>	0.08	-	0.02	0. 09 08 to 0.19	-	0. 03 <u>02 to</u> 0.05	0.11 to 0.24	
Rampion 2 Offshore Wind Farm	0.003 <u>155</u>	<u>3</u>	<u>53</u>	9.04	0.53	5.32	0.0015	No connectivity	0. 002 <u>0011</u>	0.00 <u>to</u> 0.04	0.00 to 0.00	0.00 <u>to 0.01</u>	0.03	-	0.01	0. 04 03 to 0.07		0.01 to 0.02	0.05 to 0.10	

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Plan or project	Un-appor (adult bird	tioned abui ds) ^a	n d ances	Un-appor impacts (tioned coll adult birds	ision) ^a	Apportion	ing values			values (3	ne d d isplac 0% d isplac lity to 70% mo r tality)	ement impact ement 3 and displacement		ne d collisio g r oup avoi 3)		Combine	d impact			
	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post-breedi		P r e- b r ee d ing	B r ee d ing	Post-breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	B r ee d ing	Post- breeding	<u>Annual</u>	
Walney (3 and 4) Extension Offshore Wind Farm	0.003797	0.024<u>170</u>	0.002610	0.038.08	0.0410.00	<u>45.96</u>	0.0015	<u>0.027 °</u>	0.0011		0.01 <u>to</u> 0.20	0.01 to 0.32	0.00 to 0.11	0.03	0.2427	0.12	0.04 to 0.23	0.28 to 0.59	0.13 to 0.24	0. <u>45 to</u> <u>0.</u> 1.05	27 0.1
West of Orkney Windfarm	0.003 <u>661</u>	<u>367</u>	437	11.17	9.08	<u>8.75</u>	0.0015	No connectivity	0.0020011		0.01 <u>to</u> 0.16	0.00 to 0.00	0.00 to 0.08	0.04		0.02	0. 06 05 to 0.20	0.00 to 0.00	0.03 <u>to</u> 0.10	0.07 to 0.3	31
White Cross Offshore Windfarm	0.003379	<u>23</u>	94	4.93	1.97	0.98	0.0015	0.033 <u>e</u>	0. 002 <u>0011</u>		0. 01 <u>00 to</u> 0.09	0. 01 <u>00 to</u> 0.05	0.00 <u>to 0.02</u>	0.02	0.06	0.00	0. 03 02 to 0.11		0.00 <u>to</u> 0.02	0.09 to 0.2	<u>25</u>
Gap-fille d p r o	<u>ojects</u>						1	1	1	1			I								
Burbo Bank	<u>12</u>	<u>7</u>	<u>11</u>	0.29	0.45	0.45	0.0015	0.02 d	0.0011		0.00 to 0.00	0.00 to 0.01	0.00 to 0.00	0.02	0.06	0.00	0.00 to 0.00	0.01 to 0.02	0.00 to 0.00	0.01 to 0.0	<u>)3</u>
Gwynt y Môr Offshore Wind Farm	<u>39</u>	<u>27</u>	<u>36</u>	0.45	0.77	<u>0.71</u>	0.0015	0.02 d	0.0011		0.00 to 0.01	0.00 to 0.04	0.00 to 0.01	0.00	0.01	0.00	0.00 to 0.01	0.02 to 0.05	0.00 to 0.01	0.02 to 0.0	<u>)7</u>
Robin Rigg	<u>16</u>	<u>11</u>	<u>15</u>	0.39	0.71	0.68	0.0015	<u>0.027 °</u>	0.0011		0.00 to 0.00	0.00 to 0.02	0.00 to 0.00	0.00	0.02	0.00	0.00 to 0.01	0.02 to 0.04	0.00 to 0.00	0.02 to 0.0	<u>)5</u>
Rhyl Flats Offshore Vind Farm	12	9	11	0.40	0.71	0.63	0.0015	0.02 d	0.0011		0.00 to 0.00	0.00 to 0.01	0.00 to 0.00	0.00	0.02	0.00	0.00 to 0.00	0.01 to 0.03	0.00 to 0.00	0.02 to 0.0	<u>)3</u>
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	0.96	0.99	0.0015	0.027 °	0.0011		0.00 to 0.01	0.00 to 0.06	0.00 to 0.01	0.00	0.01	0.00	0.00 to 0.01	0.03 to 0.09	0.00 to 0.01	0.03 to 0.1	<u> 2</u>
Walney 2	Included a	<u>bove</u>				0.38	0.0065	<u>0.027 °</u>	0.0015		Included a	<u>ibove</u>		0.00	0.05	0.00	0.00 to 0.00	0.05 to 0.05	0.00 to 0.00	0.05 to 0.0	<u>)5</u>
Nest of Duddon Sands Offshore Nind Farm	<u>37</u>	<u>242</u>	<u>34</u>	1.38	2.12	2.21	0.0015	<u>0.027 °</u>	0.0011		0.00 to 0.01	0.02 to 0.46	0.00 to 0.01	0.00	0.06	0.01	0.01 to 0.01	0.08 to 0.51	0.01 to 0.01	0.09 to 0.5	<u>54</u>
Total p red icte	e d impact	(a d ult bi rd	s)				1	0.12			0.04 to 1.02	0.42 37 to 8.47	0.04 to 0.98	0.32	1.2953	0.31	0.36 to 1.34	1.89 to 10.00	0.35 0.44 to 1.29	2. 31 61 to 12.63	0.42
Inc r ease in b	aseline m	o r tality (%)						0.029	6		0.01% to 0.19%	0. <mark>02</mark> 07% to 1.62%	0.01% to 0.19%	0.06%	0. 25 <u>29</u> %	0.06%	0. 08 07% to 0.26%	0.44 <u>36%</u> to 1.91%	0. 08 07% to 0.25%	<u>0.50% to 2</u>	2.4 <mark>1</mark> %

1.5.3.18 As previously discussed (section 1.1.2) the Applicant is not proposing to undertaken PVA on the worst-case scenario as advised by JNCC, due to lack of empirical evidence for a displacement rate of 70% and a mortality rate of 10% therefore the applicant has presented the NatureScot guidance of 30% displacement and 3% mortality within Table 1-28.

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Table 1-28: In-combination assessment for black-legged kittiwake from the Howth Head Coast SPA – when considering 30% displacement and 3% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the breeding period, 54.33% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season

- <u>b</u> the apportioning value during the breeding season was taken from project specific documentation.
- c the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.027.
- d the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.02.
- e the apportioning value during the breeding season has used that of Erebus Floating Wind Demo, specifically 0.033.

Project	Un-appor (adult bin	tione d abur ds) ^a	ndances	Un-apporti impacts (a	ioned collis dult birds)	sion a	Apportion	ing values		Apportioned values (30% mortality)	<u>i displacem</u> displacem	nent impact ent, 3%	Apportione (species-gr 99.28)	<mark>d collision v</mark> oup avoi d ar	<u>ralues</u> nce rate	Combined	1 impact		
	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Annual
Awel y Môr Offshore Wind Farm	<u>162</u>	<u>46</u>	<u>45</u>	<u>8.14</u>	6.20	4.41	0.0015	0.02 b	0.0011	0.01	0.01	0.00	0.03	0.12	0.01	0.03	0.13	0.01	0.18
Burbo Bank Extension Offshore Wind Farm	<u>27</u>	<u>376</u>	<u>25</u>	0.00	12.26	0.00	0.0015	0.02 d	0.0011	0.00	0.07	0.00	0.00	0.25	0.00	0.00	0.31	0.00	0.31
Erebus Floating Wind Demo	1	1076	<u>278</u>	6.66	0.27	13.11	0.0015	<u>0.033 ь</u>	0.0011	0.00	0.32	0.01	0.02	0.01	0.04	0.02	0.33	0.04	0.39
TwinHub (Wave Hub Floating Wind Farm)	<u>30</u>	2	<u>103</u>	0.00	<u>5.17</u>	0.00	0.0015	0.033 °	0.0011	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.17	0.00	0.17
Mona Offshore Wind Project	312	<u>386</u>	307	4.65	<u>8.26</u>	4.47	0.0015	0.018 b	0.0011	0.01	0.06	0.01	0.02	0.15	0.01	0.03	0.21	0.02	0.26
Morecambe Offshore Windfarm Generation Assets	<u>631</u>	<u>2074</u>	2215	2.84	8.00	6.19	0.0015	0.0238 b	0.0011	0.02	0.44	0.05	0.01	0.19	0.02	0.03	0.63	0.07	0.73
Morgan Offshore Wind Project Generation Assets	350 S	<u>245</u>	<u>886</u>	7.01	2.66	11.51	0.0015	0.027 b	0.0011	0.01	0.06	0.02	0.03	0.07	0.03	0.04	0.13	0.05	0.22
Ormonde Wind Farm	<u>12</u>	<u>32</u>	11	0.00	1.74	0.00	0.0021	<u>0.027 °</u>	0.0012	0.00	0.01	0.00	0.00	0.05	0.00	0.00	0.05	0.00	0.06
Rampion Offshore Wind Farm	451	<u>563</u>	122	22.22	<u>37.54</u>	8.43	0.0015	No connectivity	0.0011	0.01		0.00	0.08	=	0.02	0.09	Ξ	0.03	0.12
Rampion 2 Offshore Wind Farm	<u>155</u>	<u>3</u>	<u>53</u>	9.04	0.53	<u>5.32</u>	0.0015	No connectivity	0.0011	0.00		0.00	0.03	Ξ	0.01	0.04	=	0.02	0.05
Walney (3 and 4) Extension Offshore Wind Farm	797	170	610	8.08	10.00	45.96	0.0015	<u>0.027 °</u>	0.0011	0.03	0.04	0.01	0.03	0.27	0.12	0.05	0.31	0.14	0.50
West of Orkney Windfarm	<u>661</u>	<u>367</u>	437	11.17	9.08	<u>8.75</u>	0.0015	No connectivity	0.0011	0.02		0.01	0.04		0.02	0.06		0.03	0.10
White Cross Offshore Windfarm	<u>379</u>	<u>23</u>	<u>94</u>	4.93	1.97	0.98	0.0015	0.033 °	0.0011	0.01	0.01	0.00	0.02	0.06	0.00	0.03	0.07	0.00	0.11



Project	Un-apport (adult bird	ione d abur ls) ^a	ndances	Un-apporti impacts (a	ioned collis dult birds)		Apportion	ing values		Apportioned values (30% mortality)	l displacem displaceme	ent impact ent, 3%	/ (ppointionic	<u>d collision v</u> oup avoidar	ruiuoo	Combined	<u>l impact</u>		
	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Annual
Gap-filled project	t <u>s</u>				1		,			1	1	1		•	1			1	
Burbo Bank	<u>12</u>	<u>7</u>	<u>11</u>	0.29	0.45	0.45	0.0015	0.02 d	0.0011	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01
Gwynt y Môr Offshore Wind Farm	<u>39</u>	<u>27</u>	<u>36</u>	0.45	0.77	0.71	0.0015	0.02 d	0.0011	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.03
Robin Rigg	<u>16</u>	<u>11</u>	<u>15</u>	0.39	0.71	0.68	0.0015	<u>0.027 °</u>	0.0011	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.03
Rhyl Flats Offshore Wind Farm	12	9	11	0.40	0.71	0.63	0.0015	0.02 ^d	0.0011	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.02
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	0.96	0.99	0.0015	0.027 °	0.0011	0.00	0.01	0.00	0.00	0.03	0.00	0.00	0.03	0.00	0.04
Walney 2	Included a	<u>bove</u>				0.45	0.0015	0.02 d	0.0011	Included abo	<u>ve</u>		0.00	0.05	0.00	0.00	0.05	0.00	0.05
West of Duddon Sands Offshore Wind Farm	<u>37</u>	242	<u>34</u>	0.45	0.77	0.71	0.0015	0.02 d	0.0011	0.00	0.06	0.00	0.00	0.06	0.01	0.01	0.12	0.01	0.13
Total predicted in	npact (a d ult	bi rd s)								<u>0.13</u>	1.10	<u>0.13</u>	<u>0.32</u>	<u>1.53</u>	<u>0.31</u>	<u>0.45</u>	2.62	<u>0.44</u>	<u>3.51</u>
Increase in basel	ine mo r talit	y (%)								0.03%	<u>0.21%</u>	0.02%	0.06%	<u>0.29%</u>	0.06%	0.09%	<u>0.50%</u>	<u>0.08%</u>	<u>0.67%</u>

1.5.3.16 As the predicted impact on black-legged kittiwake from Howth Head Coast SPA is <1% increase in baseline mortality, which is likely to be undetectable against natural variation, the impact is not considered to hinder the conservation objects of the site, and therefore, it is concluded beyond reasonable scientific doubt that there would be no AEoSI from the Mona Offshore Wind Project in-combination with other plans and projects.



Wicklow Head SPA

1.5.3.171.5.3.20 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline black-legged kittiwake from Wicklow Head SPA, an in-combination assessment is presented within Table 1-29 (30% displacement and 1% mortality to 70% displacement and 10% mortality) and Table 1-30 (30% displacement and 3% mortality).

Table 1.-29: In-combination assessment for black-legged kittiwake from the Wicklow Head SPA - when considering 30-70% displacement and 1-10% mortality.

	Pre- breeding	Breeding	Post- breeding	Pre-breeding	Breeding	Post-brooding	Pre-breeding	Breeding	Post-breeding	Pre- breeding	B reed ing	Post- breeding
Awel y Môr Offshore Wind Farm	0.008	0.005	0.006	0.00 to 0.09	0.00 to 0.02	0.00 to 0.02	0.07	0.03	0.03	0.07 to 0.15	0.03 to 0.05	0.03 to 0.0
Burbo Bank Extension Offshore Wind Farm	0.008	0.004	0.006		0.00 to 0.11		0.00	0.05	0.00	0.00 to 0.00	0.05 to 0.15	0.00 to 0.0
Erebus Floating Wind Demo	0.008	0.013	0.006	0.00 to 0.00	0.04 to 0.98	0.00 to 0.11	0.05	_	0.08	0.05 to 0.05	0.05 to 0.98	0.08 to 0.19
TwinHub (Wave Hub Floating Wind Farm)	0.008	0.013	0.006	0.00 to 0.02	0.00 to 0.00	0.00 to 0.04	0.00	-	0.00	0.00 to 0.02	0.07 to 0.07	0.00 to 0.04
Mona Offshore Wind Project	0.008	0.006	0.006	0.01 to 0.17	0.01 to 0.16	0.01 to 0.13	0.06	0.03	0.03	0.07 to 0.23	0.04 to 0.19	0.03 to 0.1
Morecambe Offshore Windfarm Generation Assets	0.008	0.004	0.006	0.01 to 0.35	0.02 to 0.58	0.04 to 0.90	0.02	0.03	0.04	0.04 to 0.37	0.06 to 0.61	0.08 to 0.94
Morgan Offshore Wind Project Seneration Assets	0.008	0.004	0.006	0.01 to 0.19	0.00 to 0.07	0.02 to 0.36	0.06	0.01	0.07	0.06 to 0.25	0.01 to 0.08	0.08 to 0.43
Ormonde Wind Farm	0.0021	0.004	0.0012	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00	0.01	0.00	0.00 to 0.00	0.01 to 0.01	0.00 to 0.00
Rampion Offshore Wind Farm	0.008	No connectivity	0.006	0.01 to 0.25		0.00 to 0.05	0.18	-	0.05	0.19 to 0.43		0.05 to 0.10
Rampion 2 Offshore Wind Farm	0.008	No connectivity	0.006	0.00 to 0.09		0.00 to 0.02	0.07	-	0.03	0.08 to 0.16		0.03 to 0.08
Walney (3 and 4) Extension Offshore Wind Farm	0.008	0.004	0.006	0.02 to 0.44	0.00 to 0.05	0.01 to 0.25	0.06	0.04	0.28	0.08 to 0.50	0.04 to 0.09	0.29 to 0.52
West of Orkney Windfarm	0.008	No connectivity	0.006	0.02 to 0.36		0.01 to 0.18	0.09	-	0.05	0.10 to 0.45		0.06 to 0.23
White Cross Offshore Windfarm	0.008	0.013	0.006	0.01 to 0.21	0.00 to 0.02	0.00 to 0.04	0.04	0.03	0.01	0.05 to 0.25	0.03 to 0.05	0.01 to 0.04
Total predicted impact (adult l	oi rd s)		•	0.09 to 2.16	0.08 to 1.98	0.09 to 2.10	0.70	0.22	0 .65	0.80 to 2.86	0.38 to 2.28	0.74 to 2.7
ncrease in baseline mortality				0.05% to 1.10%	0.04% to 1.01%	0.05% to 1.07%	0.36%	0.11%	0.33%	0.40% to 1.45%	0.19% to 1.16%	0.38% to 1.40%
Annual impact and increase in	n baseline m	ortality from t	he combine d	impact (when conside	ring 3 0% d isplacement t	o 1% mortality to 70% disp	lacement an d 10 %	mortality)	,	1.92 to 7.90 0.98% to 4.0	bi rds 1% inc r ease i	n baseline

As previously discussed (section 1.1.2) the Applicant is not proposing to undertaken PVA on the worst-case scenario as advised by JNCC, due to lack of empirical evidence for a displacement rate of 70% and a mortality rate of 10% therefore the applicant has presented the NatureScot guidance of 30% displacement and 3% mortality within Table 1-29. 1.5.3.18



Table 1.29: In-combination assessment for black-legged kittiwake from the Wicklow Head SPA – when considering 30-70% displacement and 31-10% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the breeding period, 54.33% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season

<u>b – the apportioning value during the breeding season was taken from project specific documentation.</u>

c – the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.004.

d – the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.05.

e - the apportioning value during the breeding season has used that of Frebus Floating Wind Demo, specifically 0.013.

Plan or project Project	Un-appor (adult bir	tioned abi ds) ^a	un d ances	Un-appor impacts (tione d col adult birds	lision 3) ^a	Appo r tior	ning value	s		Apportioned 1% mortality	displacement impact value to 70% displacement and	ues (3 0% d isplacement <u>-3 a</u> L10% mo r tality)		ed collision value rate 99.28)	s (species-g r oup	lr Ir
^{Plan or project Project}	P r e- b r ee d ing	B r ee d in g	Post- b r ee d ing	P r e- b r ee d ing	B r ee d in g	Post- breeding	P r e- b r ee d ing	B r ee d in g	Post-bre	e d ing	Pre- breeding	B r ee d ing	Post-breeding	<u>Pre-</u> breeding	<u>Breeding</u>	Post-breeding	lr Ir
Awel y Môr Offshore Vind Farm	162	46	<u>45</u>	<u>8.14</u>	6.20	4.41	0.008	0.005 <u>b</u>	0.006		0. 01 00 to 0.09	0.00 <u>to 0.02</u>	0.00 <u>to 0.02</u>	0.07	0.03	0.03	Ir
Burbo Bank Extension Offshore Wind Farm	<u>27</u>	<u>376</u>	<u>25</u>	0.00	12.26	0.00	0.008	0. 004 <u>005</u>	0.006		0.00 <u>to 0.01</u>	0.01 <u>to 0.13</u>	0.00 <u>to 0.01</u>	0.00	0. 05 <u>06</u>	0.00	lr Ir
rebus Floating Wind Demo	1	1076	278	6.66	0.27	13.11	0.008	0.013 <u>b</u>	0.006		0.00 to 0.00	0. 13 04 to 0.98	0. 01 00 to 0.11	0.05	-0.00	0.08	lr D
winHub (Wave Hub loating Wind Farm)	<u>30</u>	2	103	0.00	<u>5.17</u>	0.00	0.008	0.013 <u>e</u>	0.006		0.00 <u>to 0.02</u>	0.00 to 0.00	0.00 <u>to 0.04</u>	-0.00	0. 00 <u>07</u>	0.00	Ir
Mona Offshore Wind Project	312	<u>386</u>	307	4.65	8.26	4.47	0.008	0.006 <u>b</u>	0.006		0. 02 <u>01 to</u> <u>0.17</u>	0. 02 01 to 0.16	0. 02 01 to 0.13	0. 06<u>04</u>	0. 03 <u>05</u>	0.03	D D
Morecambe Offshore Windfarm Generation Assets	<u>631</u>	2074	2215	2.84	8.00	6.19	0.008	0.004 <u>b</u>	0.006		0.01 to 0.35	0.02 to 0.58	0.04 <u>to 0.90</u>	0.02	0.03	0.04	D
Morgan Offshore Wind Project Generation Assets	<u>350</u>	<u>245</u>	886	7.01	2.66	11.51	0.008	0.004 <u>b</u>	0.006	0.02	0.01 <u>to 0.19</u>	0. 05 <u>00 to 0.07</u>	0.02 to 0.36	0.06	0.01	0.07	lr D
Ormonde Wind Farm	<u>12</u>	<u>32</u>	<u>11</u>	0.00	1.74	0.00	0.0021	0.004 <u>°</u>	0.0012		<u>0.00 to</u> 0.00	0.00 to 0.00	0.00 to 0.00	0.00	0.01	0.00	lr Ir
Rampion Offshore Wind Farm	<u>451</u>	<u>563</u>	122	22.22	37.54	<u>8.43</u>	0.008	No connectiv ity	0.006	3	0.01 <u>to 0.25</u>		0.00 to 0.05	0.18	-	0.05	D
Rampion 2 Offshore Vind Farm	<u>155</u>	3	<u>53</u>	9.04	0.53	5.32		No connectiv ity	0.006		0. 01 00 to 0.09	-	0.00 <u>to 0.02</u>	0.07	-	0.03	lr Ir
Valney (3 and 4) Extension Offshore Vind Farm	<u>797</u>	170	610	8.08	10.00	<u>45.96</u>	0.008	0.004 <u>c</u>	0.006		0. 06 <u>02 to</u> <u>0.44</u>	0.00 to 0.07	0.01 <u>to 0.25</u>	0. 03 <u>06</u>	0.06	0.28	D
Vest of Orkney Vindfarm	<u>661</u>	<u>367</u>	437	11.17	9.08	<u>8.75</u>	0.008	No connectiv ity	0.006	0.0 5	0.02 <u>to 0.36</u>		0.01 to 0.18	0.09	-	0.05	lr Ir
White Cross Offshore Vindfarm	379	<u>23</u>	94	4.93	1.97	0.98	0.008	0.013 <u>e</u>	0.006		0. 03 01 to 0.21	0.00 <u>to 0.02</u>	0.00 <u>to 0.04</u>	0.04	0.03	0.01	D
Gap-fille d p r ojects																	lr D
Burbo Bank	<u>12</u>	<u>7</u>	<u>11</u>	0.29	0.45	0.45	0.008	0.005 d	0.006		0.00 to 0.01	0.00 to 0.00	0.00 to 0.00	0.00	0.00	0.00	D

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MONA OFFSHORE WIND PROJECT

	Un-apportioned abundances Un-apportioned collision (adult birds) a impacts (adult birds) a				<u>lision</u>	Annortio	ning value		Appo r tione d	displacement impact values	es (3 0% d isplacement <u>3 ar</u>			es (species-g r oup	In	serted Ce	lls			
Plan or projectProject	(adult bi	rds) ^a		impacts (adult birds) a	Apportion	ing value	S	1% mortality	to 70% displacement and 1	1 <mark>0</mark> % mo r tality)	avoi d ance	r ate 99.28)		$\overline{}$	serted Ce			
	P r e- b r ee d ing	B r ee d in	Post- b r ee d ing	Pre- breeding			Pre- breeding	B r ee d in g	Post-breeding	Pre- breeding	B r ee d ing	Post-breeding	<u>Pre-</u> breeding	<u>Breeding</u>	Post-breeding	<u></u>	serted Ce			
Gwynt y Môr Offshore Wind Farm	<u>39</u>	<u>27</u>	<u>36</u>	0.45	0.77	0.71	0.008	0.005 d	0.006	0.00 to 0.02	0.00 to 0.01	0.00 to 0.01	0.00	0.00	0.00		serted Ce			
Robin Rigg	<u>16</u>	11	<u>15</u>	0.39	0.71	0.68	0.008	0.004 ^c	0.006	0.00 to 0.01	0.00 to 0.00	0.00 to 0.01	0.00	0.00	0.00		serted Ce			
Rhyl Flats Offshore	12	9	11	0.40	0.71	0.63	0.008	0.005 d	0.006	0.00 to 0.01	0.00 to 0.00	0.00 to 0.00	0.00	0.00	0.00		serted Ce			
Wind Farm		-		-				+				<u></u>			 					
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	0.96	0.99	0.008	<u>0.004 °</u>	0.006	0.00 to 0.03	0.00 to 0.01	0.00 to 0.02	0.00	0.01	0.01		0.03	0.01	<u>0.01 to 0.03</u>	<u>u</u>
Walney 2	Included	<u>above</u>				0.45	0.008	0.004 °	0.006	Included abov	<u>/e</u>		0.00	0.01	0.00		0.00 to 0.00	0.01 to 0.01	0.00 to 0.00	0
West of Duddon Sands Offshore Wind Farm	<u>37</u>	242	<u>34</u>	0.45	0.77	0.71	0.008	0.004 °	0.006	0.00 to 0.02	0.00 to 0.10	0.00 to 0.01	0.01	0.01	0.01		0.01 to 0.03	0.01 to 0.08	0.01 to 0.03	0
Total predicted impact ((a d ult bi r	d s)							-	0.28 <u>10 to</u> 2.26	0.25 <u>09 to 2.11</u>	0. 27 09 to 2.18	0. 70 <u>71</u>	0.2236	0. 65 <u>69</u>		serted Ce			
Increase in baseline mo	rtality (%	6)		0.14%	0.13%	0.14%	0. '	.36%	0.11%	0.33%	0.50% 0.18%	0.47%								
Annual impact and incre	ease Inc r	<u>ease</u> in bas	eline mo r t	ality from (the combir	n ed impac'	t (when co	nsi der ing	⊦ <mark>30%</mark>	2.26 birds 0.05% to 1.15%	0.05% to 1.07%	0.05 % to 1.11 %	0.36%	0.1 8%	0 .35%	In	serted Ce	Ils		
displacement and 3% m	splacement and 3% mortality)(%)									increase in baseline mortality	2.40/012 112.72		, 2.0070	<u> </u>	, 4.65,5		serted Ce			
																	serted Ce			
				>													serted Ce			
											scenario as advised by JN acement and 3% mortalit		<u>pirical evider</u>	nce for a displa	cement rate of		serted Ce			
<u>10% and</u>	<u>1 a mon</u>	ally rate t	<u>) 10% (11</u>	ereiore in	ie applicai	At has pre	<u>asented ti</u>	10 INALUIR	escoi guidance	01 30% ulspi	acement and 5% mortain	ity within Table 1-50.				In	serted Ce	lls		
																In	serted Ce	lls		



Table 1-30: In-combination assessment for black-legged kittiwake from the Wicklow Head SPA – when considering 30% displacement and 3% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the breeding period, 54.33% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season.

<u>b – the apportioning value during the breeding season was taken from project specific documentation</u>

c – the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.004.

d – the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.05.

e - the apportioning value during the breeding season has used that of Erebus Floating Wind Demo, specifically 0.013.

<u>Proiect</u>	Un-appor (adult bir	tioned abu ds) ^a	<u>ındances</u>	Un-appor impacts (a	tione <mark>d</mark> coll adult birds	ision) ^a	Apportio	ning value			displacement displacement a		Apportional (species-graph) 99.28)	d collision roup avoida	values nce rate	Combined	limpact		
	<u>Pre-</u> breeding	Breedin g	Post- breeding	Pre- breeding	Breedin g	Post- breeding	Pre- breeding	Breedin g	Post- breeding	<u>Pre-</u> breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Annual
Awel y Môr Offshore Wind Farm	<u>162</u>	<u>46</u>	<u>45</u>	8.14	6.20	4.41	0.008	0.005 b	0.006	0.01	0.00	0.00	0.07	0.03	0.03	0.08	0.03	0.03	0.14
Burbo Bank Extension Offshore Wind Farm	<u>27</u>	<u>376</u>	<u>25</u>	0.00	<u>12.26</u>	0.00	0.008	0.005 d	0.006	0.00	0.02	0.00	0.00	0.06	0.00	0.00	0.08	0.00	0.08
Erebus Floating Wind Demo	1	<u>1076</u>	<u>278</u>	6.66	0.27	<u>13.11</u>	0.008	0.013 b	0.006	0.00	0.13	0.01	0.05	=	0.08	0.05	=	0.09	0.15
TwinHub (Wave Hub Floating Wind Farm)	<u>30</u>	2	103	0.00	<u>5.17</u>	0.00	0.008	0.013 e	0.006	0.00	0.00	0.01	0.00	=	0.00	0.00	=	0.01	0.01
Mona Offshore Wind Project	<u>312</u>	<u>386</u>	<u>307</u>	4.65	<u>8.26</u>	<u>4.47</u>	0.008	0.006 b	0.006	0.02	0.02	0.02	0.04	0.05	0.03	0.06	0.07	0.04	0.17
Morecambe Offshore Windfarm Generation Assets	<u>631</u>	2074	<u>2215</u>	2.84	8.00	<u>6.19</u>	0.008	<u>0.004 ь</u>	0.006	0.04	0.07	0.12	0.02	0.03	0.04	0.07	0.11	0.15	0.33
Morgan Offshore Wind Project Generation Assets	<u>350</u>	<u>245</u>	<u>886</u>	7.01	2.66	<u>11.51</u>	0.008	0.004 b	0.006	0.02	0.01	0.05	0.06	0.01	0.07	0.08	0.02	0.12	0.22
Ormonde Wind Farm	<u>12</u>	<u>32</u>	<u>11</u>	0.00	<u>1.74</u>	0.00	0.0021	<u>0.004 °</u>	0.0012	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.01
Rampion Offshore Wind Farm	<u>451</u>	<u>563</u>	<u>122</u>	22.22	<u>37.54</u>	<u>8.43</u>	0.008	No connectiv		0.03	Ξ	0.01	0.18	=	0.05	0.21	=	0.06	0.27
Rampion 2 Offshore Wind Farm	<u>155</u>	<u>3</u>	<u>53</u>	9.04	0.53	<u>5.32</u>	0.008	No connectiv ity		<u>0.01</u>	=	0.00	0.07	=	0.03	0.08	=	0.03	0.12
Walney (3 and 4) Extension Offshore Wind Farm	<u>797</u>	170	<u>610</u>	8.08	10.00	45.96	0.008	0.004 °	0.006	0.06	0.01	0.03	0.06	0.04	0.28	0.12	0.05	0.31	0.47
West of Orkney Windfarm	<u>661</u>	<u>367</u>	437	11.17	9.08	<u>8.75</u>	0.008	No connectiv ity	I	0.05	=	0.02	0.09	=	0.05	0.14	=	0.08	0.21
White Cross Offshore Windfarm	<u>379</u>	<u>23</u>	94	4.93	1.97	0.98	0.008	0.013 e	0.006	0.03	0.00	0.00	0.04	0.03	0.01	0.07	0.03	0.01	0.11
Gap-filled projects						-													
Burbo Bank	<u>12</u>	<u>7</u>	<u>11</u>	0.29	<u>0.45</u>	<u>0.45</u>	0.008	0.005 d	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Gwynt y Môr Offshore Wind Farm	<u>39</u>	<u>27</u>	<u>36</u>	0.45	0.77	<u>0.71</u>	0.008	0.005 d	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.02



<u>Proiect</u>	Un-appor (adult bir	<u>tioned abu</u> ds) ^a	<u>ındances</u>	Un-appor impacts (tioned coll adult birds	lision s) *	Apportion	ning values	2	Apportioned values (30% mortality)	displacement displacement	impact and 3%	Apportione (species-que 99.28)	d collision oup avoida	values ince rate	Combined	<u>Limpact</u>		
	<u>Pre-</u> breeding	Breedin g	Post- breeding	Pre- breeding	Breedin g	Post- breeding	Pre- breeding	Breedin g	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Annual
Robin Rigg	<u>16</u>	<u>11</u>	<u>15</u>	0.39	0.71	0.68	0.008	0.004 °	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Rhyl Flats Offshore Wind Farm	12 9 11			0.40	0.71	0.63	0.008	0.005 d	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	0.96	0.99	0.008	0.004 ^c	0.006	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02
Walney 2	Included a	above_				0.45	0.008	0.004 °	0.006	Included abov	<u>′e</u>		0.00	0.01	0.00	0.00	0.01	0.00	0.01
West of Duddon Sands Offshore Wind Farm	<u>37</u>	242	<u>34</u>	0.45	0.77	0.71	0.008	0.004 °	0.006	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.05
Total predicted impact	(a d ult bi rc	ls)								<u>0.29</u>	<u>0.27</u>	0.28	<u>0.71</u>	<u>0.29</u>	<u>0.69</u>	1.00	<u>0.43</u>	<u>0.97</u>	<u>2.40</u>
Increase in baseline m	ortality (%)	1								<u>0.15%</u>	<u>0.14%</u>	0.14%	<u>0.36%</u>	<u>0.15%</u>	<u>0.35%</u>	<u>0.51%</u>	<u>0.22%</u>	<u>0.49%</u>	<u>1.22%</u>

4.5.3.191.5.3.22 As the predicted impact on black-legged kittiwake from Wicklow Head SPA is >1% increase in baseline mortality the impact is further investigated by a PVA (see section 1.6.2) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.



Cape Wrath SPA

As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline black-legged kittiwake from Cape Wrath SPA, an in-combination assessment is presented within Table 1-31 (30% displacement and 1% mortality to 70% displacement and 10% mortality) and Table 1-32 (30% displacement and 3% mortality).

Table 1-31: In-combination assessment for black-legged kittiwake from the Cape Wrath - when considering the 30-70% displacement and 1-10% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the pre-breeding period, 54.33% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season.

Plan-or projectProject	Un-appor (adult bir	tioned abu ds) ^a	ndances _.	Un-apport impacts (a	ioned colli idult birds)	sion a	Appo r tior	ning values		values (30%	d displacement dis			ne d collision g r oup avoi d		Combine d ir	npact		
	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post-breeding	Pre- breeding	<u>Breeding</u>	<u>Post-</u> <u>breeding</u>	Pre- breeding	<u>Breeding</u>	Post- breeding	Annual
Awel y Môr Offshore Wind Farm	<u>162</u>	<u>46</u>	<u>45</u>	<u>8.14</u>	6.20	4.41	0.044	No connectivity	0.0249	0.02 to 0.49	-	0.00 to 0.08	0.36	-	0.11	0.38 to 0.85	-	0.11 to 0.19	0.49 to 1.03
Burbo Bank Extension Offshore Wind Farm	<u>27</u>	<u>376</u>	<u>25</u>	0.00	12.26	0.00	0.044	No connectivity	0.0249	0.00 <u>to 0.08</u>	-	0.00 <u>to 0.04</u>	0.00	Æ	0.00	0.00 to 0.00 <u>08</u>	-	0.00 to 0.00 <u>04</u>	0.00 to 0.12
Erebus Floating Wind Demo	1	<u>1076</u>	<u>278</u>	6.66	0.27	<u>13.11</u>	0.044	No connectivity	0.0249	0.00 to 0.00	-	0.02 to 0.47	0.29	-	0.33	0.29 to 0.30	-	0.35 to 0.80	0.64 to 1.09
TwinHub (Wave Hub Floating Wind Farm)	<u>30</u>	2	103	0.00	<u>5.17</u>	0.00	0.044	No connectivity	0.0249	0.00 to 0.09	-	0.01 to 0.18	0.00	-	0.00	0.00 to 0.09	-	0.01 to 0.18	0.01 to 0.27
Mona Offshore Wind Project	312	386	307	4.65	8.26	4.47	0.044	No connectivity	0.0249	0.04 to 0.94	-	0.02 to 0.52	0. 35 <u>20</u>	-	0.11	0. 39 24 to 1. 29 15	-	0.13 to 0.63	0.38 to 1.78
Morecambe Offshore Windfarm Generation Assets	<u>631</u>	2074	2215	2.84	8.00	6.19	0.044	No connectivity	0.0249	0.08 to 1.90	-	0.16 to 3.75	0.12	-	0.15	0.21 to 2.03	-	0.31 to 3.91	0.52 to 5.93
Morgan Offshore Wind Project Generation Assets	<u>350</u>	<u>245</u>	886	<u>7.01</u>	2.66	11.51	0.044	No connectivity	0.0249	0.05 to 1.06	-	0.06 to 1.50	0.31	-	0.29	0.35 to 1.37	-	0.35 to 1.79	0.70 to 3.15
Ormonde Wind Farm	12	<u>32</u>	11	0.00	1.74	0.00	0.044	No connectivity	0.0249	0.00 to 0. 00 <u>04</u>	-	0.00 to 0. 00 02	0.00	-	0.00	0.00 to 0. 00 <u>04</u>	-	0.00 to 0. 00 <u>02</u>	0.00 to 0.05
Rampion Offshore Wind Farm	<u>451</u>	<u>563</u>	122	22.22	37.54	8.43	0.044	No connectivity	0.0249	0.06 to 1.36	-	0.01 to 0.21	0.98	-	0.21	1.04 to 2.34	-	0.22 to 0.42	1.25 to 2.75
Rampion 2 Offshore Wind Farm	<u>155</u>	<u>3</u>	<u>53</u>	9.04	0.53	5.32	0.044	No connectivity	0.0249	0.02 to 0.47	-	0.00 to 0.09	0.40	-	0.13	0.42 to 0.87	-	0.14 to 0.22	0.55 to 1.09
Walney (3 and 4) Extension Offshore Wind Farm	<u>797</u>	<u>170</u>	<u>610</u>	8.08	10.00	<u>45.96</u>	0.044	No connectivity	0.0249	0.10 to 2.40	-	0.04 to 1.03	0.36	-	1.14	0.46 to 2.76	-	1.19 to 2.18	1.65 to 4.94
West of Orkney Windfarm	<u>661</u>	<u>367</u>	437	11.17	9.08	<u>8.75</u>	0.044	No connectivity	0.0249	0.09 to 1.99	-	0.03 to 0.74	0.49	-	0.22	0.58 to 2.49	-	0.25 to 0.96	0.83 to 3.44

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Annual impact and increase in baseline mortality from the combined impact 4% mortality to 70% displacement and 10% mortality)

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Plan or project<mark>Project</mark>	Un-appor (adult bird	tioned abu is) ^a	n d ances	<u>Un-appor</u> impacts (a	tione d colli a d ult birds)	sion 1ª	Appo r tion	ning values		values (30%	d displaceme displacement 70% displace			ne d collision g r oup avoi d		Combine d i	mpact		
	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- breeding	Pre- breeding	B r ee d ing	Post-breeding	<u>Pre-</u> breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Annua
White Cross Offshore Windfarm	<u>379</u>	<u>23</u>	94	4.93	1.97	0.98	0.044	No connectivity	0.0249	0.05 to 1.14	-	0.01 to 0.16	0.22	-	0.02	0.27 to 1.36	-	0.03 to 0.18	0.30 to 1.54
cap-fille d projects										I			1	1		1	1		
Burbo Bank	12	7	11	0.29	0.45	0.45	0.044	No connectivity	0.0249	0.00 to 0.04	=	0.00 to 0.02	0.01	_	0.01	0.01 to 0.05	=	0.01 to 0.03	0.03 to 0.08
Gwynt y Môr Offshore Wind Farm	<u>39</u>	<u>27</u>	<u>36</u>	<u>0.45</u>	0.77	0.71	0.044	No connectivity	0.0249	0.01 to 0.12	=	0.00 to 0.06	0.02	=	0.02	0.02 to 0.14	=	0.02 to 0.08	0.04 to 0.22
Robin Rigg	<u>16</u>	11	<u>15</u>	0.39	0.71	0.68	0.044	No connectivity	0.0249	0.00 to 0.05	=	0.00 to 0.03	0.02	=	0.02	0.02 to 0.07	_	0.02 to 0.04	0.04 to 0.11
Rhyl Flats Offshore Wind Farm	12	9	<u>11</u>	0.40	0.71	0.63	0.044	No connectivity	0.0249	0.00 to 0.04	=	0.00 to 0.02	0.02	=	0.02	0.02 to 0.05	=	0.02 to 0.03	0.04 to 0.09
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	0.96	0.99	0.044	No connectivity	0.0249	0.01 to 0.15	=	0.00 to 0.08	0.03	=	0.02	0.03 to 0.18	=	0.03 to 0.10	0.06 to 0.29
Walney 2	Included a	<u>bove</u>				0.45	0.044	No connectivity	0.0249	0.00 to 0.00	=	0.00 to 0.00	0.01	=	0.01	0.01 to 0.01	=	0.01 to 0.01	0.02 to 0.02
West of Duddon Sands Offshore Wind Farm	<u>37</u>	242	<u>34</u>	0.45	0.77	0.71	0.044	No connectivity	0.0249	0.00 to 0.11	=	0.00 to 0.06	0.06	_	0.06	0.07 to 0.17	=	0.06 to 0.11	0.12 to 0.28
Гоtal p red icte d i	al predicted impact (adult birds)										N/A_	0. 37 39 to 8.729.04	3. 87 <u>90</u>	N/A-	2. 72 <u>87</u>	4. 38 43 to 45.7316.37	N/A_	3. 09 25 to 11.44 <u>91</u>	7.68 to 28.29
nc r ease in base	line mo r tal	ity (%)								0.02% to 0. 39 41%	N/A_	0.01% to 0. 29 30%	0.13%	N/A-	0.09%	0.15% to 0. 52 <u>54</u> %	N/A-	0. 10 11% to 0. 38 39%	0.25% to 0.94%

1.5.3.24 ___As previously discussed (section 1.1.2) the Applicant is not proposing to undertaken PVA on the worst-case scenario as advised by JNCC, due to lack of empirical evidence for a displacement rate of 70% and a mortality rate of 10% therefore the applicant has presented the NatureScot guidance of 30% displacement and 3% mortality within Table 1-32.

mortality

0.25 to 0.90% increase in baseline

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Table 1-32: In-combination assessment for black-legged kittiwake from the Cape Wrath SPA – when considering the 30% displacement and 3% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the breeding period, 54.33% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season.

Plan or project Project	<u>Un-appor</u> (adult bird	tioned abu ds) ^a	ndances	Un-appor impacts (a	tione d coll adult birds	ision) ^a	Appo r tion	ning values		impact va displacer mortality	ne d d isplace alues (3 0 % nent <u>and</u> to 70% disp mo r tality)			ne d collisio g r oup avoid		Combine	d impact				
	P r e- b r ee d ing	B r ee d ing	Post- breeding	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- breeding	Pre- breeding	B r ee d ing	Post- breeding	<u>Pre-</u> breeding	Breeding	Post- breeding	<u>Pre-</u> breeding	<u>Breeding</u>	Post- breeding	Annual		
Awel y Môr Offshore Wind Farm	162	<u>46</u>	<u>45</u>	8.14	6.20	4.41	0.044	No connectivity	0.0249	0.06	z.	0.01	0.36	-	0.11	0.42	-	0.12	0. 36<u>54</u>		0.11
Burbo Bank Extension Offshore Wind Farm	<u>27</u>	<u>376</u>	<u>25</u>	0.00	12.26	0.00	0.044	No connectivity	0.0249	0. 00 01	-	0.0001	0.00	-	0.00	0. 00<u>01</u>	-	0. 00 <u>01</u>	0.02		
Erebus Floating Wind Demo	1	1076	<u>278</u>	6.66	0.27	13.11	0.044	No connectivity	0.0249	0.00	ī.	0.06	0.29	-	0.33	0.29	-	0.39	0. 29 68		0.33
TwinHub (Wave Hub Floating Wind Farm)	<u>30</u>	2	103	0.00	<u>5.17</u>	0.00	0.044	No connectivity	0.0249	0.01	Ξ.	0.02	0.00	-	0.00	0.01	-	0.02	0.0003	-	0.00
Mona Offshore Wind Project	312	386	307	4.65	8.26	4.47	0.044	No connectivity	0.0249	0. 35 12	-	0.07	0.20		0.11	0.47 <u>33</u>	-	0.18	0. 35 <u>50</u>	-	0.11
Morecambe Offshore Windfarm Generation Assets	<u>631</u>	2074	2215	2.84	8.00	6.19	0.044	No connectivity	0.0249	0.24	ā	0.48	0.12	-	0.15	0.37	-	0.64	0.12 1.01	-	0.15
Morgan Offshore Wind Project Generation Assets	350	245	886	7.01	<u>2.66</u>	11.51	0.044	No connectivity	0.0249	0.14	=	0.19	0.31	-	0.29	0.44	-	0.48	0. 31 <u>92</u>	-	0.29
Ormonde Wind Farm	12	<u>32</u>	11	0.00	1.74	0.00	0.044	No connectivity	0.0249	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.01		
Rampion Offshore Wind Farm	<u>451</u>	<u>563</u>	122	22.22	37.54	8.43	0.044	No connectivity	0.0249	0.18	ī.	0.03	0.98	-	0.21	1.15	-	0.24	0.981.39	-	0.21
Rampion 2 Offshore Wind Farm	<u>155</u>	3	<u>53</u>	9.04	0.53	<u>5.32</u>	0.044	No connectivity	0.0249	0.06	=	0.01	0.40	-	0.13	0.46	-	0.14	0.4 <u>060</u>	-	0.13
Walney (3 and 4) Extension Offshore Wind Farm	<u>797</u>	<u>170</u>	610	8.08	10.00	<u>45.96</u>	0.044	No connectivity	0.0249	0.31	Ξ.	0.13	0.36	-	1.14	0.66	-	1.28	1. 14<u>94</u>		
West of Orkney Windfarm	<u>661</u>	367	437	11.17	9.08	<u>8.75</u>	0.044	No connectivity	0.0249	0.26	=	0.10	0.49	-	0.22	0.75	-	0.31	0.49 1.06		0.22

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Plan or project<mark>Project</mark>	Un-appor (adult bird	tioned abu ds) ^a	n d ances	Un-apport impacts (a	tione d colli adult bi rd s	sion L ^a	-Appo r tio	ning values		impact va displacen mortality	ne d d isplace lues (3 0 % nent , 3 and to 70% disp no r tality)			ne d collisio g r oup avoid	n values dance r ate	Combined	d impact				
	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	<u>Pre-</u> breeding	<u>Breeding</u>	Post- breeding	<u>Pre-</u> breeding	<u>Breeding</u>	Post- breeding	Annual		
White Cross Offshore Windfarm	<u>379</u>	<u>23</u>	94	4.93	1.97	0.98	0.044	No connectivity	0.0249	0.15	=	0.02	0.22	-	0.02	0.36	-	0.05	0.2241	-	0.02
Gap-fille d p r oje	ects_																				
Burbo Bank	<u>12</u>	<u>7</u>	<u>11</u>	0.29	0.45	<u>0.45</u>	0.044	No connectivity	0.0249	0.00	=	0.00	<u>0.01</u>	=	<u>0.01</u>	0.02	=	<u>0.01</u>	0.03		
Gwynt y Môr Offshore Wind Farm	<u>39</u>	<u>27</u>	<u>36</u>	0.45	0.77	0.71	0.044	No connectivity	0.0249	0.02	_	0.01	0.02	=	0.02	0.03	_	0.03	0.06		
Robin Rigg	<u>16</u>	11	<u>15</u>	0.39	0.71	0.68	0.044	No connectivity	0.0249	0.01	=	0.00	0.02	=	0.02	0.02	=	0.02	0.04		
Rhyl Flats Offshore Wind Farm	<u>12</u>	9	<u>11</u>	0.40	0.71	0.63	0.044	No connectivity	0.0249	0.00	_	0.00	0.02	=	0.02	0.02	=	0.02	0.04		
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	0.96	0.99	0.044	No connectivity	0.0249	0.02	=	0.01	0.03	=	0.02	0.05	-	0.04	0.08		
Walney 2	Included a	bove				0.45	0.044	No connectivity	0.0249				0.01	=	0.01	0.01	=	0.01	0.02		
West of Duddon Sands Offshore Wind Farm	<u>37</u>	242	<u>34</u>	0.45	0.77	<u>0.71</u>	0.044	No connectivity	0.0249	0.01	=	0.01	0.06	=	0.06	0.07	=	0.06	0.14		
Total p red icted	impact (a	dult bi rd s)		•			1			1.60	_	1.16	3. 87 90	0.00 <u>-</u>	2. 72 <u>87</u>	5.4 <mark>0</mark> 50	0.00 -	3.84 <u>4.03</u>	3.87 <u>9.53</u>	0.00	2.72
Inc r ease in bas	seline mo r t	ality (%)								0.05%	_	0.04%	0.13%	0.00% _	0.09%	0.18%	0.00% _	0.13%	0. 13 <u>32</u> %	0.00%	0.09%

4.5.3.221.5.3.25 As the predicted impact on black-legged kittiwake from Cape Wrath SPA is <1% increase in baseline mortality, which is likely to be undetectable against natural variation, the impact is not considered to hinder the conservation objectives of the site, and therefore, it is concluded beyond reasonable scientific doubt that there would be no AEoSI from the Mona Offshore Wind Project incombination with other plans and projects.

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Gap-filled projects



North Colonsay and Western Cliffs SPA

4.5.3.231.5.3.26 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline black-legged kittiwake from North Colonsay and Western Cliffs SPA, an in-combination assessment is presented within Table 1-33 (70% displacement and 10% mortality) and Table 1-34 (30% displacement and 3% mortality).

Table 1-33: In-combination assessment for black-legged kittiwake from the North Colonsay and Western Cliffs SPA – when considering 30-70% displacement and 1-10% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the pre-breeding season.

Plan or project	Un-appor (adult bird	tioned abu ds) ^a	<u>ndances</u>	Un-apport impacts (a	ioned colli adult birds)	sion L ^a	Appo r tion	ing values		mortality to	d isplaceme	ent an d 1 %	Apportioned colli group avoidance		s (species-	Combine	1 impact		
	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- breeding	Pre-breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	Breeding	Post- breeding	<u>Annual</u>
Awel y Môr Offshore Wind Farm	<u>162</u>	<u>46</u>	<u>45</u>	<u>8.14</u>	6.20	4.41	0.0237	No connectivity	0.0134	0.01 to 0.26	-	0.00 to 0.04	0.19	-	0.06	0.20 to 0.46	-	0.06 to 0.10	0.27 to 0.56
Burbo Bank Extension Offshore Wind Farm	<u>27</u>	<u>376</u>	<u>25</u>	0.00	<u>12.26</u>	0.00	0.0237	No connectivity	0.0134	0.00 to 0.04	-	0.00 to 0.02	0.00	-	0.00	0.00 to 0. 00 <u>04</u>	-	0.00 to 0. 00 <u>02</u>	0.00 to 0.07
Erebus Floating Wind Demo	1	1076	278	6.66	0.27	13.11	0.0237	No connectivity	0.0134	0.00 to 0.00	-	0.01 to 0.25	0.16	-	0.18	0.16 to 0.16	-	0.19 to 0.43	0.34 to 0.59
TwinHub (Wave Hub Floating Wind Farm)	<u>30</u>	2	<u>103</u>	0.00	<u>5.17</u>	0.00	0.0237	No connectivity	0.0134	0.00 to 0.05	-	0.00 to 0.09	0.00	-	0.00	0.00 to 0.05	-	0.00 to 0.09	0.01 to 0.14
Mona Offshore Wind Project	312	386	307	4.65	<u>8.26</u>	4.47	0.0237	No connectivity	0.0134	0.02 to 0.51	-	0.01 to 0.28	0. 19 11	-	0.06	0. 21 13 to 0. 70 62	-	0.07 to 0.34	0.20 to 0.96
Morecambe Offshore Windfarm Generation Assets	<u>631</u>	2074	2215	2.84	8.00	6.19	0.0237	No connectivity	0.0134	0.04 to 1.02	-	0.09 to 2.02	0.07	-	0.08	0.11 to 1.09	-	0.17 to 2.10	0.28 to 3.19
Morgan Offshore Wind Project Generation Assets	350	<u>245</u>	886	7.01	2.66	11.51	0.0237	No connectivity	0.0134	0.02 to 0.57	-	0.03 to 0.81	0.17	-	0.15	0.19 to 0.74	-	0.19 to 0.96	0.38 to 1.70
Rampion OffshoreOrmonde Wind Farm	12	<u>32</u>	11	0.00	<u>1.74</u>	0.00	0.0237	No connectivity	0.0134	0.03 to 0.73	-	0.00 to 0.11	0.53	-	0.11	0.56 to 1.26	-	0.12 to 0.22	0.68 to 1.48
Rampion 2-Offshore Wind Farm	<u>451</u>	<u>563</u>	122	22.22	<u>37.54</u>	8.43	0.0237	No connectivity	0.0134	0.01 to 0.25	-	0.00 to 0.05	0.21	-	0.07	0.23 to 0.47	-	0.07 to 0.12	0.30 to 0.59
Walney (3 and 4) ExtensionRampion 2 Offshore Wind Farm	<u>155</u>	3	<u>53</u>	9.04	<u>0.53</u>	<u>5.32</u>	0.0237	No connectivity	0.0134	0.06 to 1.29	-	0.02 to 0.56	0.19	-	0.62	0.25 to 1.49	-	0.64 to 1.17	0.89 to 2.66
West of Orkney WindfarmWalney (3 and 4) Extension Offshore Wind Farm	797	170	610	8.08	10.00	45.96	0.0237	No connectivity	0.0134	0.05 to 1.07	-	0.02 to 0.40	0. 19 26	-	0. 62 12	0.31 to 1.34	-	0.13 to 0.52	0.44 to 1.85
White Cross Offshore West of Orkney Windfarm	<u>661</u>	<u>367</u>	437	11.17	9.08	8.75	0.0237	No connectivity	0.0134	0.03 to 0.62	-	0.00 to 0.09	0.12	-	0.01	0.14 to 0.73	-	0.02 to 0.10	0.16 to 0.83
White Cross Offshore Windfarm	<u>379</u>	<u>23</u>	94	4.93	1.97	0.98	0.0237	No connectivity	0.0134	0.01 to 0.26	=	0.00 to 0.04	0.19	_	0.06	0.20 to 0.46	=	0.06 to 0.10	0.27 to 0.56

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Plan-or projectProject	Un-appor (adult bird	tioned abu ds) ^a	ndances	Un-apport impacts (a	ione d colli adult birds)	sion a	Appo r tior	ning values		values (30% mortality to	d displacements	ent an d 1 %	Apportioned coll group avoidance			Combine	d impact		
	P r e- b r ee d ing	B r ee d ing	Post- breeding	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- breeding	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre-breeding	<u>Breeding</u>	Post- breeding	<u>Pre-</u> breeding	Breeding	Post- breeding	Annual
Burbo Bank	<u>12</u>	<u>7</u>	11	0.29	<u>0.45</u>	<u>0.45</u>	0.0237	No connectivity	0.0134	0.00 to 0.02	=	0.00 to 0.01	0.01	=	<u>0.01</u>	0.01 to 0.03	=	0.01 to 0.02	0.01 to 0.04
Gwynt y Môr Offshore Wind Farm	<u>38</u>	<u>27</u>	<u>35</u>	0.45	0.77	0.71	0.0237	No connectivity	0.0134	0.00 to 0.06	=	0.00 to 0.03	0.01	=	0.01	0.01 to 0.07	=	0.01 to 0.04	0.02 to 0.12
Robin Rigg	<u>16</u>	<u>11</u>	<u>15</u>	0.39	0.71	0.68	0.0237	No connectivity	0.0134	0.00 to 0.03	=	0.00 to 0.01	0.01	=	0.01	0.01 to 0.04	=	0.01 to 0.02	0.02 to 0.06
Rhyl Flats Offshore Wind Farm	<u>12</u>	9	11	0.40	0.71	0.63	0.0237	No connectivity	0.0134	0.00 to 0.02	=	0.00 to 0.01	0.01	=	0.01	0.01 to 0.03	=	0.01 to 0.02	0.02 to 0.05
Walney 1 - abundances are 1+2 combined	<u>50</u>	<u>34</u>	<u>46</u>	0.62	0.96	0.99	0.0237	No connectivity	0.0134	0.00 to 0.08	=	0.00 to 0.04	0.01	=	0.01	0.02 to 0.10	=	0.02 to 0.06	0.03 to 0.15
Walney 2	Included a	above		0.29	0.45	0.45	0.044	No connectivity	0.0237	0.00 to 0.00	=	0.00 to 0.00	0.01	=	0.01	0.01 to 0.01	=	0.01 to 0.01	0.01 to 0.01
West of Duddon Sands Offshore Wind Farm	<u>38</u>	<u>27</u>	<u>35</u>	0.45	0.77	0.71	0.0237	No connectivity	0.0134	0.00 to 0.06	_	0.00 to 0.03	0.03	=	0.03	0.04 to 0.09	=	0.03 to 0.06	0.07 to 0.15
Total p red icte d impa	ct (a d ult bi	rds)								0. 27 29 to 6. 39 70	N/A_	0. 2 021 to 4.6986	2. 09 10	N/A-	1.46 <u>54</u>	2. 36<u>39</u> to 8. 47<u>80</u>	N/A_	1. <u>6675</u> to 6. <u>4640</u>	4.14 to 15.20
Increase in baseline	mo r tality (%)		0.01 0.39	% to N/A	0.01 0.29	 % to)%	0.13%	N/A	0.09%	0.08% to 0.52%	N/A	0.06% to 0.38%			1			1
Annual impact and in and 1% mortality to 7	nc r ease in 7 0% d ispla	baseline m cement an	ortality fro d 10% mort	m the com ality)Incre	bine d impa ase in base	act (when c	consi der in ality (%)	g 3 0% d ispla	cement	0.01% to 0.41%	£-	0.01% to 0.30%	4.02 to 14.63 birds 0.13% to 0.90 % increase in baseline mortality 0.13%	ī.	0.10%	0.08% to 0.54%	<u>.</u>	0.06% to 0.39%	0.14% to 0.94%

1.5.3.24 As previously discussed (section 1.1.2) the Applicant is not proposing to undertaken PVA on the worst-case scenario as advised by JNCC, due to lack of empirical evidence for a displacement rate of 70% and a mortality rate of 10% therefore the applicant has presented the NatureScot guidance of 30% displacement and 3% mortality within Table 1-34.

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Table 1-34: In-combination assessment for black-legged kittiwake from the North Colonsay and Western Cliffs SPA – when considering 30% displacement and 3% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the pre-breeding period, 54.33% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season.

	Un-apport (adult bird	ione d abu Is) ^a	ndances	Un-apport	tioned colli adult birds)	sion L ^a	Appo r tion	ning values		Apportion (30% disp	ne d d isplacen vlacement 3 <u>.2</u> splacement a	nent impact values and 1% mortality nd 10% mortality)	Appo r tion (species- 99.28)	ne d collisior g r oup avoi d	n values lance r ate	Combine	d impact		
project<mark>Project</mark>	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post-breeding	Pre- breeding	Breeding	Post- breeding	<u>Pre-</u> breeding	Breeding	Post- breeding	Annual
Awel y Môr Offshore Wind Farm	<u>159</u>	<u>46</u>	44	<u>8.14</u>	6.20	4.41	0.0237	No connectivity	0.0134	0.03	-	0.01	0.19	-	0.06	0.23	-	0.06	0.42
Burbo Bank Extension Offshore Wind Farm	<u>27</u>	<u>376</u>	<u>24</u>	0.00	12.26	0.00	0.0237	No connectivity	0.0134	0. 00 <u>01</u>	-	0.00	0.00	-	0.00	0. 00 <u>01</u>	-	0.00	0.01
Erebus Floating Wind Demo	1	<u>1076</u>	<u>270</u>	<u>6.66</u>	0.27	<u>13.11</u>	0.0237	No connectivity	0.0134	0.00	-	0.03	0.16	-	0.18	0.16	-	0.21	0.32
TwinHub (Wave Hub Floating Wind Farm)	<u>30</u>	2	101	0.00	<u>5.17</u>	0.00	0.0237	No connectivity	0.0134	0.01	-	0.01	0.00	-	0.00	0.01	-	0.01	0.01
Mona Offshore Wind Project	<u>305</u>	386	<u>298</u>	4.65	<u>8.26</u>	4.47	0.0237	No connectivity	0.0134	0.07	-	0.04	0. 19 11	-	0.06	0. 25 18	-	0.10	0.29
Morecambe Offshore Windfarm Generation Assets	<u>618</u>	2074	<u>2152</u>	2.84	8.00	6.19	0.0237	No connectivity	0.0134	0.13	-	0.26	0.07	-	0.08	0.20	-	0.34	0.27
Morgan Offshore Wind Project Generation Assets	<u>343</u>	245	<u>861</u>	7.01	2.66	11.51	0.0237	No connectivity	0.0134	0.07	-	0.10	0.17	-	0.15	0.24	-	0.26	0.41
Rampion OffshoreOrmonde Wind Farm	12	<u>32</u>	11	0.00	1.74	0.00	0.0237	No connectivity	0.0134	0.09	-	0.01	0.53	-	0.11	0.62	-	0.13	1.15
Rampion 2- Offshore Wind Farm	442	<u>563</u>	118	22.22	37.54	8.43	0.0237	No connectivity	0.0134	0.03	-	0.01	0.21	-	0.07	0.25	-	0.08	0.46
Rampion 2 Offshore Wind Farm	<u>152</u>	<u>3</u>	<u>52</u>	9.04	0.53	5.32	0.0237	No connectivity	0.0134	0.17	=	0.07	0.19	=	0.62	0.36	=	0.69	0.55
Walney (3 and 4) Extension Offshore Wind Farm	<u>,780</u>	170	<u>593</u>	8.08	10.00	45.96	0.0237	No connectivity	0.0134	0. 17<u>14</u>	-	0. 07 <u>05</u>	0. 19 26	-	0. 62 12	0. 36<u>40</u>	-	0. 69 <u>17</u>	0.67
West of Orkney Windfarm	647	367	<u>425</u>	11.17	9.08	<u>8.75</u>	0.0237	No connectivity	0.0134	0.44 <u>08</u>	-	0. 05 <u>01</u>	0.12	0.40 -	-0.01	0. 17<u>20</u>	_	0.02	0.31
White Cross Offshore Windfarm	<u>371</u>	<u>23</u>	92	4.93	1.97	0.98	0.0237	No connectivity	0.0134	0.03	=	0.01	0.19	Ξ	0.06	0.23	=	0.06	0.42
Gap-fille d p r ojects		I	ı				I			1		1	1			1			1
White Cross Offshore WindfarmBurbo Bank	<u>,12</u>	<u>.7</u>	.11	0.29	0.45	0.45	0.0237	No connectivity	0.0134	0. 08 <u>00</u>	-	0.00	0.01	0.12 <u>-</u>	-0.01	0.01	0.20 _	-0.01	0.02
Gwynt y Môr Offshore Wind Farm	<u>39</u>	<u>27</u>	<u>36</u>	0.45	0.77	0.71	0.0237	No connectivity	0.0134	0.01	=	0.00	0.01	=	0.01	0.02	=	0.01	0.03

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3% mortality)

Plan or	Un-apport (adult bird	ione d abui ls) ^a	ndances	Un-apport impacts (a	ione d colli idult birds)	sion L ^a	Appo r tion	ning values			e d d isplacen lacement 3 <u>.</u> splacement a	nent impact values and 1% mortality nd 10% mortality)		ne d collisior g r oup avoi d		Combine	d impact		
project Project	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post-b r ee d ing	Pre- breeding	<u>Breeding</u>	Post- breeding	<u>Pre-</u> breeding	B r ee d ing	<u>Post-</u> breeding	<u>Annual</u>
Robin Rigg	<u>16</u>	11	<u>15</u>	0.39	0.71		0.0237	No connectivity	0.0134	0.00	_	0.00	0.01	=	0.01	0.01	=	0.01	0.02
Rhyl Flats Offshore Wind Farm	12	9	11	0.40	0.71	0.63	0.0237	No connectivity	0.0134	0.00	=	0.00	0.01	=	0.01	0.01	=	0.01	0.02
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	0.96	0.99	0.0237	No connectivity	0.0134	0.01	=	0.01	0.01	=	0.01	0.03	=	0.02	0.04
Walney 2	Included a	bove				0.45	0.044	No connectivity	0.0237	0.01	=	0.01	0.01	=	0.01	0.01	=	0.01	0.01
West of Duddon Sands Offshore Wind Farm	<u>37</u>	<u>242</u>	<u>34</u>	0.45	0.77	0.71	0.0237	No connectivity	0.0134	0.01	=	0.00	0.03	=	0.03	0.04	=	0.03	0.07
Total predicted imp	act (a d ult b	oi rd s)	1	'						0. 82 <u>86</u>	0.00 _	0. 60 <u>62</u>	2. 09 10	0.00 <u>-</u>	1.46 <u>54</u>	2. 91 96	0.00 <u>-</u>	2. 07 17	<u>5.13</u>
Increase in baseline	e mo r tality	(%)								0.05%	0.00% _	0.04%	0.13%	0.00% _	0. 09 10%	0.18%	0.00% _	0.13%	<u>0.32%</u>

4.5.3.25 As the predicted impact on black-legged kittiwake from North Colonsay and Western Cliffs SPA is <1% increase in baseline mortality, which is likely to be undetectable against natural variation, the impact is not considered to hinder the conservation objectives of the site therefore, it is concluded beyond reasonable scientific doubt that there would be no AEoSI from the Mona Offshore Wind Project in-combination with other plans and projects.

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Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA

4.5.3.26 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline black-legged kittiwake from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA, an in-combination assessment is presented within Table 1-35 (30% displacement and 1% mortality to 70% displacement and 10% mortality) and Table 1-36 (30% displacement and 3% mortality).

Table 1,-235: In-combination assessment for black-legged kittiwake from the Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA – when considering 30-70% displacement and 1-10% mortality.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season

Apportioned displacement

b - the apportioning value during the breeding season was taken from project specific documentation

c - the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.004.

d - the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.004.

e - the apportioning value during the breeding season has used that of Frebus Floating Wind Demo, specifically 0.81

Plan or project<mark>Project</mark>	Un-apport (adult bird		n d ances	Un-appoi impacts (rtioned collisi (adult birds) ^a	on.	Apportion	ing values		displacer mortality	nent an d 1 0			ne d collisio g r oup avoi 3)		Combine	d impact		
	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- breeding	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	Breeding	Post- breeding	Pre- breeding	Breeding	Post-breeding	Annual
Awel y Môr Offshore Wind Farm	162	46	<u>45</u>	8.14	6.20	4.41	0. 0045 008	0.004 <u>b</u>	0. 0025 006	0.00 to 0.05	0.00 to 0.01	0.00 to 0.01	0.04	0.02	0.01	0.04 to 0.09	0.03 to 0.04	0.01 to 0.02	0.08 to 0.14
Burbo Bank Extension Offshore Wind Farm	0.0045 <u>27</u>	<u>376</u>	<u>25</u>	0. 003 <u>00</u>	0.0025 <u>12.26</u>	0.00	0.008	0.004 d	0.006	0.00 to 0. 00 01	0.00 to 0. 08 <u>11</u>	0.00 to 0.00	0.00	0. 04<u>05</u>	0.00	0.00 to 0. 00 01	0.04 <u>05</u> to 0. 12 <u>15</u>	0.00 to 0.00	0.05 to 0.17
Erebus Floating Wind Demo	0.0045 1	1076	278	6.66	0.27	13.11	0.008	0.817 <u>b</u>	0. 0025 <u>006</u>	0.00 to 0.00	2.64 to 61.52	0.00 to 0.05	0.03	0.22	0.03	0.03 to 0.03	2.85 to 61.74	0.03 to 0.08	2.92 to 61.85
TwinHub (Wave Hub Floating Wind Farm)	0.0045 <u>30</u>	2	103	0.00	5.17	0.00	0.008	0.817 <u>•</u>	0. 0025 <u>006</u>	0.00 to 0.01	0.01 to 0.12	0.00 to 0.02	0.00	4. 30 22	0.00	0.00 to 0.01	4. 31 23 to 4.4235	0.00 to 0.02	4.23 to 4.37
Mona Offshore Wind Project	0.0045 <u>312</u>	386	307	<u>4.65</u>	8.26	4.47	0.008	0.002 <u>b</u>	0. 0025<u>006</u>	0.00 to 0.10	0.00 to 0.05	0.00 to 0.05	0. 0 4 <u>02</u>	0. 01 <u>02</u>	0.01	0. 04<u>03</u> to 0. 13 <u>12</u>	0.02 to 0.07	0.01 to 0.06	0. 01 06 to 0. 06 25
Morecambe Offshore Windfarm Generation Assets	0.0045<u>631</u>	2074	2215	2.84	8.00	6.19	0.008	0.003 <u>b</u>	0. 0025 <u>006</u>	0.01 to 0.19	0.02 to 0.44	0.02 to 0.38	0.01	0.02	0.02	0.02 to 0.21	0.04 to 0.46	0.03 to 0.39	0.10 to 1.06
Morgan Offshore Wind Project Generation Assets	0.0045 <u>350</u>	<u>245</u>	<u>886</u>	7.01	2.66	<u>11.51</u>	0.008	0.002 <u>b</u>	0. 0025<u>006</u>	0.00 to 0.11	0.00 to 0.03	0.01 to 0.15	0.03	0.01	0.03	0.04 to 0.14	0.01 to 0.04	0.04 to 0.18	0.08 to 0.36
Ormonde Wind Farm	0.0045 <u>12</u>	0.00332	0.0025 <u>11</u>	0.00 to 0.00	0.00 to 0.00 <u>1.74</u>	0.00 to 0.00	0. 00 <u>0021</u>	0.002 °	0.0012	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00	0.00	0.00	0.00 to 0.00	0.00 to 0.01	0.00 0.00 to 0.00 0.00	0.04 <u>00</u> 0.00 to to 0.01

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Plan or project <mark>Projec</mark>	Un-apportioned abundances Un-apportioned collision (adult birds) a (mpacts (adult birds) a collect					Apportioning values			Apportioned displacement impact values (30% displacement and 1% mortality to 70% displacement and 10% mortality)						Combine	Combine d impact			
	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	Breeding	Post-breeding	<u>Annual</u>
Rampion Offshore Wind Farm	d 0.0045<u>451</u>	<u>563</u>	122	22.22	37.54	8.43	0.008	No connectivity	0. 0025 <u>006</u>	0.01 to 0.14	=	0.00 to 0.02	0.10	-		0.11 to 0.24		0.02 to 0.04	0.13 to 0.28
Rampion 2 Offshore Wind Farm	d 0.0045 155	3	<u>53</u>	9.04	0.53	<u>5.32</u>	0.008	No connectivity	0. 0025<u>006</u>	0.00 to 0.05	=	0.00 to 0.01	0.04	-		0.04 to 0.09		0.01 to 0.02	0.06 to 0.11
Walney (3 and 4) Extension Offshore Wind Farm		0.003170	0.0025 <u>610</u>	8.08	10.00	<u>45.96</u>	0.008	0.002 °	0.006	0.01 to 0.25	0.00 to 0. 04 <u>02</u>	0.00 to 0.10	0.04	0. 03 02	0.11	0.05 to 0.28	0. 03 02 to 0. 07 04	0.12 to 0.22	0.19 to 0.54
West of Orkney Windfarm	0.0045 <u>661</u>	367	<u>437</u>	11.17	9.08	8.75	0.008	No connectivity	0.0025006	0.01 to 0.20	=	0.00 to 0.07	0.05	-	0.02	0.06 to 0.25		0.03 to 0.10	0.08 to 0.35
White Cross Offshore Windfarm	0.0045 <u>379</u>	<u>23</u>	94	4.93	1.97	0.98	0.008	0.817 <u>e</u>	0. 0025 <u>006</u>	0.01 to 0.12	0.06 to 1.34	0.00 to 0.02	0.02	1.61		0.03 to 0.14	1.67 to 2.95	0.00 to 0.02	1.70 to 3.10
Gap-filled pro	ojects		I		I		T												
Burbo Bank	<u>12</u>	<u>7</u>	<u>11</u>	0.29	0.45	0.45	0.008	0.004 d	0.006	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00	0.00	0.00	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00 to 0.01
Gwynt y Môr Offshore Wind Farm	<u>d</u> <u>39</u>	<u>27</u>	<u>36</u>	0.45	0.77	0.71	0.008	0.004 d	0.006	0.00 to 0.01	0.00 to 0.01	0.00 to 0.01	0.00	0.00	0.00	0.00 to 0.01	0.00 to 0.01	0.00 to 0.01	0.01 to 0.03
Robin Rigg	<u>16</u>	<u>11</u>	<u>15</u>	0.39	0.71	0.68	0.008	0.002 °	0.006	0.00 to 0.01	0.00 to 0.00	0.00 to 0.00	0.00	0.00	0.00	0.00 to 0.01	0.00 to 0.00	0.00 to 0.00	0.01 to 0.01
Rhyl Flats Offshore Wind Farm	d 12	9	11	0.40	0.71	0.63	0.008	0.004 d	0.006	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00	0.00	0.00	0.00 to 0.01	0.00 to 0.01	0.00 to 0.00	0.01 to 0.01
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	0.96	0.99	0.008	0.002 °	0.006	0.00 to 0.02	0.00 to 0.00	0.00 to 0.01	0.00	0.00	0.00	0.00 to 0.02	0.00 to 0.01	0.00 to 0.01	0.01 to 0.04
Walney 2	Included at	<u>oove</u>	1			0.45	0.008	0.002 °	0.006	Included a	bove	1	0.00	0.00	0.00	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.01 to 0.01
West of Duddon Sands Offshore Wind Farm	37 d	242	<u>34</u>	0.45	0.77	0.71	0.008	0.002 °	0.006	0.00 to 0.01	0.00 to 0.03	0.00 to 0.01	0.01	0.00	0.01	0.01 to 0.02	0.01 to 0.04	0.01 to 0.01	0.02 to 0.07
Total predicted impact (adult hirds)									0.05 to 0.12 <u>1.28</u>	2.73 to 1.34 <u>63.7</u> 0		0.40	6. 26 21	0.2729	0 .45 to 1 .64 <u>67</u>	8. 99 94 to 69. 90 91	0 .3433 to 1 .4520	9.72 to 72.79	

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Plan or project <mark>Project</mark>	<u>Un-apporti</u> <u>(adult bird</u>	i <u>oned abur</u> Is) ^a	n <u>dances</u>	Un-appor impacts (tioned collisi adult birds) ^a	<u>on</u>	Appo r tion	ing values		impact va displacer mortality	ment an d 1 0	%	Apportion (species-c rate 99.28	group avo		-Combine	e d impact			
	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- breeding	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	<u>Pre-</u> breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	B r ee d ing	Post-breeding	Annual	
Inc r ease in ba	aseline mo r t	tality (%)									0 .93% to 2 1 .6467%		0. 13<u>14</u>%	2. 13 <u>11</u> %		0.1 5% to 0 . 55 <u>57</u> %		0.11% to 0.3941%	3.31% to 24.76%	
Annual impac considering a mortality)							9.75	to 72.65 bi re % to 24.7 1 %		baseline r	mo r tality					1				

4.5.3.271.5.3.30 As previously discussed (section 1.1.2) the Applicant is not proposing to undertaken PVA on the worst-case scenario as advised by JNCC, due to lack of empirical evidence for a displacement rate of 70% and a mortality rate of 10% therefore the Applicant has presented the NatureScot guidance of 30% displacement and 3% mortality within Table 1-36.

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Table 1-36: In-combination assessment for black-legged kittiwake from the Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA – when considering 30% displacement and 3% mortality.

a — the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For black-legged kittiwake, the proportions are 53.2% of birds are adults in the pre-breeding period and 54.74% of birds are adults in the post-breeding season

<u>b</u> – the apportioning value during the breeding season was taken from project specific documentation.

c - the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.002.

d - the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.004.

e - the apportioning value during the breeding season has used that of Erebus Floating Wind Demo, specifically 0.817.

Plan or project <mark>Project</mark>	Un-apportioned abundances (adult birds) ^a		Un-apportioned collision impacts (adult birds) ^a			Apportioning values			Apportioned displacement impact values (30% displacement and 3% mortality)			(species-group avoidance rate 99.28)			Combine d impact				
project i <u>Toject</u>	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- breeding	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- breeding	Pre- breeding	<u>Breeding</u>	Post- breeding	Annual
Awel y Môr Offshore Wind Farm	<u>162</u>	<u>46</u>	<u>45</u>	8.14	6.20	4.41	0.0045008	0.004 <u>b</u>	0. 0025 <u>006</u>	0.01	0.00	0.00	0.04	0.02	0.01	0.04	0.03	0.01	0.08
Burbo Bank Extension Offshore Wind Farm	<u>27</u>	<u>376</u>	<u>25</u>	0. 0045<u>00</u>	12.26	0. 003<u>00</u>	0. 0025<u>008</u>	0.004 ^d	0.006	0.00	0.01	0.00	0.00	0. 04<u>05</u>	0.00	0.00	0.0506	0.00	0.06
Erebus Floating Wind Demo	0.0045 1	1076	278	6.66	0.27	13.11	0.008	0.817 <u>b</u>	0. 0025 <u>006</u>	0.00	7.91	0.01	0.03	0.22	0.03	0.03	8.13	0.04	8.20
TwinHub (Wave Hub Floating Wind Farm)	0.004530	2	103	0.00	<u>5.17</u>	0.00	0.008	0.817 <u>e</u>	0. 0025 <u>006</u>	0.00	0.02	0.00	0.00	4. 30 22	0.00	0.00	4.3224	0.00	4.24
Mona Offshore Wind Project	0.0045 <u>312</u>	<u>386</u>	<u>307</u>	<u>4.65</u>	<u>8.26</u>	4.47	0.008	0.002 <u>b</u>	0. 0025 <u>006</u>	0.01	0.01	0.01	0. 04<u>02</u>	0. 01 <u>02</u>	0.01	0. 05 <u>03</u>	0.02	0.02	0.07
Morecambe Offshore Windfarm Generation Assets	0.0045 <u>631</u>	2074	2215	2.84	8.00	6.19	0.008	0.003 <u>b</u>	0.0025006	0.03	0.06	0.05	0.01	0.02	0.02	0.04	0.08	0.06	0.18
Morgan Offshore Wind Project Generation Assets	0.0045350	<u>245</u>	886	7.01	2.66	11.51	0.008	0.002 <u>b</u>	0. 0025 <u>006</u>	0.01	0.00	0.02	0.03	0.01	0.03	0.05	0.01	0.05	0.10
Ormonde Wind Farm	0.0045 <u>12</u>	0.00332	0.0025 <u>11</u>	0.00	0.001.74	0.00	0. 00 <u>0021</u>	0. 01 <u>002 °</u>	0.000012	0.00	0. 01 <u>00</u>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rampion Offshore Wind Farm	0.0045<u>451</u>	<u>563</u>	<u>,122</u>	22.22	37.54	8.43	0.008	No connectivity	0. 0025 <u>006</u>	0.02	-	0.00	0.10	-	0.02	0.12	-	0.02	0.14
Rampion 2 Offshore Wind Farm	0.0045 <u>155</u>	3	<u>53</u>	9.04	0.53	<u>5.32</u>	0.008	No connectivity	0. 0025 <u>006</u>	0.01	-	0.00	0.04	-	0.01	0.05	-	0.01	0.06
Walney (3 and 4) Extension Offshore Wind Farm	0.0045 <u>797</u>	0.003 <u>170</u>	0.0025 <u>610</u>	8.08	10.00	45.96	0.008	0.002 °	0.006	0.03	0.00	0.01	0.04	0. 03 02	0.11	0.07	0. 03 02	0.13	0.22
West of Orkney Windfarm	0.0045 <u>661</u>	367	<u>437</u>	11.17	9.08	<u>8.75</u>	0.008	No connectivity	0. 0025 006	0.03	-	0.01	0.05	-	0.02	0.08	-	0.03	0.11

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Plan or	Un-apportioned abundances (adult birds) a			Un-apportioned collision impacts (adult birds) a			Appo r tioni	Apportioning values values (3			(30% displacement and		99.28)			Combine d impact			
project<mark>Project</mark>	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	<u>Pre-</u> breeding	<u>Breeding</u>	Post- breeding	Pre- breeding	Breeding	Post- breeding	<u>Annual</u>
White Cross Offshore Windfarm	0.0045 <u>379</u>	<u>23</u>	94	4.93	1.97	0.98	0.008	0.817 <u>°</u>	0. 0025 <u>006</u>	0.02	0.17	0.00	0.02	1.61	0.00	0.04	1.78	0.00	1.82
Gap-fille d p r ojec	ts .		1		l	1			1		1	1	'	1	1	-	1	1	1
Burbo Bank	<u>12</u>	<u>7</u>	<u>11</u>	0.29	0.45	0.45	0.008	0.004 d	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Gwynt y Môr Offshore Wind Farm	<u>39</u>	<u>27</u>	<u>36</u>	0.45	0.77	0.71	0.008	0.004 d	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Robin Rigg	<u>16</u>	11	<u>15</u>	0.39	0.71	0.68	0.008	0.002 °	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Rhyl Flats Offshore Wind Farm	<u>12</u>	9	11	0.40	0.71	0.63	0.008	0.004 ^d	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Walney 1 - abundances are 1+2 combined	<u>51</u>	<u>34</u>	<u>47</u>	0.62	0.96	0.99	0.008	0.002 °	0.006	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Walney 2	Included ab	ove				0.45	0.008	<u>0.002 °</u>	0.006	Included ab	ove		0.00	0.00	0.00	0.00	0.00	0.00	0.01
West of Duddon Sands Offshore Wind Farm	<u>37</u>	242	<u>34</u>	0.45	0.77	0.71	0.008	0.002 °	0.006	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.01	0.02
Total p r e d icte d i	mpact (a d ult	bi rd s)								0.16	8. 18<u>19</u>	0. 11 12	0.40	6. 26 21	0. 27 29	0. 55 <u>56</u>	14.45 <u>40</u>	0. 39 40	<u>15.37</u>
nc r ease in base	line mo r talit	/ (%)		0.05	2.78	9% 0.04	% 0.13	2.13 %	6 0.0 9	% 0.1 9	% 4.9 1	% 0.1 3	%	1			1		45.00
Annual impact a d isplacement an	n d inc rea se <u>l</u> d 3% mo r tal	<u>ncrease</u> in i ty) (%)	baseline m	o r tality fror	n the comb	ined impac	t (when cor	nsidering 3 0 %	/	0.06%	2.79%	0.04%	0.14%	2.11%	0.10%	<u>0.19%</u>	4.90%	0.14%	5.23% increase baseline mortality

1.5.3.28 As the predicted impact on black-legged kittiwake from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA is >1% increase in baseline mortality, the impact is further investigated by a PVA (see section 1.6.2) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

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Common guillemot

Sule Skerry and Sule Stack SPA

1.5.3.29 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline common guillemot from Sule Skerry and Sule Stack SPA, an incombination assessment is presented within Table 1-37 (30-70% displacement and 1-10% mortality and 70% displacement and 2% mortality).

Table 1-37: In-combination assessment for common guillemot from the Sule Skerry and Sule Stack SPA.

^a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For common guillemot, the proportions are 57.47% of birds are adults in the breeding period, 57.60% of birds are adults in the non-breeding period.

b – the apportioning value during the breeding season was taken from project specific documentation

P r oject	Un-apportioned a birds) a	<u>ıbundances (adult</u>	Appo r tioning valu	ies		placement impact d 1-10 % mo r tality)		Apportioned displacement impact values (70% displacement, 2% mortality)			
	B r ee d ing	Non-b r ee d ing	<u>Breeding</u>	Non-breeding	Annual	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding	
Awel y Môr Offshore Wind Farm	No connectivity	1,681	No connectivity	0.0221	0.11 to 2.60	N/A_	0.11 to 2.60	0.52	N/A ₂	0.52	
Burbo Bank Extension Offshore Wind Farm	No connectivity	<u>899</u>	No connectivity	0.0221	0.06 to 1.39	N/A_	0.06 to 1.39	0.28	N/A ₂	0.28	
Erebus Floating Wind Demo	No connectivity	16,322	No connectivity	0.0221	1.08 to 25. 19 25	N/A_	1.08 to 25. 19 25	5. 04 <u>05</u>	N/A ₋	5. 04 <u>05</u>	
TwinHub (Wave Hub Floating Wind Farm)	No connectivity	<u>125</u>	No connectivity	0.0221	0.01 to 0.19	N/A_	0.01 to 0.19	0.04	N/A-	0.04	
Walney (3 and 4) Extension Offshore Wind Farm	No connectivity	<u>1,110</u>	No connectivity	0.0221	0.07 to 1. 71 <u>72</u>	N/A ₋	0.07 to 1. 71 <u>72</u>	0.34	N/A ₂	0.34	
West of Orkney Windfarm	<u>2,794</u>	<u>2,462</u>	0.9145 <u></u>	0.0221	7.83 to 182.64 <u>65</u>	7.66 to 178.84	0.16 to 3. 80 <u>81</u>	0.76	35.77	0.76	
White Cross Offshore Windfarm	No connectivity	<u>610</u>	No connectivity	0.0221	0.04 to 0.94	N/A_	0.04 to 0.94	0.19	N/A-	0.19	
Morecambe Offshore Windfarm Generation Assets	No connectivity	<u>4,404</u>	No connectivity	0.0221	0.29 to 6. 80 81	N/A ₋	0.29 to 6.80	1.36	N/A_	1.36	
Morgan Offshore Wind Project Generation Assets	No connectivity	<u>2,362</u>	No connectivity	0.0221	0.16 to 3.65	N/A_	0.16 to 3.65	0.73	N/A_	0.73	
Mona Offshore Wind Project	No connectivity	<u>2,163</u>	No connectivity	0.0221	0.14 to 3. 34 <u>35</u>	N/A_	0.14 to 3. 34 <u>35</u>	0.67	N/A-	0.67	
Gap-fille d p r ojects		_		_							
Burbo Bank	No connectivity	<u>33</u>	No connectivity	<u>0.0221</u>	0.00 to 0.05	<u>=</u>	0.00 to 0.05	<u>0.01</u>	<u>=</u>	<u>0.01</u>	
Gwynt Y Môr	No connectivity	<u>118</u>	No connectivity	<u>0.0221</u>	0.01 to 0.18	Ξ	0.01 to 0.18	0.04	_	0.04	
Ormonde Wind Farm	No connectivity	<u>22</u>	No connectivity	0.0221	0.00 to 0.03	Ξ	0.00 to 0.03	<u>0.01</u>		0.01	
Robin Rigg	No connectivity	<u>51</u>	No connectivity	0.0221	0.00 to 0.08		0.00 to 0.08	0.02		0.02	
Rhyl Flats Offshore Wind Farm	No connectivity	<u>39</u>	No connectivity	0.0221	0.00 to 0.06	<u>=</u>	0.00 to 0.06	<u>0.01</u>	1	0.01	
Walney 1 & 2	No connectivity	<u>131</u>	No connectivity	<u>0.0221</u>	0.01 to 0.20	=	0.01 to 0.20	0.04	=	0.04	
West of Duddon Sands Offshore Wind Farm	No connectivity	<u>96</u>	No connectivity	0.0221	0.01 to 0.15	=	0.01 to 0.15	0.03	Ξ.	0.03	
Total p r edicted impact (ad	otal predicted impact (adult birds)						2. 13 16 to 49.6150.48	45. 69 <u>86</u>	35.77	9.92 10.10	
Increase in baseline morta	ality (%)				1.0506% to 24.5463%	0 .82% to 1 9.2 1 %	0 .23% to 5. 33 42%	4. 91 93%	19.21 <u>3.84</u> %	1. 07 <u>08</u> %	

1.5.3.28 As the predicted impact on common guillemot from Sule Skerry and Sule Stack SPA is >1% increase in baseline mortality the impact is further investigated by a PVA (see section 1.6.3) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

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North Rona and Sula Sgeir SPA

4.5.3.30 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline common guillemot North Rona and Sula Sgeir SPA, an in-combination assessment is presented within Table 1-38 (30-70% displacement and 1-10% mortality; 70% displacement and 2% mortality).

Table 1-38: In-combination assessment for common guillemot from the North Rona and Sula Sgeir SPA.

^a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For common guillemot, the proportions are 57,47% of birds are adults in the breeding period.

b – the apportioning value during the breeding season was taken from project specific documentation

P r oject	Un-apportioned birds) a	abundances (adult	Appo r tioning val	ues		placement impact od 1-10% mortality		Apportioned displacement impact values (70% displacement, 2% mortality)		
	B r ee d ing	Non-b r ee d ing	<u>Breeding</u>	Non-breeding	Annual	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding
Awel y Môr Offshore Wind Farm	No connectivity	1,681	No connectivity	0.0145	0.07 to 1. 70 <u>71</u>	N/A_	0.07 to 1. 70 <u>71</u>	0.34	N/A_	0.34
Burbo Bank Extension Offshore Wind Farm	No connectivity	899	No connectivity	0.0145	0.04 to 0.91	N/A-	0.04 to 0.91	0.18	N/A_	0.18
Erebus Floating Wind Demo	No connectivity	<u>16,322</u>	No connectivity	0.0145	0.71 to 16. 53 <u>57</u>	N/A_	0.71 to 16. 53 <u>57</u>	3.31	N/A_	3.31
TwinHub (Wave Hub Floating Wind Farm)	No connectivity	<u>125</u>	No connectivity	0.0145	0.01 to 0.13	N/A_	0.01 to 0.13	0.03	N/A_	0.03
Walney (3 and 4) Extension Offshore Wind Farm	No connectivity	1,110	No connectivity	0.0145	0.05 to 1. 12 <u>13</u>	N/A_	0.05 to 1. 12 13	0. 22 23	N/A ₋	0.2223
West of Orkney Windfarm	0.0002 2,794	<u>2,462</u>	<u>0.0002</u> ^b	0.0145	0.11 to 2. 53 <u>54</u>	0.00 to 0.04	0.11 to 2.49 <u>50</u>	0.51	0.01	0.50
White Cross Offshore Windfarm	No connectivity	<u>610</u>	No connectivity	0.0145	0.03 to 0.62	N/A_	0.03 to 0.62	0.12	N/A_	0.12
Morecambe Offshore Windfarm Generation Assets	No connectivity	4,404	No connectivity	0.0145	0.19 to 4.4 <u>6</u> 47	N/A-	0.19 to 4. 46 <u>47</u>	0.89	N/A ₂	0.89
Morgan Offshore Wind Project Generation Assets	No connectivity	2,362	No connectivity	0.0145	0.10 to 2. 39 40	N/A_	0.10 to 2. 39 40	0.48	N/A ₂	0.48
Mona Offshore Wind Project	No connectivity	2,163	No connectivity	0.0145	0.09 to 2. 19 20	N/A-	0.09 to 2. 19 20	0.44	N/A_	0.44
Gap-filled projects										
Burbo Bank	No connectivity	<u>33</u>	No connectivity	<u>0.0145</u>	0.00 to 0.03	Ξ	0.00 to 0.03	<u>0.01</u>	_	<u>0.01</u>
Gwynt Y Môr	No connectivity	<u>118</u>	No connectivity	<u>0.0145</u>	0.01 to 0.12	=	0.01 to 0.12	0.02	<u>=</u>	0.02
Ormonde Wind Farm	No connectivity	<u>22</u>	No connectivity	<u>0.0145</u>	0.00 to 0.02	2	0.00 to 0.02	0.00		0.00
Robin Rigg	No connectivity	<u>51</u>	No connectivity	<u>0.0145</u>	0.00 to 0.05	2	0.00 to 0.05	<u>0.01</u>		<u>0.01</u>
Rhyl Flats Offshore Wind Farm	No connectivity	<u>39</u>	No connectivity	0.0145	0.00 to 0.04	-	0.00 to 0.04	0.01	-	0.01
Walney 1 & 2	No connectivity	<u>131</u>	No connectivity	<u>0.0145</u>	0.01 to 0.13	_	0.01 to 0.13	0.03	Ξ	0.03
West of Duddon Sands Offshore Wind Farm	No connectivity	<u>96</u>	No connectivity	0.0145	0.00 to 0.10	Ξ	0.00 to 0.10	0.02	Ξ.	0.02
Total predicted impact (a	dult bi rd s)				1.4 <u>042</u> to 32.59 <u>33.16</u>	0.00 to 0.04	1.4 <mark>0</mark> 42 to 32.5533.12	6. 52 63	0.01	6. 51 <u>62</u>
Increase in baseline mort	ality (%)				0 .23% to 5.34 <u>44</u> %	0.00% to 0.01%	0 .23% to 5. 34 43%	1. 07 <u>09</u> %	0.00%	1. 07 <u>08</u> %

4.5.3.31 ____As the predicted impact on common guillemot from North Rona and Sula Sgeir SPA is >1% increase in baseline mortality the impact is further investigated by a PVA (see section 1.6.3) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

Cape Wrath SPA

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4.5.3.32 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline common guillemot from Cape Wrath SPA, an in-combination assessment is presented within Table 1-39 (30-70% displacement and 1-10% mortality; 70% displacement and 2% mortality).

Table 1-39: In-combination assessment for Commoncommon guillemot from the Cape Wrath SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For common guillemot, the proportions are 57.47% of birds are adults in the breeding period.

b - the apportioning value during the breeding season was taken from project specific documentation

P r oject	Un-apportioned abundances (adult birds) a		Appo r tioning val	ues		olacement impact v d 1-10% mo r tality)	alues (3 0-70 %	Apportioned disp displacement, 29	olacement impact v % mo r tality)	ralues (7 0 %
	B r ee d ing	Non-breeding	<u>Breeding</u>	Non-breeding	Annual	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding
Awel y Môr Offshore Wind Farm	No connectivity	1,681	No connectivity	0.0792	0.40 to 9. 30 32	N/A_	0.40 to 9. 30 <u>32</u>	1.86	N/A-	1.86
Burbo Bank Extension Offshore Wind Farm	No connectivity	899	No connectivity	0.0792	0.21 to 4. 97 98	N/A ₌	0.21 to 4. 97 98	0.99 <u>1.00</u>	N/A ₋	0.99 1.00
Erebus Floating Wind Demo	No connectivity	16,322	No connectivity	0.0792	3. 87 88 to 90. 29 49	N/A-	3. 87 88 to 90. 29 49	18. 06 10	N/A-	18. 06 <u>10</u>
TwinHub (Wave Hub Floating Wind Farm)	No connectivity	125	No connectivity	0.0792	0.03 to 0.69	N/A_	0.03 to 0.69	0.14	N/A_	0.14
Walney (3 and 4) Extension Offshore Wind Farm	No connectivity	1,110	No connectivity	0.0792	0.26 to 6. 14 <u>15</u>	N/A_	0.26 to 6. 14 <u>15</u>	1.23	N/A_	1.23
West of Orkney Windfarm	<u>2,794</u>	<u>2,462</u>	0. 0248 <u>0248</u> ^b	0.0792	0.79 to 18.47 <u>50</u>	0.21 to 4.85	0. 58 <u>59</u> to 13. 62 <u>65</u>	2.72 <u>3.70</u>	0.97	2. 72 <u>73</u>
White Cross Offshore Windfarm	No connectivity	<u>610</u>	No connectivity	0.0792	0.14 to 3. 37 38	N/A-	0.14 to 3. 37 38	0. 67 68	N/A-	0. 67 <u>68</u>
Morecambe Offshore Windfarm Generation Assets	No connectivity	4,404	No connectivity	0.0792	1. 04<u>05</u> to 24.<u>36<u>42</u></u>	N/A-	1. 04<u>05</u> to 24.36<u>42</u>	4. 87 <u>88</u>	N/A ₋	4. 87 <u>88</u>
Morgan Offshore Wind Project Generation Assets	No connectivity	2,362	No connectivity	0.0792	0.56 to 13. 07 10	N/A ₋	0.56 to 13. 07 10	2. 61 <u>62</u>	N/A ₋	2. 61 <u>62</u>
Mona Offshore Wind Project	No connectivity	<u>2,163</u>	No connectivity	0.0792	0.51 to 11. 97 <u>99</u>	N/A-	0.51 to 11. 97 99	2. 39<u>40</u>	N/A_	2. 39<u>40</u>
Gap-filled projects										
Burbo Bank	No connectivity	<u>33</u>	No connectivity	<u>0.0792</u>	0.01 to 0.19	Ξ	0.01 to 0.19	<u>0.04</u>	Ξ	<u>0.04</u>
Gwynt Y Môr	No connectivity	<u>118</u>	No connectivity	<u>0.0792</u>	0.03 to 0.65	Ξ	0.03 to 0.65	<u>0.13</u>	Ξ	<u>0.13</u>
Ormonde Wind Farm	No connectivity	<u>22</u>	No connectivity	<u>0.0792</u>	0.01 to 0.12	Ξ	0.01 to 0.12	<u>0.02</u>	Ξ	<u>0.02</u>
Robin Rigg	No connectivity	<u>51</u>	No connectivity	<u>0.0792</u>	0.01 to 0.28	Ξ	0.01 to 0.28	<u>0.06</u>	Ξ	<u>0.06</u>
Rhyl Flats Offshore Wind Farm	No connectivity	<u>39</u>	No connectivity	0.0792	0.01 to 0.22	Ξ	0.01 to 0.22	0.04	=	0.04
<u>Walney 1 & 2</u>	No connectivity	<u>131</u>	No connectivity	<u>0.0792</u>	0.03 to 0.72	<u>=</u>	0.03 to 0.72	<u>0.14</u>	Ξ	<u>0.14</u>
West of Duddon Sands Offshore Wind Farm	No connectivity	<u>96</u>	No connectivity	0.0792	0.02 to 0.53	Ξ	0.02 to 0.53	0.11	=	0.11
Total predicted impact (adul	t bi rd s)				7. 83 <u>96</u> to 182.64 <u>185.75</u>	0 .2 1 to 4.85	7. 62 75 to 477.79180.90	36.53 <u>37.15</u>	0 .97	35.56 <u>36.18</u>
Increase in baseline mortalit	Increase in baseline mortality (%)						0 .23% to 5. 33 42%	1. 09 <u>11</u> %	0.03%	1. 07 <u>08</u> %

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1.5.3.33 As the predicted impact on common guillemot from Cape Wrath SPA is >1% increase in baseline mortality the impact is further investigated by a PVA (see section 1.6.3) to conclude an if whether AEoSI can be ruled out beyond reasonable scientific doubt.

Han**d**a SPA

1.5.3.34 1.5.3.37 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline common guillemot from Handa SPA, an in-combination assessment is presented within Table 1-40 (30-70% displacement and 1-10% mortality; 70% displacement and 2% mortality).

Field Code Changed



Table 1--40: In-combination assessment for common guillemot from the Handa SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For common quillemot, the proportions are 57.47% of birds are adults in the breeding period, 57.60% of birds are adults in the non-breeding period.

b – the apportioning value during the breeding season was taken from project specific documentation

P r oject	Un-apportioned abundances (adult birds) ^a		Appo r tioning va	alues		placement impact d 1-10% mortality)		······································	N/A_ 2.5859 N/A_ 1.38		
	B r ee d ing	Non-b r ee d ing	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding	
Awel y Môr Offshore Wind Farm	No connectivity	1,681	No connectivity	0.11	0.55 to 12. 92 95	N/A-	0.55 to 12. 92 95	2. 58 <u>59</u>	N/A-	2. 58 <u>59</u>	
Burbo Bank Extension Offshore Wind Farm	No connectivity	<u>899</u>	No connectivity	0.11	0.30 to 6. 91 <u>92</u>	N/A_	0.30 to 6. 91 <u>92</u>	1.38	N/A ₁	1.38	
Erebus Floating Wind Demo	No connectivity	16,322	No connectivity	0.11	5.37 to 125.40 <u>68</u>	N/A-	5.37 to 125.40 <u>68</u>	25. 08 14	N/A-	25. 08 14	
TwinHub (Wave Hub Floating Wind Farm)	No connectivity	<u>125</u>	No connectivity	0.11	0.04 to 0.96	N/A <u>-</u>	0.04 to 0.96	0.19	N/A-	0.19	
Walney (3 and 4) Extension Offshore Wind Farm	No connectivity	<u>1,110</u>	No connectivity	0.11	0.37 to 8. 53 <u>55</u>	N/A-	0.37 to 8. 53 <u>55</u>	1.71	N/A_	1.71	
West of Orkney Windfarm	2,794	<u>2,462</u>	0. 0116 0116 ^b	0.11	0.91 to 21. 19 23	0.10 to 2.27	0.81 to 18. 92 96	3.78 <u>4.25</u>	0.45	3. 78 <u>79</u>	
White Cross Offshore Windfarm	No connectivity	<u>610</u>	No connectivity	0.11	0.20 to 4. 69 70	N/A-	0.20 to 4. 69 70	0.94	N/A_	0.94	
Morecambe Offshore Windfarm Generation Assets	No connectivity	4,404	No connectivity	0.11	1.45 to 33. 84 <u>91</u>	N/A <u>-</u>	1.45 to 33. 8 4 <u>91</u>	6. 77<u>78</u>	N/A_	6. 77 78	
Morgan Offshore Wind Project Generation Assets	No connectivity	2,362	No connectivity	0.11	0.78 to 18. 15 19	N/A <u>-</u>	0.78 to 18. 15 19	3. 63 <u>64</u>	N/A ₌	3. 63 <u>64</u>	
Mona Offshore Wind Project	No connectivity	<u>2,163</u>	No connectivity	0.11	0.71 to 16. 62 66	N/A-	0.71 to 16. 62 66	3. 32 33	N/A <u>-</u>	3. 32 33	
Gap-filled projects											
Burbo Bank	No connectivity	<u>33</u>	No connectivity	<u>0.11</u>	0.01 to 0.26	=	0.01 to 0.26	0.05	_	0.05	
Gwynt Y Môr	No connectivity	<u>118</u>	No connectivity	<u>0.11</u>	0.04 to 0.91	_	0.04 to 0.91	0.18	_	0.18	
Ormonde Wind Farm	No connectivity	<u>22</u>	No connectivity	<u>0.11</u>	0.01 to 0.17	Ξ	0.01 to 0.17	0.03	_	0.03	
Robin Rigg	No connectivity	<u>51</u>	No connectivity	<u>0.11</u>	0.02 to 0.39	Ξ	0.02 to 0.39	0.08	_	0.08	
Rhyl Flats Offshore Wind Farm	No connectivity	<u>39</u>	No connectivity	<u>0.11</u>	0.01 to 0.30	Ξ	0.01 to 0.30	0.06	_	0.06	
Walney 1 & 2	No connectivity	131	No connectivity	<u>0.11</u>	0.04 to 1.01	Ξ	0.04 to 1.01	0.20	_	0.20	
West of Duddon Sands Offshore Wind Farm	No connectivity	<u>96</u>	No connectivity	0.11	0.03 to 0.74	=	0.03 to 0.74	0.15	=	0.15	
Total predicted impact (adult b	i rd s)			•	10.6884 to 249.20253.51	0.10 to 2.27	10. 58 <u>74</u> to 246.93251.25	49.8 4 <u>50.70</u>	0 .45	4 9.39 <u>50.25</u>	
Increase in baseline mortality (%)				0 .23% to 5. 3847 %	0.00% to 0.05%	0 .23% to 5. 3342 %	1.0809%	0.01%	1. <mark>070</mark> 8%	

4.5.3.35 As the predicted impact on common guillemot from Handa SPA is >1% increase in baseline mortality the impact is further investigated by a PVA (see section 1.6.3) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

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Shiant Isles SPA

4.5.3.36 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline common guillemot from the Shiant Isles SPA, an in-combination assessment is presented within Table 1-41 (30-70% displacement and 1-10% mortality; 70% displacement and 2% mortality).

Table 1-41: In-combination assessment for common guillemot from the Shiant Isles SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For common quillemot, the proportions are 57.47% of birds are adults in the breeding period.

b – the apportioning value during the breeding season was taken from project specific documentation

	Un-apportioned abundances		Appo r tioning va	lues		lacement impact v	alues (3 0- 7 0 %		placement impact v	alues (7 0 %
P r oject	Tagait birde)				displacement and	* *	<u> </u>	displacement, 2%	• • • • • • • • • • • • • • • • • • • •	<u> </u>
	B r ee d ing	Non-breeding	Breeding	Non-breeding	Annual	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding
Awel y Môr Offshore Wind Farm	No connectivity	1,681	No connectivity	0.0149	0.07 to 1.75	N/A_	0.07 to 1.75	0.35	N/A ₋	0.35
Burbo Bank Extension Offshore Wind Farm	No connectivity	<u>899</u>	No connectivity	0.0149	0.04 to 0.94	N/A <u>-</u>	0.04 to 0.94	0.19	N/A-	0.19
Erebus Floating Wind Demo	No connectivity	16,322	No connectivity	0.0149	0.73 to 16.99 <u>17.02</u>	N/A-	0.73 to 16.99 <u>17.02</u>	3.40	N/A-	3.40
TwinHub (Wave Hub Floating Wind Farm)	No connectivity	<u>125</u>	No connectivity	0.0149	0.01 to 0.13	N/A_	0.01 to 0.13	0.03	N/A_	0.03
Walney (3 and 4) Extension Offshore Wind Farm	No connectivity	<u>1,110</u>	No connectivity	0.0149	0.05 to 1.16	N/A-	0.05 to 1.16	0.23	N/A_	0.23
West of Orkney Windfarm	0.0002 2,794	<u>2,462</u>	<u>0.0002</u> ^b	0.0149	0.11 to 2. 60 <u>61</u>	0.00 to 0.04	0.11 to 2. 56 <u>57</u>	0. 51 <u>52</u>	0.01	0.51
White Cross Offshore Windfarm	No connectivity	<u>610</u>	No connectivity	0.0149	0.03 to 0. 63 <u>64</u>	N/A-	0.03 to 0. 63 64	0.13	N/A <u>-</u>	0.13
Morecambe Offshore Windfarm Generation Assets	No connectivity	<u>4,404</u>	No connectivity	0.0149	0.20 to 4. 58 <u>59</u>	N/A_	0.20 to 4. 58 <u>59</u>	0.92	N/A_	0.92
Morgan Offshore Wind Project Generation Assets	No connectivity	<u>2,362</u>	No connectivity	0.0149	0.11 to 2.46	N/A_	0.11 to 2.46	0.49	N/A_	0.49
Mona Offshore Wind Project	No connectivity	<u>2,163</u>	No connectivity	0.0149	0.10 to 2. 25 <u>26</u>	N/A-	0.10 to 2. 25 26	0.45	N/A <u>-</u>	0.45
Gap-filled projects										
Burbo Bank	No connectivity	<u>33</u>	No connectivity	0.0149	0.00 to 0.03	<u>-</u>	0.00 to 0.03	<u>0.01</u>	_	<u>0.01</u>
Gwynt Y Môr	No connectivity	<u>118</u>	No connectivity	0.0149	0.01 to 0.12	=	0.01 to 0.12	0.02	=	0.02
Ormonde Wind Farm	No connectivity	<u>22</u>	No connectivity	0.0149	0.00 to 0.02		0.00 to 0.02	0.00	-	0.00
Robin Rigg	No connectivity	<u>51</u>	No connectivity	<u>0.0149</u>	0.00 to 0.05	-11	0.00 to 0.05	<u>0.01</u>	-	<u>0.01</u>
Rhyl Flats Offshore Wind Farm	No connectivity	<u>39</u>	No connectivity	0.0149	0.00 to 0.04		0.00 to 0.04	<u>0.01</u>	<u> </u>	<u>0.01</u>
Walney 1 & 2	No connectivity	<u>131</u>	No connectivity	0.0149	0.01 to 0.14	2	0.01 to 0.14	0.03	Ξ.	0.03
West of Duddon Sands Offshore Wind Farm	No connectivity	<u>96</u>	No connectivity	0.0149	0.00 to 0.10	=	0.00 to 0.10	0.02	=	0.02
Total predicted impact (adult bi	1 .44 <u>46</u> to 33.49 <u>34.07</u>	0.00 to 0.04	1 .4346 to 33.4534.03	6. 70 <u>81</u>	0.01	6. 69 <u>81</u>				
Increase in baseline mortality (%)				0 .23% to 5. 33 43%	0.00% to 0.01%	0 .23% to 5. 33 42%	1. 07 <u>09</u> %	0.00%	1. 07 08%

4.5.3.371.5.3.40 As the predicted impact on common guillemot from Shiant Isles SPA is >1% increase in baseline mortality the impact is further investigated by a PVA (see section 1.6.3) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

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Flannan Isles SPA

4.5.3.381.5.3.41 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline common guillemot from the Flannan Isles SPA, an in-combination assessment is presented within Table 1-42 (30-70% displacement and 1-10% mortality; 70% displacement and 2% mortality).

Table 1-42: In-combination assessment of for common guillemot from the Flannan Isles SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For common quillemot, the proportions are 57.47% of birds are adults in the breeding period.

Project	Un-apportioned abundances (adult birds) a			Apportioned displacement impact values (30-70% displacement and 1-10% mortality)			Apportioned displacement impact values (70% displacement, 2% mortality)			
.,	B r ee d ing	Non-breeding	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding
Awel y Môr Offshore Wind Farm	No connectivity	<u>1,681</u>	No connectivity	0.0284	0.14 to 3.34	N/A ₋	0.14 to 3.34	0.67	N/A-	0.67
Burbo Bank Extension Offshore Wind Farm	No connectivity	<u>899</u>	No connectivity	0.0284	0.08 to 1. 78<u>79</u>	N/A_	0.08 to 1. 78<u>79</u>	0.36	N/A-	0.36
Erebus Floating Wind Demo	No connectivity	16,322	No connectivity	0.0284	1.39 to 32. 38 45	N/A-	1.39 to 32. 38 45	6.48 <u>49</u>	N/A_	6. 48 <u>49</u>
Walney (3 and 4) Extension Offshore Wind Farm	No connectivity	<u>125</u>	No connectivity	0.0284	0.01 to 0.25	N/A <u>-</u>	0.01 to 0.25	0.05	N/A_	0.05
West of Duddon Sands Offshore Wind Farm	No connectivity	<u>1,110</u>	No connectivity	0.0284	0.09 to 2. 20 21	N/A_	0.09 to 2. 20 21	0.44	N/A-	0.44
West of Orkney Windfarm	2,794	<u>2,462</u>	No connectivity	0.0284	0.21 to 4. 88 89	N/A-	0.21 to 4. 88 <u>89</u>	0.98	N/A_	0.98
White Cross Offshore Windfarm	No connectivity	<u>610</u>	No connectivity	0.0284	0.05 to 1.21	N/A-	0.05 to 1.21	0.24	N/A-	0.24
Morecambe Offshore Windfarm Generation Assets	No connectivity	4,404	No connectivity	0.0284	0.37 to 8. 74<u>76</u>	N/A_	0.37 to 8. 74<u>76</u>	1.75	N/A-	1.75
Morgan Offshore Wind Project Generation Assets	No connectivity	2,362	No connectivity	0.0284	0.20 to 4. 69 <u>70</u>	N/A_	0.20 to 4. 69 <u>70</u>	0.94	N/A-	0.94
Mona Offshore Wind Project	No connectivity	<u>2,163</u>	No connectivity	0.0284	0.18 to 4. 29 30	N/A-	0.18 to 4. 29 30	0.86	N/A_	0.86
Gap-fille d projects										
Burbo Bank	No connectivity	<u>33</u>	No connectivity	0.0284	0.00 to 0.07	_	0.00 to 0.07	<u>0.01</u>	=	0.01
Gwynt Y Môr	No connectivity	<u>118</u>	No connectivity	0.0284	0.01 to 0.23	_	0.01 to 0.23	0.05	=	<u>0.05</u>
Ormonde Wind Farm	No connectivity	<u>22</u>	No connectivity	0.0284	0.00 to 0.04	_	0.00 to 0.04	0.01	_	0.01
Robin Rigg	No connectivity	<u>51</u>	No connectivity	0.0284	0.00 to 0.10	_	0.00 to 0.10	0.02	_	0.02
Rhyl Flats Offshore Wind Farm	No connectivity	<u>39</u>	No connectivity	0.0284	0.00 to 0.08	1	0.00 to 0.08	0.02		0.02
Walney 1 & 2	No connectivity	<u>131</u>	No connectivity	0.0284	0.01 to 0.26	_	0.01 to 0.26	0.05	_	<u>0.05</u>
West of Duddon Sands Offshore Wind Farm	No connectivity	<u>96</u>	No connectivity	0.0284	0.01 to 0.19	=	0.01 to 0.19	0.04	=	0.04
Total predicted impact (adult bi	2. 73 77 to 63.7564.87	0.00 to 0.00 <u>-</u>	2. 73 77 to 63.7564.87	12. 75 <u>97</u>	0.00 -	12. 75 <u>97</u>				
Increase in baseline mortality (0 .23% to 5. 33 42%	0.00% to 0.00%-	0 .23% to 5. 33 42%	1. 07 08%	0.00% -	1. 07 08%				

1.5.3.37

As the predicted impact on common guillemot from Flannan Isles SPA is >1% increase in baseline mortality the impact is further investigated by a PVA (see section 1.6.3) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.



St Kilda SPA

4.5.3.391.5.3.43 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline common guillemot from St Kilda SPA, an in-combination assessment is presented within Table 1-43 (30-70% displacement and 1-10% mortality; 70% displacement and 2% mortality).

Table 1-43: In-combination assessment for common guillemot from the St Kilda SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For common guillemot, the proportions are 57.47% of birds are adults in the breeding period, 57.60% of birds are adults in the non-breeding period.

P r oject	Un-apportioned abundances (adult birds) *		Appo r tioning va	alues		lacement impact va	lues (3 0 -7 0 %		olacement impact va 5 mo r tality)	
	B r ee d ing	Non-breeding	<u>Breeding</u>	Non-breeding	Annual	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding
Awel y Môr Offshore Wind Farm	No connectivity	<u>,1,681</u>	No connectivity	0.0455	0.23 to 5. 34 <u>35</u>	N/A-	0.23 to 5. 34 <u>35</u>	1.07	N/A ₋	1.07
Burbo Bank Extension Offshore Wind Farm	No connectivity	899	No connectivity	0.0455	0.12 to 2.86	N/A-	0.12 to 2.86	0.57	N/A ₌	0.57
Erebus Floating Wind Demo	No connectivity	<u>16,322</u>	No connectivity	0.0455	2.22 to 51. 87 99	N/A_	2.22 to 51. 87 99	10. 37<u>40</u>	N/A_	10.37
TwinHub (Wave Hub Floating Wind Farm)	No connectivity	<u>125</u>	No connectivity	0.0455	0.02 to 0.40	N/A_	0.02 to 0.40	0.08	N/A ₌	0.08
Walney (3 and 4) Extension Offshore Wind Farm	No connectivity	<u>1,110</u>	No connectivity	0.0455	0.15 to 3. 53 <u>54</u>	N/A_	0.15 to 3. 53 <u>54</u>	0.71	N/A ₌	0.71
West of Orkney Windfarm	<u>2,794</u>	<u>2,462</u>	No connectivity	0.0455	0.34 to 7. 83<u>84</u>	N/A_	0.34 to 7. 83<u>84</u>	1.57	N/A_	1.57
White Cross Offshore Windfarm	No connectivity	<u>610</u>	No connectivity	0.0455	0.08 to 1.94	N/A_	0.08 to 1.94	0.39	N/A_	0.39
Morecambe Offshore Windfarm Generation Assets	No connectivity	4,404	No connectivity	0.0455	0.60 to 14. 00 <u>03</u>	N/A_	0.60 to 14. 00 <u>03</u>	2. 80 81	N/A ₌	2. 80<u>81</u>
Morgan Offshore Wind Project Generation Assets	No connectivity	2,362	No connectivity	0.0455	0.32 to 7. 51 <u>52</u>	N/A-	0.32 to 7. 51 <u>52</u>	1.50	N/A_	1.50
Mona Offshore Wind Project	No connectivity	<u>2,163</u>	No connectivity	0.0455	0.29 to 6. 88 89	N/A-	0.29 to 6. 88 89	1.38	N/A_	1.38
Gap-filled projects										
Burbo Bank	No connectivity	<u>33</u>	No connectivity	<u>0.0455</u>	0.00 to 0.11	_	0.00 to 0.11	0.02	1	0.02
Gwynt Y Môr	No connectivity	<u>118</u>	No connectivity	<u>0.0455</u>	0.02 to 0.38	Ξ.	0.02 to 0.38	<u>0.08</u>	2	<u>0.08</u>
Ormonde Wind Farm	No connectivity	<u>22</u>	No connectivity	<u>0.0455</u>	0.00 to 0.07	Ξ	0.00 to 0.07	<u>0.01</u>	Ξ.	<u>0.01</u>
Robin Rigg	No connectivity	<u>51</u>	No connectivity	<u>0.0455</u>	0.01 to 0.16	<u>=</u>	0.01 to 0.16	<u>0.03</u>	1	0.03
Rhyl Flats Offshore Wind Farm	No connectivity	<u>39</u>	No connectivity	<u>0.0455</u>	0.01 to 0.12	=	0.01 to 0.12	0.02	Ξ	0.02
Walney 1 & 2	No connectivity	<u>131</u>	No connectivity	<u>0.0455</u>	0.02 to 0.42	Ξ	0.02 to 0.42	0.08	<u>-</u>	0.08
West of Duddon Sands Offshore Wind Farm	No connectivity	<u>96</u>	No connectivity	0.0455	0.01 to 0.30	=	0.01 to 0.30	0.06	2	0.06
Total p red icte d impact (a d ult	Total predicted impact (adult birds)						4. 38<u>44</u> to 102.1 4 <u>103.92</u>	2 0 .43 <u>78</u>	0.00 _	2 0 .43 <u>78</u>
Increase in baseline mortality	/ (%)				0 .23% to 5. 33 43%	0.00% to 0.00%	0 .23% to 5. 33 43%	1. <mark>07<u>09</u>%</mark>	0.00% -	1. <mark>07<u>09</u>%</mark>

1.5.3.40 As the predicted impact on common guillemot from St Kilda SPA is >1% increase in baseline mortality, the impact is further investigated by a PVA (see section 1.6.3) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

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Canna and Sanday SPA

4.5.3.41 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline common guillemot from Canna and Sanday, an in-combination assessment is presented within Table 1-44 (30-70% displacement and 1-10% mortality; 70% displacement and 2% mortality).

Field Code Changed



Table 1.-44: In-combination assessment for Common guillemot from the Canna and Sanday SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For common guillemot, the proportions are 57.47% of birds are adults in the breeding period, 57.60% of birds are adults in the non-breeding period.

Project	Un-apportioned abundances (adult birds) a		Appo r tioning v	alues	Apportioned disp displacement and	acement impact va 1-10% mortality)	lues (3 0-70 %	Apportioned disp displacement, 2%	lacement impact va 5 mo r tality)	lues (7 0 %
	<u>Breeding</u>	Non-breeding	B r ee d ing	Non-b r ee d ing	Annual	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding
Awel y Môr Offshore Wind Farm	No connectivity	<u>1,681</u>	No connectivity	0.0113	0.06 to 1.33	N/A_	0.06 to 1.33	0.27	N/A-	0.27
Burbo Bank Extension Offshore Wind Farm	No connectivity	<u>899</u>	No connectivity	0.0113	0.03 to 0.71	N/A_	0.03 to 0.71	0.14	N/A-	0.14
Erebus Floating Wind Demo	No connectivity	16,322	No connectivity	0.0113	0.55 to 12. 88 <u>91</u>	N/A-	0.55 to 12. 88 <u>91</u>	2.58	N/A <u>-</u>	2.58
TwinHub (Wave Hub Floating Wind Farm)	No connectivity	<u>125</u>	No connectivity	0.0113	0.00 to 0.10	N/A_	0.00 to 0.10	0.02	N/A_	0.02
Walney (3 and 4) Extension Offshore Wind Farm	No connectivity	<u>1,110</u>	No connectivity	0.0113	0.04 to 0.88	N/A_	0.04 to 0.88	0.18	N/A-	0.18
West of Orkney Windfarm	<u>2,794</u>	<u>2,462</u>	No connectivity	0.0113	0.08 to 1. 94 <u>95</u>	N/A-	0.08 to 1. 94 <u>95</u>	0.39	N/A <u>-</u>	0.39
White Cross Offshore Windfarm	No connectivity	<u>610</u>	No connectivity	0.0113	0.02 to 0.48	N/A-	0.02 to 0.48	0.10	N/A-	0.10
Morecambe Offshore Windfarm Generation Assets	No connectivity	4,404	No connectivity	0.0113	0.15 to 3.48	N/A <u>-</u>	0.15 to 3.48	0.70	N/A_	0.70
Morgan Offshore Wind Project Generation Assets	No connectivity	<u>2,362</u>	No connectivity	0.0113	0.08 to 1. 86 <u>87</u>	N/A <u>-</u>	0.08 to 1. 86 <u>87</u>	0.37	N/A-	0.37
Mona Offshore Wind Project	No connectivity	<u>2,163</u>	No connectivity	0.0113	0.07 to 1.71	N/A-	0.07 to 1.71	0.34	N/A <u>-</u>	0.34
Gap-filled projects										
Burbo Bank	No connectivity	<u>33</u>	No connectivity	<u>0.0113</u>	0.00 to 0.03	Ξ.	0.00 to 0.03	<u>0.01</u>	1	<u>0.01</u>
Gwynt Y Môr	No connectivity	<u>118</u>	No connectivity	<u>0.0113</u>	0.00 to 0.09	2	0.00 to 0.09	<u>0.02</u>	1	<u>0.02</u>
Ormonde Wind Farm	No connectivity	<u>22</u>	No connectivity	<u>0.0113</u>	0.00 to 0.02	<u>=</u>	0.00 to 0.02	0.00	1	0.00
Robin Rigg	No connectivity	<u>51</u>	No connectivity	<u>0.0113</u>	0.00 to 0.04		0.00 to 0.04	<u>0.01</u>	Ξ	<u>0.01</u>
Rhyl Flats Offshore Wind Farm	No connectivity	<u>39</u>	No connectivity	<u>0.0113</u>	0.00 to 0.03	<u>=</u>	0.00 to 0.03	<u>0.01</u>	1	<u>0.01</u>
Walney 1 & 2	No connectivity	<u>131</u>	No connectivity	<u>0.0113</u>	0.00 to 0.10	=	0.00 to 0.10	0.02	Ξ.	0.02
West of Duddon Sands Offshore Wind Farm	No connectivity	<u>96</u>	No connectivity	0.0113	0.00 to 0.08	Ξ	0.00 to 0.08	0.02	=	0.02
Total predicted impact (adult b	pi rd s)				1. 09 10 to 25. 37 81	0.00 to 0.00_	1. 09 10 to 25. 37 81	5. <mark>07<u>16</u></mark>	0.00 _	5. 07<u>16</u>
Increase in baseline mortality	Increase in baseline mortality (%)						0 .23% to 5. 3241 %	1. 06 08%	0.00%_	1. 06 08%

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4.5.3.421.5.3.46 As the predicted impact on common guillemot from Canda and Sanday SPA is >1% increase in baseline mortality the impact is further investigated by a PVA (see section 1.6.3) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

Mingulay and Berneray SPA

.5.3.431.5.3.47 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline common guillemot from Mingulay and Berneray SPA an in-combination assessment is presented within Table 1-45 (30-70% displacement and 1-10% mortality; 70% displacement and 2% mortality).



Table 1-45: In-combination assessment for common guillemot from the Mingulay and Berneray SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature

P r oject	<u>Un-apportioned abundances</u> (adult birds) ^a		Appo r tioning va	Appo r tioning values		placement impact n d 1-10 % mo r tality)		Apportioned displacement impact values (70% displacement, 2% mortality)		
	Breeding	Non-breeding	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding
Awel y Môr Offshore Wind Farm	No connectivity	<u>1,681</u>	No connectivity	0.0392	0.20 to 4. 60 <u>61</u>	N/A-	0.20 to 4. 60 <u>61</u>	0.92	N/A_	0.92
Burbo Bank Extension Offshore Wind Farm	No connectivity	899	No connectivity	0.0392	0.11 to 2.46 <u>47</u>	N/A_	0.11 to 2.46 <u>47</u>	0.49	N/A <u>-</u>	0.49
Erebus Floating Wind Demo	No connectivity	16,322	No connectivity	0.0392	1.92 to 44. 69 79	N/A-	1.92 to 44. 69 79	8. 94 <u>96</u>	N/A_	8. 94 <u>96</u>
TwinHub (Wave Hub Floating Wind Farm)	No connectivity	<u>125</u>	No connectivity	0.0392	0.01 to 0.34	N/A-	0.01 to 0.34	0.07	N/A-	0.07
Walney (3 and 4) Extension Offshore Wind Farm	No connectivity	<u>1,110</u>	No connectivity	0.0392	0.13 to 3. 04 <u>05</u>	N/A_	0.13 to 3. 04 <u>05</u>	0.61	N/A-	0.61
West of Orkney Windfarm	<u>2,794</u>	<u>2,462</u>	No connectivity	0.0392	0.29 to 6. 74 <u>76</u>	N/A-	0.29 to 6. 74 <u>76</u>	1.35	N/A_	1.35
White Cross Offshore Windfarm	No connectivity	<u>610</u>	No connectivity	0.0392	0.07 to 1.67	N/A-	0.07 to 1.67	0.33	N/A-	0.33
Morecambe Offshore Windfarm Generation Assets	No connectivity	<u>4,404</u>	No connectivity	0.0392	0.52 to 12. 06 <u>09</u>	N/A_	0.52 to 12. 06 <u>09</u>	2.41	N/A <u>-</u>	2.41
Morgan Offshore Wind Project Generation Assets	No connectivity	<u>2,362</u>	No connectivity	0.0392	0.28 to 6.47 <u>48</u>	N/A-	0.28 to 6.47 <u>48</u>	1. 29 <u>30</u>	N/A <u>-</u>	1. 29 <u>30</u>
Mona Offshore Wind Project	No connectivity	<u>2,163</u>	No connectivity	0.0392	0.25 to 5. 92 94	N/A-	0.25 to 5. 92 94	1. 18 <u>19</u>	N/A-	1. 18 19
Gap-filled projects										
Burbo Bank	No connectivity	<u>33</u>	No connectivity	0.0392	0.00 to 0.09	1	0.00 to 0.09	<u>0.02</u>	Ξ	0.02
Gwynt Y Môr	No connectivity	<u>118</u>	No connectivity	<u>0.0392</u>	0.01 to 0.32	1	0.01 to 0.32	<u>0.06</u>		<u>0.06</u>
Ormonde Wind Farm	No connectivity	<u>22</u>	No connectivity	0.0392	0.00 to 0.06	1	0.00 to 0.06	<u>0.01</u>	Ξ	<u>0.01</u>
Robin Rigg	No connectivity	<u>51</u>	No connectivity	0.0392	0.01 to 0.14	1	0.01 to 0.14	0.03	Ξ	0.03
Rhyl Flats Offshore Wind Farm	No connectivity	<u>39</u>	No connectivity	0.0392	0.00 to 0.11	1	0.00 to 0.11	<u>0.02</u>	Ξ	0.02
Walney 1 & 2	No connectivity	<u>131</u>	No connectivity	0.0392	0.02 to 0.36	-	0.02 to 0.36	0.07	=	0.07
West of Duddon Sands Offshore Wind Farm	No connectivity	<u>96</u>	No connectivity	0.0392	0.01 to 0.26	=	0.01 to 0.26	0.05	Ξ	0.05
Total predicted impact (adult birds)					3. 77<u>84</u> to 88.00<u>89.53</u>	0.00 to 0.00 <u>-</u>	3. 77 83 to 88. 00 89.53	17. 60 <u>91</u>	0.00 <u>-</u>	17. 60 91
Increase in baseline mortality (%)						0.00% to 0.00%-	0 .23% to 5. 3343 %	1. 07 <u>08</u> %	0.00% _	1. 0 7 <u>08</u> %

1.5.3.44 1.5.3.48 As the predicted impact on common guillemot from Mingulay and Berneray SPA is >1% increase in baseline mortality the impact is further investigated by a PVA (see section 1.6.3) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

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North Colonsay and western cliffs SPA

4.5.3.45 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline common guillemot from North Colonsay and western cliffs SPA, an incombination assessment is presented within Table 1-46 (30-70% displacement and 1-10% mortality; 70% displacement and 2% mortality).

Table 1-46: In-combination assessment for common guillemot from the North Colonsay and Western Cliffs SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature

P r oject	<u>Un-apportioned abundances</u> (adult birds) ^a		Appo r tioning v	Apportioning values		splacement impac an d 1-10 % mo r tality		Apportioned displacement impact values (70% displacement, 2% mortality)		
	<u>Breeding</u>	Non-breeding	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding
Awel y Môr Offshore Wind Farm	No connectivity	<u>1,681</u>	No connectivity	0.0411	0.21 to 4. 83 84	N/A_	0.21 to 4. 83 <u>84</u>	0.97	N/A-	0.97
Burbo Bank Extension Offshore Wind Farm	No connectivity	899	No connectivity	0.0411	0.11 to 2. 58 <u>59</u>	N/A_	0.11 to 2. 58 <u>59</u>	0.52	N/A-	0.52
Erebus Floating Wind Demo	No connectivity	16,322	No connectivity	0.0411	2.01 to 46.8696	N/A_	2.01 to 46. 86 96	9. 37 39	N/A-	9. 37 39
TwinHub (Wave Hub Floating Wind Farm)	No connectivity	<u>125</u>	No connectivity	0.0411	0.02 to 0.36	N/A ₌	0.02 to 0.36	0.07	N/A_	0.07
Walney (3 and 4) Extension Offshore Wind Farm	No connectivity	<u>1,110</u>	No connectivity	0.0411	0.14 to 3.19	N/A_	0.14 to 3.19	0.64	N/A-	0.64
West of Orkney Windfarm	<u>2,794</u>	<u>2,462</u>	No connectivity	0.0411	0.30 to 7. 07 <u>08</u>	N/A_	0.30 to 7. 07 <u>08</u>	1. 41<u>42</u>	N/A_	1.41 <u>42</u>
White Cross Offshore Windfarm	No connectivity	<u>610</u>	No connectivity	0.0411	0.08 to 1.75	N/A_	0.08 to 1.75	0.35	N/A-	0.35
Morecambe Offshore Windfarm Generation Assets	No connectivity	4,404	No connectivity	0.0411	0.54 to 12. 64<u>67</u>	N/A_	0.54 to 12. 64 <u>67</u>	2.53	N/A_	2.53
Morgan Offshore Wind Project Generation Assets	No connectivity	2,362	No connectivity	0.0411	0.29 to 6. 78 <u>80</u>	N/A_	0.29 to 6. 78 <u>80</u>	1.36	N/A-	1.36
Mona Offshore Wind Project	No connectivity	<u>2,163</u>	No connectivity	0.0411	0.27 to 6. 21 22	N/A_	0.27 to 6. 21 22	1.24	N/A_	1.24
Gap-filled projects										
Burbo Bank	No connectivity	<u>33</u>	No connectivity	0.0411	0.00 to 0.10	=	0.00 to 0.10	0.02	Ξ	0.02
Gwynt Y Môr	No connectivity	<u>118</u>	No connectivity	0.0411	0.01 to 0.34	Ξ.	0.01 to 0.34	0.07	=	0.07
Ormonde Wind Farm	No connectivity	<u>22</u>	No connectivity	0.0411	0.00 to 0.06	Ξ	0.00 to 0.06	0.01	Ξ	0.01
Robin Rigg	No connectivity	<u>51</u>	No connectivity	0.0411	0.01 to 0.15	_	0.01 to 0.15	0.03	_	0.03
Rhyl Flats Offshore Wind Farm	No connectivity	<u>39</u>	No connectivity	0.0411	0.00 to 0.11	_	0.00 to 0.11	0.02	Ξ	0.02
Walney 1 & 2	No connectivity	<u>131</u>	No connectivity	0.0411	0.02 to 0.38	Ξ	0.02 to 0.38	0.08	=	0.08
West of Duddon Sands Offshore Wind Farm	No connectivity	<u>96</u>	No connectivity	0.0411	0.01 to 0.28	=	0.01 to 0.28	0.05	=	0.05
Total predicted impact (adult birds)						0.00 to 0.00 ₋	3.954. 01 to 92.2693.87	18.4 5 77	0.00 <u>-</u>	18.4 5 77
Increase in baseline mortality (%)		0.24% to 5.6070%	0.00% to 0.00%-	0 .24% to 5. 60 7 0 %	1. 12 14%	0.00% -	1. 12 14%			

5.3.461.5.3.50 As the predicted impact on common guillemot from North Colonsay and Western Cliffs SPA is >1% increase in baseline mortality the impact is further investigated by a PVA (see section 1.6.3) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

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Ailsa Craig SPA

4.5.3.47 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline common guillemot from Ailsa Craig SPA, an in-combination assessment is presented within Table 1-47 (30-70% displacement and 1-10% mortality; 70% displacement and 2% mortality).

Table 1-47: In-combination assessment for Common guillemot from the Ailsa Craig SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For common guillemot, the proportions are 57.47% of birds are adults in the breeding period.

Dreiter from the Appendix tab	Un-apportioned abundances		Appo r tioning values		Appo r tione d d is	placement impact v		Apportioned displacement impact values (70% displacement, 402% mortality)			
Project	Breeding	Non-breeding	B r ee d ing	Non-breeding	Annual	d 1-10% mortality) Breeding	Non-b r ee d ing	Annual	B r ee d ing	Non-breeding	
Awel y Môr Offshore Wind Farm	No connectivity	1,681	No connectivity	0.016	0.08 to 1.88	N/A-	0.08 to 1.88	0.38	N/A ₋	0.38	
Burbo Bank Extension Offshore Wind Farm	No connectivity	899	No connectivity	0.016	0.04 to 1.00	N/A <u>-</u>	0.04 to 1.00	0.20	N/A <u>-</u>	0.20	
Erebus Floating Wind Demo	No connectivity	16,322	No connectivity	0.016	0.78 to 18. 24 28	N/A-	0.78 to 18. 24 28	3. 65 <u>66</u>	N/A-	3. 65 <u>66</u>	
TwinHub (Wave Hub Floating Wind Farm)	No connectivity	<u>125</u>	No connectivity	0.016	0.01 to 0.14	N/A_	0.01 to 0.14	0.03	N/A <u>-</u>	0.03	
Walney (3 and 4) Extension Offshore Wind Farm	No connectivity	<u>1,110</u>	No connectivity	0.016	0.05 to 1.24	N/A_	0.05 to 1.24	0.25	N/A_	0.25	
West of Orkney Windfarm	<u>2,794</u>	<u>2,462</u>	No connectivity	0.016	0.12 to 2. 75 <u>76</u>	N/A-	0.12 to 2. 75 76	0.55	N/A-	0.55	
White Cross Offshore Windfarm	No connectivity	610	No connectivity	0.016	0.03 to 0.68	N/A-	0.03 to 0.68	0.14	N/A-	0.14	
Morecambe Offshore Windfarm Generation Assets	No connectivity	4,404	No connectivity	0.016	0.21 to 4. 92 93	N/A-	0.21 to 4. 92 93	0. 98 <u>99</u>	N/A-	0. 98 <u>99</u>	
Morgan Offshore Wind Project Generation Assets	No connectivity	2,362	No connectivity	0.016	0.11 to 2. 64 <u>65</u>	N/A ₋	0.11 to 2. 64 <u>65</u>	0.53	N/A ₋	0.53	
Mona Offshore Wind Project	No connectivity	<u>2,163</u>	No connectivity	0.016	0.10 to 2.42	N/A_	0.10 to 2.42	0.48	N/A_	0.48	
Gap-filled projects											
Burbo Bank	No connectivity	<u>33</u>	No connectivity	<u>0.016</u>	0.00 to 0.04	1	0.00 to 0.04	<u>0.01</u>	<u>-</u>	0.01	
Gwynt Y Môr	No connectivity	<u>118</u>	No connectivity	0.016	0.01 to 0.13	2	0.01 to 0.13	0.03	=	0.03	
Ormonde Wind Farm	No connectivity	<u>22</u>	No connectivity	<u>0.016</u>	0.00 to 0.03	1	0.00 to 0.03	<u>0.01</u>	<u>-</u>	0.01	
Robin Rigg	No connectivity	<u>51</u>	No connectivity	0.016	0.00 to 0.06	2	0.00 to 0.06	<u>0.01</u>	=	<u>0.01</u>	
Rhyl Flats Offshore Wind Farm	No connectivity	<u>39</u>	No connectivity	0.016	0.00 to 0.04	=	0.00 to 0.04	0.01	=	0.01	
Walney 1 & 2	No connectivity	<u>131</u>	No connectivity	0.016	0.01 to 0.15	2	0.01 to 0.15	0.03	=	0.03	
West of Duddon Sands Offshore Wind Farm	No connectivity	<u>96</u>	No connectivity	0.016	0.00 to 0.11	=	0.00 to 0.11	0.02	=	0.02	
					1. 5 4 <u>57</u> to 35.92 <u>36.54</u>	0.00 to 0.00 ₂	1. 5 4 <u>57</u> to 35.92 <u>36.54</u>	7. 18 <u>31</u>	0.00 -	7. 18 <u>31</u>	
Increase in baseline mortality	(%)				0 .24% to 5. 61 71%	0.00% to 0.00%-	0 .24% to 5. 61 71%	1. 12 14%	0.00% _	1. 12 14%	

4.5.3.48 1.5.3.52 As the predicted impact on common guillemot from Ailsa Craig SPA is >1% increase in baseline mortality the impact is further investigated by a PVA (see section 1.6.3) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

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Rathlin Island SPA

4.5.3.49 1.5.3.53 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline common guillemot from Rathlin Island SPA, an in-combination assessment is presented within Table 1-48 (30-70% displacement and 1-10% mortality; 70% displacement and 2% mortality).

Table 1-48: In-combination assessment for common guillemot from the Rathlin Island SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For common guillemot, the proportions are 57,47% of birds are adults in the breeding period. 57,60% of birds are adults in the non-breeding period.

P r oject	<u>Un-apportioned abundances</u> (adult birds) ^a		Appo r tioning \	/alues	Appo r tione d d ispla d isplacement an d	acement impact valu - 1-10 % mo r tality)	es (3 0 -7 0 %	Apportioned displ displacement, 2%	acement impact valu mo r tality)	es (7 0 %
	B r ee d ing	Non-breeding	<u>Breeding</u>	Non-breeding	Annual	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding
Awel y Môr Offshore Wind Farm	No connectivity	<u>,1,681</u>	No connectivity	0.2664	1.34 to 31. 28 <u>35</u>	N/A_	1.34 to 31. 28 <u>35</u>	6. 26 27	N/A-	6. 26 27
Burbo Bank Extension Offshore Wind Farm	No connectivity	<u>899</u>	No connectivity	0.2664	0.72 to 16. 73 <u>77</u>	N/A_	0.72 to 16. 73 <u>77</u>	3.35	N/A-	3.35
Erebus Floating Wind Demo	No connectivity	<u>16,322</u>	No connectivity	0.2664	13.02 to 303.71304.37	N/A_	13.02 to 303.71304.37	60. 74<u>87</u>	N/A-	60. 74<u>87</u>
TwinHub (Wave Hub Floating Wind Farm)	No connectivity	<u>125</u>	No connectivity	0.2664	0.10 to 2.33	N/A_	0.10 to 2.33	0.47	N/A-	0.47
Walney (3 and 4) Extension Offshore Wind Farm	No connectivity	<u>1,110</u>	No connectivity	0.2664	0.89 to 20. 65 70	N/A_	0.89 to 20. 65 70	4. 13 14	N/A-	4. 13<u>14</u>
West of Orkney Windfarm	2,794	<u>2,462</u>	No connectivity	0.2664	1.96 to 45. 82 92	N/A-	1.96 to 45.8292	9. 16 18	N/A-	9. 16 18
White Cross Offshore Windfarm	No connectivity	<u>610</u>	No connectivity	0.2664	0.49 to 11. 35 <u>37</u>	N/A-	0.49 to 11. 35 <u>37</u>	2.27	N/A-	2.27
Morecambe Offshore Windfarm Generation Assets	No connectivity	<u>4,404</u>	No connectivity	0.2664	3.51 to 81.95 82.13	N/A_	3.51 to 81.9582.13	16. 39<u>43</u>	N/A_	16. 39<u>43</u>
Morgan Offshore Wind Project Generation Assets	No connectivity	<u>2,362</u>	No connectivity	0.2664	1.88 to 43.95 <u>44.05</u>	N/A_	1.88 to 43.9544.05	8. 79 <u>81</u>	N/A_	8. 79 <u>81</u>
Mona Offshore Wind Project	No connectivity	<u>2,163</u>	No connectivity	0.2664	1.73 to 40. 25 <u>34</u>	N/A_	1.73 to 40. 25 34	8. 05 <u>07</u>	N/A_	8. 05 <u>07</u>
Gap-filled projects										
Burbo Bank	No connectivity	<u>33</u>	No connectivity	<u>0.2664</u>	0.03 to 0.62	Ξ.	0.03 to 0.62	<u>0.12</u>	Ξ	<u>0.12</u>
Gwynt Y Môr	No connectivity	<u>118</u>	No connectivity	<u>0.2664</u>	0.09 to 2.20	Ξ	0.09 to 2.20	<u>0.44</u>	2	<u>0.44</u>
Ormonde Wind Farm	No connectivity	<u>22</u>	No connectivity	<u>0.2664</u>	0.02 to 0.42	Ξ	0.02 to 0.42	0.08	2	0.08
Robin Rigg	No connectivity	<u>51</u>	No connectivity	<u>0.2664</u>	0.04 to 0.94	Ξ	0.04 to 0.94	<u>0.19</u>	2	<u>0.19</u>
Rhyl Flats Offshore Wind Farm	No connectivity	<u>39</u>	No connectivity	0.2664	0.03 to 0.73	=	0.03 to 0.73	0.15	Ξ	<u>0.15</u>
Walney 1 & 2	No connectivity	<u>131</u>	No connectivity	<u>0.2664</u>	0.10 to 2.44	Ξ	0.10 to 2.44	<u>0.49</u>	Ξ.	<u>0.49</u>
West of Duddon Sands Offshore Wind Farm	No connectivity	<u>96</u>	No connectivity	0.2664	0.08 to 1.78	=	0.08 to 1.78	0.36	=	0.36
Total predicted impact (adult	t bi rd s)				25.63 26. 0 8 to 598. 0 26 0 8.47	0.00 to 0.00 -	25.63 26. 0 8 to 598.02 6 0 8.47	119.60 <u>121.69</u>	0.00_	119.60 121.69
Increase in baseline mortalit	y (%)				0 .24% to 5. 61 71%	0.00% to 0.00%_	0 .24% to 5. 61 71%	1. 12 14%	0.00% -	1. 12 14%

1.5.3.50 1.5.3.54 As the predicted impact on common guillemot from Rathlin Island SPA is >1% increase in baseline mortality the impact is further investigated by a PVA (see section 1.6.3) to conclude an if an AEoSI can be ruled out beyond reasonable scientific doubt.

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Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA

4.5.3.51 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline common guillemot from Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA, an in-combination assessment is presented within Table 1-49 (30-70% displacement and 1-10% mortality; 70% displacement and 2% mortality).

Table 1.-49: In-combination assessment for Common guillemot from the Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For common guillemot, the proportions are 57.47% of birds are adults in the breeding period.

b - the apportioning value during the breeding season was taken from project specific documentation

c – the apportioning value during the breeding season has used that of Erebus Floating Wind Demo, specifically 0.754

P r oject	<u>Un-apportioned abundances</u> (adult birds) ^a		Apportioning values		Apportioned displ displacement and	acement impact val 1-10% mortality)	ues (3 0-70 %	Apportioned displacement impact values (70% displacement, 2% mortality)		
	<u>Breeding</u>	Non-breeding	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding	Annual	B r ee d ing	Non-breeding
Awel y Môr Offshore Wind Farm	No connectivity	<u>1,681</u>	No connectivity	0.0447	0.22 to 5. 25 <u>26</u>	N/A-	0.22 to 5. 25 <u>26</u>	1.05	N/A ₋	1.05
Burbo Bank Extension Offshore Wind Farm	No connectivity	899	No connectivity	0.0447	0.12 to 2.81	N/A_	0.12 to 2.81	0.56	N/A ₋	0.56
Erebus Floating Wind Demo	No connectivity	<u>16,322</u>	0.754 <u></u>	0.0447	11.29 to 263.3243	9.10 to 212.36	2.18 to 50.96 <u>51.07</u>	52. 66 <u>69</u>	42.47	10. 19 21
TwinHub (Wave Hub Floating Wind Farm)	No connectivity	<u>125</u>	No connectivity	0.0447	0.02 to 0.39	N/A-	0.02 to 0.39	0.08	N/A ₋	0.08
Walney (3 and 4) Extension Offshore Wind Farm	No connectivity	<u>1,110</u>	No connectivity	0.0447	0.15 to 3.47	N/A-	0.15 to 3.47	0.69	N/A ₋	0.69
West of Orkney Windfarm	2,794	<u>2,462</u>	No connectivity	0.0447	0.33 to 7. 69 <u>70</u>	N/A_	0.33 to 7. 69 <u>70</u>	1.54	N/A_	1.54
White Cross Offshore Windfarm	No connectivity	<u>610</u>	0.754 <u>°</u>	0.0447	4.38 to 102.13	4.30 to 100.22	0.08 to 1. 90 <u>91</u>	20.43	20.04	0.38
Morecambe Offshore Windfarm Generation Assets	No connectivity	4,404	No connectivity	0.0447	0.59 to 13. 75 <u>78</u>	N/A ₋	0.59 to 13. 75 <u>78</u>	2. 75 <u>76</u>	N/A ₋	2. 75 <u>76</u>
Morgan Offshore Wind Project Generation Assets	No connectivity	<u>2,362</u>	No connectivity	0.0447	0.32 to 7. 37 <u>39</u>	N/A_	0.32 to 7. 37 39	1. 47<u>48</u>	N/A_	1. 47<u>48</u>
Mona Offshore Wind Project	No connectivity	<u>2,163</u>	No connectivity	0.0447	0.29 to 6. 75 <u>77</u>	N/A_	0.29 to 6. 75 <u>77</u>	1.35	N/A_	1.35
Gap-filled projects										
Burbo Bank	No connectivity	<u>33</u>	No connectivity	0.0447	0.00 to 0.10	2	0.00 to 0.10	0.02	_	<u>0.02</u>
Gwynt Y Môr	No connectivity	<u>118</u>	No connectivity	0.0447	0.02 to 0.37	2	0.02 to 0.37	<u>0.07</u>	_	<u>0.07</u>
Ormonde Wind Farm	No connectivity	<u>22</u>	No connectivity	0.0447	0.00 to 0.07	2	0.00 to 0.07	<u>0.01</u>	_	<u>0.01</u>
Robin Rigg	No connectivity	<u>51</u>	No connectivity	0.0447	0.01 to 0.16		0.01 to 0.16	<u>0.03</u>	<u>=</u>	<u>0.03</u>
Rhyl Flats Offshore Wind Farm	No connectivity	<u>39</u>	No connectivity	0.0447	0.01 to 0.12	=	0.01 to 0.12	0.02	=	0.02
Walney 1 & 2	No connectivity	<u>131</u>	No connectivity	0.0447	0.02 to 0.41	=	0.02 to 0.41	0.08	=	0.08
West of Duddon Sands Offshore Wind Farm	No connectivity	<u>96</u>	No connectivity	0.0447	0.01 to 0.30	2	0.01 to 0.30	0.06	=	0.06
Total predicted impact (adu	Total p red icte d impact (a d ult bi rd s)						4. 30 38 to 100.34102.10	82. 59 <u>94</u>	65.52	2 0.07 <u>42</u>
Increase in baseline mortali	ty (%)				0 .89% to 20. 76 <u>85</u> %	0 .67% to 1 5.72%	0 .22% to 5. 0 4 <u>13</u> %	4. 15 17%	3. 1 4 <u>%</u>	1. 01 <u>02%</u>

1.5.3.52 As the predicted impact on common guillemot from Skomer, Skokholm and the Seas off Pembrokeshire / Sgomer, Sgogwm a Moroedd Penfro SPA is >1% increase in baseline mortality the impact is further investigated by a PVA (see section 1.6.3) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

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Great black-backed gull

1.5.3.53 1.5.3.57 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in baseline great black-backed gull mortality from the Isles of Scilly SPA, an incombination assessment is presented within Table 1.50.

Table 1.-50: In-combination assessment for great black-backed gull from the Isles of Scilly SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults. All projects have used the proportion of adults/immatures within the Appendix tables in Furness (2015) for age-class apportioning during the non-breeding season which is that 31.9% of birds are adults.

b - TwinHub presented an annual impact only (Atlantic Ecology, 2018), this annual impact was corrected by using the input density estimates (as a proportion of the annual density) for each month.

C – Ormonde Wind Farm presented an annual impact only (2.36 when considering 95% avoidance). For precaution and as no monthly breakdown of abundance/density was available 100% of the impact is considered as part of the non-breeding season.

Project	Un-apportioned collision impacts (adult	Apportioning values	Apportioned collision (species-group avoidance
	<u>birds) ^a</u>		r ate 0 .9939)
	Non-breeding season	Non-breeding season	Non-breeding season
Awel y Môr Offshore Wind Farm	0.20	0.2885	0.06
Erebus Floating Wind Demo	0.26	0.2885	0. 07<u>08</u>
TwinHub (Wave Hub Floating Wind Farm)	2.93 ^b	0.2885	1.91 0.29
Mona Offshore Wind Project	<u>1.01</u>	0.2885	0.64 <u>04</u>
Morecambe Offshore Windfarm Generation Assets	<u>0.14</u>	0.2885	0.04 <u>07</u>
Morgan Offshore Wind Project Generation Assets	0.23	0.2885	0.4 <u>203</u>
Ormonde Wind Farm	0.09 ^c	0.2885	0.02 1.25
Rampion Offshore Wind Farm	4.34	0.2885	2.44 <u>3.07</u>
Rampion 2 (Rampion Extension) Offshore Wind Farm	10.62	0.2885	1.26 0.84
Walney (3 and 4) Extension Offshore Wind Farm	6.48	0.2885	2.72 1.85
White Cross Offshore Windfarm	0.00	0.2885	0.00
Gap-filled projects			
Burbo Bank	0.32	<u>0.2885</u>	0.09
Burbo Bank Extension	0.88	<u>0.2885</u>	<u>0.25</u>
Gwynt y Môr Offshore Wind Farm	<u>1.45</u>	<u>0.2885</u>	0.42
Rhyl Flats Offshore Wind Farm	0.38	0.2885	<u>0.11</u>
Robin Rigg	0.83	<u>0.2885</u>	0.24
Walney 1	<u>0.65</u>	<u>0.2885</u>	0.19
Walney 2	0.78	0.2885	0.22
West of Duddon Sands Offshore Wind Farm	1.01	0.2885	0.29
Total predicted impact (adult birds)			9. 58 38
Increase in baseline mortality (%)			7. 6044 %

4.5.3.54 As the predicted impact on great black-backed gull from Isles of Scilly SPA is >1% increase in baseline mortality, the impact is further investigated by a PVA (see section 1.6.5) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

Manx shearwater

4.5.3.551.5.3.59 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in Manx shearwater –baseline mortality from Glannau Aberdaron ac Ynys Enlli/Aberdaron Coast and Bardsey Island SPA, an in-combination assessment is presented within Table 1-51 (30-70% displacement and 1-10% mortality).

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Table 1.-51: In-combination assessment for Manx shearwater from the Glannau Aberdaron ac Ynys Enlli/Aberdaron Coast and Bardsey Island SPA.

- <u>a</u> the apportioning value during the breeding season was taken from project specific documentation
- b the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.0421.
- c the apportioning value during the breeding season has used that of Erebus Floating Wind Demo, specifically 0.003.
- d the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.085.
- e the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For Manx shearwater, the proportions are 54.34% of birds are adults in the breeding period and 62.77% of birds are adults in the pre-breeding and post-breeding periods.

	Un-apportioned abundances (adult			Apportioning values			Apportioned displacement impact values (30-70% displacement and 1-10%			
Plan or project Project	<u>Diras) °</u>					_	mo r tality)			
	P r e-b r ee d ing	B r ee d ing	Post-breeding	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre-breeding	<u>Breeding</u>	Post-breeding	Annual
Awel y Môr Offshore Wind Farm	<u>,111</u>	14	<u>134</u>	0.00326	0.0421 <u>a</u>	0.00326	0.00 to 0. 02 03	0.00 to 0.04	0.00 to 0. 00 <u>03</u>	0.00 to 0. 06 10
Burbo Bank Extension Offshore Wind Farm	<u>0</u>	<u>241</u>	1	0.00326	0.0421 <u>b</u>	0.00326	0.00 to 0.00	0.03 to 0.71	0.00 to 0.00	0.03 to 0.71
Erebus Floating Wind Demo	<u>11</u>	<u>837</u>	<u>350</u>	0.00326	0.003 <u>a</u>	0.00326	0.00 to 0.00	0. 00 01 to 0.18	0.00 to 0. 07 <u>08</u>	0. 00 01 to 0. 25 26
TwinHub (Wave Hub Floating Wind Farm)	<u>0</u>	<u>690</u>	<u>2</u>	0.00326	0.003 <u>c</u>	0.00326	0.00 to 0.00	0.01 to 0. 15 14	0.00 to 0.00	0.01 to 0.15
Ormonde Wind Farm	<u>0</u>	<u>544</u>	<u>1</u>	0.00326	0. 0863 <u>085</u> ^d	0.00326	0.00 to 0.00	0.14 to 3. 29 24	0.00 to 0.00	0.14 to 3. 29 24
Mona Offshore Wind Project	2	<u>679</u>	<u>10</u>	0.00326	0.1134-	0.00326	0.00 to 0.00	0.23 to 5.39	0.00 to 0. 02 <u>00</u>	0.23 to 5.44 <u>39</u>
Morecambe Offshore Windfarm Generation Assets	<u>0</u>	4118	4	0.00326	0.0863-	0.00326	0.00 to 0.00	1.07 to 24.88	0.00 to 0.00	1.07 to 24.88
Morgan Offshore Wind Project Generation Assets	<u>37</u>	<u>254</u>	293	0.00326	0.085-4	0.00326	0.00 to 0.01	0.06 to 1.51	0.00 to 0. 06 <u>07</u>	0.07 to 1. 58 <u>59</u>
Rampion Offshore Wind Farm	<u>0</u>	<u>18</u>	<u>0</u>	0.00326	No connectivity	0.00326	0.00 to 0.00	N/A_	0.00 to 0.00	0.00 to 0.00
Rampion 2 Offshore Wind Farm	<u>0</u>	<u>0</u>	<u>0</u>	0.00326	No connectivity	0.00326	0.00 to 0.00	N/A_	0.00 to 0.00	0.00 to 0.00
Walney (3 and 4) Extension Offshore Wind Farm	<u>0</u>	320	203	0.00326	0. 0863 <u>085</u> ^d	0.00326	0.00 to 0.00	0.08 to 1. 93 90	0.00 to 0. 04 <u>05</u>	0.08 to 1. 97 95
West of Duddon Sands Offshore Wind Farm	<u>1</u>	<u>296</u>	<u>2</u>	0.00326	0. 0863 <u>085 d</u>	0.00326	0.00 to 0.00	0.08 to 1. 79 <u>76</u>	0.00 to 0.00	0.08 to 1. 79 <u>76</u>
West of Orkney Windfarm	<u>0</u>	4	2	0.00326	No connectivity	0.00326	0.00 to 0.00	N/A_	0.00 to 0.00	0.00 to 0.00
White Cross Offshore Windfarm	<u>7,611</u>	<u>18</u>	<u>14</u>	0.00326	0.0028-	0.00326	0. 06<u>07</u> to 1.<u>5074</u>	0.00 to 0.00	0.00 to 0.00	0. 06 07 to 1. 51 74
Gap-filled projects										
Burbo Bank Offshore Wind Farm	<u>0</u>	<u>1</u>	<u>1</u>	0.00326	<u>0.0421 b</u>	0.00326	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00
Gwynt y Môr Offshore Wind Farm	<u>1</u>	<u>7</u>	<u>2</u>	0.00326	<u>0.0421 b</u>	0.00326	0.00 to 0.00	0.00 to 0.02	0.00 to 0.00	0.00 to 0.02
Robin Rigg	<u>0</u>	2	1	0.00326	0.085 d	0.00326	0.00 to 0.00	0.00 to 0.01	0.00 to 0.00	0.00 to 0.01
Rhyl Flats	<u>0</u>	2	<u>1</u>	0.00326	0.0421 b	0.00326	0.00 to 0.00	0.00 to 0.01	0.00 to 0.00	0.00 to 0.01
Walney 1 & 2	1	<u>8</u>	3	0.00326	0.085 d	0.00326	0.00 to 0.00	0.00 to 0.05	0.00 to 0.00	0.00 to 0.05
Total predicted impact (adult birds)							0. 07 08 to 1. 54 77	1. 70 <u>71</u> to 39. <u>8684</u>	0.01 to 0. 19 23	1. 77 <u>79</u> to 41. 59 <u>84</u>
Increase in baseline mortality (%)							0.00% to 0.04%	0.0 4% to 0 .95%	0.00% to 0.0001%	0.0 4% to 0 .99%

4.5.3.561.5.3.60 As the predicted impact on Manx shearwater from Glannau Aberdaron ac Ynys Enlli/Aberdaron Coast and Bardsey Island SPA is <1% increase in baseline mortality, which is likely to be undetectable against natural variation, the impact is not considered to hinder the conservation objectives of the site, and therefore, it is concluded beyond reasonable scientific doubt that there would be no AEoSI from the Mona Offshore Wind Project in-combination with other plans and projects.

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Copeland Islands SPA

4.5.3.57 1.5.3.61 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in Manx shearwater -baseline mortality from Copeland Islands SPA, an in-combination assessment is presented within Table 1-52 (30-70% displacement and 1-10% mortality).

Table 1-52: In-combination assessment for Manx shearwater from the Copeland Island SPA.

- a the apportioning value during the breeding season was taken from project specific documentation
- b the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.0059.
- c the apportioning value during the breeding season has used that of Erebus Floating Wind Demo, specifically 0.0028.
- d the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.035.

e – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For Manx shearwater, the proportions are 54.34% of birds are adults in the breeding period and 62.77% of birds are adults in the pre-breeding and post-breeding periods.

Discouries Deciret	birds) •			Annortioning Vallies			mortality)				
Plan or project Project	P r e-b r ee d ing	B r ee d ing	Post-breeding	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre-breeding	<u>Breeding</u>	Post-breeding	Annual	
Awel y Môr Offshore Wind Farm	<u>,111</u>	14	134	0.001	0.0059 <u>a</u>	0.001	0.00 to 0.01	0.00 to 0.01	0.00 to 0. 00 <u>01</u>	0.00 to 0. 01 <u>02</u>	
Burbo Bank Extension Offshore Wind Farm	<u>0</u>	241	1	0.001	0.0059 <u></u>	0.001	0.00 to 0.00	0.00 to 0.10	0.00 to 0.00	0.00 to 0.10	
Erebus Floating Wind Demo	<u>11</u>	<u>837</u>	<u>350</u>	0.001	0.0028 <u>a</u>	0.001	0.00 to 0.00	0. 00 01 to 0.16	0.00 to 0.02	0. 00 01 to 0.19	
TwinHub (Wave Hub Floating Wind Farm)	<u>0</u>	<u>690</u>	<u>2</u>	0.001	0.0028 <u>°</u>	0.001	0.00 to 0.00	0.01 to 0.14	0.00 to 0.00	0.01 to 0.14	
Ormonde Wind Farm	<u>0</u>	<u>544</u>	<u>1</u>	0.001	0. 0222 035 d	0.001	0.00 to 0.00	0. 04 06 to 0.85 1.33	0.00 to 0.00	0. 04<u>06</u> to <u>0.85</u><u>1.33</u>	
Mona Offshore Wind Project	2	<u>679</u>	<u>10</u>	0.001	0.022 <u>a</u>	0.001	0.00 to 0.00	0.04 to 1.05	0.00 to 0. 01 <u>00</u>	0. 05<u>04</u> to 1.05	
Morecambe Offshore Windfarm Generation Assets	<u>0</u>	4118	4	0.001	0.0222 <u>a</u>	0.001	0.00 to 0.00	0.27 to 6.40	0.00 to 0.00	0.27 to 6.40	
Morgan Offshore Wind Project Generation Assets	<u>37</u>	<u>254</u>	<u>293</u>	0.001	0.035 <u>a</u>	0.001	0.00 to 0.00	0.03 to 0.62	0.00 to 0.02	0.03 to 0.64	
Rampion Offshore Wind Farm	<u>0</u>	<u>18</u>	<u>0</u>	0.001	No connectivity	0.001	0.00 to 0.00	N/A-	0.00 to 0.00	0.00 to 0.00	
Rampion 2 Offshore Wind Farm	<u>0</u>	<u>0</u>	<u>0</u>	0.001	No connectivity	0.001	0.00 to 0.00	N/A-	0.00 to 0.00	0.00 to 0.00	
Walney (3 and 4) Extension Offshore Wind Farm	0 .001	0.0222320	0.001203	0. 00 to 0.00<u>001</u>	0.035 d	0.001	0.00 to 0.00	0.03 to 0. 77 <u>78</u>	0.00 to 0. 00 <u>01</u>	0.03 to 0. 77 <u>80</u>	
West of Duddon Sands Offshore Wind Farm	0.001 1	0.0222296	0.001 2	0. 00 to 0.00 <u>001</u>	0. 02 to 0.46 <u>035</u>	0. 00 to 0.00<u>001</u>	0. 02 00 to 0.4600	0.03 to 0.72	0.00 to 0.00	0.03 to 0.72	
West of Orkney Windfarm	0 .001	<u>4</u>	2	0.001	No connectivity	0.001	0.00 to 0.00	N/A-	0.00 to 0.00	0.00 to 0.00	
White Cross Offshore Windfarm	0.001 7,611	<u>18</u>	<u>14</u>	0.001	0.0002 <u>a</u>	0.001	0.02 to 0. 46 <u>53</u>	0.00 to 0.00	0.00 to 0.00	0.02 to 0. 46 <u>53</u>	
Gap-filled projects						•					
Burbo Bank Offshore Wind Farm	<u>0</u>	1	1	0.001	0.0059 b	0.001	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	
Gwynt y Môr Offshore Wind Farm	1	<u>7</u>	2	0.001	0.0059 b	<u>0.001</u>	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	
Robin Rigg	<u>0</u>	2	1	0.001	0.035 d	0.001	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	
Rhyl Flats	<u>0</u>	2	1	<u>0.001</u>	<u>0.0059 b</u>	<u>0.001</u>	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	
Walney 1 & 2	<u>1</u>	<u>8</u>	<u>3</u>	<u>0.001</u>	0.035 d	<u>0.001</u>	0.00 to 0.00	0.00 to 0.02	0.00 to 0.00	0.00 to 0.02	
Total predicted impact (adult birds)							0.0 2 to 0.47<u>54</u>	0 .4549 to 40.5511.34	0.00 to 0. 05 <u>07</u>	0 .47 <u>51</u> to 11 . 0 7 <u>95</u>	
Increase in baseline mortality (%)							0.00% to 0.04%	0.04% to 0.84 <u>90</u> %	0.00% to 0.0001%	0.0 4% to 0 . 88 <u>95</u> %	

1.5.3.58 As the predicted impact on Manx shearwater from Copeland Island SPA is <1% increase in baseline mortality, therefore, it is concluded beyond reasonable scientific doubt that there would be no AEoSI from the Mona Offshore Wind Project in-combination with other plans and projects, the impact is not considered to hinder the conservation objects of the site and, therefore, it is concluded beyond reasonable scientific doubt that there would be no AEoSI from the Mona Offshore Wind Project in-combination with other plans and projects.

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Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA

4.5.3.591.5.3.63 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in Manx shearwater -baseline mortality from -Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA, an in-combination assessment is presented within Table 1-53 (30-70% displacement and 1-10% mortality).

Table 1-53: In-combination assessment for Manx shearwater from the Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA.

- a the apportioning value during the breeding season was taken from project specific documentation
- b the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.4436.
- c the apportioning value during the breeding season has used that of Erebus Floating Wind Demo, specifically 0.995.
- d the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.752.

e — The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For Manx shearwater, the proportions are 54.34% of birds are adults in the breeding period and 62.77% of birds are adults in the pre-breeding and post-breeding periods.

Di Davigat	<u>Un-apportio</u> birds) ^e	<u>ned abunda</u>	nces (adult	Appo r tionir	ng values		Appo r tione d d ispla	Apportioned displacement impact values (30-70% displacement 1-10% mortality						
Plan or project Project	P r e- b r ee d ing	B r ee d ing	Post- b r ee d ing	Pre- breeding	B r ee d ing	Post- b r ee d ing	Pre-breeding	Breeding	Post-breeding	Annual				
Awel y Môr Offshore Wind Farm	<u>,111</u>	.14	<u>,134</u>	0.7054	0.4436 <u>a</u>	0.7054	0. 20 24 to 4. 75 5.49	0.02 to 0.44	0. 00 28 to 0.00 6.63	0. 22 <u>54</u> to <u>5.19</u> <u>12.56</u>				
Burbo Bank Extension Offshore Wind Farm	<u>0</u>	<u>241</u>	1	0.7054	0.4436 <u>b</u>	0.7054	0.00 to 0.00	0.32 to 7.49	0.00 to 0. 00 <u>03</u>	0.32 to 7.49 <u>52</u>				
Erebus Floating Wind Demo	<u>11</u>	837	<u>350</u>	0.7054	0.995 <u>a</u>	0.7054	2.21 0.02 to 0.48 <u>56</u>	0.40 2.50 to 58.29	1.35 0.74 to 14.95 17.26	3.9626 to 73.7276.12				
TwinHub (Wave Hub Floating Wind Farm)	<u>0</u>	<u>690</u>	2	0.7054	0.995 <u>°</u>	0.7054	0.00 to 0.00	2. 07 06 to 48. 19 07	0.00 to 0. 00 09	2. 07 <u>06</u> to 48. 19 <u>17</u>				
Ormonde Wind Farm	<u>0</u>	<u>544</u>	1	0.7054	0.752 <u>d</u>	0.7054	0.00 to 0.00	1. 25 23 to 29.18 28.64	0.00 to 0. 00 <u>03</u>	1. 25 23 to 29.18 28.67				
Mona Offshore Wind Project	2	<u>679</u>	<u>10</u>	0.7054	0.7497 <u>a</u>	0.7054	0.00 to 0. 08 <u>09</u>	1.53 to 35.62	0.02 to 0.50	0.21 <u>1.55</u> to 4.88 <u>36.21</u>				
Morecambe Offshore Windfarm Generation Assets	<u>0</u>	4118	4	0.7054	0.7654 <u>a</u>	0.7054	0.00 to 0.00	9.46 to 220.63	0.01 to 0. 16 <u>19</u>	9.46 to 220. 79 <u>82</u>				
Morgan Offshore Wind Project Generation Assets	<u>37</u>	<u>254</u>	<u>293</u>	0.7054	0.752 <u>a</u>	0.7054	0. 07 08 to 1. 58 83	0.57 to 13.36	0. 54<u>62</u> to 12.53<u>14.47</u>	1.48 <u>27</u> to 27.48 <u>29.66</u>				
Rampion Offshore Wind Farm	<u>0</u>	<u>18</u>	<u>0</u>	0.7054	No connectivity	0.7054	0.00 to 0.00	N/A to N/A-	0.00 to 0.00	0.00 to 0.00				
Rampion 2 Offshore Wind Farm	<u>0</u>	0	0	0.7054	No connectivity	0.7054	0.00 to 0.00	N/A to N/A-	0.00 to 0.00	0.00 to 0.00				
Walney (3 and 4) Extension Offshore Wind Farm	<u>0</u>	320	203	0.7054	0. 765 4 <u>752 d</u>	0.7054	0.00 to 0.00	4.14 <u>0.72</u> to 26.56 <u>16.82</u>	0. 00 43 to 0.00 10.04	1.44 <u>15</u> to 26. 56 <u>86</u>				
West of Duddon Sands Offshore Wind Farm	1	<u>296</u>	2	0.7054	0. 765 4 <u>752 d</u>	0.7054	0.00 to 0. 00 <u>03</u>	0. 68 <u>67</u> to 15. 96 <u>56</u>	0.00 to 0. 00 09	0.68 <u>67</u> to 15.96 <u>69</u>				
West of Orkney Windfarm	<u>0</u>	4	2	0.7054	No connectivity	0.7054	0.00 to 0.00	0.00 to 0.00 ₋	0.00 to 0. 08 <u>09</u>	0.00 to 0. 08 <u>09</u>				
White Cross Offshore Windfarm	<u>7,611</u>	<u>18</u>	14	0.7054	0.6032 <u>a</u>	0.7054	13.95 16.11 to 325.41 375.84	0.03 to 0.76	0.03 to 0. 59 <u>68</u>	14.00 <u>16.17</u> to <u>326.76377.28</u>				
Gap-filled projects														
Burbo Bank Offshore Wind Farm	<u>0</u>	<u>1</u>	1	0.001	<u>0.0059 ь</u>	0.001	0.00 to 0.00	0.00 to 0.03	0.00 to 0.03	0.00 to 0.06				
Gwynt y Môr Offshore Wind Farm	1	<u>7</u>	2	0.001	<u>0.0059 </u> ^ь	<u>0.001</u>	0.00 to 0.03	0.01 to 0.22	0.00 to 0.09	0.01 to 0.34				
Robin Rigg	<u>0</u>	2	1	0.001	<u>0.752 d</u>	<u>0.001</u>	0.00 to 0.00	0.00 to 0.09	0.00 to 0.03	0.01 to 0.12				
Rhyl Flats	<u>0</u>	2	1	0.001	<u>0.0059 </u> ^ь	0.001	0.00 to 0.00	0.00 to 0.07	0.00 to 0.03	0.00 to 0.10				
Walney 1 & 2	1	8	<u>3</u>	0.001	0.752 d	<u>0.001</u>	0.00 to 0.03	0.02 to 0.40	0.01 to 0.12	0.02 to 0.56				
Total predicted impact (adult birds)							16.4 <u>345</u> to 332.31 <u>383.9</u> 0	47.47 <u>19.14</u> to 4 <u>56.47446.5</u> 0	2.44 <u>16</u> to 33.20 <u>50.43</u>	36.03 37.75 to 821.98 880.83				
Increase in baseline mortality (%)							1.30 <u>0.01</u> % to 0.28 <u>32</u> %	1.39 <u>0.02</u> % to 0.39 <u>38</u> %	0. 17 00% to 0. 03 04%	2.86 0.03 % to 0 . 69 <u>74</u> %				

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1.5.3.60 As the predicted impact on Manx shearwater from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA is <1% increase in baseline mortality, which is likely to be undetectable against natural variation, the impact is not considered to hinder the conservation objects of the site, and therefore, it is concluded beyond reasonable scientific doubt that there would be no AEoSI from the Mona Offshore Wind Project in-combination with other plans and projects.

Northern gannet

Ailsa Craig SPA

4.5.3.611.5.3.65 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in northern gannet -baseline mortality from Alisa Craig SPA, an in-combination assessment is presented within Table 1-54 (80% displacement and 10% mortality and species-group avoidance rate).

Table 1-54: In-combination assessment for northern gannet from the Ailsa Craig SPA.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For northern gannet, the proportions are 55.25% of birds are adults in the breeding period, 59.16% of birds are adults in the post-breeding season.

<u>b</u> - the apportioning value during the breeding season was taken from project specific documentation

c - the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.568.

d - the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.462.

P r oject	Un-apportioned abundances (adult birds) ^a			Un-app collisio (adult b	ortioned n impaci pirds) ^a	<u>ts</u>	Appo r t	ioning valı	ıes	Apportioned displacement impact values (60-80% displacement and 4-10% mortality) Apportioned collis (species-group avoidance rate 0.9)					Combine d impact				
	P r e- b r ee d in g	Breedin g	Post- b r ee d in g	Non <mark>Pre</mark> - b reed in g	Breedin g	PrePost- breedin g	Post<mark>Pre</mark> - b reed in g	<u>Breeding</u>	NonPos t- breedin g	Pre- breedin g	Breeding	Post- breedin g	NonPre- breedin g	<u>Breedin</u>	PrePost- breedin g	PostPre- breeding	<u>Breeding</u>	NonPost - breedin g	Annual
Awel y Môr Offshore Wind Farm	<u>0</u>	<u>181</u>	<u>,117</u>	0.00	6.01	1.48	0.1386	0.4 <u>620</u> 462	0.1706	0.00 to 0.00	0.50 to 6.70	0.44 <u>12</u> to 1.52 <u>60</u>	0.00	2.78 <u>9.47</u>	0.241.85	0.00 to 0.00	3.28 to 9.47	0.37 to 1.7585	3.65 to 11.32
Burbo Bank Extension Offshore Wind Farm	<u>15</u>	<u>358</u>	<u>13</u>	0.00	<u>6.87</u>	0.00	0.1386	0.4 <u>620462</u>	0.1706	0.01 to 0. 15 16	0.99 to 13.23	0.01 to 0.17	0. 00 16	16.41	3 <u>0</u> .17	0. 00 01 to 0.16	4.17 to 16.41	0.01 to 0.17	4.19 to 16.75
Erebus Floating Wind Demo	<u>59</u>	<u>124</u>	<u>195</u>	0.36	1.86	0.35	0.1386	No connectivit y	0.1706	0.05 to 0. 61 <u>66</u>	N/A-	0. 19 20 to 2. 52 66	0. 05 <u>71</u>	N/A_	0.062.72	0. 66 10 to 0.71	N/A-	0.26 to 2.5872	0.36 to 3.42
TwinHub (Wave Hub Floating Wind Farm)	<u>0</u>	<u>135</u>	<u>89</u>	0.00	<u>14.43</u>	0.00	0.1386	No connectivit y	0.1706	0.00 to 0.00	N/A_	0.09 to 1. 15 22	0.00	N/A <u>-</u>	0.001.22	0.00 to 0.00	N/A-	0.09 to 1.4522	0.09 to 1.22
Ormonde Wind Farm	2	<u>110</u>	<u>3</u>	<u>0.00</u>	<u>3.71</u>	<u>0.00</u>	0.1386	0. 5078 <u>568</u> <u>c</u>	0.1706	0.00 to 0. 00 02	0. 33 37 to 4.47 <u>5.00</u>	0.00 to 0. 00 05	0. 00 <u>02</u>	1.89 <u>7.11</u>	0. 00 <u>05</u>	0.00 <u>to</u> 0.02	6.35 <u>2.48 to</u> 7.11	0.00 <u>to</u> <u>0.05</u>	2.49 to 7.17
Mona Offshore Wind Project	<u>17</u>	<u>139</u>	<u>34</u>	0.24	<u>2.61</u>	0.30	0.1386	0. 5620<u>562</u> <u>b</u>	0.1706	0.01 to 0. 17 18	0.47 to 6.23	0.03 to 0.44 <u>46</u>	0. 03 22	1.47 <u>7.70</u>	<u>0.51</u>	0.05 <u>to</u> 0.22	1.94 to 7.70	0.4 <u>909</u> to 0.51	2.07 to 8.43
Morecambe Offshore Windfarm Generation Assets	0	<u>413</u>	<u>96</u>	0.00	0.04	0.00	0.1386	0. 5078 <u>507</u> <u>8</u> ^b	0.1706	0.00 to 0.00	1.26 to 16.79	0. 09 10 to 1. 24 30	0.00	0.02 <u>16.8</u> <u>1</u>	0.001.30	0.00 to 0.00	1.28 to 16.81	0.10 to 1.2430	1.38 to 18.11
Morgan Offshore Wind Project Generation Assets	<u>31</u>	<u>115</u>	<u>112</u>	0.13	0.93	<u>0.15</u>	0.1386	0. 5680 <u>568</u> <u>b</u>	0.1706	0. 02 03 to 0. 32 35	0.39 to 5.25	0.11 to 1.45 <u>53</u>	0. 02 <u>37</u>	0.53 <u>5.77</u>	0.021.55	0. 34 04 to 0.37	0.92 to 5.77	0.14 to 1.47 <u>55</u>	1.10 to 7.69
Walney (3 and 4) Extension Offshore Wind Farm	<u>14</u>	<u>83</u>	<u>151</u>	<u>0.54</u>	9.00	<u>9.65</u>	0.1386	0. 5078 <u>568</u> <u>c</u>	0.1706	0.01 to 0. 15 <u>16</u>	0. 25 28 to 3. 37 77	0.15 to 1.952.06	0. 07 23	4.57 <u>8.88</u>	1.56 3.70	0. 22 09 to 0.23	7.94 <u>5.40 to</u> 8.88	1.80 to 3. 51 70	7.28 to 12.82
West of Duddon Sands Offshore Wind Farm	<u>7</u>	<u>238</u>	<u>10</u>	<u>0.15</u>	1.08	<u>0.19</u>	0.1386	0. 5078<u>568</u> <u>c</u>	0.1706	0. 00 01 to 0. 00 07	0. 73 <u>81</u> to 9.67 <u>10.82</u>	0. 00 01 to 0. 00 14	0. 00 <u>09</u>	0.00 <u>11.4</u> <u>4</u>	0. 00 18	0. 00 03 to 0.09	9.67 <u>1.43 to</u> 11.44	0. <u>0004</u> to 0.18	1.50 to 11.70

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P r oject	Un-apportioned abundances (adult birds) a		Un-app collisio (adult l	Un-apportioned collision impacts (adult birds) ^a			Apportioning values			Apportioned displacement impact values (60-80% displacement and 4-10% mortality)			Apportioned collision (species-group avoidance rate 0.9928)			Combine d impact			
	P r e- b r ee d in g	Breedin g	Post- b r ee d in g	NonPre- breedin g	Breedin g	PrePost- breedin g	Post <u>Pre</u> - breedin g	<u>Breeding</u>	NonPos t- breedin a	Pre- breedin g	Breeding	Post- breedin g	NonPre- breedin g	<u>Breedin</u>	ProPost- breedin g	PostPre- breeding	Breeding	NenPost - breedin a	Annual
West of Orkney Windfarm	<u>35</u>	<u>529</u>	<u>682</u>	1.25	18.67	<u>7.53</u>	0.1386	0. 0003 <u>000</u> <u>3^b</u>	0.1706	0.03 to 0. 36 <u>39</u>	0.00 to 0.01	0.66 <u>70</u> to 8.83 <u>9.31</u>	0. 16 <u>56</u>	0. 01 <u>02</u>	1.22 <u>10.5</u> 9	0. 52 20 to 0.56	0.01 to 0.02	1.98 to 10.0559	2.19 to 11.17
White Cross Offshore Windfarm	<u>83</u>	<u>132</u>	44	0.00	2.44	0.98	0.1386	0. 0112 <u>011</u> <u>2^b</u>	0.1706	0. 06 <u>07</u> to 0. 86 <u>92</u>	0.01 to 0.12	0.05 to 0.60	0.92	0.15	0.77	0.07 to 0.92	0.04 to 0. 57 <u>15</u>	0. 00 21 to 0.77	0.0332
Gap-fille d projects Burbo Bank	2	3	3	0.04	0.20	0.03	0.1386	0.462 ^d	0.1706	0.00 to 0.02	0.01 to 0.12	0.00 to 0.04	0.02	0.21	0.05	0.01 to 0.02	0.10 to 0.21	0.01 to 0.05	0.12 to 0.28
Total predicted impact (adult birds)Gwynt y Môr Offshore Wind Farm	0.20 to 2.63 <u>8</u>	<u>,15</u>	,12	0.60	4. 94 to 65.84 <mark>03</mark>	1.49 to 19.830.7 2	0. 33 138 6	44.46 <u>0.462</u>	3.31 <u>0.1</u> 706	0.01 to 0.09	0.04 to 0.55	0.01 to 0.16	0.17	<u>2.41</u>	0.28	0.09 to 0.17	0.521.90 to 2.9641	4.79 <u>0.14</u> to 23.14 <u>0.2</u> 8	2.13 to 2.87
Robin Rigg	2	<u>6</u>	4	0.05	0.39	0.07	0.1386	0.568°	0.1706	0.00 to 0.03	0.02 to 0.28	0.00 to 0.06	0.03	0.50	0.07	0.01 to 0.03	0.24 to 0.50	0.02 to 0.07	0.27 to 0.60
Increase in baseline mortality (%)Rhyl Flats Offshore Wind Farm	0.00% to 0.05%2	0.09% to 1.22%4	<u>3</u>	0.24	0.57	0.10	0.1386	0.462°	0.1706	0. <mark>03%00</mark> to 0. 37% 03	0.01% 7 7 2 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0. 01 % <u>00</u> to 0.05%	0. 36% to 1.49% <u>06</u>	0.43	0.07	0.03 to 0.06	0. <mark>09%28</mark> to 0.43%	0.02 to 0.07	0.33 to 0.55
Walney 1 and 2	9	<u>20</u>	<u>15</u>	<u>0.15</u>	1.06	0.19	0.1386	0.568 ^d	0.1706	0.01 to 0.10	0.07 to 0.90	0.02 to 0.21	0.12	1.50	0.24	0.03 to 0.12	0.67 to 1.50	0.05 to 0.24	0.74 to 1.86
Total predicted imp	act (a d ult	bi rd s)								<u>0.24 to</u> <u>3.17</u>	5.24 to 69.93	1.62 to 21.61	<u>0.52</u>	<u>18.88</u>	<u>3.71</u>	<u>0.76 to</u> <u>3.69</u>	24.13 to 88.81	5.33 to 25.32	30.21 to 117.82
Annual impact and in displacement and 1-1	crease<mark>lncr</mark> 0% mortali	r <u>ease</u> in ba ty) (%)	seline moi	rtality from	the combin	ie d impact (when consi	dering 60-80%	5	0.00% to 0.06%	0.10% to 1.30%	24.720. 03% to 1060.40 birds 0.46% to 1.98% increase in baseline mortalit	0.01%	0.35%	0.07%	0.01% to 0.07%	0.45% to 1.65%	0.10% to 0.47%	0.56% to 2.19%

4.5.3.621.5.3.66 As the predicted impact on northern gannet from Ailsa Craig SPA is >1% increase in baseline mortality, the impact is further investigated by a PVA (see section 1.6.4) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

Grassholm SPA

4.5.3.631.5.3.67 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in northern gannet -baseline mortality from Grassholm SPA, an in-combination assessment is presented within Table 1-55 (60-80% displacement and 1-10% mortality and species-group avoidance rate).

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Table 1-55: In-combination assessment for northern gannet from the Grassholm SPA.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For northern gannet, the proportions are 55.25% of birds are adults in the breeding period, 59.16% of birds are adults in the post-breeding season.

b – the apportioning value during the breeding season was taken from project specific documentation

- c the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.258.
- d the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.367.
- e the apportioning value during the breeding seas has used that of Erebus Floating Wind Demon, specifically 0.995.

	<u>Un-apportione</u>	d abundances (ac	luit birds) ^a	<u>Un-apportioner</u>	d collision impact	s (adult birds) *	Appo r tioning v	alues			d isplacement impact v an d 1105 % mo r talit		avoid	Inserted Cells
Project	P re -b r ee d ing	<u>Breeding</u>	Post-breeding	NonPre- breeding	<u>Breeding</u>	PrePost- breeding	PostPre- breeding	<u>Breeding</u>	NonPost- breeding	Pre-breeding	<u>Breeding</u>	Post-breeding	breed ing	Inserted Cells
Awel y Môr Offshore Wind Farm	Q	181	,117	0.00	6.01	1.40	0.2007	0. 3670 367 ^b	0.2471	0.00 to 0.00	0.40 to 5.32	0.46 <u>17</u> to 2. 20 <u>31</u>	0.00	Inserted Cells 2 0 0. 2 0.8+54 10 3. 14 2 3 to 6 15 0. 0 10 10 10 10 10 10 10 10 10 10 10 10 1
Burbo Bank Extension Offshore Wind Farm	<u>15</u>	358	13	0.00	6.87	0.00	0.2007	0. 3670 <u>367</u> ^d	0.2471	0.02 to 0.22 <u>24</u>	0.79 to 10.51	0.02 to 0.24 <u>25</u>	0.00	Inserted Cells
Erebus Floating Wind Demo	<u>59</u>	124	<u>195</u>	0.34	1.86	0.34	0.2007	0. 9950 995 ^b	0.2471	0.07 to 0.89 <u>95</u>	0.74 to 9.85	0.27 <u>29</u> to 3.65 <u>85</u>	0.07	1 0 0. 2 0.3638 to 3. 11 to 5 to 9



	Un-apportioner	1 abundances (ac	luit birds) ?	Un-apportioned collision impacts (adult birds) 2 Apportioning values						Apportioned displacement impact values (60-80% displacement and 449 116% mortality)				Apportio ned collision (species group Inserted Cells avoid e rate Inserted Cells 0.9928)			
Project	Pre-bree d ing	<u>Breeding</u>	Post-breeding	NonPre- breeding	<u>Breeding</u>	PrePost- breeding	PostPre- breeding	Breeding	NonPost- breeding	Pre-breeding	<u>Breeding</u>	Post-breeding	NonP I re- breed I ing I	nserted Conserted Conserte	ells ells ells ells		
TwinHub (Wave Hub Floating Wind Farm)	<u>0</u>	135	89	0.00	14.43	0.00	0.2007	0. 9950<u>9</u>95°	0.2471	0.00 to 0.00	0.80 to 10.73	0.13 to 1.67 <u>76</u>	0.00	1 0 0. 4 . 00 . 0 to 3 0 0. 9 00 3	0 0 1 0.13 to 1.6776	15 .3 .3 .0 to 26 .8 5	
Ormonde Wind Farm	2	110	<u>3</u>	0.00	3.71	0.00	0.2007	0. 3141<u>258°</u>	0.2471	0.00 to 0. 00 03	0. 24 17 to 2. 76 27	0. 00 01 to 0. 00 07		00 4 0 to 7 0 0. 0 0 0. 0 03 9 6	1 0.0001 to 0.0007	1. 14 to 3. 33	
Mona Offshore Wind Project	<u>17</u>	<u>139</u>	<u>34</u>	0.23	2.61	0.28	0.2007	0. 1760<u>1</u>76 b	0.2471	0.02 to 0.25 <mark>27</mark>	0.15 to 1.95	0.05 to 0. 63 <u>67</u>	0.05	0 0 0. 	0 0.12 to 0.7074 6 1 t 0 2	0. 80 to 3. 47	



	<u>Un-apportione</u>	e <mark>d abundances (ad</mark>	<u>dult birds) *</u>	Un-apportione	e <mark>d collision impact</mark>	ss (adult birds) ^a	Apportioning	values			d isplacement impact va t an d 		Apportio ned collision (special group Inserted Cells avoid e rate 0.9928)
Project	P r e-b r ee d ing	Breeding	Post-b r ee d ing	NonPre- breeding	Breeding	PrePost- breeding	PostPre- breeding	Breeding	Non <mark>Post</mark> - bree d ing	Pre-breeding	Breeding	Post-b r ee d ing	Inserted Cells Non-P Inserted Cells re- breed Inserted Cells ing Inserted Cells Inserted Cells Inserted Cells Inserted Cells
Morecambe Offshore Windfarm Generation Assets	<u>0</u>	413	<u>96</u>	0.00	0.04	0.00	0.2007	0. 3141 <u>258</u> ^b	0.2471	0.00 to 0.00	0. 78<u>64</u> to <u>40.388.53</u>	0.43 <u>14</u> to 1. 79 89	Inserted Cells Deleted Cells Inserted Cells Inserted Cells O 4 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
Morgan Offshore Wind Project Generation Assets	31	115	112	0.12	0.93	0.14	0.2007	0. 2580 <u>258^b</u>	0.2471	0.47 <u>50</u>	0.18 to 2.38	0.46 <u>17</u> to 2.40 <u>21</u>	0.020 Inserted Cells 2
Walney (3 and 4) Extension Offshore Wind Farm	14	83	<u>151</u>	0.51	9.00	<u>9.15</u>	0.2007	0. 3141<u>258°</u>	0.2471	0.02 to 0.21 <u>23</u>	0.4 <u>613</u> to <u>2.08</u> 1.71	0. 2 4 <u>22</u> to 2. 8 3 <u>98</u>	Deleted Cells Deleted Cells Deleted Cells Deleted Cells Deleted Cells Inserted Cells Inserted Cells
West of Duddon Sands Offshore Wind Farm	<u>z</u>	238	10	0.14	1.08	0.18	0.2007	0. 3141<u>258°</u>	0.2471	0. 00 01 to 0. 00 10	0.37 to 4.91	0.02 to 0.21	Inserted Cells Inserted Cells Inserted Cells Inserted Cells



	<u>Un-apportiones</u>	l abundances (ac	luit birds) ^a	Un-apportions	d collision impac	i <u>s (adult birds) °</u>	Appo r tioning	/alues			d isplacement impact v an d ¹⁴⁰10 % mo r talit		avoid	ion Inserted			
Project	Pre-bree d ing	<u>Breeding</u>	Post-b r ee d ing	NonPre- breeding	<u>Breeding</u>	PrePost- breeding	PostPre- breeding	<u>Breeding</u>	NenPost breeding	Pre-breeding	<u>Breeding</u>	Post-breeding	NonP	Inserted Inserted Inserted Inserted Inserted Inserted Inserted	Cells Cells Cells Cells Cells	A	
														Inserted	2 0 t t 0 0 5 0 9 0 8 0 1 2 9 5	9 t 0 5 . 9 8 5 8	0 0 0
West of Orkney Windfarm	<u>35</u>	529	<u>682</u>	1.16	18.67	7.14	0.2007	No connectivity	0.2471	0.04 to 0. 5256	N/A <u>-</u>	0.961.01 to 12.7913.48	0. 23 2 5	A 7 29 to 8 0. 6 76	A	10.54 to 16 .1 5	<u>.</u>
White Cross Offshore Windfarm	83	132	44	0.00	2.44	0.93	0.2007	0. 5208 <u>5208</u> ^b	0.2471	0.09 <u>10</u> to 1.25 <u>34</u>	0.41 to 5.50	0.06 <u>07</u> to 0.83 <u>88</u>	0.00	1 0 0. 	1.06 <u>1</u> 1.06 <u>1</u> 1.06	1 to 2. 09 to 9. 23	<u>.</u>
Gap-filled projects							<u> </u>			0.00 to 0.03	0.01 to 0.10	0.00 to 0.06	0.01	0 0 0.	<u>0</u> <u>0.01 t</u>	<u>0</u> <u>0</u> .	
Burbo Bank	2	<u>3</u>	<u>3</u>	0.03	0.20	0.03	0.2007	0.367 ^d	0.2471					<u>01</u> <u>0</u> <u>0</u> to <u>7</u> 1 <u>0.</u> <u>0</u> 4	<u>0</u> <u>8</u>	10 to 0. 27)
Gwynt y Môr Offshore Wind Farm	8	<u>15</u>	12	0.56	4.03	0.69	0.2007	0.367 ^d	0.2471	0.01 to 0.12	0.03 to 0.44	0.02 to 0.23	0.12	1 0 0. 13 4 1 to 8 8	7 1 0.20 t 0.41 5 1	0 1. 84 to	<u>1</u>



	Un-septortions	. d abundances (a	fadult birds) ^e	<u>Un-apportion</u>	<u>ed collision impar</u>	cis (adult birds) ^a	Apportionin	g values			I d isplacement impac nt an d 		avoid	ision or Inserte	rted Cells		
Project	P r e-b r ee d ing	<u>Breeding</u>	Post-b r ee d ing	NonPre- breeding	Breeding	PrePost- breeding	PostPre- breeding	<u>Breeding</u>	NonPost- breeding	Pre-breeding	<u>Breeding</u>	Post-bree d ing	NenP re- breed ing	Inserted Ins	rted Cells	5 5 5 5	
										+					U. 1 O 1 O O O O O O O		<u>2.</u> <u>57</u>
Robin Rigg	2	<u>6</u>	4	0.05	0.39	0.07	0.2007	0.258°	0.2471	0.00 to 0.04	0.01 to 0.13	0.01 to 0.08	0.01	1002	2 0. 0 0 01 . 0 10 1 0. 1 05 t	0.02 to 0.10	0. 15 to 0. 37
Rhyl Flats Offshore Wind Farm	2	4	3	0.22	0.57	0.10	0.2007	<u>0.367^d</u>	0.2471	0.00 to 0.04	0.01 to 0.13	0.01 to 0.07	0.05	0 0 2 0 1 3	2 3 0. 0 0 05 . 0 10 2 0. 2 09 t 0 0 0 1	0.03 to 0.09	0. 30 to 0. 52
Walney 1 and 2	9	20	<u>15</u>	0.14	1.06	0.18	0.2007	<u>0.258°</u>	0.2471	0.01 to 0.14	0.03 to 0.41	0.02 to 0.30	0.03	2075	0. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.07 to 0.35	0. 41 to 1. 20
Total predicted impact (adult birds)		<u></u>								0 .29 <u>34</u> to 3.814.59	5.064.87 to 67.4664.88	2.35 to 31.30	<u>0.70</u>	Inserte	ted Cells rted Cells	5	



	<u>Un-apportioned</u>	d abundances (ac	dult.birds).2	Un-apportions	ed collision impse	t <u>s (adult birds) °</u>	Apportioning	values			d isplacement impact t an d 		avoi	Inserted Cells
Project	P r e-b r ee d ing	<u>Breeding</u>	Post-bree d ing	NonPre- breeding	<u>Breeding</u>	PrePost- breeding	Post Pre- bree d ing	Breeding	NonPost- breeding	Pre-breeding	<u>Breeding</u>	Post-breeding	NonFree breeting	Inserted Cells
					1	ı								Inserted Cells 2 1 34 2 7 7 13 15 15 15 15 15 15 15
Increase in baseline mortality (%)										0.9901% to 0.9708%	0.0908% to 1.4611%	0.0 4% to 0. 49 <u>54</u> %	0.01 %	Deleted Cells Inserted Cells Inserted Cells

1.5.3.64 As the predicted impact on northern gannet from Grasholm SPA is predicted to be >1% increase in baseline mortality, the impact is further investigated by a PVA (see section 1.6.4) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.



Saltee Islands SPA

1.5.3.65 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in northern gannet baseline mortality from Saltee Islands SPA, an in-combination assessment is presented within Table 1-55 (60-80% displacement and 1-10% mortality and species-group avoidance rate).

Table 1.55: In-combination assessment for northern gannet from the Saltee Islands SPA.

Project	Apportic	oning values			splacement impa ent, 1-10 % mo r ta			ne d collisi -group avo 128)		Combined impa	act	
	Pre- breeding	Post-breeding	Non- breeding	Pre-breeding	Post-breeding	Non-breeding	Pro- breeding	Post- breeding	Non- breeding	Pre-breeding	Post-breeding	Non-breeding
Awel y Môr Offshore Wind Farm	0.0015	0.0210	0.0015	0.00 to 0.00	0.02 to 0.30	0.00 to 0.01	0.00	0.13	0.00	0.00 to 0.00	0.15 to 0.43	0.00 to 0.02
Burbo Bank Extension Offshore Wind Farm	0.0015	0.0210	0.0015	0.00 to 0.00	0.05 to 0.60	0.00 to 0.00	0.00	0.14	0.00	0.00 to 0.00	0.19 to 0.75	0.00 to 0.00
Erebus Floating Wind Demo	0.0015	0.0030	0.0015	0.00 to 0.01	0.00 to 0.03	0.00 to 0.02	0.00	0.01	0.00	0.00 to 0.01	0.01 to 0.04	0.00 to 0.02
TwinHub (Wave Hub Floating Wind Farm)	0.0015	0.0030	0.0015	0.00 to 0.00	0.00 to 0.03	0.00 to 0.01	0.00	0.04	0.00	0.00 to 0.00	0.05 to 0.08	0.00 to 0.01
Ormonde Wind Farm	0.0015	0.0377	0.0015	0.00 to 0.00	0.02 to 0.33	0.00 to 0.00	0.00	0.14	0.00	0.00 to 0.00	0.16 to 0.47	0.00 to 0.00
Mona Offshore Wind Project	0.0015	0.0280	0.0015	0.00 to 0.00	0.02 to 0.31	0.00 to 0.00	0.00	0.07	0.00	0.00 to 0.00	0.10 to 0.38	0.00 to 0.00
Morecambe Offshore Windfarm Generation Assets	0.0015	0.0377	0.0015	0.00 to 0.00	0.09 to 1.25	0.00 to 0.01	0.00	0.00	0.00	0.00 to 0.00	0.10 to 1.25	0.00 to 0.01
Morgan Offshore Wind Project Generation Assets	0.0015	0.0320	0.0015	0.00 to 0.00	0.02 to 0.30	0.00 to 0.01	0.00	0.03	0.00	0.00 to 0.00	0.05 to 0.33	0.00 to 0.01
Walney (3 and 4) Extension Offshore Wind Farm	0.0015	0.0377	0.0015	0.00 to 0.00	0.02 to 0.25	0.00 to 0.02	0.00	0.34	0.01	0.00 to 0.00	0.36 to 0.59	0.02 to 0.03
West of Duddon Sands Offshore Wind Farm	0.0015	0.0377	0.0015	0.00 to 0.00	0.05 to 0.72	0.00 to 0.00	0.00	0.00	0.00	0.00 to 0.00	0.05 to 0.72	0.00 to 0.00
West of Orkney Windfarm	0.0015	No-connectivity	0.0015	0.00 to 0.00	N/A	0.01 to 0.08	0.00	N/A	0.01	0.00 to 0.01	N/A	0.02 to 0.09
White Cross Offshore Windfarm	0.0015	0.0141	0.0015	0.00 to 0.01	0.01 to 0.15	0.00 to 0.01	0.00	0.03	0.00	0.00 to 0.01	0.05 to 0.18	0.00 to 0.01
Total-predicted impact (adult birds)	•	•	•	0.00 to 0.03	0.32 to 4.27	0.01 to 0.17	0.00	0.94	0.03	0.01 to 0.03	1.26 to 5.21	0.04 to 0.20
Increase in baseline mortality (%)				0.00% to 0.00%	0.04% to 0.56%	0.00% to 0.02%	0.00%	0.12%	0.00%	0.00% to 0.00%	0.16% to 0.68%	0.01% to 0.03%
Annual impact and increase in base	line mortality	from the combined	impact (when	consi der ing 6 0- 8 0% d i	splacement and 1-10%	mortality)		•		1.31 to 5.44 birds 0.17% to 0.71% incre	ase in baseline mo r tali	t y

1.5.3.66 As the predicted impact on northern gannet from Saltee Islands SPA <1% increase in baseline mortality, which is likely to be undetectable against natural variation the impact is not considered to hinder the conservation objectives of the site, and therefore, it is concluded beyond reasonable scientific doubt that there would be no AEoSI from the Mona Offshore Wind Project in-combination with other plans and projects...

Skelligs SPA

4.5.3.67 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in northern gannet -baseline mortality from SkelligsSaltee Islands SPA, an incombination assessment is presented within Table 1-56 (60-80% displacement and 1-10% mortality and species-group avoidance rate).

Table 1.-56: In-combination assessment for northern gannet from the Skelligs Saltee Islands SPA.

a – the plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables, or during the breeding season from the stable-age structures. For northern gannet, the proportions are 55.25% of birds are adults in the breeding period, 59.16% of birds are adults in the post-breeding season.

<u>b</u> – the apportioning value during the breeding season was taken from project specific documentation

c – the apportioning value during the breeding season has used that of Morgan Offshore Wind Project Generation Assets, specifically 0.032.

<u>d</u> – the apportioning value during the breeding season has used that of Awel y Môr Offshore Wind Farm, specifically 0.021.

e - the apportioning value during the breeding seas has used that of Erebus Floating Wind Demon, specifically 0.003.



	Un-apportioned abunda	inces (adult birds) ^a		Un-apportion	ed collision impacts	(adult birds) ^a	Apportioning value	s		Apportioned displacement impact 10% mortality)	values (60	Inserted Cells	Appo r tione d collision
Project	Pre-breeding	Breeding	Post-breeding	NonPre- breeding	<u>Breeding</u>	PrePost breeding	PostPre-breeding	Breeding	NonPost- breeding	Pre-breeding	Breedin	Inserted Cells Inserted Cells Inserted Cells Inserted Cells	
Awel y Môr Offshore Wind Farm	Q	181	,117	0. 048 <u>00</u>	6.01	1.40	0. 0437 <u>0015</u>	0. 040 021 ^b	0.0015	0.00 to 0.00	0.05021	Inserted Cells	0300
Burbo Bank Extension Offshore Wind Farm	0.04815	0.0437 <u>358</u>	0.040 13	0.00	6.87	0.00	0.0015	0.021 ^d	0.0015	0.00 to 0. 0500	0.09051	Inserted Cells Inserted Cells Inserted Cells	0
Erebus Floating Wind Demo	0.048 <u>59</u>	0.002124	0.040 <u>195</u>	0.34	1.86	0.34	0.0015	0.003 ^b	0.0015	0. 02 00 to 0. 21 01	0.00 to	Inserted Cells	59 <u>02</u>
TwinHub (Wave Hub Floating Wind Farm)	0.048	0.002 135	0.040 <u>89</u>	0.00 to -0.00	0.00 to 0.02 <u>14.43</u>	0. 02 to 0.27 <u>00</u>	0. 00 <u>0015</u>	0.003°	0.0015	0.00 to 0.00	0.00 to	Inserted Cells Inserted Cells Inserted Cells	



											Apportioned collisi
	Un-apportioned abunda	ances (adult birds) a		Un-apportion	ned collision impacts	(adult birds) a	Apportioning value	es		Apportioned displacem 10% mortality)	Inserted Cells
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Project											Inserted Cells
	Pre-breeding	Breeding	Post-breeding	NonPre- breeding	Breeding	ProPost- breeding	PostPre-breeding	Breeding	NonPost- breeding	Pre-breeding	Breeding Inserted Cells
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Ormonde Wind Farm	0.048 2	0.0437 <u>110</u>	0.040 <u>3</u>	0.00 to 0.00	0.03 to 0.383.71	0.00 to 0.00	0. 00 0015	0. 16 032°	0. 00 <u>0015</u>	0.00 to 0.00	Inserted Cells
Offilonde Willu Fallii	0.046 <u>4</u>	0.0437 110	0.040 2	0.00 to 0.00	0.03 to 0.30 <u>0.7 i</u>	0.00 to 0.00	0. 00 0015	U. 10 UJZ_	0. 00 0013	0.00 to 0.00	Inserted Cells
											Inserted Cells
				0. 00 to		0. 01 to					0. 15 00
Mona Offshore Wind Project	0.048 <u>17</u>	0.0437 139	0.040 <u>34</u>	0. 00 to 0.06 <u>23</u>	0.04 to 0.48 <u>2.61</u>	0. 01 to 0.10 <u>28</u>	0. 01 <u>0015</u>	0. 11 028 ^b	0. 01 <u>0015</u>	0.00 to 0.00	0.02 to Inserted Cells
											0.0000
	+	+		+	+	+	_	+	+	+	
											0.0200
Morecambe Offshore Windfarm Generation Assets	0.048	0.0437 <u>413</u>	0.040 <u>96</u>	0.00 to 0.00	0.04	0.00	0.0015	0.0377b	0.0015	0.00 to 0.00	0.44 <u>09</u> t Inserted Cells
Generation Assets								T			Inserted Cells
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Morgan Offshore Wind Project											0.0400
Generation Assets	0.048 <u>31</u>	0.0437 <u>115</u>	0.040 112	0.12	0.93	0.14	<u>0.0015</u>	0.032°	0.0015	0.00 to 0.00	0.02 to Inserted Cells
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	+	+	+	+	+	+	+	+	+	+	0.034 Inserted Cells
Walney (3 and 4) Extension Offshore	0.048 <u>14</u>	0.0437<u>83</u>	0.040 <u>151</u>	0. 00 to	9.00	<u>9.15</u>	0.0015	0.032 °	<u>0.0015</u>	0.00 to 0.00	Inserted Cells
Wind Farm	_	_	_	0.05 <u>51</u>							0 Inserted Cells



	Un-apportioned abunda	inces (adult birds) ^a		Un-apportio	ned collision impacts	(adult birds) a	Apportioning value	es		Apportioned displacement 10% mortality)	t impact values (6 0	Inserted Cells	Apportio	ne d col
Project	Pre-breeding	<u>Breeding</u>	Post-breeding	NonPre- breeding	<u>Breeding</u>	PrePost- breeding	PostPre-breeding	Breeding	NonPost- breeding	Pre-breeding	Breeding	Inserted Cells Inserted Cells Inserted Cells Inserted Cells		
											2 t o 0	Inserted Cells Inserted Cells Inserted Cells Inserted Cells		
West of Duddon Sands Offshore Wind Farm	0.048 <u>7</u>	0.0437238	0.04010	0. 00 to 0.00 <u>14</u>	0.06 to 0.83 <u>1.08</u>	0. 00 to 0. 0018	0.00015	0. 00 032°	0.00015	0.00 to 0.00	0. <u>06<mark>05</mark></u> t	Inserted Cells Inserted Cells Inserted Cells Inserted Cells		
West of Orkney Windfarm	0.048 <u>35</u>	<u>529</u>	<u>682</u>	1.16	18.67	7.14	0.0015	No connectivity	0. 040 0015	0.00 to 0.00	-	Inserted Cells Inserted Cells Inserted Cells Inserted Cells Inserted Cells	0.01 to	
White Cross Offshore Windfarm	0.048 <u>83</u>	0.002132	0.04044	0. 02 to 0.30 <u>00</u>	0.00 to 0.02 <u>2.44</u>	0.93	0.0015	0.0141b	0.0015	0.00 to 0.01	0.01 to (Inserted Cells Inserted Cells Inserted Cells Inserted Cells Deleted Cells Inserted Cells Inserted Cells		
Gap-filled projects Burbo Bank	2	3	3	0.03	0.20	0.03	0.0015	0.021 ^d	<u>0.0015</u>	0.00 to 0.00		Inserted Cells Inserted Cells Inserted Cells 0.01	0.00 to 0.00 0.00	



		Un-apportioned abunda	ences (adult birds) a		Un-apportion	ed collision impacts	(adult birds) a	Apportioning value	es		Apportioned displacement impact 10% mortality)	values (60 Inserted Cells	4	Apportioned collision
Project		Pre-breeding	Breeding	Post-breeding	NonPre- breeding	Breeding	PrePost- breeding	Post <u>Pre</u> -breeding	Breeding	NonPost- breeding	Pre-breeding	Inserted Cells Inserted Cells Breedin Inserted Cells Inserted Cells		
												Inserted Cells	•	
												Inserted Cells Inserted Cells Inserted Cells		
Gwynt y Môr Offshore Wir	ind Farm	8	<u>15</u>	12	0.56	4.03	0.69	0.0015	0.021 ^d	0.0015	0.00 to 0.00	0.00 to 0.03	0.00 to 0.00	0.00
Robin Rigg		2	<u>6</u>	4	0.05	0.39	0.07	0.0015	0.032°	0.0015	0.00 to 0.00	0.00 to 0.02	0.00 to 0.00	0.00 0.00 1
Rhyl Flats Offshore Wind	<u>Farm</u>	2	4	<u>3</u>	0.22	0.57	0.10	0.0015	0.021 ^d	0.0015	0.00 to 0.00	0.00 to 0.01	0.00 to 0.00	0.00 0 1
Walney 1 and 2		9	<u>20</u>	<u>15</u>	0.14	1.06	0.18	0.0015	0.032°	0.0015	0.00 to 0.00	0.00 to 0.05	0.00 to 0.00	0.00 0.00 3
Total p red icte d impact (a	(a d ult bi rd s)	I	1	1	1	1	1	I	I	I	0.97 <u>00</u> to 0.92 <u>03</u>	Deleted Cells Deleted Cells Inserted Cells 0.3531 Inserted Cells Inserted Cells		



MONA OFFSHORE WIND PROJECT

	Un-apportioned abund	dances (adult birds) *		<u>Un-appor</u>	rtioned collision impacts	s (adult birds) ^a	Appo r tic	oning values	es				ione d d isplacement impact v o r tality)	values (6	Inserted Cells	Appo r tione d collision
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Project								,							Inserted Cells	
	Pre-breeding	<u>Breeding</u>	Post-breeding	NonPre- breeding	<u>Breeding</u>	PrePost breeding	PostPre-	-b r ee d ing	Breeding	Non Pos breedin	<u>st</u> -	Pre-bree	∌ d ing	<u>Breed</u> i	dinc Inserted Cells	
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Increase in baseline mortality (%)			0.01% to 0	0 12%	0.06% to 0.76%	0.05% to (0.60%	0.01%	% 0.17	70/_	0.10%		0.02% to 0.14%	0.23%	Inserted Cells	
interesse in passine mortanty (70)			0.0170100	1.12/0	0.00% to 0.10%	0.00 /0 to 1	7 .00 /6	0.0170	<u> </u>	70	, 0.10%		3.02 /0 to 0.14 /0	0.20 7	Inserted Cells	
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						(24)					\$	3.01 <u>0.00</u>	<mark>0%</mark> to 13.49 birds		Inserted Cells	
Annual impact and increase Increase in	paseline mortality from t	the combined impact (wh	en considering 60-80%	6 displacement	.t an d 1-10 % mortality) <u>(</u>	<u>%)</u>						0.39 to 1	1.76% increase in baseline	0.04%	Inserted Cells	
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1.5.3.68 <u>1.5.3.70</u> As the pr	redicted impact on nort	rthern gannet from \$	kelligsGrasholm S	SPA is predi	icted to be >1% inc	rease in has	seline mort	ality the	impact is fu	urther inv	restinat <i>e</i>	ed by a	PVA (see section 1.6	(4)	Inserted Cells	

3.70 As the predicted impact on northern gannet from SkelligsGrasholm SPA is predicted to be > 1% increase in baseline mortality, the impact is further investigated by a PVA (see section 1.6.4) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.



Razo**r**bill

Cape Wrath SPA

4.5.3.691.5.3.71 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in razorbill -baseline mortality from Cape Wrath SPA, an in-combination assessment is presented within Table 1-57 (30-70% displacement and 1-10% mortality and 70% displacement and 2% mortality).

Table 1:-57: In-combination assessment for razorbill from the Cape Wrath SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables. For razorbill, the proportions are 52,22% of birds are adults in the pro-breeding period.

S OPORION WOM THE APP			, the proportions are 52.22% of birds a	Appo r tioning value:		ponda, oc.			s (3 0-70% d isplacement an d 1-10 %		disp nt in valu (70% disp nt, 2	6 Iacer	me t me
Project	P r e- b r ee d in g	Post- b r ee d in g	Non-b r ee d ing	P r e-b r ee d ing	Post- b r ee d in g	Non- b r ee d in g	Pre-breeding	Post-b r ee d ing	Non-b r ee d ing	Ann ual	이 이 + , , , , 이 타 이 에 데	Non Ar e e e ding	<u>nn</u>
Awel y Môr Offshore Wind Farm	<u>175</u>	34	<u>,79</u>	0.0129	0.0129	0.0093	0.01 to 0. 17 16	0.00 to 0.03	0.00 to 0. 0605	0. 09 01 to 0.24	0 . 0 0 . 4 0 <u>0</u> 1	0 0 0 0	<u>)5</u>
Erebus Floating Wind DemoBurbo Bank Extension	<u>0</u>	<u>0</u>	<u>15</u>	0.0129	0.0129	0.0093	0. 02 00 to 0.4600	0.00 to 0.88 <u>00</u>	0. 03 <u>00</u> to 0.4 <u>001</u>	0. 23 00 to 0.01	0 0	0 0 0 0	<u>)1</u>
Erebus Floating Wind Demo	<u>468</u>	892	<u>561</u>	0.0129	0.0129	0.0093	0.02 to 0.42	0.00 to 0.81	0.03 to 0.37	0.05 to 1.59	0 0	0 1 2	<u>22</u>
TwinHub (Wave Hub Floating Wind Farm)	<u>0</u>	0	28	0.0129	0.0129	0.0093	0.00 to 0.00	0.00 to 0.00	0.00 to 0.02	0.00 to 0.02	0 0 0 0 0		<u>)00</u>
Walney (3 and 4) Extension Offshore Wind Farm	<u>0</u>	<u>456</u>	1609	0.0129	0.0129	0.0093	0.00 to 0.00	0.00 to 0.4 5 41	0.01 to 1.44 <u>05</u>	0. 00 01 to 1.46	0 0 0 1 2 6 0 0	0 0 0 0 6	<u>)7</u>

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	<u>Un-appor</u>	tioned abu	ndances (adult birds) *	Appo r tioning values	5		Appo r tione d d isplacemo r tality)	cement impact values	(3 0-70% d isplacement an d 1-10 %	(7 d i nt						
Project	P r e- b r ee d in g	Post- b r ee d in g	Non-b r ee d ing	Pre-breeding	Post- breedin g	Non- b r ee d in g	Pre-breeding	Post-b r ee d ing	Non-b r ee d ing		P. C. O. C D. L. O. O. O. C D. L. O. O. O. C D. L. O. O. O C. O. O. O. C C. O. O. O. C. O.					
West of Duddon Sands Offshore Wind Farm	<u>o</u>	<u>0</u>	106	0.0129	0.0129	0.0093	0.00 to 0.00	0.00 to 0.00	0.00 to 0. 08<u>07</u>	0.00 <u>to</u> <u>0.07</u>	0 0 <u>0</u> 0.00 0 0 <u>0</u>					
West of Orkney Windfarm	<u>51</u>	<u>75</u>	<u>8</u>	0.0129	0.0129	0.0093	0.00 to 0.05	0.00 to 0.07	0.00 to 0.01	0. 02 01 to 0.12	0 0 0 2 0 0 2 0 0 1 1 1					
White Cross Offshore Windfarm	180	21	189	0.0129	0.0129	0.0093	0.01 to 0. 18 16	0.00 to 0.02	0.00 to 0.43 <u>12</u>	0.01 to 0.30	0					
Morecambe Offshore Windfarm Generation Assets	203	<u>352</u>	313	0.0129	0.0129	0.0093	0.01 to 0.20 <u>18</u>	0.00 to 0. 35 <u>32</u>	0.01 to 0.2220	0.02 to 0.70	0 0 0 0 0 0 0 0 0 1 0 4 4 2 5 0 6 2					
Morgan Offshore Wind Project Generation Assets	<u>87</u>	<u>54</u>	122	0.0129	0.0129	0.0093	0.00 to 0. 09 08	0.00 to 0.05	0.00 to 0. 09 <u>08</u>	01 0 to 3	0 0 0					
Mona Offshore Wind Project	1,005	<u>48</u>	221	0.0129	0.0129	0.0093	0.04 to 0. 99 91	0.00 to 0. 05 <u>04</u>	0.00 to 0. 16<u>14</u>	0. 49 04 to 1.09	0 0 0 9 9 . 2 2 0 1 0 1 8 1					
Gap-filled projects	1	1		<u> </u>	I	I	<u> </u>	I								
Burbo Bank	<u>5</u>	<u>3</u>	<u>5</u>	0.0129	0.0129	0.0093	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00 to 0.01	0 0 0 0					

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	<u>Un-appor</u>	tjoned abu	ndances (adult birds) *	Appo r tioning value	es		Apportioned displacement impact values (30-70% displacement and 1-10% mortality)					
P r oject	P r e- b reed in g	Post- b r ee d in g	Non-b r ee d ing	P r e-b r ee d ing	Post- breedin g	Non- b r ee d in g	Pre-breeding	Post-breeding	Non-b r ee d ing	Ann ual	다 이 이 다 이 이 이 이 이	tality) Ann b r e d i n g
Gwynt y Môr Offshore Wind Farm	<u>20</u>	11	17	0.0129	0.0129	0.0093	0.00 to 0.02	0.00 to 0.01	0.00 to 0.01	0.00 to 0.04	0 0	0 0 0 0 0
Ormonde Offshore Wind Farm	<u>5</u>	<u>3</u>	4	0.0129	0.0129	0.0093	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00 to 0.01	0 0 0 0 0 0 2	0 0 0 0 0
Robin Rigg	8	<u>6</u>	<u>z</u>	0.0129	0.0129	0.0093	0.00 to 0.01	0.00 to 0.01	0.00 to 0.00	0.00 to 0.02	0 0 0 0 0 1	0 0 0.01 0
Rhyl Flats Offshore Wind Farm	<u>6</u>	4	<u>5</u>	0.0129	0.0129	0.0093	0.00 to 0.01	0.00 to 0.00	0.00 to 0.00	0.00 to 0.01	0 0	0 0 0 0
Walney 1 and 2	<u>21</u>	<u>13</u>	18	0.0129	0.0129	0.0093	0.00 to 0.02	0.00 to 0.01	0.00 to 0.01	0.00 to 0.04	0 0	0 0 0.01 0
Total p red icte d impa	act (a d ult bi rc	ds)					0.0 9 to 2. 1 4 <u>02</u>	0. 02<u>03</u> to 1.94<u>78</u>	0.0 6 to 2. 29 <u>15</u>	1.06 0.17 to 5.95	0 0 	0 2 0.78 6
Increase in baseline	mortality (%)		0.02% to 0.49%	0.00% to 0).43%	0.01% to 0.52%	0.10%	0.02% 0.06%		<u> U 2</u>	
Annual impaet an d ii mo r tality) <u>(%)</u>	nerease<u>l</u>ncre	e <mark>ase</mark> in base	line mo r tality from displacement (when considering 70% di	splacement 	an d 10 %	0.02% to 0.46%	<u>0.01% to 0.41%</u>	0.01% to 0.49%	0.17 to 6.35 bird s 0.04 % to 1.45 % incre	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.99 birds 0.18 0 % incre ase in base line mort ality

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MONA OFFSHORE WIND PROJECT

Project	<u>Un-appo</u>	<u>rtioned abu</u>	indances (adult birds) ^a	Appo r tioning values	5		Apportioned displacement impact values (30-70% displacement and 1-10% mortality)					aceme pact s
	P r e- b reed in g	Post- b r ee d in g	Non-b r ee d ing	P r e-b r ee d ing	Post- b r ee d in g	Non- b r ee d in g	P r e-b r ee d ing	Post-breeding	Non-b r ee d ing	Ann ual		Ann ual
										in base line mort ality 36%		

1.5.3.70 1.5.3.72 As the predicted impact on razorbill from Cape Wrath SPA is >1% increase in baseline mortality (when considering 70% displacement and 10% mortality) the impact is further investigated by a PVA (see section 1.6.61.6.4) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

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Han**d**a SPA

4.5.3.71 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in razorbill baseline mortality from Handa SPA, an in-combination assessment is presented within Table 1-58 (30-70% displacement and 1-10% mortality and 70% displacement and 2% mortality).

Table 1:-58: In-combination assessment for razorbill from the Handa SPA.

a — The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature

Project	Un-appoi	rtioned abui ds) ^a	n d ances	Appo r tior	ning values			Appo r tione d d isplacement impact values (3 0-70% d is 1-10% mo r tality)			acement an d	Appo r tione c (7 0 % d isplac			values
	Pre- breeding	Post- b r ee d ing	Non- b r ee d ing	P r e- b r ee d ing	Post-breeding	Non- b r ee d ing	Pre-breeding		Post- b r ee d ing	Non- b r ee d ing	Annual	<u>Pre-</u> breeding	<u>Post-</u> breeding	Non- breeding	Annual
Awel y Môr Offshore Wind Farm	<u>175</u>	<u>34</u>	<u>79</u>	0.0319	0.0319	0.0231	0.02 to 0.43 <u>39</u>		0. 01 00 to 0.08	0. 00 01 to 0. 14 13	0. 09 03 to 0.60	0. 04 <u>08</u>	0.03	0.01	0.12
Erebus Floating Wind DemoBurbo Bank Extension	<u>0</u>	<u>0</u>	<u>15</u>	0.0319	0.0319	0.0231	0. 05 <u>00</u> to 1.14 <u>0.0</u>	00	0. 01 <u>00</u> to 2.18 <u>0.00</u>	0. 07 00 to 0. 99 02	0. 23 00 to 0.02	0. 05 <u>00</u>	0. 32 <u>01</u>	0.00	0.01
Erebus Floating Wind Demo	<u>468</u>	<u>892</u>	<u>561</u>	0.0319	0.0319	0.0231	0.04 to 1.04		0.09 to 1.99	0.04 to 0.91	0.17 to 3.94	0.21	0.05	0.29	0.54
TwinHub (Wave Hub Floating Wind Farm)	0	<u>0</u>	<u>28</u>	0.0319	0.0319	0.0231	0.00 to 0.00		0.00 to 0.00	0.00 to 0. 05 <u>04</u>	0.00 <u>to 0.04</u>	0.00	0.00	0.00	0.00
Walney (3 and 4) Extension Offshore Wind Farm	<u>0</u>	<u>456</u>	<u>1609</u>	0.0319	0.0319	0.0231	0.00 to 0.00		0. 00 04 to 1. 12 02	0. 03 11 to 2. 83 60	0. 00 16 to 3.62	0.00	0.02	0. 16 <u>15</u>	0.17
West of Duddon Sands Offshore Wind Farm	<u>0</u>	<u>0</u>	<u>106</u>	0.0319	0.0319	0.0231	0.00 to 0.00		0.00 to 0.00	0. 00 01 to 0. 19 17	0. 00 01 to 0.17	0.00	0.00	0.00	0.00
West of Orkney Windfarm	<u>51</u>	<u>75</u>	8	0.0319	0.0319	0.0231	0.00 to 0.11		0.01 to 0. 12 17	0.00 to 0. 18 01	0.01 to 0. 01 29	0.02	0.02	0. 03 02	0.06
White Cross Offshore Windfarm	<u>180</u>	21	<u>189</u>	0.0319	0.0319	0.0231	0.02 to 0.44 <u>40</u>		0.00 to 0.05	0. 00 01 to 0. 33 31	0. 09 03 to 0.76	0.08	0.01	0.01	0.10
Morecambe Offshore Windfarm Generation Assets	203	<u>352</u>	<u>313</u>	0.0319	0.0319	0.0231	0.02 to 0. 50 <u>45</u>	0.01 to 0.86	0.03 to 0. 55 <u>79</u>	0. 10 02 to 0.51	0. 06 07 to 1.75	0.4209	0.05	0.11	0.26
Morgan Offshore Wind Project Generation Assets	<u>87</u>	<u>54</u>	<u>122</u>	0.0319	0.0319	0.0231	0.01 to 0. 21 19		0.01 to 0. 13 <u>12</u>	0. 00 01 to 0. 22 20	0.02 to 0.51	0.04	0.03	0.02	0.08
Mona Offshore Wind Project	<u>1,005</u>	<u>48</u>	<u>221</u>	0.0319	0.0319	0.0231	0. 11 10 to 2.4624	1	0.00 to 0.11	0.02 to 0.36	0. 00 12 to 0.122.71	0. 00 to 0.49 0.3945	0.02	0.02	0.48
Gap-filled projects															
Burbo Bank	<u>5</u>	<u>3</u>	<u>5</u>	<u>0.0319</u>	<u>0.0319</u>	0.0231	0.00 to 0.01		0.00 to 0.01	0.00 to 0.01	0.00 to 0.03	<u>0.00</u>	0.00	0.00	0.00
Gwynt y Môr Offshore Wind Farm	<u>20</u>	<u>11</u>	<u>17</u>	0.0319	0.0319	0.0231	0.00 to 0.05		0.00 to 0.03	0.00 to 0.03	0.00 to 0.10	0.01	0.00	0.00	0.02
Ormonde Offshore Wind Farm	<u>5</u>	<u>3</u>	<u>4</u>	0.0319	0.0319	0.0231	0.00 to 0.01		0.00 to 0.01	0.00 to 0.01	0.00 to 0.03	0.00	0.04	0.00	0.04
Robin Rigg	<u>8</u>	<u>6</u>	<u>7</u>	<u>0.0319</u>	<u>0.0319</u>	0.0231	0.00 to 0.02		0.00 to 0.01	0.00 to 0.01	0.00 to 0.04	<u>0.00</u>	<u>0.01</u>	0.00	0.02
Rhyl Flats Offshore Wind Farm	<u>6</u>	4	<u>5</u>	0.0319	0.0319	0.0231	0.00 to 0.01		0.00 to 0.01	0.00 to 0.01	0.00 to 0.03	0.00	0.00	0.00	0.00
Walney 1 and 2	<u>21</u>	<u>13</u>	<u>18</u>	<u>0.0319</u>	<u>0.0319</u>	0.0231	0.00 to 0.05		0.00 to 0.03	0.00 to 0.03	0.00 to 0.10	<u>0.01</u>	0.00	0.00	0.02
Total predicted impact (ad	ult bi rd s)						0 . 23 <u>2</u> 1 to 5.30 <u>4.</u>	<u>99</u>	0.05<u>19</u> to 4. 72 <u>40</u>	0.1523 to 5. 7035	0 .63 to 1 4.74	1. 06 <u>00</u>	0. 2 4 <u>30</u>	0. 68 <u>64</u>	<u>1.94</u>
Increase in baseline morta	ality (%)		0.0 5% 0. 49%		% to 0.44%	0.039	6 to 0.53%	0.10%	0.02%	0.06%					
Annual impact and incread displacement and 10% mc	se lnc r ease ii rtality) (%)	n baseline m	o r tality from	d isplaceme	nt (when consi der	ing 7 0 %	<u>0.02% to 0.46%</u>		0.02% to 0.41%	0.02% to 0.49%	0.43 to 15.72 birds 0.0406% to 1.45% increase in baseline mortality36%	<u>0.09%</u>	<u>0.03%</u>	<u>0.06%</u>	1.99 birds 0.18% increase in baseline mortality

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MONA OFFSHORE WIND PROJECT

4.5.3.72 As the predicted impact on razorbill from Cape Wrath SPA is >1% increase in baseline mortality (when considering 70% displacement and 10% mortality) the impact is further investigated by a PVA (see section 1.6.4) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

Field Code Changed



MONA OFFSHORE WIND PROJECT

Shiant Isles SPA

4.5.3.73 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in razorbill baseline mortality from Shiant Isles SPA, an in-combination assessment is presented within Table 1-59 (30-70% displacement and 1-10% mortality and 70% displacement and 2% mortality).

Table 1-59: In-combination assessment for razorbill from the Shiant Isles SPA.

a — The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables. For razorbill, the proportions are 52.22% of birds are adults in the pre- and post-breeding period.

Project	Un-apporti	oned abunda	nces (adult birds) ^a	Appo r tioni	ng values		Appo r tione d d ispla d isplacement an d	acement imp 1-10 % mo r ta	pact values (3 0 -7 0 % ality)		ed disp ent impa valu (70% disp ent,	displacement mpact values 70% displacement, 2% mortality) Pre- b r o o o o o o o o o o o o o o o o o o			
	Pre- breeding	Post- b r ee d ing	Non-b r ee d ing	P r e- b r ee d ing	Post- b r ee d ing	Non- b r ee d ing	Pre-breeding	Post- b r ee d ing	Non-b r ee d ing	<u>A</u> <u>c. c. u al</u>	Pre- bree ding		<u> </u>		
Awel y Môr Offshore Wind Farm	175	34	<u>79</u>	0.0263	0.0263	0.019	0. 02 01 to 0. 35 32	0. 01 00 to 0. 07 06	0.00 to 0. 11 10	0. 07 02 to 0. 49	0.06	0 0 0			
Erebus Floating Wind DemoBurbo Bank Extension	<u>0</u>	<u>0</u>	<u>15</u>	0.0263	0.0263	0.019	0. 04<u>00</u> to 0.94<u>00</u>	0. 01 00 to 1.800.00	0. 06<u>00</u> to 0.81<u>02</u>	0. 19 00 to 0. 02	0. 04 <u>00</u>	. <u>0</u> <u>0</u> <u>2</u> <u>6</u> <u>0</u> <u>0</u>	<u>)</u> <u>)</u> <u> </u>		
Erebus Floating Wind Demo	<u>468</u>	892	<u>561</u>	0.0263	0.0263	0.019	0.04 to 0.86	0.07 to 1.64	0.05 to 0.75	0. 16 to 3. 25	0.17	0 0 0 0 2 4 4 4 5	! <u>}</u>		
TwinHub (Wave Hub Floating Wind Farm)	<u>0</u>	<u>0</u>	28	0.0263	0.0263	0.019	0.00 to 0.00	0.00 to 0.00	0.00 to 0.04	0. 00 to 0. 04	0.00	0 <u>0</u> 0 0 <u>0</u> 0 0 <u>0</u> 0	2		
Walney (3 and 4) Extension Offshore Wind Farm	0	<u>456</u>	1609	0.0263	0.0263	0.019	0.00 to 0.00	0. 00 04 to 0. 92 84	0.03 to 2. 33<u>14</u>	0. 00 06 to	0. 02 <u>00</u>	0 <u>0</u> <u>0</u> 4 <u>1</u> <u>1</u> 3 <u>2</u> <u>4</u>	<u>!</u> <u>!</u>		

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Project	<u>Un-apportioned abundances (adult birds) °</u>				ng values		Appo r tione d d isp d isplacement and	Inserted Cells Split Cells			
	Pre- breeding	Post- b r ee d ing	Non-b r ee d ing	P r e- b r ee d ing	Post- breeding	Non- b r ee d ing	P r e-b r ee d ing	Post- b r ee d ing	Non-b r ee d ing	A n n u al A n g al A n	Inserted Cells Inserted Cells Inserted Cells Inserted Cells Inserted Cells
West of Duddon Sands Offshore Wind Farm	<u>0</u>	<u>0</u>	106	0.0263	0.0263	0.019	0.00 to 0.00	0.00 to 0.00	0.00 to 0. 15 <u>14</u>	2. 98 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
West of Orkney Windfarm	<u>51</u>	<u>75</u>	<u>8</u>	0.0263	0.0263	0.019	0.00 to 0. 10 09	0. 00 01 to 0. 15 14	0.00 to 0.01	0. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Inserted Cells
White Cross Offshore Windfarm	180	<u>21</u>	189	0.0263	0.0263	0.019	0. 02 01 to 0. 36 33	0.00 to 0.04	0.00 to 0. 27 <u>25</u>	0. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Morecambe Offshore Windfarm Generation Assets	203	<u>352</u>	<u>313</u>	0.0263	0.0263	0.019	0.02 to 0.44 <u>37</u>	0. 01 03 to 0. 71 65	0.02 to 0.4 <u>542</u>	0. 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Inserted Cells
Morgan Offshore Wind Project Generation Assets	87	<u>54</u>	122	0.0263	0.0263	0.019	0.01 to 0.47 <u>16</u>	0.00 to 0.10	0.00 to 0.16	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Deleted Cells Deleted Cells Inserted Cells Inserted Cells
Mona Offshore Wind		<u>48</u>	<u>221</u>	0.0263	0.0263	0.019	0.08 to 1.85	0.00 to	0.00 to 0.29	0. 0 0 0 0 0	Deleted Cells





Pr oject	<u>Un-apporti</u> o	oned abundar	nces (adult birds) ^a	Appo r tionir	ng values		Apportioned displacement impact values (30-70% displacement and 1-10% mortality)				Apportion ed displacem ent impact values (70% displacem ent, 2% mortality)	
	P r e- b r ee d ing	Post- b r ee d ing	Non-b r ee d ing	P r e- b r ee d ing	Post- breeding	Non- b r ee d ing	Pre-breeding	Post- b r ee d ing	Non-b r ee d ing	Annual	Pre- bree ding	시 의 의 의 의 의 의 의 의 의 의 의 의 의 의 의 의 의 의 의
<u>Gap-filled projects</u>										to 2. 02 23	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4 0 0 <u>4</u> 9 2 1 <u>0</u>
Burbo Bank	<u>5</u>	3	<u>5</u>	0.0263	0.0263	0.019	0.00 to 0.01	0.00 to 0.01	0.00 to 0.01	0. 00 to 0. 02	0.00	0 0 0 0 0 0 0 0 0
Gwynt y Môr Offshore Wind Farm	<u>20</u>	11	17	0.0263	0.0263	0.019	0.00 to 0.04	0.00 to 0.02	0.00 to 0.02	0. 00 to 0. 08	0.01	0 0 0 0 0 0 0 0 1
Ormonde Offshore Wind Farm	<u>5</u>	3	4	0.0263	0.0263	0.019	0.00 to 0.01	0.00 to 0.01	0.00 to 0.01	0. 00 to 0. 02	0.00	0 0 0 0 0 0 3 0 4
Robin Rigg	<u>8</u>	<u>6</u>	<u>7</u>	0.0263	0.0263	0.019	0.00 to 0.01	0.00 to 0.01	0.00 to 0.01	0. 00 to 0. 03	0.00	0 0 0 0 0 0 1 0 2
Rhyl Flats Offshore Wind Farm	<u>6</u>	4	<u>5</u>	0.0263	0.0263	0.019	0.00 to 0.01	0.00 to 0.01	0.00 to 0.01	0. 00 to 0. 03	0.00	0 0 0 0 0 0 0 0 0

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Pr oject	Un-apporti	ioned abunda	nces (adult birds) ^a		Apportionir	ng values		Appo r tione d d isp d isplacement an c	lacement im I 1-10 % mo r t	pact values (3 0 -7 0 % ality)		displent impa value (70% displent, 2	es 6 Iacem
	Pre- breeding	Post- b r ee d ing	Non-b r ee d ing		P r e- b r ee d ing	Post- breeding	Non- b r ee d ing	Pre-breeding	Post- b r ee d ing	Non-b r ee d ing	<u>A</u> n n u a	Pre- bree ding	전 이 이 나 나 한 도 한 한 점 이 이 이 나 나 한 도 한 한 점 이 이 이 점 이 이 이 점 이
Walney 1 and 2	21	13	<u>18</u>		0.0263	0.0263	0.019	0.00 to 0.04	0.00 to 0.02	0.00 to 0.02	0. 00 to 0. 09	0.01	0 0 0 0 0 0 0 0 0 0 0 1
Total p red icte d impact	(a d ult bi rd s)					,		0 .49 <u>17</u> to 4. 37 <u>11</u>	0.04<u>15</u> to 3. 89 63	0.42<u>11</u> to 4. 69 <u>40</u>	0. 87 43 to 12 .1	0. 20 <u>82</u>	0
Increase in baseline m		in baseline moi	rtality f rom displacement (wl	0.04% to 0.49%	9.01% to 0.44	1	% to 0.53%	0.10% 0.02% to 0.46%	0.02% to 0.41%	0.06% 0.01% to 0.49%	0. 35 to 12 .9 5 bir ds 0. 044 05 % in st es es in base	<u>0.09</u> <u>%</u>	4 b + f d b 0 · 1 8 % + n b f b a b b : 0 · 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

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Project	<u>Un-apportioned abundances (adult birds) *</u>	Appo r tioni	ng values		Apportioned displacement impact values (30-70% displacement and 1-10% mortality)					ortion placem act les blacem 2% tality)
	Pre- Post- Non-breeding breeding	P r e- b r ee d ing	Post- b r ee d ing	Non- b r ee d ing	P r e-b r ee d ing	Post- b r ee d ing	Non-b r ee d ing	A n n u a	Pre- bree ding	
								e m or tal ity 36 %		y

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.5.3.74 1.5.3.76	_As the predicted impact on razorbill from Shiant Isles SPA is >1% increase in baseline mortality (when considering 70% displacement and 10% mortality) the impact is further inve	estigated
by a PVA	(see section 1.6.4) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.	

Field Code Changed





Flannan Isles SPA

4.5.3.75 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in razorbill baseline mortality from Flanna Isles SPA, an in-combination assessment is presented within Table 1-60 (30-70% displacement and 1-10% mortality and 70% displacement and 2% mortality).

Table 1-60: In-combination assessment for razorbill from the Flannan Isles SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix tables. For razorbill, the proportions are 52.22% of birds are adults in the pre- and post-breeding period, 53.48% of birds are adults in the non-breeding period.

Project	<u>Un-appo</u>	ertione d at	oundances (adult birds) *	Apportioning values			Apportioned displacement impact values (30-70% displacement and 1-10% mortality)						eem
	Pre- breedin g	Post- b r ee d in g	Non-b r ee d ing	P r e- b r ee d in g	Post- b r ee d in g	Non- b r ee d in g	Pre- breeding	Post-b r ee d ing	Non-b r ee d ing	<u>Annual</u>	다 이 에 나 : 의 다 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이 이	은 이 이 이 r . e) e) d), 디 이	<u>unn</u>
Awel y Môr Offshore Wind Farm	175	34	79	0.0065	0.0065	0.0047	0.00 to -0. 09 08	0.00 to 0.02	0.00 to 0.03	0. 02 01 to 0.12	<u>0</u> 0 <u>.</u> . <u>0</u> 0		0.02
Erebus Floating Wind DemoBurbo Bank Extension	<u>0</u>	<u>0</u>	<u>15</u>	0.0065	0.0065	0.0047	0. 0100 to 0. 23 00	0.00 to 0.44 <u>00</u>	0.04 <u>00</u> to 0.20 <u>01</u>	0.00 to 0.01	0 . 0 . 0 . 0 0 0	<u>0</u> <u>0</u> 0	0.00
Erebus Floating Wind Demo	<u>468</u>	892	<u>561</u>	0.0065	0.0065	0.0047	0.01 to 0.21	0.00 to 0.41	0.01 to 0.18	0.02 to 0.80	0 0 0 0 4 1	<u>.</u> 0 6) <u>.11</u>
TwinHub (Wave Hub Floating Wind Farm)	Q	0	28	0.0065	0.0065	0.0047	0.00 to 0.00	0.00 to 0.00	0.00 to 0.01	0.00 <u>to 0.01</u>	0 0 0 0 0 0	<u>.</u> 0 0	0.00
Walney (3 and 4) Extension Offshore Wind Farm	<u>o</u>	<u>456</u>	1609	0.0065	0.0065	0.0047	0.00 to 0.00	0.00 to 0. 23 21	0.01 to 0. 58 <u>53</u>	0. 00 01 to 0.74	0 0 0	. 0	0.03
West of Duddon Sands Offshore Wind Farm	<u>o</u>	<u>0</u>	106	0.0065	0.0065	0.0047	0.00 to 0.00	0.00 to 0.00	0.00 to 0. 04 03	0.00 <u>to 0.03</u>	0 0 0 0 0	<u>0</u>	0.00

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Pr oject	<u>Un-appo</u>	rtione d ab	undances (adult birds) ^a	Apportioning values			Apportioned displacement impact values (30-70% displacement and 1-10% mortality)						cem cem cem cem cem
	P r e- b r ee d in g	Post- b r ee d in g	Non-b r ee d ing	P r e- b r ee d in g	Post- b r ee d in g	Non- b r ee d in g	Pre- breeding	Post-b r ee d ing	Non-b r ee d ing		<u>Annual</u>		Ann ual
West of Orkney Windfarm	<u>51</u>	<u>75</u>	<u>8</u>	0.0065	0.0065	0.0047	0.00 to 0.02	0.00 to 0.03	0.00 to 0. 04 <u>00</u>		0.00 to 0. 00 06	0 0 0	0.01
White Cross Offshore Windfarm	180	<u>21</u>	189	0.0065	0.0065	0.0047	0.00 to 0. 09 08	0.00 to 0.01	0.00 to 0. 07 <u>06</u>		0.00 to 0.15	0 0 0 0 0 0 2 0 0	0.02
Morecambe Offshore Windfarm Generation Assets	203	<u>352</u>	313	0.0065	0.0065	0.0047	0.00 to 0.09	0.00 to 0.16	0.00 to 0.10	0.00 to 0.18	0.01 to 0. 11 36	0 0 .	0.05
Morgan Offshore Wind Project Generation Assets	<u>87</u>	<u>54</u>	122	0.0065	0.0065	0.0047	0.00 to 0.04	0.00 to 0. 03 <u>02</u>	0.00 to 0.04	1	0.00 to 0.10	0 0 0 0 0 0 0 1 1 0	<u>).02</u>
Mona Offshore Wind Project	<u>1,005</u>	<u>48</u>	<u>221</u>	0.0065	0.0065	0.0047	0.02 to 0. 50 46	0.00 to 0.02	0.00 to 0. 08 <u>07</u>		0.02 to 0.55	0 0 0 0 0 0 0 1 9 0 0 0	0 0 0
Gap-filled projects		ı		1	I	1	I	I	1		1		
Burbo Bank	<u>5</u>	<u>3</u>	<u>5</u>	0.0065	0.0065	0.0047	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00		0.00 to 0.01	<u>0</u> <u>0</u> <u>0</u>	0.00
Gwynt y Môr Offshore Wind Farm	<u>20</u>	<u>11</u>	<u>17</u>	0.0065	0.0065	0.0047	0.00 to 0.01	0.00 to 0.01	0.00 to 0.01		0.00 to 0.02	0 0 0	0.00
Ormonde Offshore Wind Farm	<u>5</u>	<u>3</u>	4	0.0065	0.0065	0.0047	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00		0.00 to 0.01	0 0 0 0 0 0 0 1 0	0.01

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Pr oject	Un-appo	ortioned al	oundances (adult birds) *	Apportio	oning valu	es	Apportione	d d isplacement in	npact values (3 0-70% d isplacement an c	I 1-10 % mo r tality)	Apportion ed displacem ent impact values (70% displacem ent, 2% mortality)	Inserted Cells Split Cells
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	P r e- b r ee d in	Post- b r ee d in	Non-b r ee d ing	P r e- b r ee d in	Post- b r ee d in	Non- b r ee d in	Pre- breeding	Post-breeding	Non-b r ee d ing	<u>Annual</u>	b b b c Ann e c e ual	Inserted Cells
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											d ci a	
Robin Rigg	<u>8</u>	<u>6</u>	Z	0.0065	0.0065	0.0047	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00 to 0.01	0 0 0 0 0 0 0 0 0	
Rhyl Flats Offshore Wind Farm	<u>6</u>	4	<u>5</u>	0.0065	0.0065	0.0047	0.00 to 0.00	0.00 to 0.00	0.00 to 0.00	0.00 to 0.01	0 0 0 0 0 0 0 0 0	
Walney 1 and 2	<u>21</u>	<u>13</u>	18	0.0065	0.0065	0.0047	0.00 to 0.01	0.00 to 0.01	0.00 to 0.01	0.00 to 0.02	0 0 0 0 0 0 0 0 0	
											0 0	Inserted Cells
Total predicted impac	t (a d ult bi rc	ds)					0. 05 04 to 1. 08 02	0.01 to 0 . 96 <u>90</u>	0.0 3 to 1.46<u>09</u>	0.22 <u>08 to 3.00</u>	5 4 <u>1</u> 2 0 3	Inserted Cells
Increase in baseline n	ortality (%	Δ		0.02% to (1.49%	0.00% to	144% 0.4	 	0.10% 0.02%	0.06%		
	ioriain y (70	7		10.0270.00		1 2.22 / 0 10			VIII.	513575	0.40 birds 0.18	
										0.09 to 3.20 birds	000%	Inserted Cells
Annual impact and in and 10% mortality)(%)	crease Inc r e	ease in base	eline mo r tality f rom displacement (whe	n consi der in	g 7 0% d isp	lacement	0.02% to 0.46%	0.01% to 0.41%	<u>0.01% to 0.49%</u>	0.04% to 1.45%	0 0 0 ase	Inserted Cells
3.14 10 /0 11101tainty 7 <u>1 /0</u>	1						3.4070			mortality36%	9 3 6 in 2 2 2 base	Inserted Cells
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As the predicted impact on razorbill from Flannan Isles SPA is >1% increase in baseline mortality (when considering 70% displacement and 10% mortality), the impact is further investigated by a PVA (see section 1.6.61.6.4) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

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MONA OFFSHORE WIND PROJECT

Mingulay and Berneray SPA

4.5.3.77 1.5.3.79 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in razorbill baseline mortality from Mingulay and Berneray SPA, an in-combination assessment is presented within Table 1-61 (30-70% displacement and 1-10% mortality and 70% displacement and 2% mortality).

Table 1-61: In-combination assessment for razorbill from the Mingulay and Berneray SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature

	<u>Un-appo</u>	rtioned abu	ndances (adult birds) ^a	Apportioning values			Appo r tione d d is mo r tality)	disp nt im value disp nt, 2	ortion lacem npact es (70 lacem % tality)	ne) % ne				
Project	Pre- breeding	Post- b r ee d ing	Non-b r ee d ing	P r e-b r ee d ing	Post- b r ee d ing	Non- b r ee d in g	P r e-b r ee d ing	Post-b r ee d ing	Non-b r ee d ing	Ann ual	Pre- bree ding	P 0 st - br ee di n g	시 이 디 . 1 의 타 의 예 리 , 디 미	
Awel y Môr Offshore Wind Farm	175	34	<u>79</u>	0.0625	0.0625	0.0451	0. 0403 to 0.84 <u>77</u>	0. 02 01 to 0.4715	0.04 <u>00</u> to 0.27 <u>25</u>	0. <u>05</u> to <u>1.</u> 17	0. 07 <u>15</u>	<u>0.</u> <u>06</u>	0 <u>0</u> 0 <u>2</u> 2 <u>4</u>	
Erebus Floating Wind DemoBurbo Bank Extension	<u>0</u>	<u>0</u>	<u>15</u>	0.0625	0.0625	0.0451	0. 1000 to 2.2 4 <u>0.00</u>	0. 02 01 to 4.270.00	0.43 <u>00</u> to 4 <u>.930.05</u>	0.4 <u>50</u> 1 to 0.05	0. 10 <u>00</u>	0. 62 <u>03</u>	0 0 0 0 0 3	
Erebus Floating Wind Demo	<u>468</u>	892	<u>561</u>	0.0625	0.0625	0.0451	0.09 to 2.05	0.02 to 3.90	0.12 to 1.77	0.23 to 7.72	0.41	<u>0.</u> <u>09</u>	0 1 5 0 7 6	/
TwinHub (Wave Hub Floating Wind Farm)	<u>0</u>	<u>0</u>	28	0.0625	0.0625	0.0451	0.00 to 0.00	0.00 to 0.00	0.00 to 0. 1009	0.00 to 0.09	0.00	0. 01	0 <u>0</u> . <u>.</u> 0 <u>0</u> 0 <u>1</u>	
Walney (3 and 4) Extension Offshore Wind Farm	<u>0</u>	<u>456</u>	1609	0.0625	0.0625	0.0451	0.00 to 0.00	0.01 to 2. 19 <u>00</u>	0.06 to 5.08	0.07 to <u>5.537</u> .08	0.00	0. 04 03	0 0 2 3 9 2	
West of Duddon Sands Offshore Wind Farm	<u>0</u>	<u>0</u>	106	0.0625	0.0625	0.0451	0.00 to 0.00	0.00 to 0.00	0.00 to 0. 36<u>33</u>	0.00 to 0.33	0.00	0. 00	0 0 0 0 0 0	
West of Orkney Windfarm	<u>51</u>	<u>75</u>	8	0.0625	0.0625	0.0451	0.01 to 0. <u>2422</u>	0.01 to 0. 36 <u>33</u>	0.01 to 0. 03<u>02</u>	0. 05 <u>0</u> 3 to 0.58	0.04	<u>0.</u> <u>03</u>	0 <u>0</u>	
White Cross Offshore Windfarm	180	21	189	0.0625	0.0625	0.0451	0.03 to 0.79	0.00 to 0.09	0.00 to 0.60	0.04 to	0 0	0.	0 0	1/

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	<u>Un-appor</u>	tione d abu	ndances (adult birds) ^a	Appo r tioning value	es		Apportioned displacement impact values (30-70% displacement and 1-10% mortality)						e d # %
	Pre- breeding	Post- b r ee d ing	Non-b r ee d ing	P r e-b r ee d ing	Post- breeding	Non- b r ee d in g	P r e-b r ee d ing	Post-breeding	Non-b r ee d ing	Ann ual	Pre- bree ding	된 이 <u>하</u> <mark>하 e e di</mark> n a	
										0.86 <u>1</u> .48	0 1 0 7 1 0 0 1 0 0 0 0	1	0 <u>1</u> 1 <u>9</u>
Morecambe Offshore Windfarm Generation Assets	203	<u>352</u>	313	0.0625	0.0625	0.0451	0.04 to 0. 97 89	0.02 to 1. 69 <u>54</u>	0.05 to 1.08 <u>0.99</u>	0.11 to 3.42	0. 24 <u>18</u>	0 10 2	<u>)</u> <u>0</u>
Morgan Offshore Wind Project Generation Assets	<u>87</u>	<u>54</u>	122	0.0625	0.0625	0.0451	0.02 to 0.42 <u>38</u>	0.01 to 0. 26 24	0.01 to 0.42 <u>39</u>	0.04 to 1.00	0.08	0. 06 06 05	0 . <u>0</u> 4 <u>1</u> 0 <u>6</u>
Mona Offshore Wind Project	<u>1,005</u>	<u>48</u>	221	0.0625	0.0625	0.0451	0. 21 19 to 4. 81 40	0.01 to 0. 23 21	0.01 to 0. 76 <u>70</u>	0. 96 2 0 to 5.30	0.88	0	0 <u>0</u>
Gap-fille d p r ojects Burbo Bank	<u>5</u>	<u>3</u>	<u>5</u>	0.0625	0.0625	0.0451	0.00 to 0.02	0.00 to 0.01	0.00 to 0.01	0.00 to 0.05	0.00	0	0 0 0 0 0 0 0 1
Gwynt y Môr Offshore Wind Farm	<u>20</u>	11	17	0.0625	0.0625	0.0451	0.00 to 0.09	0.00 to 0.05	0.00 to 0.05	0.01 to 0.19	0.02	0. 01 01) <u>0</u> 0 <u>0</u> 1 <u>3</u>
Ormonde Offshore Wind Farm	<u>5</u>	<u>3</u>	4	0.0625	0.0625	0.0451	0.00 to 0.02	0.02 to 0.01	0.00 to 0.01	0.02 to 0.05	0.00	0. 08 08	0 0 0 0 0 0 0 9
Robin Rigg	8	<u>6</u>	Z	0.0625	0.0625	0.0451	0.00 to 0.03	0.01 to 0.03	0.00 to 0.02	0.01 to 0.08	0.01	0. 03	<u>0</u>

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	<u>Un-appor</u>	tione d abu	ndances (adult birds) ^a				Appo r tione d d is mo r tality)	Apportioned displacement impact values (30-70% displacement and 1-10% mortality)					Apportioned displaceme nt impact values (70% displaceme nt, 2% mortality)			
Project	P r e- b r ee d ing	Post- b r ee d ing	Non-b r ee d ing	Pre-breeding	Post- b r ee d ing	Non- b r ee d in g	P r e-b r ee d ing	Post-b r ee d ing	Non-b r ee d ing		Ann ual	Pre- bree ding	P. 이 화 br 은 di 디 데	신디디디디에_, 디디		
														0 0 0 4 0 0		
Rhyl Flats Offshore Wind Farm	<u>6</u>	4	<u>5</u>	0.0625	0.0625	<u>0.0451</u>	0.00 to 0.03	0.00 to 0.02	0.00 to 0.02		0.00 to 0.06	0.01	<u>0.</u> <u>00</u>	0 0 0		
Walney 1 and 2	<u>21</u>	<u>13</u>	18	0.0625	0.0625	0.0451	0.00 to 0.09	0.00 to 0.06	0.00 to 0.06		0.01 to 0.20	0.02	<u>0.</u> <u>01</u>	0 0 0 0 1 3		
Total p red icte d impact (a	a d ult bi rd s)						<u>0.42 to 9.78</u>	0.13 to 8.63	0 .44 <u>27</u> to 10 .38 <u>44</u>		0.408 1 to 9.252 8.85	0.20 to 11.1 21.9 6	24 · 4 8 01 · 510	1 . 3 3 2 5		
Increase in baseline mor	tality (%)			0.02% to 0.49%	0.00% to 0.	44%	l <mark>).01% to 0.52%</mark>	0.10%	0.02%	0.06%			<u>9</u>		i	
Annual impact and increase in baseline mortality from displacement (when considering 70% displacement and 10% mortality)(%) Document Reference: S_D3_19								<u>0.01% to 0.41%</u>	<u>0.01% to 0.49%</u>		0.83 to 30.76 birds 0.04 % to 1.45 % incre ase in basel ine mort ality3 6%	<u>0.09</u> <u>%</u>	<u>76</u>	3 - 8 9 5 i + t 6 5 0 · 1 8 % i + t 6 t 6 9 206		

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	<u>Un-apportioned abundances (adult birds) *</u>	Apportioning value	Apportioning values			Apportioned displacement impact values (30-70% displacement and 1-10% mortality)					
Project	Pre- Post- Non-breeding breeding breeding	P r e-b r ee d ing	Post- breeding	Non- b r ee d in g	Pre-breeding	Post-b r ee d ing	Non-b r ee d ing	Ann ual	Pre- bree ding	o st	N o n - b n u a l .
											i n b a s e i i n e n e f i a i i i t

1.5.3.78 <u>1.5.3.80</u>	the predicted impact on razorbill from Mingulay and Berneray SPA is >1% increase in baseline mortality (when considering 70% displacement and 10% mortality), the impact is further	her
investigate	by a PVA (see section 1.6.6 1.6.4) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.	

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MONA OFFSHORE WIND PROJECT

Rathlin Island SPA

4.5.3.791.5.3.81 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in razorbill baseline mortality from Rathlin Island SPA, an in-combination assessment is presented within Table 1-62 (30-70% displacement and 1-10% mortality and 70% displacement and 2% mortality).

Table 1-62: In-combination assessment for razorbill from the Rathlin Island SPA.

a – The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment). All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature

Project	Un-apportioned abundances (adult birds) a			Apportioning values			Appo r tione d d isp mo r tality)	Appo rtione d displ acem ent impa ct value s (70% displ acem ent, 2% morta lity)			
	Pre- breedin g	Post- b r ee d in g	Non-b r ee d ing	P r e-b r ee d ing	Post- b r ee d in g	Non- b r ee d in g	Pre-bree d ing	Post-b r ee d ing	Non-b r ee d ing	Annual	시 이 이 나 이 이 이 이 이 이 다. 이 이 이 나 나 이 이 이 이 나 나 이 이 이 이 이 이 이 이
Awel y Môr Offshore Wind Farm	175	34	<u>79</u>	0.0952	0.0952	0.0687	0.05 to 1. 28 <u>17</u>	0.02 to 0. 25 <u>23</u>	0.01 to 0.44 <u>38</u>	0. 26 08 to 1.78	0 0 0 1 0 0 4 0 1 4 4 0 3 2 1 3 6
Erebus Floating Wind DemoBurbo Bank Extension	<u>0</u>	<u>0</u>	<u>15</u>	0.0952	0.0952	0.0687	0. 15 <u>00</u> to <u>3.410.00</u>	0. 03<u>01</u> to <u>6.500.00</u>	0. 20 00 to 2.94 0.07	0.68 <u>01 to 0.07</u>	0 0 0 0 4 9 1 5 4 0 0 0 0 4
Erebus Floating Wind Demo	<u>468</u>	892	<u>561</u>	0.0952	0.0952	0.0687	0.13 to 3.12	0.03 to 5.94	0.18 to 2.70	0.35 to 11.76	0 0 0 1 6 1 8 6 2 4 6 2
TwinHub (Wave Hub Floating Wind Farm)	<u>0</u>	<u>0</u>	28	0.0952	0.0952	0.0687	0.00 to 0.00	0.00 to 0.00	0.00 to 0. 15 <u>13</u>	0.00 to 0.13	0 0 0 0 0 0 0 0 0 1 0 1

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Project	<u>Un-appo</u>	rtione d abi	undances (adult birds) *				Apportioned displacement impact values (30-70% displacement and 1-10% mortality)				
	P r e- b r ee d in g	Post- b r ee d in g	Non-b r ee d ing	P r e-b r ee d ing	Post- b r ee d in g	Non- b r ee d in g	Pre-breeding	Post-breeding	Non-b r ee d ing	<u>Annual</u>	A CI CI 31 81—1 A CI CI 31 81—1
Walney (3 and 4) Extension Offshore Wind Farm	<u>0</u>	<u>456</u>	1609	0.0952	0.0952	0.0687	0.00 to 0.00	0.01 to 3. 33 04	0.09 to 7.74	0. 10 11 to 8.43 10.78	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
West of Duddon Sands Offshore Wind Farm	<u>0</u>	<u>0</u>	106	0.0952	0.0952	0.0687	0.00 to 0.00	0.00 to 0.00	0.00 to 0. 56 <u>51</u>	0.00 to 0.51	0 0 0 0
West of Orkney Windfarm	<u>51</u>	<u>75</u>	<u>8</u>	0.0952	0.0952	0.0687	0. 02 01 to 0. 37 34	0.01 to 0. 55 <u>50</u>	0.02 to 0.04	0.04 to 0.88	0 0 0 0 0 0 0 7 5 0 9
White Cross Offshore Windfarm	<u>180</u>	<u>21</u>	189	0.0952	0.0952	0.0687	0. 06 05 to 1. 31 20	0.01 to 0. 15 <u>14</u>	0.00 to 0. 99 <u>91</u>	0. 26 06 to 2.25	0 0 0 0 2 0 0 2 4 3 2 9
Morecambe Offshore Windfarm Generation Assets	203	<u>352</u>	313	0.0952	0.0952	0.0687	0.06 to 1.48 <u>35</u>	0. 04<u>03</u> to 2.57<u>35</u>	0. 08 <u>07</u> to 1.64 <u>50</u>	0. 30 16 to 5.20	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Morgan Offshore Wind Project Generation Assets	<u>87</u>	<u>54</u>	122	0.0952	0.0952	0.0687	0. 03 02 to 0. 63 58	0.02 to 0. 39 <u>36</u>	0.01 to 0. 64 <u>59</u>	0. 13 05 to 1.52	0 0 <u>0</u> <u>0</u> <u>.</u> . 0 0 <u>0</u> <u>2</u> 9 6 <u>5</u> <u>5</u>

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Project	Un-appo	rtioned abi	<u>ındances (adult birds) *</u>	Apportioning values			Apportioned displacement impact values (30-70% displacement and 1-10% mortality)				
	Pre- breedin g	Post- b r ee d in g	Non-b r ee d ing	P r e-b r ee d ing	Post- b r ee d in g	Non- b r ee d in g	P r e-b r ee d ing	Post-b r ee d ing	Non-b r ee d ing	Annual	신 디 디 의 제, 디 이 된 이 이 나, 나의 나 이 이 레, 디 이 또 다 이 나가 나의 나 이 이 레, 디 데
Mona Offshore Wind Project	1,005	48	221	0.0952	0.0952	0.0687	0. 31 29 to 7.33 6.70	0.01 to 0. 35 <u>32</u>	0.01 to 1. 16 <u>06</u>	0.31 to 8.07	1 0 2 8 1 . 0 0 1 4 7 0 0 4 3 6 5 4
Gap-filled projects Burbo Bank	<u>5</u>	<u>3</u>	<u>5</u>	0.0952	0.0952	0.0687	0.00 to 0.03	0.00 to 0.02	0.00 to 0.02	0.00 to 0.08	0 0 0 0
Gwynt y Môr Offshore Wind Farm	<u>20</u>	11	17	0.0952	0.0952	0.0687	0.01 to 0.14	0.00 to 0.08	0.00 to 0.08	0.01 to 0.29	0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 3 1 1 5
Ormonde Offshore Wind Farm	<u>5</u>	<u>3</u>	4	0.0952	0.0952	0.0687	0.00 to 0.03	0.03 to 0.02	0.00 to 0.02	0.03 to 0.08	0 0 0 0
Robin Rigg	8	<u>6</u>	<u>Z</u>	0.0952	0.0952	0.0687	0.00 to 0.05	0.01 to 0.04	0.00 to 0.04	0.01 to 0.13	1 2 0 3 0 0 0 0 0 0 0 0
Rhyl Flats Offshore Wind Farm	<u>6</u>	4	<u>5</u>	0.0952	0.0952	0.0687	0.00 to 0.04	0.00 to 0.02	0.00 to 0.03	0.00 to 0.09	1 4 1 6 0 0 0 0 0 0 0 1 0 0 1

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Project	ject <u>Un-apportioned abundances (adult birds) a</u> Apportionin						Appo r tione d d isp mo r tality)	lacement impact val	ues (3 0-70% d isplac	ement an d 1-10 %	Apportione d displacement impact value s (70% displacement, 2% mortality)
	Pre- breedin g	Post- b r ee d in g	Non-b r ee d ing	P r e-b r ee d ing	Post- b r ee d in g	Non- b r ee d in g	Pre-breeding	Post-b r ee d ing	Non-b r ee d ing	<u>Annual</u>	시 다 다 의 제 시 이 다 나 이 다 이 이 러 다 더 시 이 제 나 나 이 다 이 이 러 다 더 시 다 이 나 이 나 이 이 러 다 더
Walney 1 and 2	21	13	18	0.0952	0.0952	0.0687	0.01 to 0.14	0.00 to 0.09	0.00 to 0.09	0.01 to 0.31	0 0 0 0
Total predicted impact (ac	dult bi rd s)				0.68 to 15.	81	0.46<u>64</u> to 1 4. 9 9 <u>89</u>	0.19 to 13.14	<u>0.41 to 15.90</u>	0. 44 <u>1.24</u> to 16 <u>43</u> .94	9 2 1 5 7 0 1 5 7 0 1 5 9 9 7 9 0 1 8
Increase in baseline morta	ality (%)			0.02% to 0.49%	0.00% to 0	1.44%	0.01% to 0.52%	0.10%	0.02%	0.06%	
Annual impact and increamortality)(%)	se lnc r ease i	n baseline r	no r tality from displacement (when c	onsidering 70% displa d	cement an d	10%	0.02% to 0 .46%	<u>0.01% to 0.41%</u>	0.01 % to 0 .49%	1.27 to 46.85 birds 0.04% to 1.45% increase in baseline mortality36%	5 , 0 3 b . ↓ f d 0 0 . 1 8 % . ↓ f 0 0 . 1 8 % . ↓ f 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

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Project	Un-apportioned abundances (adult birds) ^a	Appo r tioning value	es		Apportioned displacement impact values (30-70% displacement and 1-10% mortality)						
	Pre- Post- breedin breedin Non-breeding g g	P r e-b r ee d ing	Post- breedin g	Non- b r ee d in g	P r e-b r ee d ing	Post-breeding	Non-b r ee d ing	<u>Annual</u>			

1.5.3.80 1.5.3.82	As the predicted impact on razorbill from Rathlin Island SPA is >1% increase in baseline mortality (when considering 70% displacement and 10% mortality) the impact is further investigated
by a PVA	A (see section 1.6.6) to determined 1.6.41.6.6) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.

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MONA OFFSHORE WIND PROJECT

Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA

1.5.3.81 As the impact from the Mona Offshore Wind Project alone was predicted to result in a >0.05% increase in razorbill baseline mortality from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA, an in-combination assessment is presented within Table 1_63 (70% displacement and 10% mortality and 70% displacement and 2% mortality).

Table 1-63: In-combination assessment for razorbill from the Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA.

a — The plans/projects included within this in-combination assessment cover a large spatial area and therefore it is considered necessary and proportionate to apply a correction factor to account for the number of adult birds within the whole area and not presume that 100% of birds are adults (as done in the Mona Offshore Wind Project alone assessment All projects have used the age-class proportions from Furness (2015). During the non-breeding season this derived from the adult/immature proportion from the Appendix to bless. For record till, the proportion are sold to be a provided from the project alone assessment and project alone assessment an

Project	<u>Un-appor</u>	rtioned abui	ndances (adult birds) *	Apportioning value	es		Apportioned displacement impact values (30-70% displacement and 1-10% mortality)							
	P r e- b r ee d in g	Post- b r ee d in g	Non-b r ee d ing	P r e-b reed ing	Post- b r ee d in g	Non- b r ee d in g	P r e-b r ee d ing	Post-b r ee d ing	Non-b r ee d ing	A n n u al		도 이 에 타 이 보 도 이 에 이 :! 드 이	<u> </u>	
Awel y Môr Offshore Wind Farm	<u>,175</u>	<u>34</u>	<u>79</u>	0.0371	0.0371	0.0201	0.02 to 0. 50 46	0.01 to 0. 10 09	0.00 to 0.42 <u>11</u>	0. 4 0 3 to 0. 6 6	0 :0		0 . 0	<u>C</u>
Erebus Floating Wind DemoBurbo Bank Extension	<u>0</u>	<u>0</u>	<u>15</u>	0.0371	0.0371	0.0201	0.06 <u>00</u> to 1.33 <u>0.00</u>	0. 01<u>00</u> to <u>2.530.00</u>	0. 06<u>00</u> to 0.86<u>02</u>	0. 2 7 0 0 to 0. 0. 0.			<u>Q</u>	<u>Q</u>

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Project	<u>Un-appor</u>	riioned abur	ndances (adult birds) ^a	Appo r tioning value	es		Apportioned displacement impact values (30-70% displacement and 1-10% mortality)							
	P r e- b r ee d in g	Post- b r ee d in g	Non-b r ee d ing	P r e-b r ee d ing	Post- b reed in g	Non- b reed in g	P r e-b r ee d ing	Post-b r ee d ing	Non-b r ee d ing	A n n u al	파 는 에 대한 는 이 이 이 이 는 다 이 다.	C C C C C C C C C C C C C C C C C C C	<u> </u>	
Erebus Floating Wind Demo	<u>468</u>	<u>892</u>	<u>561</u>	0.0371	0.0371	0.0201	0.05 to 1.22	0.01 to 2.32	0.05 to 0.79	0. 1 2 to 4. 3	() .:(() ()	(ן יואות)	רו יותאותא	
TwinHub (Wave Hub Floating Wind Farm)	<u>0</u>	<u>0</u>	28	0.0371	0.0371	0.0201	0.00 to 0.00	0.00 to 0.00	0.00 to 0.04	0. 0 0 to 0. 0. 4		<u>Q</u> .	<u>.</u>	
Walney (3 and 4) Extension Offshore Wind Farm	<u>0</u>	<u>456</u>	1609	0.0371	0.0371	0.0201	0.00 to 0.00	0.00 to 1. 30 <u>19</u>	0.03 to 2.47 <u>26</u>	0. 0 0 3 to 3. 4 5	<u>Q</u> ()	0 . 1	<u>(</u>	
West of Duddon Sands Offshore Wind Farm	<u>0</u>	<u>0</u>	106	0.0371	0.0371	0.0201	0.00 to 0.00	0.00 to 0.00	0.00 to 0. 16 <u>15</u>	0. 0 0 to 0.		<u>Q</u> .	<u></u>	

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Un-apportioned abundances (adult birds) * Project		Appo r tioning value	es		Apportioned displacement impact values (30-70% displacement and 1-10% mortality)									
	Pre- breedin g	Post- b r ee d in g	Non-b r ee d ing	Pre-breeding	Post- b r ee d in g	Non- b r ee d in g	P r e-b r ee d ing	Post-b r ee d ing	Non-b r ee d ing	A n n u al			A KI LI VI GILI	
West of Orkney Windfarm	<u>51</u>	<u>75</u>	<u>8</u>	0.0371	0.0371	0.0201	0.01 to 0. 14 <u>13</u>	0.00 to 0.24 <u>20</u>	0.00 to 0.01	0. 0. 1. 0. 3. 4	0 0	0 0	<u>.</u>	
White Cross Offshore Windfarm	180	<u>21</u>	189	0.0371	0.0371	0.0201	0.02 to 0. 51 <u>47</u>	0.00 to 0. 06 <u>05</u>	0.00 to 0. 29 <u>27</u>	0. 4 0 2 to 0. 7	Q .ICIOI	Q Q Q	<u>(</u>	
Morecambe Offshore Windfarm Generation Assets	203	352	313	0.0371	0.0371	0.0201	0.02 to 0. 58 <u>53</u>	0.01 to 1.00 0.91	0.02 to 0.4 <u>844</u>		1			

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	Project	<u>Un-apportioned abundances (adult birds) a</u>						Apportioned displacement impact values (30-70% displacement and 1-10% mortality)				d disaccentium ct val s (70 disaccentium)	splem t pa lue 2% orta	
		P r e- b r ee d in g	Post- b r ee d in g	Non-b r ee d ing	P r e-b r ee d ing	Post- b r ee d in g	Non- b r ee d in g	P r e-b r ee d ing	Post-b r ee d ing	Non-b r ee d ing	<u>A</u> n n u al			4 E. E. J. W
-	Morgan Offshore Wind Project Generation Assets	<u>87</u>	<u>54</u>	122	0.0371	0.0371	0.0201	0.01 to 0. 25 <u>23</u>	0.01 to 0. 15 <u>14</u>	0.00 to 0. 19 <u>17</u>	이 이 의 <u>10</u> 이 5 4	(0	<u>.</u>
-	Mona Offshore Wind Project	1,005	48	221	0.0371	0.0371	0.0201	0.11 to 2.61	0.00 to 0.12	0.00 to 0.31	0. 1 2 to 3. 0 4	CI HANCAL	<u>Q</u>	- CI .: LIJI GI
-	Gap-filled projects	<u> </u>	I			I	1					<u></u>		
<u></u>	Burbo Bank	<u>5</u>	3	<u>5</u>	0.0371	0.0371	0.0201	0.00 to 0.01	0.00 to 0.01	0.00 to 0.01	0. 0 0 to 0. 0 3	<u>G</u> !	<u>q</u>	ייי ייי
	Gwynt y Môr Offshore Wind Farm	<u>20</u>	11	17	0.0371	0.0371	0.0201	0.00 to 0.05	0.00 to 0.03	0.00 to 0.02	0. 0 0 to	<u>q</u>	<u>d</u>	

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Project	<u>Un-apportioned abundances (adult birds)</u> *			Apportioning values			Apportioned displacement impact values (30-70% displacement and 1-10% mortality)						d disaccentrate (70 disaccentrate)	pne pl pm coa ue pl pm coa pl pm coa pl pm coa prta
	P r e- b r ee d in g	Post- b r ee d in g	Non-b r ee d ing	P r e-b r ee d ing	Post- b r ee d in g	Non- b reed in g	P r e-b r ee d ing	Post-b r ee d ing	Non-b r ee d ii	ng		A n n u al	표	다 이 다 기보기도 이 에 이 이 -1 도 1 이
												<u>0.</u> 1 1		
MenaOrmonde Offshore Wind ProjectFarm	<u>5</u>	3	<u>4</u>	0.0371	0.0371	0.0201	0. 1200 to 2.86 <u>0.01</u>	0.01 to 0.44 <u>01</u>	0.00 to 0. 3 4 <u>01</u>	<u>9.57</u>	0.02	0. 0 1 to 0. 0		<u>Q</u> <u>Q</u> <u>C</u>
Robin Rigg	8	<u>6</u>	<u>Z</u>	0.0371	0.0371	0.0201	0.00 to 0.02	0.00 to 0.01	0.00 to 0.01			0. 0 0 to 0. 0 5		
Rhyl Flats Offshore Wind Farm	<u>6</u>	4	<u>5</u>	0.0371	0.0371	0.0201	0.00 to 0.02	0.00 to 0.01	0.00 to 0.01			0. 0 0 to 0. 0 3	<u> </u>	<u>Q</u> <u>Q</u> <u>Q</u> <u>1</u>
Walney 1 and 2	<u>21</u>	13	18	0.0371	0.0371	0.0201	0.00 to 0.05	0.00 to 0.03	0.00 to 0.03			0. 0 0 to 0.		

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-	MONA OFFSHORE WIND	FROJECT											_	
	Project	<u>Un-apportioned abundances (adult birds) a</u>			Apportioning values		Apportioned displacement impact values (30-70% displacement and 1-10% mortality)			Appritio d dispace ent import values (70% dispace ent, 40% moi lity)	ne ol m a ue % ol m % ta	Inserted Cells		
		Pre- bree d in g	Post- b r ee d in g	Non-b r ee d ing	P r e-b r ee d ing	Post- b r ee d in g	Non- b reed in g	Pre-breeding	Post-b r ee d ing	Non-b r ee d ing		A c c c c c c c c c c c c c c c c c c c		Inserted Cells Inserted Cells Inserted Cells Inserted Cells Inserted Cells
	Total predicted impact (0 .2625 to 6.165.80	0.0607 to 5.4912	0.43<u>12</u> to 4. 96<u>65</u>		1 0 1 0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1	0 . 40 4101	Inserted Cells Inserted Cells
	Annual impact and incremortality)(%)		<u>e</u> in baseline	mo r tality from displacement (when	0.01% to 0.49%	0.00% to 0	,	0.00% to 0.39%	0.10% 0.01% to 0.41%	0.01% to 0.37%	0.06%	0. 2 4 5 4 4 5 6 6 4 6 6 6 4 6 6 6 7 4 7 7 7 7 7 7 7 7	Q : 0 2104	Inserted Cells Inserted Cells Inserted Cells Inserted Cells Inserted Cells Inserted Cells

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	Project Project				Apportioning values			Apportioned displacement impact values (30-70% displacement and 1-10% mortality)					Apportione d displacem ent impact value s (70% displacem ent, 102% mortality)		
		P r e- b r ee d in g	Post- b r ee d in g	Non-b r ee d ing	P r e-b r ee d ing	Post- b r ee d in g	Non- b r ee d in g	P r e-b r ee d ing	Post-b r ee d ing	Non-b r ee d ing	A n n u al		다 이 에 타 나보 타 예 에 이 ·- ! 다 이	<u> </u>	
											921 % in the a de of the a de of in the first of the firs				

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As the predicted impact on razorbill from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA is >1% increase in baseline mortality (when considering 70% displacement and 10% mortality) the impact is further investigated by a PVA (see section 1.6.61.6.4) to determine whether AEoSI can be ruled out beyond reasonable scientific doubt.



1.6 Population Viability Analysis

- 1.6.1.1 Given the considerations set out in section 1.1.2, the Applicant would note that the scenarios set out in this section are highly conservative, should not be interpreted in isolation, and do not represent a realistic scenario. The Applicant maintains the conclusions presented in the HRA Stage 2 ISAA Part Three: SPAs and Ramsar sites Assessments (REP2-010) are accurate, although this document presents the full range of assessment scenarios as requested by the SNCBs.
- 1.6.1.2 Table 1_64 provides a summary of those sites and species where the increase in baseline mortality from in-combination impacts was found to exceed 1% when considering the upper displacement and mortality range recommended by the SNCBs (Table 1-2).
- 1.6.1.3 A PVA has been undertaken for each SPA and species which exceeds a >1% increase in baseline mortality for the upperworst-case displacement and mortality threshold impact for common guillemot, razorbill, northern gannet and greater black-backed gull. PVAs have also been undertaken for the alternative approach for common guillemot (using 70% displacement rate and 2% mortality rate) when predicted impacts would result in an increase in baseline mortality of >1%. PVAs for black-legged kittiwake have been undertaken when using an alternative approach (using 30% displacement and 3% mortality rate) when predicted impacts would result in an increase in baseline mortality of >1%. The results of the PVAs are presented in section 1.6



Table 1-64: Summary of colony sites where apportioned in-combination impacts result in an increase in baseline mortality of >1%.



Increase in Estimate**d** mortalities when using alternative approach¹ Bio season baseline Species Site Adult bird mortalities (worst-case) Impact mortality(worstcase)

Common	Non-	Displacement	Sule Skerry and Sule Stack SPA	228.45 229.31	24. 5 4 <u>63%</u>	45. 69 <u>86</u>
guillemot			North Rona and Sula Sgeir SPA	32.59 <u>33.16</u>	5. 34<u>44%</u>	6. 52 63



Cape Wrath SPA	182.6 4 <u>185.75</u>	5. 47 <u>56%</u>	36.53 <u>37.15</u>
Handa SPA	249.20 <u>253.51</u>	5. 38 <u>47%</u>	49.8 4 <u>50.70</u>
Shiant Isles SPA	33.49 <u>34.07</u>	5. 33<u>43%</u>	6. 70 <u>81</u>
Flannan Isles SPA	63.7564.87	5. 33<u>42%</u>	12. 75 <u>97</u>
St Kilda SPA	102.14 <u>103.92</u>	5. 33<u>43%</u>	20.43 <u>78</u>
Canna and Sanday SPA	25. 37 <u>81</u>	5. 32 41%	5. 07 <u>16</u>



	te mits i notes i				
		Mingulay and Berneray SPA	88.00 89.53	5. 33<u>43%</u>	17. 60 <u>91</u>
		North Colonsay and Western Cliffs SPA	92.2693.87	5. 60 70%	18.45 <u>77</u>
		Ailsa Craig SPA	35.92 <u>36.54</u>	5. 61 71%	7.48 <u>31</u>
		Rathlin Island SPA	598.02 608.47	5. 61 71%	119.60 <u>121.67</u>
		Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA	4 12.93 414.68	20. 76<u>85%</u>	82. 59 <u>94</u>
Razorbill	Displacement	Cape Wrath SPA	6.36 <u>5.95</u>	1.45 <u>36%</u>	0.80 <u>78</u>

Non-Breeding Annual



Handa SPA	15.72 <u>14.74</u>	1.45 <u>36%</u>	1. 99 9
Shiant Isles SPA	12. 95<u>14</u>	1.45 <u>36%</u>	1.64 <u>60</u>
Flannan Isles SPA	3.00	1.36%	0.40
Mingulay and Berneray	30.76 28.85	1.45 <u>36%</u>	3. 89 80
Rathlin Island	4 6.85 43.94	1.4536%	5. 93<u>78</u>
Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA	16.61 <u>15.58</u>	1.3224%	2. 11 <u>07</u>
Flannan Isles SPA	3.20	1.45	0.40



			Ailsa Craig SPA	2. 03 08	1. 42 <u>46</u> %	0. 63 64
			Lambay Island SPA	14.27 <u>15.79</u>	1.47 <u>63</u> %	4. 01<u>79</u>
Black- legged kittiwake	Annual	Displacement and collisions	Ireland's Eye SPA	5.50 <u>6.02</u>	1.2423%	1.47 <u>70</u>
KITIWAKE			Howth Head Coast SPA	11.74 12.63	2. 24<u>41</u>%	3.47 <u>51</u>
			Wicklow Head SPA	6.8 4 <u>8.40</u>	3.48 <u>4.27</u> %	2. 26 40
			Skomer, Skokholm and the Seas eshireoff Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA	72. 65<u>79</u>	24. 71 <u>76</u> %	15. 38<u>37</u>



Nothern No			Ailsa Craig SPA	106.40 117.82	1.98 2.19%	
rthern	Annual	Displacement and collisions	Grassholm SPA	4 <u>32.22</u> 135.51	2. 27 <u>32</u> %	N/A_
gannet			Skelligs SPA	13.49	1.76%	
GlackGreat black- backed gull	Non- breeding	Collision	Isles of Scilly SPA	9. 58 38	7. 60<u>44</u>%	N/A-

¹ The 'alternative approach' considered for common guillemot, razorbill and black-legged kittiwake using accepted displacement and mortality rates as recently accepted and used by the Secretary of State within the HRAs for Hornsea Two/Three/Four, East Anglia One North, East Anglia Two, Norfolk Boreas, Norfolk Vanguard, Sheringham Shoal and Dudgeon Extension Projects (SEP and DEP). The rates presented for common guillemot and razorbill are 70% displacement and 2% mortality (see paragraph 1.2.1.7). The rates used for black-legged kittiwake are 30% displacement and 3% mortality (see paragraph 1.2.1.9).





1.6.2 Black-legged kittiwake

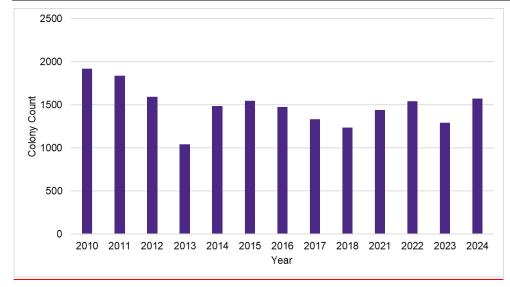
Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA

- 1.6.2.1 One scenario was modelled within the PVA for black-legged kittiwake from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA, considering the scenario of 30% displacement and 3% mortality, in line with the NatureScot guidance (NatureScot, 2023). A PVA was not undertaken for the worst-case scenario (70% displacement and 10% mortality) due to a lack of empirical evidence.
- 1.6.2.2 For the scenario using a 30% displacement rate and 3% mortality rate, the predicted impact would result in the median growth rate continuing to be > being marginally <1 and therefore indicating that the population is predicted to increasedecrease in size under these modelled parameters (Table 1_65). The counterfactual of the growth rate also however indicates the impact scenarios are near to the baseline or the non-impacted predicted growth rate, therefore the difference between the baseline and the impacted scenario is small (0.6% smaller).
- 1.6.2.3 It should be noted that if the displacement assessment was not included, as advised by NRW (A), the predicted impact would be halved. However for precaution and to present the impacts that the JNCC have requested to be included a PVA was undertaken on both combined mortality from both displacement and collisions.

Table 1--65: PVA outputs for black-legged kittiwake from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA

Yea r	Impact scena r i o	Simulated median Modi an adult population size	Percentage population Population change (%) since 204.3 2022	Median growth rate	e of	97.5 percentil e of simulate d growth rate	Median counterfactu al-of population sizeCPS	Median counterfactu al of growth rate CGR
203 0	Baselin e	2,265 <u>3,207</u>	11.08 <u>2</u> %	1. 0131 <u>013</u>	0. 8411<u>81</u> 0	1. 2211 16 <u>7</u>	-	-
203 0	Impact	2,244 <u>3,190</u>	10.25 <u>1</u> %	1.0038008	0. 8363<u>80</u> <u>5</u>	1. 2084 <u>16</u> <u>1</u>	0. 9913<u>994</u>	0. 9910<u>994</u>
206 5	Baselin e	3, 704<u>534</u>	4 5.63 <u>12</u> %	1.0142003	0. 9936<u>98</u> 1	1. 0342 <u>02</u> <u>3</u>	-	-
206 5	Impact	2, 676 <u>862</u>	24.74 <u>-9</u> %	1.0050 <u>0.9</u> <u>97</u>	0. 9847<u>97</u> 5	1. 0249 <u>01</u> <u>7</u>	0. 7221<u>812</u>	0. 9910<u>994</u>

1.6.2.4 The population of black-legged kittiwake from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA has remained stable over the last 14 years of colony monitoring (since 2010). This stable population is in light of the predicted annual impact from the projects considered in-combination (Figure 1.1). The average colony count is 2,973 birds ± 450 (standard deviation). Therefore, the predicted population after the 35 years (2,862 birds) of modelling is within the natural range of the population. It should also be noted that as projects are decommissioned the impact would also be removed, however the PVA is unable to be run like that currently.



<u>Figure 1.1: Colony count monitoring of black-legged kittiwake from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA.</u>

As the results of the PVA undertaken for black-legged kittiwake from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA indicated an increasingstable population size when compared to the long-term (10 year) average with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had consideration of considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Wicklow Head SPA

4.6.2.41.6.2.6 One scenario was modelled within the PVA for black-legged kittiwake from Wicklow Head SPA, considering the scenario of 30% displacement and 3% mortality, in line with the NatureScot guidance (NatureScot, 2023). A PVA was not undertaken for the worst-case scenario (70% displacement and 10% mortality) due to lack of empirical evidence.

4.6.2.51.6.2.7 For the scenario, the predicted impact would result in the median growth rate continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1_66). The counterfactual of the growth rate also indicates the impact scenarios are close -to the baseline or the non-impacted predicted growth rate.



Table 1--66: PVA outputs for black-legged kittiwake from Wicklow Head SPA.

Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage pepulation Populati on change (%), since 2043/2022	Median growth rate	2.5 percentil e of simulate d growth rate	e of simulate	Median counterfactual of population size CPS	Median counterfactu al of growth rate CGR
203 0	Baselin e	1, 671 <u>391</u>	23.96 <u>3</u> %	1. 0165 <u>01</u> <u>7</u>	0. 8454<u>81</u> 5	1. 2143<u>16</u> <u>3</u>	-	-
203 0	Impact	1, 669 <u>387</u>	23.81 <u>3</u> %	1. 0144 <u>01</u> <u>6</u>	0. 8418<u>80</u> <u>9</u>	1. 2108<u>16</u> 0	0. 9978<u>998</u>	0. 9981<u>998</u>
206 5	Baselin e	2,746	103.71 <u>104</u> %	1. 0143 <u>00</u> <u>3</u>	0. 9940<u>98</u> 1	1. 0343 <u>02</u> <u>2</u>	-	-
206 5	Impact	2,565	90.24%	1. 0122 <u>00</u> <u>1</u>	0. 9918<u>97</u> <u>9</u>	1. 0322 <u>02</u> <u>0</u>	0. 9312<u>927</u>	0. 9980<u>998</u>

1.6.2.61.6.2.8

As the results of the PVA undertaken for black-legged kittiwake from Wicklow Head SPA indicated an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had consideration of considered the sitessite's conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

1.6.3 Common guillemot

Ailsa Craig SPA

- 1.6.3.1 Two scenarios were modelled within the PVA for common guillemot from Ailsa Craig SPA, one considering the worst-case scenario of 70% displacement and 10% mortality and one considering an alternative approach considering 70% displacement and 2% mortality.
- 1.6.3.2 For both scenarios, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table_1_67). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table-1-67: PVA outputs for common guillemot from Ailsa Craig SPA

Yea r		Simulated median Medi an adult population size	Percentage population Population change (%) since 2013	Median growth rate	2.5 percentile of simulated growth rate	97.5 percentil e of simulate d growth rate	Median counterfactual of population size CPS	Median counterfactu al of growth rate CGR
203 0	Baseline	15,946 <u>16.095</u>	51.95 % <u>2.73</u>	1. 0255 <u>02</u> <u>7</u>	1.0199 <u>0.9</u> 52	1. 0312 <u>09</u> <u>5</u>	-	-



Yea r	Impact scenari o	Simulated median Medi an adult population size	Percentage population Population change (%) since 2013	Median growth rate	2.5 percentile of simulated growth rate	97.5 percentil e of simulate d growth rate	Median counterfactu al-of population sizeCPS	Median counterfactu al-of-growth rateCGR
203 0	70 <u>%</u> and 2 <u>%</u>	15,936 <u>16,063</u>	51.86% <u>2.67</u>	1. 0247 <u>02</u> 7	1.0190 <u>0.9</u> 52	1. 0304<u>09</u> <u>4</u>	0. 9991<u>999</u>	0. 9993 999
203 0	70 <u>%</u> and 10 <u>%</u>	15,887 <u>16,019</u>	51.39% 2.36	1. 0217 <u>02</u> <u>4</u>	1.0159 <u>0.9</u> 49	1. 0277 <u>09</u> <u>1</u>	0. 9963<u>996</u>	0. 9963 <u>996</u>
206 5	Baseline	38,549 <u>39,559</u>	267.34% <u>152.91</u>	1. 0255 <u>02</u> <u>6</u>	1. 0250 <u>017</u>	1. 0261 <u>03</u> <u>5</u>	-	-
206 5	70 <u>%</u> and 2 <u>%</u>	37,491 <u>38,444</u>	257.26% <u>145.78</u>	1. 0247 <u>02</u> <u>5</u>	1.0242 <u>017</u>	1. 0253 <u>03</u> <u>4</u>	0. 9726 <u>972</u>	0.9992999
206 5	70 <u>%</u> and 10 <u>%</u>	33,579 <u>34,436</u>	219.98 % <u>119.93</u>	1. 0216 <u>02</u> <u>2</u>	1.0211013	1. 0222 <u>03</u> <u>1</u>	0. 8711 <u>870</u>	0. 9962 <u>996</u>

As the results of the two PVAs undertaken for common guillemot from Ailsa Craig SPA indicating an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion the Applicant has had-consideration-ofconsidered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Canna and Sanday SPA

- 1.6.3.4 Two scenarios were modelled within the PVA for common guillemot from Canna and Sanday SPA, one considering the worst-case scenario of 70% displacement and 10% mortality and one considering an alternative approach considering 70% displacement and 2% mortality.
- 1.6.3.5 For both scenarios, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1_68). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1--68: PVA outputs for common guillemot from Canna and Sanday SPA

Yea r	Impact scenari o	Simulated median Medi an adult population size	Percentage population Populati on change (%) since 1999	Median growth rate	2.5 percentile of simulated growth rate	e of	Median counterfactual of population sizeCPS	Median counterfactu al of growth rate CGR
203 0	Baseline	16,930 <u>17,159</u>	116.33 <u>119</u> %	1. 0255 <u>02</u> <u>8</u>	1.0201 <u>0.9</u> 51	1. 0309 09 4	-	-
203 0	70 <u>%</u> and 2 <u>%</u>	16,914 <u>17,175</u>	116.13 <u>119</u> %	1. 0249 <u>02</u> <u>7</u>	1.0193 <u>0.9</u> 51	1. 0303<u>09</u> <u>4</u>	0. 9991<u>999</u>	0. 999 4 <u>999</u>

Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage population Population Change (%) since 1999	Median growth rate	2.5 percentile of simulated growth rate	e of simulate	Median counterfactu- al-of population sizeCPS	Median counterfactu- al of growth rate CGR
203 0	70 <u>%</u> and 10 <u>%</u>	16,867 <u>17,128</u>	115.53 <u>119</u> %	1. 0220 <u>02</u> <u>4</u>	1.0166 <u>0.9</u> 49	1. 0276 <u>09</u> <u>0</u>	0. 9961 <u>997</u>	0. 9966 <u>997</u>
206 5	Baseline	40,91042,195	4 <u>22.74</u> 439%	1. 0255 <u>02</u> <u>6</u>	1.0250017	1. 0261 <u>03</u> <u>5</u>	-	-
206 5	70 <u>%</u> and 2 <u>%</u>	39,861 <u>41,108</u>	4 09.34 425%	1. 0248 <u>02</u> <u>5</u>	1. 0243 <u>016</u>	1. 0253 <u>03</u> <u>4</u>	0. 9741<u>974</u>	0. 9993 <u>999</u>
206 5	70 <u>%</u> and 10 <u>%</u>	35,918 <u>37.021</u>	358.95 <u>373</u> %	1. 0218 <u>02</u> 2	1. 0213 <u>014</u>	1. 022 4 <u>03</u> 1	0. 8778<u>876</u>	0. 996 4 <u>996</u>

As the results of the two PVAs undertaken for common guillemot from Canna and Sanday SPA indicating an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had-consideration-efconsidered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Cape Wrath SPA

- 1.6.3.7 Two scenarios were modelled within the PVA for common guillemot from Cape Wrath SPA, one considering the worst-case scenario of 70% displacement and 10% mortality and one considering an alternative approach considering 70% displacement and 2% mortality.
- 1.6.3.8 For both scenarios, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1_69). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1--69: PVA outputs for common guillemot from Cape Wrath SPA

Yea r	Impact scenari o	Simulated median Media n adult population size	Percentage population Populati on change (%) since 2000	Median growth rate	2.5 percentile of simulated growth rate	97.5 percentil e of simulate d growth rate	Median counterfactual of population size CPS	Median counterfactu al-of-growth rate CGR
203 0	Baseline	115,402 <u>117,0</u> 20	110.90 <u>114</u> %	1. 0256 <u>02</u> <u>7</u>	1.0234 <u>0.9</u> <u>51</u>	1. 0276 <u>09</u> <u>7</u>	-	-
203 0	70 <u>%</u> and 2 <u>%</u>	115,329 <u>116,9</u> 08	110.77 <u>113</u> %	1. 0248 <u>02</u> <u>6</u>	1.0227 <u>0.9</u> 49	1. 0269 <u>09</u> <u>6</u>	0. 9993 <u>999</u>	0. 9993 <u>999</u>

Yea r	Impact scena r i o	Simulated median Media n adult population size	Percentage population Population change (%) since 2000	Median growth rate	2.5 percentile of simulated growth rate	97.5 percentil e of simulate d growth rate	Median counterfactual of population size GPS	Median counterfactu al-of-growth rateCGR
203 0	70 <u>%</u> and 10 <u>%</u>	114,994 <u>116,5</u> 91	110.16 <u>113</u> %	1. 0219 <u>02</u> <u>3</u>	1.0197 <u>0.9</u> 47	1. 0240 <u>09</u> <u>3</u>	0. 9963 <u>996</u>	0. 9964<u>996</u>
206 5	Baseline	278,879 <u>288,0</u> 49	4 09.67 426%	1. 0255 <u>02</u> <u>6</u>	1. 0253 <u>017</u>	1. 0257 <u>03</u> <u>5</u>	-	-
206 5	70 <u>%</u> and 2 <u>%</u>	271,531 <u>280,1</u> 27	396.24 <u>411</u> %	1. 0248 <u>02</u> <u>5</u>	1. 0246 <u>017</u>	1. 0250 <u>03</u> <u>4</u>	0. 973 4 <u>973</u>	0. 9993 <u>999</u>
206 5	70 <u>%</u> and 10 <u>%</u>	243,882 <u>251,4</u> 46	345.71 <u>359</u> %	1. 0217 <u>02</u> <u>2</u>	1. 0215<u>013</u>	1. 0219 <u>03</u> <u>1</u>	0. 8744<u>873</u>	0. 9963<u>996</u>

As the results of the two PVAs undertaken for common guillemot from Cape Wrath SPA indicating an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had-consideration-efconsidered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Flannan Isles SPA

- 1.6.3.10 Two scenarios were modelled within the PVA for common guillemot from Flanna Isles SPA, one considering the worst-case scenario of 70% displacement and 10% mortality and one considering an alternative approach considering 70% displacement and 2% mortality.
- 1.6.3.11 For both scenarios, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1-70). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1--70: PVA outputs for common guillemot from Flannan Isles SPA.

Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage population Populati or change (%) since 1999	Median growth rate	2.5 percentile of simulated growth rate	e of	Median counterfactu al-of population sizeCPS	Median counterfactu al-of-growth rate CGR
203 0	Baseline	4 2,430 43.025	116.33% <u>119</u>	1. 0255 <u>02</u> <u>8</u>	1.0221 <u>0.9</u> 52	1. 0290 <u>09</u> <u>3</u>	-	-
203 0	70 <u>%</u> and 2 <u>%</u>	42,405 <u>43.016</u>	116.20% <u>119</u>	1. 0248 <u>02</u> <u>7</u>	1.0213 <u>0.9</u> 51	1. 0284 <u>09</u> <u>3</u>	0. 9993 <u>999</u>	0. 9993 <u>999</u>

Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage population Populati on change (%) since 1999	Median growth rate	2.5 percentile of simulated growth rate	e of simulate	Median counterfactual of population size CPS	Median counterfactu al-of-growth rate CGR
203 0	70 <u>%</u> and 10 <u>%</u>	42, 286 <u>880</u>	115.59% <u>119</u>	1. 0220 <u>02</u> <u>4</u>	1.0184 <u>0.9</u> 49	1. 0255 <u>09</u> <u>0</u>	0. 996 4 <u>997</u>	0. 9966 <u>996</u>
206 5	Baseline	102,526 105.8 <u>83</u>	4 22.72 % <u>440</u>	1. 0255 <u>02</u> <u>6</u>	1. 0252 <u>017</u>	1. 0259 <u>03</u> <u>5</u>	-	-
206 5	70 <u>%</u> and 2 <u>%</u>	99,901103,138	409.33% <u>426</u>	1. 0248 <u>02</u> <u>5</u>	1. 0244 <u>016</u>	1. 0251 <u>03</u> <u>4</u>	0. 9742<u>974</u>	0. 9993 <u>999</u>
206 5	70 <u>%</u> and 10 <u>%</u>	89,955 <u>92,716</u>	358.63 % <u>373</u>	1. 0218 <u>02</u> <u>2</u>	1. 0215 <u>013</u>	1. 0222 <u>03</u> <u>1</u>	0. 877 4 <u>876</u>	0. 996 4 <u>996</u>

As the results of the two PVAs undertaken for common guillemot from Flannan Isles SPA indicating an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion the Applicant has had-consideration-efconsidered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Handa SPA

- 1.6.3.13 Two scenarios were modelled within the PVA for common guillemot from Handa SPA, one considering the worst-case scenario of 70% displacement and 10% mortality and one considering an alternative approach considering 70% displacement and 2% mortality.
- 1.6.3.14 For both scenarios, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1-71). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1--71: PVA outputs for common guillemot from Handa SPA

Yea r	Impact scenari o	Simulated median Medi an adult population size	Percentage population Populati on change (%) since 2011	Median growth rate	2.5 percentile of simulated growth rate	e of simulate	Median counterfactual of population sizeCPS	Median counterfactu al of growth rate CGR
203 0	Baseline	121,445 <u>122,7</u> 59	59.83% <u>62</u>	1. 0255 <u>02</u> <u>8</u>	1.0235 <u>0.9</u> 53	1. 0276 <u>09</u> <u>8</u>	-	-
203 0	70 <u>%</u> and 2 <u>%</u>	121,370 <u>122.6</u> 81	59.73% <u>61</u>	1. 0248<u>02</u> <u>7</u>	<u>1.0227</u> <u>0.9</u> <u>53</u>	1. 0269 <u>09</u> <u>7</u>	0. 9993 <u>999</u>	0. 9993 <u>999</u>
203 0	70 <u>%</u> and 10 <u>%</u>	121,023 <u>122.2</u> 52	59.27% <u>61</u>	1. 0220 <u>02</u> <u>4</u>	1.0199 <u>0.9</u> 50	1. 0241 <u>09</u> <u>4</u>	0. 9966<u>996</u>	0. 9965<u>996</u>

Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage population Population change (%) since 2011	Median growth rate	2.5 percentile of simulated growth rate	e of simulate	Median counterfactual of population size CPS	Median counterfactual of growth rateCGR
206 5	Baseline	293,492 <u>301,9</u> 99	286.24% <u>297</u>	1. 0255 <u>02</u> <u>6</u>	1. 0253<u>017</u>	1. 0257 <u>03</u> <u>4</u>	-	-
206 5	70 <u>%</u> and 2 <u>%</u>	285,845293,7 93	276.18% <u>287</u>	1. 0248 <u>02</u> <u>5</u>	1. 0246 <u>016</u>	1. 0250 <u>03</u> <u>4</u>	0. 9739 <u>974</u>	0. 9993 <u>999</u>
206 5	70 <u>%</u> and 10 <u>%</u>	257,230 <u>264.0</u> 92	238.52% 248	1. 0218 <u>02</u> 2	1. 0216 <u>013</u>	1. 0220 <u>03</u> <u>1</u>	0. 8765 <u>875</u>	0. 9963 <u>996</u>

As the results of the two PVAs undertaken for common guillemot from Handa SPA indicating an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion the Applicant has had-consideration-of-considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Mingulay and Berneray SPA

- 1.6.3.16 Two scenarios were modelled within the PVA for common guillemot from Mingulay and Berneray SPA, one considering the worst-case scenario of 70% displacement and 10% mortality and one considering an alternative approach considering 70% displacement and 2% mortality.
- 1.6.3.17 For both scenarios, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1-72). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1--72: PVA outputs for common guillemot from Mingulay and Berneray SPA.

Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage population Populati or change (%) since 2009	Median growth rate	2.5 percentile of simulated growth rate	e of simulate	Median counterfactual of population sizeCPS	Median counterfactu al-of-growth rate CGR
203 0	Baseline	45,4 83 <u>864</u>	68.12<u>70</u> %	1. 0255 <u>02</u> <u>7</u>	1.0221 <u>0.9</u> 49	1. 0289 <u>09</u> <u>5</u>	-	-
203 0	70 <u>%</u> and 2 <u>%</u>	45,441 <u>835</u>	67.96<u>69</u>%	1. 0249 <u>02</u> <u>6</u>	1.0214 <u>0.9</u> 49	1. 0282 <u>09</u> <u>4</u>	0. 9993 <u>999</u>	0. 9993 999
203 0	70 <u>%</u> and 10 <u>%</u>	45, 318<u>704</u>	67.51 <u>69</u> %	1. 0220 <u>02</u> <u>4</u>	1.0184 <u>0.9</u> 46	1. 025 4 <u>09</u> <u>1</u>	0. 9966<u>996</u>	0. 9965 <u>996</u>
206 5	Baseline	109,888 <u>112.6</u> 24	306.18 <u>316</u> %	1. 0255 <u>02</u> <u>6</u>	1. 0252 <u>017</u>	1. 0259 <u>03</u> <u>4</u>	-	-



Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage population Populati on change (%) since 2009	Median growth rate	2.5 percentile of simulated growth rate	e of	Median counterfactual of population size CPS	Median counterfactu al of growth rateCGR
206 5	70 <u>%</u> and 2 <u>%</u>	107,053 <u>109,6</u> 99	295.70 <u>305</u> %	1. 0248<u>02</u> 5	1. 0245<u>016</u>	1. 0251 <u>03</u> <u>4</u>	0. 9741<u>974</u>	0. 9993 999
206 5	70 <u>%</u> and 10 <u>%</u>	96,427 <u>98.611</u>	256.42 <u>264</u> %	1. 0218 <u>02</u> <u>2</u>	1. 0215 <u>013</u>	1. 0221<u>03</u> <u>0</u>	0. 877 4 <u>876</u>	0. 9964<u>996</u>

As the results of the two PVAs undertaken for common guillemot from Mingulay and Berneray SPA indicating an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion the Applicant has had-consideration-of-considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

North Colonsay and Western Cliffs SPA

- 1.6.3.19 Two scenarios were modelled within the PVA for common guillemot from North Colonsay and Western Cliffs SPA, one considering the worst-case scenario of 70% displacement and 10% mortality and one considering an alternative approach considering 70% displacement and 2% mortality.
- 1.6.3.20 For both scenarios, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1_73). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1--73: PVA outputs for common guillemot from North Colonsay and Western Cliffs SPA_

Yea r	Impact scenari o	Simulated median Mcdi an adult population size	Percentage population Populati or change (%) since 2000	Median growth rate	2.5 percentile of simulated growth rate	e of simulate	Median counterfactual of population sizeCPS	Median counterfactu al-of-growth rate CGR
203 0	Baseline	56,950 <u>57,645</u>	110.93 <u>113</u> %	1. 0255 <u>02</u> <u>7</u>	1.0225 <u>0.9</u> 50	1. 0287 <u>09</u> <u>7</u>	-	-
203 0	70 <u>%</u> and 2 <u>%</u>	56,898 <u>57,646</u>	110.73 <u>114</u> %	1. 0248 <u>02</u> <u>6</u>	1.0217 <u>0.9</u> 49	1. 0278 <u>09</u> <u>5</u>	0. 9989<u>999</u>	0. 9993 999
203 0	70 <u>%</u> and 10 <u>%</u>	56,736 <u>57,430</u>	110.13 <u>113</u> %	1. 0218 <u>02</u> <u>3</u>	1.0187 <u>0.9</u> 47	1. <u>0249<u>09</u> <u>3</u></u>	0. 9960<u>996</u>	0. 9964<u>996</u>
206 5	Baseline	137,647 <u>141,9</u> <u>81</u>	409.80 <u>426</u> %	1. 0255 <u>02</u> <u>6</u>	1. 0252 <u>017</u>	1. 0258 <u>03</u> <u>5</u>	-	-

Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage population Population change (%), since 2000	Median growth rate	2.5 percentile of simulated growth rate	e of	Median counterfactual of population sizeCPS	Median counterfactual-of-growth rateCGR
206 5	70 <u>%</u> and 2 <u>%</u>	133,916 <u>137,8</u> 95	395.98 <u>411</u> %	1. 0248 <u>02</u> <u>5</u>	1. 0245<u>016</u>	1. 0250 <u>03</u> <u>4</u>	0. 9727<u>972</u>	0. 9992<u>999</u>
206 5	70 <u>%</u> and 10 <u>%</u>	119,93 4 <u>123,3</u> <u>32</u>	344.20 <u>357</u> %	1. 0216 <u>02</u> <u>2</u>	1. 0213 <u>013</u>	1. 0219 <u>03</u> 1	0. 8714<u>870</u>	0. 9962<u>996</u>

As the results of the two PVAs undertaken for common guillemot from North Colonsay and Western Cliffs SPA indicating an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion the Applicant has had consideration—ofconsidered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

North Rona and Sula Sgeir SPA

- 1.6.3.22 Two scenarios were modelled within the PVA for common guillemot from North Rona and Sula Sgeir SPA, one considering the worst-case scenario of 70% displacement and 10% mortality and one considering an alternative approach considering 70% displacement and 2% mortality.
- 1.6.3.23 For both scenarios, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1-74). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1--74: PVA outputs for common guillemot from North Rona and Sula Sgeir SPA.

Yea r	Impact scenari o	Simulated median Medi an adult population size	Percentage population Population change (%) since 2012	Median growth rate	2.5 percentile of simulated growth rate	e of simulate	Median counterfactu al-of population sizeCPS	Median counterfactu al-of-growth rate CGR
203 0	Baseline	15, 588<u>740</u>	55.88 <u>57</u> %	1. 0254 <u>02</u> <u>8</u>	1.0199 <u>0.9</u> 52	1. 0311 <u>09</u> <u>6</u>	-	-
203 0	70 <u>%</u> and 2 <u>%</u>	15, 573 <u>665</u>	55.73 <u>57</u> %	1. 0248<u>02</u> <u>4</u>	1.0189 <u>0.9</u> 49	1. 0304<u>09</u> <u>4</u>	0. 9993 <u>997</u>	0. 9994<u>997</u>
203 0	70 <u>%</u> and 10 <u>%</u>	15, 529 <u>730</u>	55.29 <u>57</u> %	1. 0219 02 <u>7</u>	1.0162 <u>0.9</u> 52	1. 0279 <u>09</u> <u>7</u>	0. 996 4 <u>999</u>	0. 9965 <u>999</u>
206 5	Baseline	37,671 <u>38.560</u>	276.71 <u>286</u> %	1. 0255 <u>02</u> <u>6</u>	1. 0250 <u>017</u>	1. 0261 <u>03</u> <u>4</u>	-	-
206 5	70 <u>%</u> and 2 <u>%</u>	36,680 <u>33.800</u>	266.80 <u>238</u> %	1. 0248 <u>02</u> <u>2</u>	1. 0242<u>013</u>	1. 0253<u>03</u> <u>0</u>	0. 9739<u>876</u>	0. 9993<u>996</u>



Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage population Population change (%) since 2012	Median growth rate	of	e of simulate	Median counterfactu al of population sizeCPS	Median counterfactu al of growth rate CGR
206 5	70 <u>%</u> and 10 <u>%</u>	33,026 <u>37,615</u>	230.26 <u>276</u> %	1. 0218 <u>02</u> <u>5</u>	1. 0212 <u>016</u>	1. 022 4 <u>03</u> <u>4</u>	0. 8770<u>974</u>	0. 9964<u>999</u>

As the results of the two PVAs undertaken for common guillemot from North Rona and Sula Sgeir SPA indicating an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had-consideration-of-considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Rathlin Island SPA

- 1.6.3.25 Two scenarios were modelled within the PVA for common guillemot from Rathlin Island SPA, one considering the worst-case scenario of 70% displacement and 10% mortality and one considering an alternative approach considering 70% displacement and 2% mortality.
- 1.6.3.26 For both scenarios, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1_75). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1--75: PVA outputs for common guillemot from Rathlin Island SPA.

Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage population Populati on change (%) since 2011	Median growth rate	2.5 percentile of simulated growth rate	e of simulate	Median counterfactual of population sizeCPS	Median counterfactual of growth rate CGR
203 0	Baseline	279,377 <u>282,4</u> 07	59.83 <u>62</u> %	1. 0255 <u>02</u> <u>7</u>	1.0242 <u>0.9</u> 53	1. <u>0269<u>09</u> <u>8</u></u>	-	-
203 0	70 <u>%</u> and 2 <u>%</u>	279,185 <u>282,1</u> 56	59.72 <u>61</u> %	1. 0248 <u>02</u> <u>7</u>	1.0234 <u>0.9</u> <u>52</u>	1. 0262 <u>09</u> <u>7</u>	0. 9993<u>999</u>	0. 9993 <u>999</u>
203 0	70 <u>%</u> and 10 <u>%</u>	278,364 <u>281,3</u> 23	59.25 <u>61</u> %	1. 0218 <u>02</u> <u>4</u>	1.0204 <u>0.9</u> 50	1. 0232<u>09</u> <u>4</u>	0. 996 4 <u>996</u>	0. 9963 <u>996</u>
206 5	Baseline	675,186 <u>694.3</u> 63	286.27 <u>297</u> %	1. 0255 <u>02</u> <u>6</u>	1. 025 4 <u>017</u>	1. 0257 <u>03</u> <u>4</u>	-	-
206 5	70 <u>%</u> and 2 <u>%</u>	656,858675,3 34	275.79 <u>286</u> %	1. 0247 <u>02</u> <u>5</u>	1. 0246 <u>016</u>	1. 0249 <u>03</u> <u>4</u>	0. 9728 <u>973</u>	0. 9992 999
206 5	70 <u>%</u> and 10 <u>%</u>	588,342 <u>603.9</u> 25	236.59 <u>246</u> %	1. 0216 <u>02</u> <u>2</u>	1. 0215<u>013</u>	1. 0218 <u>03</u> <u>0</u>	0. 8715<u>870</u>	0. 9962<u>996</u>



As the results of the two PVAs undertaken for common guillemot from Rathlin Island SPA indicating an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion the Applicant has had consideration of considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Shiant Isles SPA

- 1.6.3.28 Two scenarios were modelled within the PVA for common guillemot from Shiant Isles SPA, one considering the worst-case scenario of 70% displacement and 10% mortality and one considering an alternative approach considering 70% displacement and 2% mortality.
- 1.6.3.29 For both scenarios, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1_76). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1-76: PVA outputs for common guillemot from Shiant Isles SPA

Yea r	Impact scenari o	Simulated median Median adult population size	Percentage population Population change (%) since 2008	Median growth rate	2.5 percentile of simulated growth rate		Median counterfactu al of population sizeCPS	Median counterfactu al-of-growth rate CGR
203 0	Baseline	17, 749 916	72.39 <u>74</u> %	1. 0255 <u>0</u> <u>29</u>	<u>1.0202</u> 0.9 <u>52</u>	1. <mark>0308</mark> <u>0</u> 95	-	-
203 0	70 <u>%</u> and 2 <u>%</u>	17, 739 899	72.29 <u>74</u> %	1. <mark>0248</mark> <u>0</u> 28	1.019 4 <u>0.9</u> <u>52</u>	1. <mark>0303</mark> <u>0</u> <u>96</u>	0. 9993 <u>999</u>	0. 9993 999
203 0	70 <u>%</u> and 10 <u>%</u>	17, 690 829	71.81 73%	1. 0220 0 25	49 49	1. <mark>0275</mark> <u>0</u> <u>92</u>	0. 9965 996	0. 9965 996
206 5	Baseline	4 2,903 43,86 7	316.69 326%	1. 0255 <u>0</u> <u>26</u>	1. 0250 <u>017</u>	1. 0260 <u>0</u> <u>34</u>	-	-
206 5	70 <u>%</u> and 2 <u>%</u>	41,794 <u>42.69</u> 0	305.92 315%	1. <mark>0248</mark> <u>0</u> 25	1. 0243 <u>016</u>	1. <mark>0253</mark> <u>0</u> <u>34</u>	0. 9741₉₇₄	0. 9993 999
206 5	70 <u>%</u> and 10 <u>%</u>	37,653 <u>38,39</u> 1	265.71 <u>273</u> %	1. <mark>0218</mark> <u>0</u> <u>22</u>	1. 0213 <u>014</u>	1. <mark>0223</mark> <u>0</u> <u>31</u>	0. 8776 <u>876</u>	0. 9964 <u>996</u>

As the results of the two PVAs undertaken for common guillemot from Shiant Isles SPA indicating an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had-consideration-of-considered the sites.ite's conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects



S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA

- 1.6.3.31 Two scenarios were modelled within the PVA for common guillemot from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA, one considering the worst-case scenario of 70% displacement and 10% mortality and one considering an alternative approach considering 70% displacement and 2% mortality.
- 1.6.3.32 For both scenarios, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1_77). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate when considering the 70% displacement and 2% mortality.

Table 1--77: PVA outputs for common guillemot from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro.

Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage population Populati or change (%) since 2013	Median growth rate	2.5 percentile of simulated growth rate	e of simulate	Median counterfactual of population sizeCPS	Median counterfactu- al-of-growth rate CGR
203 0	Baseline	49,548 <u>69,654</u>	51.99 <u>114</u> %	1. 0256 <u>02</u> <u>7</u>	1.0222 <u>0.9</u> 50	1. 0287 <u>09</u> <u>7</u>	-	-
203 0	70 <u>%</u> and 2 <u>%</u>	49,413 <u>69,293</u>	51.57 <u>113</u> %	1. 0228 <u>02</u> <u>3</u>	1.0194 <u>0.9</u> 46	1. 0260 <u>09</u> <u>2</u>	0. 9972<u>996</u>	0. 9973<u>996</u>
203 0	70 <u>%</u> and 10 <u>%</u>	4 8,876 68,166	4 <u>9.93</u> 109%	1. 0117 <u>00</u> <u>5</u>	1.0083 <u>0.9</u> 29	1. <u>0150<u>07</u> <u>4</u></u>	0. 986 4 <u>979</u>	0. 9865 <u>979</u>
206 5	Baseline	119,751 <u>171,3</u> 02	267.33 <u>425</u> %	1. 0255 <u>02</u> <u>6</u>	1. 0252 <u>017</u>	1. 0258 <u>03</u> <u>5</u>	-	-
206 5	70 <u>%</u> and 2 <u>%</u>	108,122 <u>145,9</u> 21	231.66 <u>348</u> %	1. 0226 <u>02</u> <u>1</u>	1. 0223 <u>013</u>	1. 0229 <u>03</u> <u>0</u>	0. 9030<u>853</u>	0. 9972 <u>996</u>
206 5	70 <u>%</u> and 10 <u>%</u>	71,73776,738	120.05 <u>135</u> %	1. 0110 00 <u>3</u>	1.0107 <u>0.9</u> <u>95</u>	1. 0114<u>01</u> 2	0. 5992<u>448</u>	0. 9859 <u>978</u>

As the results of the two PVAs undertaken for common guillemot from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA indicating an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had consideration of considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S D3 25.6). -This conclusion replicates what was previously presented in HRA Stage



2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

St Kilda SPA

- 1.6.3.34 Two scenarios were modelled within the PVA for common guillemot from St Kilda SPA, one considering the worst-case scenario of 70% displacement and 10% mortality and one considering an alternative approach considering 70% displacement and 2% mortality.
- 1.6.3.35 For both scenarios, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1-78). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1-78: PVA outputs for common guillemot from St Kilda SPA.

Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage population Populati on change (%) since 1999	Median growth rate	2.5 percentile of simulated growth rate	e of simulate	Median counterfactual of population size CPS	Median counterfactu al-of-growth rate CGR
203 0	Baseline	67,928 <u>68,888</u>	116.33% <u>119</u>	1. 0255 <u>02</u> <u>8</u>	1.0229 <u>0.9</u> 52	1. 0283<u>09</u> <u>4</u>	-	-
203 0	70 <u>%</u> and 2 <u>%</u>	67,866 <u>68,877</u>	116.13% <u>119</u>	1. 0248<u>02</u> <u>7</u>	<u>1.02200.9</u> <u>51</u>	1. 0275 <u>09</u> <u>3</u>	0. 9991 <u>999</u>	0. 9993 999
203 0	70 <u>%</u> and 10 <u>%</u>	67,673 <u>68,750</u>	115.52% <u>119</u>	1. 0219 <u>02</u> <u>4</u>	1.0192 <u>0.9</u> 49	1. 0248 <u>09</u> <u>1</u>	0. 9963<u>996</u>	0. 9965 <u>997</u>
206 5	Baseline	164,167 <u>169.3</u> <u>90</u>	4 <u>22.82</u> % <u>439</u>	1. 0255 <u>02</u> <u>6</u>	1. 0253<u>017</u>	1. 0258 <u>03</u> <u>5</u>	-	-
206 5	70 <u>%</u> and 2 <u>%</u>	159,888 <u>164,9</u> 04	409.20% <u>425</u>	1. 0248 <u>02</u> <u>5</u>	1. 0245 <u>016</u>	1. 0251<u>03</u> <u>4</u>	0. 9743<u>974</u>	0. 9993 999
206 5	70 <u>%</u> and 10 <u>%</u>	143,976 <u>148,2</u> 56	358.52% <u>372</u>	1. 0218 <u>02</u> <u>2</u>	1. 0215 <u>013</u>	1. 0221<u>03</u> <u>1</u>	0. 8773 <u>876</u>	0. 9964<u>996</u>

As the results of the two PVAs undertaken for common guillemot from St Kilda SPA indicating an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had-consideration-of-considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Sule Skerry and Sule Stack SPA

1.6.3.37 Two scenarios were modelled within the PVA for common guillemot from Sule Skerry and Sule Stack SPA, one considering the worst-case scenario of 70% displacement

and 10% mortality and one considering an alternative approach considering 70% displacement and 2% mortality.

1.6.3.38 For both scenarios, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1_78). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate when considering the 70% displacement and 2% mortality.

Table 1-279: PVA outputs for common guillemot from Sule Skerry and Sule Stack SPA

Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage population Populati on change (%) since 1998	Median growth rate	2.5 percentile of simulated growth rate	e of simulate	Median counterfactu al of population sizeCPS	Median counterfactu al of growth rate CGR
203 0	Baseline	33,86 4 <u>34,307</u>	121.83% <u>125</u>	1. 0255 <u>02</u> <u>7</u>	1.0217 <u>0.9</u> 51	1. 029 4 <u>09</u> <u>6</u>	-	-
203 0	70 <u>%</u> and 2 <u>%</u>	33, 761<u>794</u>	121 .15%	1. 0223<u>01</u> <u>0</u>	1.0184 <u>0.9</u> 35	1.0261 <u>07</u> <u>9</u>	0. 9969<u>984</u>	0. 9968 <u>984</u>
203 0	70 <u>%</u> and 10 <u>%</u>	33,326 <u>34,190</u>	118.30% <u>124</u>	1. 0091<u>02</u> 3	<u>1.00520.9</u> <u>47</u>	1. 0132 <u>09</u> <u>3</u>	0. 9842<u>997</u>	0. 9841<u>997</u>
206 5	Baseline	81,839 <u>84,343</u>	436.09% <u>452</u>	1. 0255 <u>02</u> <u>6</u>	1. 0252 <u>017</u>	1. 0259 <u>03</u> <u>5</u>	-	-
206 5	70 <u>%</u> and 2 <u>%</u>	72,560 45.937	375.30% 201	1. 0221 <u>00</u> 9	1.0217000	1. 0225 <u>01</u> <u>8</u>	0. 8866 <u>545</u>	0. 9967 983
206 5	70 <u>%</u> and 10 <u>%</u>	44,65274.702	192.49% <u>389</u>	1. 0084 <u>02</u> <u>3</u>	1. 0080<u>014</u>	1. 0089 <u>03</u> <u>1</u>	0. 5456<u>886</u>	0. 9833 <u>997</u>

As the results of the two PVAs undertaken for common guillemot from Sule Skerry and Sule Stack SPA indicating an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion the Applicant has had-consideration-efconsidered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

1.6.4 Northern gannet

Ailsa Craig SPA

- 1.6.4.1 One scenario was modelled within the PVA for northern gannet from Ailsa Craig SPA, considering the worst-case scenario of 80% displacement and 10% mortality and collisions when using the species-group avoidance rate.
- 1.6.4.2 The PVA resulted in a predicted impact which indicates that median growth rate (and 95% confidence intervals) continues to be >1 and therefore indicate that the population is predicted to increase in size under these modelled parameters (Table



1_80). The counterfactual of the growth rate also indicates the impact scenario is close to the baseline or the non-impacted predicted growth rate.

Table 1--80: PVA outputs for northern gannet from Ailsa Craig SPA.

Yea r	Impact scenari o	Simulated mediar Media n adult population size	Percentage population Population change (%) since 2014	Median growth rate	2.5 percentile of simulated growth rate	97.5 percenti le of simulate d growth rate	Median counterfactual of population size CPS	Median counterfactu al-of-growth rate CGR
203 0	Baselin e	78,787 <u>88,919</u>	18.56 <u>34</u> %	1. <u>01100</u> <u>18</u>	1.0082 <u>0.96</u> <u>32</u>	1. 0137 <u>07</u> <u>6</u>	-	-
203 0	Impact	78,645 <u>88,743</u>	18.35 <u>34</u> %	1. <u>00920</u> <u>17</u>	1.0065 <u>0.96</u> <u>0</u>	1. 0120<u>07</u> <u>4</u>	0. 9983 <u>998</u>	0. 9983<u>998</u>
206 5	Baselin e	115,428 <u>168,6</u> 66	73.70 <u>154</u> %	1. <u>01100</u> <u>19</u>	1. 0107 <u>012</u>	1. 0113 <u>02</u> <u>5</u>	-	-
206 5	Impact	107,897 <u>156,7</u> 22	62.37<u>136</u>%	1. <u>00910</u> <u>16</u>	1.0088010	1. 009 4 <u>02</u> <u>3</u>	0. 9345<u>998</u>	0. 9981<u>928</u>

As the results of the PVA undertaken for northern gannet from Ailsa Craig SPA indicate an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had-consideration-efconsidered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Grassholm SPA

- 1.6.4.4 One scenario was modelled within the PVA for northern gannet from Grassholm SPA, considering the worst-case scenario of 80% displacement and 10% mortality and collisions when using the species-group avoidance rate.
- 1.6.4.5 The PVA resulted in a predicted impact which indicates that median growth rate (and 95% confidence intervals) continues to be >1 and therefore indicate that the population is predicted to increase in size under these modelled parameters (Table 1-81). The counterfactual of the growth rate also indicates the impact scenario is close to the baseline or the non-impacted predicted growth rate.

Table 1-281: PVA outputs for northern gannet from Grassholm SPA_

Yea r	Impact scena r i o	Simulated mediar Media n adult population size	Percentage population Population change (%) since 2014	Median growth rate	2.5 percentile of simulated growth rate	97.5 percentil e of simulate d growth rate	Median counterfactu- al-of population sizeGPS	Median counterfactu al-of-growth rate_CGR
203 0	Baselin e	85,391<u>94,713</u>	18.56 <u>32</u> %	1. <u>0110<u>01</u> <u>9</u></u>	1.0084 <u>0.9</u> <u>64</u>	1. <u>0136<u>07</u> <u>7</u></u>	-	-

Yea r	Impact scena r i o	Simulated mediar Media n adult population size	Percentage population Conumber (%) since 2014	Median growth rate	2.5 percentile of simulated growth rate	97.5 percentil e of simulate d growth rate	Median counterfactual-of population size CPS	Median counterfactu al-of-growth rateCGR
203 0	Impact	85,227 <u>94,523</u>	18.33 <u>32</u> %	1. 0089 <u>01</u> <u>8</u>	1.0063 <u>0.9</u> <u>62</u>	1. 0116<u>07</u> <u>5</u>	0. 9981<u>998</u>	0. 9980<u>998</u>
206 5	Baselin e	125,131 <u>179,6</u> 34	73.74 149%	1. 0110 01 9	1. 0107 <u>011</u>	1. 0113 <u>02</u> <u>6</u>	-	-
206 5	Impact	115,757 <u>166,0</u> 84	60.72 <u>100</u> %	1. 0088 <u>01</u> <u>6</u>	1.0085009	1. 0091 <u>02</u> <u>3</u>	0. 9251<u>925</u>	0. 9978<u>998</u>

As the results of the PVA undertaken for northern gannet from Grassholm SPA indicate an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion the Applicant has had consideration of the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Skelligs SPA

- 1.6.4.7 One scenario was modelled within the PVA for northern gannet from Skelligs SPA, considering the worst case scenario of 80% displacement and 10% mortality and collisions when using the species-group avoidance rate.
- 1.6.4.8 The PVA resulted in a predicted impact which indicates that median growth rate (and 95% confidence intervals) continue to be >1 and therefore indicate that the population is predicted to increase in size under these modelled parameters (Table 1-82). The counterfactual of the growth rate also indicates the impact scenario is close to the baseline or the non-impacted predicted growth rate.

Table 1.82: PVA outputs for northern gannet from Skelligs SPA

Year								Median counterfactual of growth rate
2030	Baseline	83,685	18.55%	1.0110	1.0083	1.0137	-	-
2030	Impact	83,685	18.55%	1.0107	1.0082	1.0134	0.9988	0.9988
2065	Baseline	122,633	73.73%	1.0110	1.0107	1.0113	-	-
2065	Impact	121,659	72.35%	1.0107	1.0104	1.0111	0.9920	0.9998

4.6.4.9<u>1.6.4.6</u> As the results of the PVA undertaken for northern gannet from Skelligs SPA indicate an increasing population size with and without the predicted impacts it can be



concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion the Applicant has had consideration of On coming to this conclusion, the Applicant has considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

1.6.5 Great black-backed gull

Isles of Scilly SPA

- 1.6.5.1 One scenario was modelled within the PVA for great black-backed gull from Isles of Scilly SPA, considering the worst-case scenario of collisions when using the species-group avoidance rate- (0.9939).
- 1.6.5.2 The PVA resulted in a predicted impact which indicates that median growth rate (and 95% confidence intervals) continues to be >1 and therefore indicate that the population is predicted to increase in size under these modelled parameters (Table 1-82).

Table 1-282: PVA outputs for great black-backed gull from Isles of Scilly SPA.

Yea r	Impact scenari o	Simulated median Median adult population size	Percentage population Population change (%) since 2014 2006	Median growth rate	2.5 percentil e of simulate d growth rate	97.5 percentil e of simulate d growth rate	Median counterfactual of population size CPS	Median counterfactu al-of-growth rate CGR
203 0	Baselin e	29, 769<u>819</u>	1, 552 <u>555</u> %	1. 1266 <u>12</u> <u>6</u>	1. 1206 08 1	1. 1325 <u>17</u> <u>7</u>	-	-
203 0	Impact	29, 599<u>681</u>	1, 5 43 <u>547</u> %	1. 1202<u>12</u> <u>0</u>	1. <u>1141<u>07</u> <u>5</u></u>	1. 1263<u>17</u> <u>0</u>	0.9940994	0.9944 <u>994</u>
206 5	Baselin e	1, 929,801 <u>923,1</u> <u>13</u>	106, 992<u>621</u>%	1. 1266<u>12</u> <u>7</u>	1. 1263<u>12</u> 2	1. 1269 <u>13</u> <u>1</u>	-	-
206 5	Impact	1, 565,177 <u>566,9</u> <u>93</u>	86, 758<u>859</u>%	1. 1201 <u>12</u> <u>0</u>	1. 1198<u>11</u> 5	1. 1203<u>12</u> 5	0. 8105<u>814</u>	0. 9942<u>994</u>

As the results of the PVA undertaken for great black-backed gull from Isles of Scilly SPA indicate an increasing population size with and without the predicted incombination impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had consideration of considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Review of connectivity between the northeast Irish Sea and the Isles of Scilly SPA



- 1.6.5.4 In addition to the previously presented evidence (section 1.5 of Volume 6, Annex 5.3: Offshore Ornithology Collision Risk Modelling Technical Report (REP2-020)), the Applicant has provided additional clarification and certainty to the conclusion of no AEoI for the Isles of Scilly SPA great black-backed gull feature. The Applicant has provided a PVA with the gap filled projects for great black-backed gull from the Isles of Scilly SPA.
- 1.6.5.5 Following a further review of Furness (2015) and additional evidence, it is clear that using the 'South-west and Channel BDMPS' may not be the most appropriate due to the Mona Offshore Wind Project's location within one BDMPS but close to another BDMPS. The 'South-west and Channel BDMPS' northern boundary is defined as a line through the Isle of Man (southwest to northeast); a separate BDMPS (the West of Scotland BDMPS) is defined to the north of this boundary. Furness (2015) estimates that 90% of the adult birds and 70% of immature birds from the Isles of Scilly SPA are present in the 'South-west and Channel BDMPS', but 0% are present within the 'West of Scotland BDMPS'. Section 14.12 of Furness (2015) also states the following:

"Adult great black-backed gulls from UK colonies may remain very close to the colony throughout the year, while immatures tend to move south but not over very large distances. So the distribution of UK SPA birds within the BDMPS is likely to be aggregated in waters close to SPA colony sites. This may be especially the case in the West of Scotland BDMPS, with adult birds from North Rona mainly being close to North Rona, and in UK South-west waters and Channel with adult birds being around the Scillies all through the year."

1.6.5.6 Furthermore, migratory movements using ringing recoveries (Figure 1.2; Spina et al., 2022) also indicate that no great black-backed gull ringed in the Isles of Scilly has been recorded at a more northernly latitude than the southern coast of Ireland, approximately 250 km southwest of the Mona Offshore Wind Project. A total of 62 great black-backed gull were ringed in the Isles of Scilly and recovered elsewhere as shown in Figure 1.2.



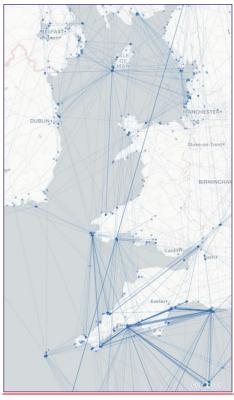


Figure 1.2: Connectivity between ringing and recovery locations of great black-backed gull ringed in the UK and Ireland (source: Spina et al., 2022).

1.6.5.7 Additional evidence exists from a ringing project undertaken at Skokholm Island on great black-backed gull, which lies approximately 200 km further north than the Isles of Scilly. Between 2014 and 2022, none of the 266 great black-backed gulls ringed between 2012 and 2021 and resighted away from the colony were recorded in the north-eastern Irish Sea (Skokholm Bird Observatory, 2023). Great black-backed gull generally tends to stay close to their natal or breeding colony, with some of the younger birds (red dots on the map) travelling further afield. The movement of younger birds is predominately to the south, to Cornwall and continental Europe (Figure 1.3).



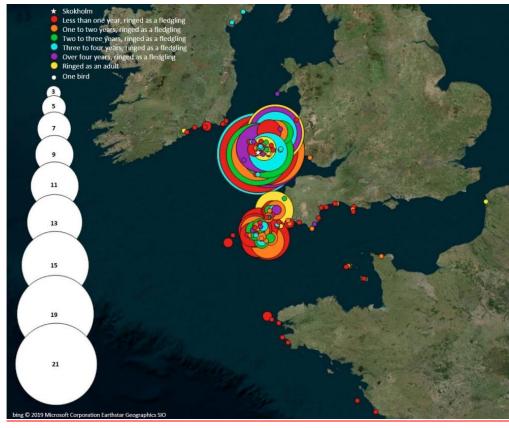


Figure 1.3: Location of resightings of great black-backed gull from Skokholm Island between 2014 and 2022 (source: Skokholm Bird Observatory, 2023).

1.6.5.8 In light of the evidence presented above demonstrating the lack of connectivity between the Isles of Scilly and the Mona Offshore Wind Project by great black-backed gull, the Applicant considers that beyond reasonable scientific doubt, there will be no AEOI without the need for an updated quantitative assessment. The assessment presented within the HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (APP-033) remains valid, and the additionality of the historical projects does not alter the results.

As stated within both JNCC and NRWs Relevant Representations (RR-011 and RR-033, respectively) and Written Representations (REP1-066 and REP1-056, respectively), the current PVA outputs, using the latest productivity and survival rates for great black-backed gull do not replicate the current population trend. Therefore, the Applicant considers that this qualitative assessment provides adequate robust evidence as to why the Mona Offshore Wind Project would not present an AEOI (alone or in-combination) on the great black-backed gull from the Isles of Scilly SPA.

1.6.5.3 1.6.5.10 Therefore, it would indicate that birds from the Isles of Scilly SPA are highly unlikely, given the evidence presented, to travel north into the Irish Sea and be



susceptible to collisions from any offshore wind farm projects from this area. The predicted apportioned impact from the Mona Offshore Wind Farm Project on this SPA (i.e., a maximum of 0.4 birds) is, therefore, considered to be unsupported due to this lack of connectivity.

1.6.6 **R**azo**r**bill

Cape Wrath SPA

- 1.6.6.1 One scenario was modelled within the PVA for razorbill from Cape Wrath SPA, considering the worst-case scenario of 70% displacement and 10% mortality. A PVA was not undertaken for the alternative approach (considering 70% displacement and 2% mortality) due to the impact predicted being <1% increase in baseline mortality and therefore not requiring a PVA (Parker *et al.*, 2023).
- 1.6.6.2 For the scenario, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1_83). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1--83: PVA outputs for razorbill from Cape Wrath SPA.

Yea r	Impact scena r i o	Simulated median Media n adult population size	Percentage population Populati on change (%) since 2000	Media n growt h rate	2.5 percentil e of simulate d growth rate		Median counterfactu al of population sizeCPS	Median counterfactu al of growth rate CGR
203 0	Baseline	5,674	35.74%	1.0105	0.9988	1.0221	-	-
203 0	Impact	-5,657	35.33%	1.0087	0.9974	1.0200	0.9971	0.9981
206 5	Baseline	8,135	94.62%	1.0104	1.0092	1.0115	-	-
206 5	Impact	7,640	82.78%	1.0086	1.0074	1.0098	0.9395	0.9983

As the results of the PVA undertaken for razorbill from Cape Wrath SPA indicated an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had consideration of considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Flannan Isles SPA

1.6.6.4 One scenario was modelled within the PVA for razorbill from Flannan Isles SPA, considering the worst-case scenario of 70% displacement and 10% mortality. A PVA

was not undertaken for the alternative approach (considering 70% displacement and 2% mortality) due to the impact predicted being <1% increase in baseline mortality and therefore not requiring a PVA (Parker *et al.*, 2023).

1.6.6.5 For the scenario, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1_84). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1-84: PVA outputs for razorbill from Flannan Isles SPA.

Yea r	Impact scenari o	Simulated median Medi an adult population size	Percentage populationPopulation change (%) since 1999	Median growth rate	2.5 percentile of simulated growth rate	97.5 percentil e of simulate d growth rate	Median counterfact ual of population size CPS	Median counterfact ual of growth rate CGR
203 0	Baselin e	2, 913<u>802</u>	38.58 <u>33.30</u> %	1. 0103 <u>02</u> <u>07</u>	0. 9946<u>8384</u>	1. 0267 <u>12</u> <u>60</u>	-	-
203 0	Impact	2, 906<u>798</u>	38.25 <u>33.11</u> %	1. 0089 <u>01</u> <u>93</u>	0. 9931<u>8328</u>	1. 0242<u>12</u> 39	0. 9976 <u>9989</u>	0. 998 4 <u>9981</u>
206 5	Baselin e	4 ,182 3.836	98.93 <u>82.49</u> %	1. 0104 <u>00</u> <u>93</u>	1.0087 <u>0.99</u> 16	1. 0120 <u>02</u> <u>56</u>	-	-
206 5	Impact	3, 920<u>598</u>	86.49 <u>71.15</u> %	1. <u>0086<u>00</u> <u>75</u></u>	1.0069 <u>0.98</u> 99	1. 0103 <u>02</u> <u>36</u>	0. 9369 <u>9380</u>	0.9982

As the results of the PVA undertaken for razorbill from Flannan Isles SPA indicated an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had consideration of considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Handa SPA

- 1.6.6.7 One scenario was modelled within the PVA for razorbill from Handa SPA, considering the worst-case scenario of 70% displacement and 10% mortality. A PVA was not undertaken for the alternative approach (considering 70% displacement and 2% mortality) due to the impact predicted being <1% increase in baseline mortality and therefore not requiring a PVA (Parker *et al.*, 2023).
- 1.6.6.8 For the scenario, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1-85). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.



Table 1.-85: PVA outputs for razorbill from Handa SPA.

Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage populationPopulation change (%) since 2010	Median growth rate	2.5 percentile of simulated growth rate	97.5 percentil e of simulate d growth rate	Median counterfact ual-of population sizeCPS	Median counterfact ual of growth rate CGR
203 0	Baselin e	12, 648<u>395</u>	22.44 <u>19.99</u> %	1. <u>0104<u>02</u> <u>02</u></u>	1.0028 <u>0.84</u> 45	1. 0178 <u>12</u> <u>64</u>	-	-
203 0	Impact	12, 625 365	22.22 <u>19.70</u> %	1. 0087 <u>01</u> <u>85</u>	1.0006 <u>0.84</u> 45	1. 0162 <u>12</u> <u>40</u>	0. 9986 <u>9982</u>	0.9982
206 5	Baselin e	18,145 <u>16,93</u> 4	75.65 <u>63.93</u> %	1. <u>010400</u> <u>94</u>	1.0096 <u>0.99</u> 19	1. 0112 <u>02</u> <u>51</u>	-	-
206 5	Impact	17,042 <u>15,83</u> 2	64.98 <u>53.26</u> %	1. <u>0086<u>00</u> <u>77</u></u>	1.0078 <u>0.99</u> <u>02</u>	1. <u>009</u> 4 <u>02</u> <u>33</u>	0. 9388 <u>9380</u>	0. 9983 <u>9982</u>

As the results of the PVA undertaken for razorbill from Handa SPA indicated an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had consideration of considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Mingulay and Berneray SPA

- 1.6.6.10 One scenario was modelled within the PVA for razorbill from Mingulay and Berneray SPA, considering the worst-case scenario of 70% displacement and 10% mortality. A PVA was not undertaken for the alternative approach (considering 70% displacement and 2% mortality) due to the impact predicted being <1% increase in baseline mortality and therefore not requiring a PVA (Parker *et al.*, 2023).
- 1.6.6.11 For the scenario, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1_86). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1-286: PVA outputs for razorbill from Mingulay and Berneray SPA.

Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage population Populat ion change (%) since 2009	Median growth rate	2.5 percentile of simulated growth rate	97.5 percentil e of simulate d-growth rate	Median counterfact ual of population size CPS	Median counterfact ual of growth rate CGR
203 0	Baselin e	25,00924.51 6	<u>21.</u> 23 .67 %	1. 0104 <u>02</u> <u>03</u>	1.0049 <u>0.84</u> 44	1. 0159 <u>12</u> <u>38</u>	-	-
203 0	Impact	24, 963<u>496</u>	23.44 <u>21.13</u> %	1. <u>0087<u>01</u> <u>91</u></u>	1.0032 <u>0.84</u> <u>32</u>	1. 0141<u>12</u> 20	0. 9979 <u>9981</u>	0. 9983 <u>9984</u>

Document Reference: S_D3_19

Yea r	Impact scena r i o	Simulated median Medi an adult population size	Percentage populationPopulation change (%) since 2009	Median growth rate	2.5 percentile of simulated growth rate	97.5 percentil e of simulate d growth rate	Median counterfact ual of population sizeCPS	Median counterfact ual of growth rate CGR
206 5	Baselin e	35,884 <u>33,61</u> <u>1</u>	77.45 <u>66.21</u> %	1. <u>0104<u>00</u> <u>94</u></u>	1.0098 <u>0.99</u> 12	1. <u>010902</u> <u>58</u>	-	-
206 5	Impact	33,711 <u>31,56</u> 8	66.70 <u>56.10</u> %	1. 0086 <u>00</u> <u>76</u>	1.0080 <u>0.98</u> 93	1. 0092 <u>02</u> 39	0. 9395 <u>9383</u>	0. 9983 <u>9982</u>

As the results of the PVA undertaken for razorbill from Mingulay and Berneray SPA indicated an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had-consideration-efconsidered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Rathlin Island SPA

- 1.6.6.13 One scenario was modelled within the PVA for razorbill from Rathlin Island SPA, considering the worst-case scenario of 70% displacement and 10% mortality. A PVA was not undertaken for the alternative approach (considering 70% displacement and 2% mortality) due to the impact predicted being <1% increase in baseline mortality and therefore not requiring a PVA (Parker et al., 2023).</p>
- 1.6.6.14 For the scenario, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1_87). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1-87: PVA outputs for razorbill from Rathlin Island SPA.

Yea r	Impact scenari o	Simulated median Medi an adult population size	Percentage populationPopulation change (%) since 2011	Median growth rate	2.5 percentile of simulated growth rate	97.5 percentil e of simulate d growth rate	Median counterfact ual-of population sizeCPS	Median counterfact ual of growth rate CGR
203 0	Baselin e	37,299 <u>36,79</u> <u>8</u>	21.16 19.53%	1. <u>0104<u>02</u> <u>21</u></u>	1.0060 <u>0.84</u> 78	1. <u>014812</u> <u>95</u>	-	-
203 0	Impact	37,244 <u>36,72</u> 4	20.98 19.29%	1. 0087 <u>01</u> <u>99</u>	1.0043 <u>0.84</u> 74	1. 0132 12 82	0. 9985 <u>9981</u>	0.99839982
206 5	Baselin e	53,498 <u>49,71</u> <u>1</u>	73.77 <u>61.47</u> %	1. 0104 <u>00</u> <u>91</u>	1.0099 <u>0.99</u> 10	1. <u>0108<u>02</u> <u>51</u></u>	-	-
206 5	Impact	50,268 <u>46,63</u> <u>8</u>	63.28 <u>51.49</u> %	1. <u>0086<u>00</u> <u>73</u></u>	1.0081 <u>0.98</u> <u>93</u>	1. <u>0091<u>02</u> <u>34</u></u>	0. 9399 <u>9380</u>	0. 9983 <u>9982</u>



1.6.6.15 As the results of the PVA undertaken for razorbill from Rathlin Island SPA indicated an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had consideration of considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). -This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

Shiant Isles SPA

- 1.6.6.16 One scenario was modelled within the PVA for razorbill from Shiant Isles SPA, considering the worst-case scenario of 70% displacement and 10% mortality. A PVA was not undertaken for the alternative approach (considering 70% displacement and 2% mortality) due to the impact predicted being <1% increase in baseline mortality and therefore not requiring a PVA (Parker et al., 2023).</p>
- 1.6.6.17 For the scenario, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1_88). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1-288: PVA outputs for razorbill from Shiant Isles SPA.

Yea r	Impact scenari o	Simulated median Median adult population size	Percentage populationPopulation change (%) since 2008	Median growth rate	2.5 percentile of simulated growth rate	97.5 percentil e of simulate d-growth rate	Median counterfact ual of population size CPS	Median counterfact ual of growth rate CGR
203 0	Baselin e	10, 617<u>399</u>	24.96 <u>22.40</u> %	1. 0104 <u>02</u> <u>35</u>	1.0024 <u>0.83</u> 38	1. 0186 <u>12</u> <u>81</u>	-	-
203 0	Impact	10, 598<u>373</u>	24.7 4 <u>22.09</u> %	1. <u>0086<u>02</u> <u>15</u></u>	1.0003 <u>0.83</u> 13	1. <u>016912</u> <u>65</u>	0. 9979 <u>9982</u>	0. 9982<u>9981</u>
206 5	Baselin e	15,232 <u>14,21</u> 4	79.28 <u>67.30</u> %	1. 0104 <u>00</u> <u>92</u>	1.0095 <u>0.99</u> 11	1. 0113 <u>02</u> <u>61</u>	-	-
206 5	Impact	14,311 <u>13,32</u> <u>3</u>	68.44 <u>56.81</u> %	1. <u>0086<u>00</u> <u>74</u></u>	1.0077 <u>0.98</u> <u>95</u>	1. <u>0095<u>02</u> <u>41</u></u>	0. 9396 <u>9381</u>	0.9982

As the results of the PVA undertaken for razorbill from Shiant Isles SPA indicated an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had consideration of considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).



Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA

- 1.6.6.19 One scenario was modelled within the PVA for razorbill from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA, considering the worst-case scenario of 70% displacement and 10% mortality. A PVA was not undertaken for the alternative approach (considering 70% displacement and 2% mortality) due to the impact predicted being <1% increase in baseline mortality and therefore not requiring a PVA (Parker *et al.*, 2023).
- 1.6.6.20 For the scenario, the predicted impact would result in the median growth rate (and 95% confidence intervals) continuing to be >1 and therefore indicating that the population is predicted to increase in size under these modelled parameters (Table 1_89). The counterfactual of the growth rate also indicates the impact scenarios are close to the baseline or the non-impacted predicted growth rate.

Table 1-289: PVA outputs for razorbill from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA.

Yea r	Impact scenari o	Simulated median Medi an adult population size	Percentage populationPopulation change (%) since 2013	Median growth rate	2.5 percentile of simulated growth rate	97.5 percentil e of simulate d growth rate	Median counterfact ual-of population sizeCPS	Median counterfact ual-of growth rate CGR
203 0	Baselin e	14, 242<u>023</u>	18.66 <u>16.83</u> %	1. <u>0102</u> 02 18	1.0031 <u>0.83</u> <u>96</u>	1. 0175 <u>12</u> <u>94</u>	-	-
203 0	Impact	14,219 <u>13,98</u> 5	18.47 <u>16.52</u> %	1. <u>0088<u>01</u> <u>96</u></u>	1.0013 <u>0.83</u> 99	1. 0163<u>12</u> 78	0. 9986 <u>9985</u>	0.9985
206 5	Baselin e	20,431 <u>19,20</u> 5	70.23 <u>60.01</u> %	1. 0104 <u>00</u> <u>93</u>	1.0096 <u>0.99</u> 16	1. 0111 <u>02</u> <u>54</u>	-	-
206 5	Impact	19,302 <u>18,09</u> <u>3</u>	60.82 <u>50.75</u> %	1. <u>0088<u>00</u> <u>77</u></u>	1.0080 <u>0.99</u> 00	1. <u>0095<u>02</u> <u>37</u></u>	0. 9450<u>9436</u>	0.9984

As the results of the PVA undertaken for razorbill from Skomer, Skokholm and the Seas off Pembrokeshire/Sgomer, Sgogwm a Moroedd Penfro SPA indicated an increasing population size with and without the predicted impacts it can be concluded that there is no AEoSI, beyond reasonable scientific doubt, when considering the Mona Offshore Wind Project in-combination with other plans and projects. On coming to this conclusion, the Applicant has had consideration of considered the sites conservation objectives (Appendix to ExQ1 Q1.10.6 Part B Conservation objectives for SPAs screened in for Likely Significant Effects S_D3_25.6). This conclusion replicates what was previously presented in HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010).

1.7 Conclusions

1.7.1.1 Following the submission of the Mona Offshore Wind Project application, the SNCBs requested additional clarification on the impacts presented within the EIA (specifically collisions) and HRA (specifically presenting a range of impacts). This supporting information technical note has been produced to provide the extra clarity that the SNCBs requested.

- 1.7.1.2 Within the EIA documentation the mean collision impacts were assessed, however the SNCBs requested that the LCI and UCI were also included within the assessment presented in the EIA and HRA. Within section 1.4 the impacts are assessed including the mean, LCI and UCI. When considering the worst-case scenario (UCI) the impact on all species (apart from great back-backed gull) resulted in >1% increase in baseline mortality and no change to the impact magnitude was predicted. For great black-backed gull a PVA was required as the UCI (and mean) impact were predicted to increase the baseline mortality by >1% (when considering the smallest foraging range breeding season population). The PVA predicted no change in the conclusions of the assessment, with the population predicted to increase in size when considering both the mean and UCI impacts.
- When presenting the range of displacement impacts for each species and apportioning the impact to relevant SPAs, several SPAs required an in-combination assessment. The in-combination assessments (section 1.5.3) resulted in several SPAs requiring PVAs as the impacts predicted resulted in an increase in baseline mortality of >1%. The in-combination assessments included the gap-filled projects, which previously were only considered qualitatively within the Applicant's DCO application and were not included in the version of this note submitted at Deadline 3 (REP3-059).
- 1.7.1.3

 The PVAs presented in section 1.61.6 predicted that for each all bar one SPA and species considered there would be no decrease in population size under any of the impact scenarios. The range-based scenarios were presented for common guillemot, northern gannet, great black-backed gull and razorbill as requested by the SNCBs. Common guillemot was also modelled within the PVAs, considering an alternative approach using the 70% displacement and 2% mortality. Black-legged kittiwake was not assessed against the worst case scenario (i.e. 70% displacement and 10% mortality) and a more pragmatic 30% displacement and 3% mortality was modelled within the PVAs modelled within the PVAs assuming 30% displacement and 3% mortality, which is in line with NatureScot's guidance (NatureScot, 2023) and used in displacement assessments for offshore wind farm within Scottish waters (noting that NRW (A) and Natural England does not advise that displacement assessments are undertaken for kittiwake by English or Welsh projects as the risk is considered to low).
- 1.7.1.4 Following the PVAs, no AEoSI was predicted for each SPA and species and therefore the conclusions presented within HRA Stage 2 Information to Support an Appropriate Assessment Part Three: Special Protection Areas and Ramsar sites Assessments (REP2-010) remain valid.



<u>1.7.1.5</u>).

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1.8 References

NatureScot (2018). Interim Guidance on apportioning impacts from marine renewable developments to breeding seabird populations in SPAs. Available at: https://www.nature.scot/doc/interim-guidance-apportioning-impacts-marine-renewable-developments-breeding-seabird-populations

Document Reference: S_D3_19



PVA modelling sheets PVA modelling sheets seabird populations in SPAs. Available at: https://www.nature.scot/doc/interim-guidance-apportioning-impacts-marine-renewable-developments-breeding-seabird-populations

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Appendix A: PVA modelling parameters

A.1.1.1 Due to the number of PVAs run for this projects summary information and tables are presented below to provide the SNCBs with the information required to undertake a recreation of the PVA outputs. Individual PVA modelling sheets are available on request.

A.1.1.1.2 All PVAs were run using: Tool version 2, with R version 3.5.1, PVA package version: 4.18 (with UI version 1.7).

##		Package	Version
##	popbio	"popbio"	"2.4.4"
##	shiny	"shiny"	"1.1.0"
##	shinyjs	"shinyjs"	"1.0"
##	shinydashboard	"shinydashboard"	"0.7.1"
##	shinyWidgets	"shinyWidgets"	"0.4.5"
##	DT	"DT"	"0.5"
##	plotly	"plotly"	"4.8.0"
##	rmarkdown	"rmarkdown"	"1.10"
##	dplyr	"dplyr"	"0.7.6"
##	tidyr	"tidyr"	"0.8.1"

A.1 Basic PVA information

A.1.1.1.3 Each of the models were run using the following basic information:

This run had reference name "[Varied for each model run]".

PVA model run type: simplescenarios.

Model to use for environmental stochasticity: betagamma.

Model for density dependence: nodd.

Include demographic stochasticity in model?: Yes.

Number of simulations: 5000.

Random seed: 15.

Years for burn-in: 5.

Case study selected: None.

A.2 Population

A.1.1.4 The population used within the PVAs is presented within the Mona Offshore Wind Project apportioning tables (section 1.5.1 for species considering for displacement (black-legged kittiwake, common guillemot, northern gannet and razorbill) and section 1.5.2 for species considered for collision (black-legged kittiwake, northern gannet and great black-backed gull)).

A.3 Basic demographic rates

A.1.1.5 The basic demographic rates are presented within Table 1-90. The Applicant has used the input parameters for most species that are inbuilt to the PVA shiny app. The productivity was provided by the BTO and uses data from the seabird monitoring programme from 2010 to 2019.



Table 1-90: Baseline demographic rates for the each species which required a PVA

<u>Parameter</u>	Black-legged kittiwake	Common guillemot	Northern gannet	Great black- backed gull	Razorbill
Productivity	Mean: 0.619	Mean: 0.583	Mean: 0.766	Mean: 1.016	Mean: 0.532
	SD: 0.121	SD: 0.075	SD: 0.051	SD: 0.125	SD: 0.084
Adult survival rate	Mean: 0.854	Mean: 0.94	Mean: 0.922	Mean: 0.93	Mean: 0.895
	SD: 0.077	SD: 0.025	SD: 0.019	SD: 0.001	SD: 0.067
Age class 0 to 1 survival rate	Mean: 0.79	Mean: 0.56	Mean: 0.42	0. Mean: 0.798	Mean: 0.794
	SD: 0.001	SD: 0.058	SD: 0.084	SD: 0.001	SD: 0.001
Age class 1 to 2 survival rate	Mean: 0.854	Mean: 0.792	Mean: 0.852	Mean: 0.93	Mean: 0.794
	SD: 0.077	SD: 0.152	SD: 0.032	SD: 0.001	SD: 0.001
Age class 2 to 3 survival rate	Mean: 0.854	Mean: 0.917	Mean: 0.908	Mean: 0.93	Mean: 0.895
	SD: 0.077	SD: 0.098	SD: 0.026	SD: 0.001	SD: 0.067
Age class 3 to 4 survival rate	Mean: 0.854	Mean: 0.938	Mean: 0.91	Mean: 0.93	Mean: 0.895
	SD: 0.077	SD: 0.107	SD: 0.026	SD: 0.001	SD: 0.067
Age class 4 to 5 survival rate	Mean: 0.854	Mean: 0.94	Mean: 0.922	Mean: 0.93	Mean: 0.895
	SD: 0.077	SD: 0.025	SD: 0.019	SD: 0.001	SD: 0.067
Age class 5 to 6 survival rate	N/A	Mean: 0.94 SD: 0.025	N/A	N/A	N/A

A.4 Impacts

A.1.1.6 The impacts for each site can be generated by dividing the in-combination impact (section 1.5.3 and summarised in Table 1-64) by the population presented within the Mona Offshore Wind Project apportioning tables (section 1.5.1 for species considering for displacement (black-legged kittiwake, common guillemot, northern gannet and razorbill) and section 1.5.2 for species considered for collision (black-legged kittiwake, northern gannet and great black-backed gull)).

A.1.1.7 For example the in-combination impact on great black-backed gull from Table 1-50 of 9.38 birds and the population at the Isles of Scilly (1802 birds in 2006) from Table 1-16 generates a decrease in survival of 0.005204529 (9.38/1802). All PVAs were run using nine decimal places if possible.

A.5 Outputs

A.1.1.1.1.8 All PVAs were run from 2030 to 2065, in line with the predicted lifetime of the Mona Offshore Wind Project.