

Environmental Statement

Volume 6, Annex 5.2: Offshore Ornithology Displacement Technical Report





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Glossary

Term	Meaning
Season	Bird behaviour and abundance is recognised to differ across a calendar year, with particular months recognised as being part of different seasons. The biologically defined minimum population scale (BDMPS) seasons used in this report are based on those described in Furness (2015). Separate seasons are recognised in this technical report in order to establish the level of importance any seabird species has within the study area during any particular period of time.
Disturbance sensitivity	Species disturbance sensitivity to wind farm structures, ship and helicopter traffic factors are compiled by Bradbury <i>et al.</i> (2014). They used scores from 1 (limited escape behaviour and a very short flight distance when approached) to 5 (strong escape behaviour at a large response distance).
Habitat specialisation	The habitat specialisation factor represents the range of habitats species are able to use and whether they use these as specialists or generalists. Species habitat specialisation scores used in this Technical Report have been compiled by Bradbury <i>et al.</i> (2014). This score classifies species into categories from 1 (tend to forage over large marine areas with little known association with particular marine features) to 5 (tend to feed on very specific habitat features, such as shallow banks with bivalve communities, or kelp beds).
Ornithology	Ornithology is a branch of zoology that concerns the study of birds.
Significant effect	The significance of an effect is determined by considering the overall importance of the receptor and the magnitude of the effect using a matrix-based approach.
Statutory Nature Conservation Bodies (SNCBs)	Comprised of Joint Nature Conservation Committee, Natural Resources Wales, Department of Agriculture, Environment and Rural Affairs/Northern Ireland Environment Agency, Natural England and Scottish Natural Heritage, these agencies provide advice in relation to nature conservation to the government.

Acronyms

Term	Meaning
BDMPS	Biologically Defined Minimum Population Scale
ВТО	British Trust for Ornithology
EWG	Expert Working Group
LCI/UCI	Lower/Upper Confidence Interval
MRSea	Marine Renewables Strategic environmental assessment
SMP	Seabird Monitoring Programme
SNCB	Statutory Nature Conservation Body
SPA	Special Protection Area
VORs	Valued Ornithological Receptors

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Units

Unit	Description
%	Percent
km	Kilometres
km²	Kilometres squared

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1 Offshore ornithology displacement technical report

1.1 Introduction

1.1.1 Background

- 1.1.1.1 Seabirds can be impacted by offshore wind farm developments in a number of ways, including collision, displacement, barrier effects and disturbance, as well as indirect impacts such as changes to prey availability.
- 1.1.1.2 Disturbance can exist when a bird's normal pattern of activity is interrupted by anthropogenic activity (i.e. vessel movements and increase noise from construction activities). Birds using a given area of sea for feeding, resting and/or commuting may therefore be disturbed by these activities in or near those areas. As the result of disturbance, displaced seabirds may move to areas already occupied by other seabirds and thus face higher intra/inter-specific competition due to a higher density of individuals competing for the same resource. Alternatively, displaced seabirds may be forced to move into areas of lower quality (e.g. areas of lower prey availability). Such disturbance and resulting avoidance could ultimately affect their demographic fitness (i.e. survival rates and breeding productivity) as well as potentially impacting on other birds in areas that displaced birds move to. Disturbance is typically considered a temporary effect, with impacts reducing once the activity causing disturbance stops.
- 1.1.1.3 Furness *et al.* (2013) defines displacement as 'a reduced number of birds occurring within or immediately adjacent to an offshore wind farm' due to the presence of turbines. Displacement, as an effect, may occur both in the area of the disturbance or development and to some distance beyond it, which is known as a 'buffer' (e.g. Mendel et al. 2014). Displacement is considered to be a permanent effect, with birds facing adverse effects due to the removal of feeding areas, resulting in birds having to travel to more distant areas of sea for feeding and/or resting opportunities.
- 1.1.1.4 Species differ greatly in their susceptibility to disturbance and displacement. Species sensitivity to disturbance in response to offshore wind farms has been quantified by Garthe and Hüppop (2004), Furness et al. (2013), Bradbury et al. (2014) and Wade et al. (2016). In a review of studies from 20 operational offshore wind farms in Europe, Dierschke et al. (2016) assessed the extent of displacement or attraction of a number of seabird species. Whilst diver species and northern gannet Morus bassanus showed consistent and strong avoidance behaviour of operational wind farms, northern fulmar Fulmarus glacialis, common scoter Melanitta nigra, Manx shearwater Puffinus puffinus, razorbill Alca torda, common guillemot Uria aalge, little gull Larus minutus and sandwich tern Thalasseus sandvicensis showed less consistent displacement.
- 1.1.1.5 The Statutory Nature Conservation Bodies (SNCBs) have produced guidelines to assess seabird displacement associated with offshore wind farms (JNCC *et al.*, 2022). The guidelines promote the use of a displacement matrix approach (i.e. representing proportions of seabirds potentially displaced/dying as a result of offshore wind farm development). The SNCB note (JNCC *et al.*, 2022) details that the effects from disturbance and displacement is expected to be spatially limited to the offshore wind farm footprint and close proximity (birds are impacted by displacement up to 2 km from the wind farm footprint for most species, with displacement up to 4 km considered for divers and seaducks (and in some cases up to 10 km) due to being the most sensitive species groups to disturbance from sound, boat and helicopter traffic).



1.1.1.6 The displacement assessment for the Mona Offshore Wind Project makes use of the SNCB Matrix table approach, which was agreed during consultation with the Offshore Ornithology Expert Working Group (EWG) on 13 July 2022 as part of the Evidence Plan process (Evidence Plan sent to stakeholders on 26 May 2022, responses received on 24 June 2022 from Natural England and JNCC, and 7 July from Natural Resource Wales).

1.1.2 Aim of report

1.1.2.1 This report presents the method and results of the SNCB Matrix table approach to seabird displacement assessment resulting from the Mona Offshore Wind Project during the construction, operations and maintenance and decommissioning phases. The report considers the most abundant seabird species recorded during the digital aerial surveys carried out between March 2020 and February 2022 to characterise the baseline for the assessment. The full methods and results of the digital aerial surveys are presented in Volume 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (Document reference F6.5.1).



1.2 Consultation

1.2.1.1 A summary of the key issues raised during consultation activities undertaken to date specific to offshore ornithology is presented in Table 1.1 below, together with how these issues have been considered in the production of this technical report as part of the Environmental Statement.

1.2.2 Evidence Plan process

- 1.2.2.1 The purpose of the Evidence Plan process is to agree the information the Mona Offshore Wind Project needs to supply to the Secretary of State, as part of a DCO application for the Mona Offshore Wind Project. The Evidence Plan seeks to ensure compliance with EIA. The development and monitoring of the Evidence Plan and its subsequent progress is being undertaken by the Steering Group. The Steering Group will comprise of the Planning Inspectorate, the Applicant, NRW, Natural England, JNCC and the MMO as the key regulatory and SNCBs. To inform the EIA process during the pre-application stage of the Mona Offshore Wind Project, Expert Working Groups (EWGs) were also set up to discuss and agree topic specific issues with the relevant stakeholders. Consultation was undertaken via the Offshore Ornithology EWG, with meetings held in February 2022, July 2022, November 2022, February 2023, June 2023, October 2023 and December 2023.
- 1.2.2.2 The responses provided and changes suggested by the stakeholders through the EWG are summarized in Table 1.1 together with changes implemented in the technical report of the Environmental Statement.
- 1.2.2.3 A number of comments were received during the S42 consultation following submission of the PEIR chapter. All the responses provided, and changes suggested by the stakeholders are presented in the consultation report (Document reference E.3) together with changes implemented in the technical reports underpinning the Environmental Statement.
- 1.2.2.4 A summary of the key responses with changes implemented in the technical report of the Environmental Statement are presented in Table 1.1.



Table 1.1: Summary of key topics and issues raised during consultation activities undertaken for the Mona Offshore Wind Project relevant to offshore ornithology displacement technical report of the Environmental Statement.

Date	Consultee and type of response	Topics and issues raised	Response to issue raised and/or where considered in this chapter
June 2022	Scoping Opinion JNCC	Displacement and barrier effects to seabirds occurring during O&M should also be assumed to occur during both construction and decommissioning. Table 4.19 indicates that displacement will be considered during construction and decommissioning phases, but not barrier effects. In the absence of evidence to the contrary, then an assumption of a mean annual mortality of 50% of that assessed during O&M should be applied to the construction and decommissioning phases.	Displacement assessment was carried out for the construction, operations and maintenance, and decommissioning phases assuming that 50% of the annual displacement impact resulting from the operations and maintenance phase will occur during construction and decommissioning phases. Approach and results are presented in sections 1.3 and 1.4.
July 2022	Offshore Ornithology Expert Working Group 2: Attended by: Natural England, JNCC, NRW, RSPB, TWT	Agreed on the approach to displacement as set out in the Mona Displacement technical paper, taking into account clarifications to be provided by SNCBs.	It was agreed that kittiwake would be included in displacement along with the combined estimate of birds on the water and in flight for Manx shearwater.
June 2023	S42 Consultation NRW, JNCC	NRW recommend that a worked example of the approach for a species assessed by MRSea for collision (for example kittiwake) and for a species assessed for displacement (for example guillemot) be included, that details how unidentified birds and availability bias have been corrected for and how estimates of birds in flight have been made from all birds estimates.	Methodology has been further clarified in response to S42 consultation and therefore the requirement for a worked example is no longer necessary.
		NRW do not recommend that displacement is assessed for kittiwake as we currently consider the evidence base to be insufficient hence we have not provided advice/comment on this.	Although black-legged kittiwake are considered to have low sensitivity to displacement, this species has been considered following an agreement through the Evidence Plan Process and at the recommendation of JNCC.

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Date	Consultee and type of response	Topics and issues raised	Response to issue raised and/or where considered in this chapter
		NRW seek clarification as to whether the monthly abundance estimates presented in Tables A.122-A.128 of Annex 5.2 are actually a mix of design-based and model-based (MRSea) estimates or whether all are model-based (MRSea) or all design-based.	Monthly species abundances are a mix of MRSea and design-based abundances, with MRSea estimates used in instead of design-based estimates wherever possible. Further explanations are provided in section 1.3.
		NRW states that it appears that for the species where MRSea estimates have been generated for some of the surveys, the quantitative impact assessments (for example of displacement and collision risk) have been based on a mix of MRSea estimates for months where these are available and design-based estimates where MRSea estimates are not available. NRW advise that whilst this approach seems sensible and uses the best available data, this hierarchy of approach needs to be clearly stated in the documents.	Monthly species abundances are a mix of MRSea and design-based abundances, with MRSea estimates used instead of design-based estimates wherever possible. Further explanations are provided in section 1.3.
		NRW advise that the guillemot seasonal abundances included for Mona in Table 10.73 are double-checked, as they are not consistent with the seasonal abundances presented in Volume 6, Annex 5.2: Offshore ornithology displacement technical report of the Environmental Statement (Document reference F6.5.2), Table 1.15 Common guillemot bio-season displacement estimates for the Mona Array Area plus 2km buffer during the operations and maintenance phase.	Common guillemot seasonal abundances have been checked in Volume 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (Document reference F6.5.1) and in this technical report.
		JNCC seek clarification as to which method(s) have been used to generate the monthly abundance estimates presented in Tables A.122-A.128 of Volume 6 Chapter 5.2 (Document reference F6.5.2).	Monthly species abundances are a mix of MRSea and design-based abundances, with MRSea estimates used in place of design-based estimates wherever possible. Further explanations are provided in section 1.3.

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1.3 Methodology

- 1.3.1.1 As sensitivity to displacement differs considerably between seabird species, species were screened and progressed for the Matrix table approach using 'Disturbance Sensitivity' and 'Habitat Specialization' scores from Bradbury *et al.* (2014) (expanded from Furness *et al.*, 2013) as recommended by the Joint SNCB Interim Displacement Advice Note (JNCC *et al.*, 2022) (the SCNB Note). As recommended by the SNCB Note (JNCC *et al.*, 2022), the assessment is based on the mean seasonal peak number of seabirds (average of the highest seasonal value in the two years of survey) in the Mona Array Area with the appropriate buffer zone.
- 1.3.1.2 Displacement matrices were populated based on the displacement and mortality values recommended by the SNCB Note (JNCC *et al.*, 2022) and the displaced population was assessed against the relevant regional population for each season.

1.3.2 Screening species for displacement assessment

- 1.3.2.1 A review of all species of seabirds recorded during the two years of Digital Aerial Surveys (DAS) undertaken at the Mona Offshore Ornithology Array Area study area was conducted to identify Valued Ornithological Receptors (VORs) for displacement analysis based on their abundance in surveys and vulnerability to impacts. A further step refined this list of VORs based on whether they are features of nearby designated sites in order to identify species of importance.
- 1.3.2.2 To inform the identification of VORs the following criteria are defined for each species:
 - Known to be vulnerable to displacement impacts (based on Bradbury *et al.*, 2014 and Wade *et al.*, 2016).
 - Where the population of the species observed is considered to be of importance (i.e. high abundance recorded within the Mona Array Area plus 2 km (or 4 km buffer if appropriate for the species)).
 - Low = <100 birds in all individual surveys
 - Moderate = 100 to 500 birds in at least one survey
 - High = > 500 birds in at least one survey.
 - Are a feature of a designated site(s) within that species mean-max foraging range (as shown in Volume 6, Annex 5.1: Offshore Ornithology Baseline Characterisation Technical Report of the Environmental Statement (Document reference F6.5.1)).
- 1.3.2.3 VORs were identified and progressed to the displacement matrix table stage when the vulnerability of a species was moderate or high and the population importance of a species was also moderate or high. Species identified and taken forward to the collision risk assessment have been highlighted within Table 1.1 below.
- 1.3.2.4 Species such as Manx shearwater and black-legged kittiwake are considered to have low sensitivity to displacement however at the request of JNCC as part of the Offshore Ornithology EWG (EWG meeting 2, 13 July 2022), displacement for these species has been considered. Red-throated diver were also included within the assessment despite their low presence at the request of the EWG (EWG meeting 3, 30 November 2022).



Table 1.2: Displacement screening based on species abundance within the Mona Array Area plus a 2km to 4km buffer during the site-specific surveys, displacement vulnerability, and connectivity to designated site.

1. Cells highlighted indicate species in yellow has been screened in.

Species	Observed within the Mona Array Area plus 2 km buffer (or 4 km buffer if appropriate for the species)	Population importance	Vulnerability to displacement impacts	Designated site qualifying feature (within range of the Mona Array Area)	Displacement analysis required (Yes/No)
European shag Phalacrocorax aristotelis	No	Low	Moderate	Yes	No - species absent from the Mona Array Area plus 2 km buffer
Great cormorant Phalacrocorax carbo	Yes - peak average abundance of 6 birds.	Low	High	Yes	No - species recorded in low population numbers in the Mona Array Area plus 2 km buffer
Red-throated diver Gavia stellata	No	Low	High	Yes	Yes –assessment carried out following JNCC request to include species in displacement assessment (Second EWG meeting on 13 July 2022).
Common guillemot	Yes - peak average abundance of 5,739 birds.	High	Moderate	Yes	Yes - species recorded in high numbers in the Mona Array Area plus 2 km buffer, species has a moderate level of vulnerability to displacement, species is a qualifying feature of nearby designated sites.
Razorbill	Yes - peak average abundance of 2,305 birds.	High	Moderate	Yes	Yes - species recorded in high numbers in the Mona Array Area plus 2 km buffer, species has a moderate level of vulnerability to displacement, species is a qualifying feature of nearby designated sites.



Species	Observed within the Mona Array Area plus 2 km buffer (or 4 km buffer if appropriate for the species)	Population importance	Vulnerability to displacement impacts	Designated site qualifying feature (within range of the Mona Array Area)	Displacement analysis required (Yes/No)
Atlantic puffin Fratercula arctica	Yes - peak average abundance of 44 birds.	Low	Moderate	Yes	Yes - species has a moderate level of vulnerability to displacement, species is a qualifying feature of nearby designated sites.
Northern fulmar	Yes - peak average abundance of 149 birds.	Moderate	Very Low	Yes	No - species has a very low vulnerability to displacement
Manx shearwater	Yes - peak average abundance of 2,173 birds.	High	Very Low	Yes	Yes - assessment carried out following EWG request
Northern gannet	Yes - peak average abundance of 293 birds.	Moderate	Low	Yes	Yes - species recorded in moderate numbers in the Mona Array Area plus 2 km buffer, species is a qualifying feature of nearby designated sites.
Black-legged kittiwake Rissa tridactyla	Yes - peak average abundance of 907 birds.	High	Low	Yes	Yes - assessment carried out following JNCC request
Herring gull <i>Larus</i> argentatus	Yes - peak average abundance of 68 birds.	Low	Low	Yes	No - species has a low vulnerability to displacement
Lesser black-backed gull Larus fuscus	Yes - peak average abundance of 27 birds.	Low	Low	Yes	No - species has a low vulnerability to displacement
Great black-backed gull Larus marinus	Yes - peak average abundance of 174 birds.	Moderate	Low	Yes	No - species has a low vulnerability to displacement
Black-headed gull Chroicocephalus ridibundus	Yes - peak average abundance of 7 birds.	Low	Low	Yes	No - species has a low vulnerability to displacement

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Species	Observed within the Mona Array Area plus 2 km buffer (or 4 km buffer if appropriate for the species)	Population importance	Vulnerability to displacement impacts	Designated site qualifying feature (within range of the Mona Array Area)	Displacement analysis required (Yes/No)
Common gull <i>Larus</i> canus	Yes - peak average abundance of 20 birds.	Low	Low	Yes	No - species has a low vulnerability to displacement
Little gull	Yes - peak average abundance of 14 birds.	Low	Low	Yes	No - species has a low vulnerability to displacement
Great skua Stercorarius skua	Yes - peak average abundance of 7 birds.	Low	Very Low	No	No - species has a very low vulnerability to displacement
Arctic skua Stercorarius parasiticus	Yes - peak average abundance of 11 birds.	Low	Very Low	No	No - species has a very low vulnerability to displacement
Common tern Sterna hirundo	Yes - peak average abundance of 7 birds.	Low	Low	Yes	No - species has a low vulnerability to displacement
Sandwich tern	Yes - peak average abundance of 15 birds.	Low	Moderate	Yes	No - species has a low vulnerability to displacement
Arctic tern Sterna paradisaea	No	Low	Low	No	No - species has a low vulnerability to displacement



1.3.3 Seasonality

- 1.3.3.1 Seasons used within the displacement assessment were defined according to the breeding, non-breeding and migratory periods (autumn and spring migration) based on Furness (2015) (Table 1.3) and as per Offshore Ornithology EWG advice (based on the second EWG meeting and Evidence Plan sent to Statutory Nature Conservation Bodies (SNCBs) on 27 May 2022, advice received on 24 June from Natural England and JNCC, and on 7 July 2022 from NRW).
- 1.3.3.2 If a month fell within two seasons (e.g., March for gannet is included in both the prebreeding and breeding seasons in Furness (2015)), priority was given to the breeding season. In cases where a peak abundance was estimated during a month spanning two seasons, such as 100 birds observed in March for northern gannets, the peak of 100 birds was attributed to the breeding period. This approach was applied based on advice from JNCC during EWG meeting 2 (held on 13 July 2022), which discouraged the use of the migration-free breeding period in the displacement assessments. Consequently, some months were present in more than one season. To avoid underestimating the impact during the breeding season therefore, a precautionary approach was taken to prioritizing it due to the significant importance of this time and any potential impacts during this period having a profound impact on the regional population. If two months fell across two periods (e.g. March and April for kittiwake overlapping the pre-breeding and breeding season) then the first month was assigned to the pre-breeding and the second assigned to the breeding. This approach was taken as birds are still undergoing migration in March (Furness, 2015) and would likely overestimate impacts if all birds were considered to be breeding during the migration

Table 1.3: Seasonal definitions as the basis for assessment, from Furness (2015).

Species	Pre-breeding season/spring migration	Breeding season	Post breeding season/autumn migration	Non- breeding/winter season
Common guillemot	N/A	March to July	N/A	August to February
Razorbill	January to March	April to July	August to October	November to December
Atlantic puffin	N/A	April to August	N/A	September to March
Northern gannet	December to February	March to September	October to November	N/A
Black-legged kittiwake	January to March February	April March to August	September to December	N/A
Manx shearwater	March	April to August	September to October	N/A
Red-throated diver	February to April	May to August	September to November	December to January

1.3.4 Buffers for displacement

1.3.4.1 For the purpose of the displacement assessment, the monthly abundance of seabirds within the Mona Array Area, the Mona Array Area plus 2 km buffer and, if appropriate for the species, the Mona Array plus 4 km buffer, including upper and lower 95%



confidence limits, were generated from the data collected through the programme of digital aerial surveys carried out in the Mona Offshore Ornithology Array Area study area (Figure 1.1). The Mona Array Area plus 2 km buffer covers 449.59 km², and the Mona Array Area plus 4 km buffer covers 622.46 km².



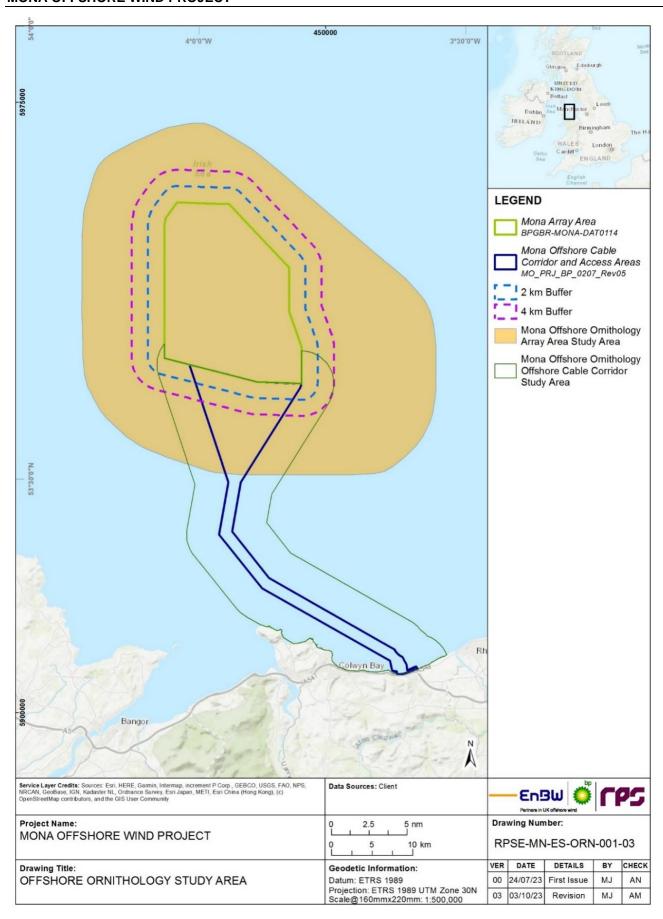


Figure 1.1: The Mona Offshore Ornithology Array Area study area, Mona Array Area plus associated buffers for displacement and the Mona Offshore Ornithology Offshore Cable Corridor



1.3.5 Abundance estimates

- 1.3.5.1 Density/population estimates were generated from the site specific digital aerial surveys carried out in the Mona Offshore Ornithology Array Area study area, which extended up to 16.5 km outside the Mona Array Area. Full details of the digital aerial survey methods and results are presented in Volume 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (Document reference F6.5.1).
- 1.3.5.2 Model-based estimates using the Marine Renewables Strategic environmental assessment (MRSea) package were produced in order to predict numbers across the digital aerial survey area alongside 95% confidence intervals to provide a level of uncertainty. Design-based estimates for bird numbers and densities in each month were also generated and compared to the MRSea estimates to provide additional validation of the MRSea outputs and to provide estimates for months where low raw abundances prevented the use of the MRSea model. Monthly species abundances are therefore a mix of MRSea and design-based abundances, with MRSea estimates used in lieu of design-based estimates wherever possible. For example, MRSea was only able to run for razorbill for the months of March 2020, July 2020, September 2020, December 2020 to April 2021 and December 2021 to February 2022, and so MRSea estimates are used for those months, with design-based estimates only used for April 2020 to June 2020, August 2020, October 2020 to November 2020 and May 2021 to November 2021. The only species that had MRSea estimates used for all months was common guillemot as there were sufficient observations recorded during digital aerial surveys for MRSea models to run.
- 1.3.5.3 The primary data that informs the basis for the assessment of displacement effects are seasonal mean peak population estimates including seabirds both recorded on the surface (sitting) and in flight. Mean seasonal peak population estimates of each species were calculated using the defined seasons by Furness (2015) to provide the number of seabirds at risk of displacement impacts, including upper and lower 95% confidence intervals. Peak abundances in each season for each species considered within the displacement assessment are outlined in bold within Appendix A.
- 1.3.5.4 As an example, the mean seasonal peak population calculation for common guillemot which breeds from March to July is presented. The average was taken of the peak count for the breeding season in Year 1 of the digital aerial surveys within the Mona Array Area plus 2 km buffer (which occurred in March) and the peak count in the breeding season of Year 2 (which occurred in April).
- 1.3.5.5 In accordance with SNCB (2022), displacement was estimated as affecting seabirds present both in flight and sitting on the water (whether foraging or loafing), having accounted for availability bias (seabirds that may be underwater at the time of the survey). Therefore, abundance estimates of seabirds recorded in flight and sitting were combined to derive the mean seasonal peak population at risk of displacement. Where possible, data relating to age classes of each species is also reported, although the values used in the matrices will relate to all individuals. Mean seasonal peak abundances and how they were derived are presented in Table 1.4. For Lower Confidence Intervals (LCI) and Upper Confidence Intervals (UCI), see Appendix B.



Table 1.4: Mean peak abundances for use in the assessment for each season.

	Pre-breeding		Post breeding	Non-breeding/winter
Species	season/spring migration	Breeding season	season/autumn migration	season
Common guillemot				
Peak Year 1	N/A	5,739	N/A	4,415
Peak Year 2	N/A	2,702	N/A	3,097
Mean peak	N/A	4,220	N/A	3,756
Razorbill			<u> </u>	
Peak Year 1	1,543	35	173	223
Peak Year 2	2,305	130	9	619
Mean peak	1,924	83	91	421
Atlantic puffin	1	·	<u>'</u>	
Peak Year 1	N/A	30	N/A	440
Peak Year 2	N/A	0	N/A	0
Mean peak	N/A	15	N/A	220
Northern gannet		•		
Peak Year 1	34	209	26	N/A
Peak Year 2	21	293	89	N/A
Mean peak	28	251	58	N/A
Black-legged kittiwa	ake	•	<u>'</u>	
Peak Year 1	907 - <u>287</u>	264 - <u>548</u>	242	N/A
Peak Year 2	861	445-907	879	N/A
Mean peak	884 - <u>574</u>	355 - <u>726</u>	560	N/A

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Species	Pre-breeding season/spring migration	Breeding season	Post breeding season/autumn migration	Non-breeding/winter season
Manx shearwater				
Peak Year 1	<u>6</u> 0	324	<u>2532</u>	N/A
Peak Year 2	6	2,173	331 - <u>7</u>	N/A
Mean peak	<u>6</u> 3	1,249	182 <u>16</u>	N/A
Red-throated diver				
Peak Year 1	0	N/A	0	0
Peak Year 2	0	N/A	0	0
Mean peak	0	N/A	0	0



1.3.6 Displacement parameters

- 1.3.6.1 Table 1.5 presents the displacement and mortality ranges for the species considered in the displacement assessment. The most likely displacement and mortality rates during the operational period for common guillemot, razorbill and northern gannet have been obtained from the SNCB Note (JNCC *et al.* 2022). For auk species such as common guillemot, razorbill and Atlantic puffin the SNCBs advise a displacement level of 30 to 70%. Black-legged kittiwake rates have been taken from the relevant literature (Table 1.5).
- 1.3.6.2 As Manx shearwater have a disturbance susceptibility score of one, the recommended rates of 1 to 10% for displacement and 1 to 10% mortality from the SNCB Note (JNCC et al. 2022) guidance were originally considered. However, the Offshore Ornithology EWG (meeting held 13 July 2022) advised that the 30% to 70% rates be applied (the same rates for auk species) instead.

Table 1.5: Displacement and mortality rates for use in the assessment during the operations and maintenance phase.

Species	Displacement rates	Mortality rates	Source
Common guillemot	30 to 70%	1 to 10%	SNCB Note (JNCC et al., 2022)
Razorbill	30 to 70%	1 to 10%	SNCB (JNCC et al., 2022)
Atlantic puffin	30 to 70%	1 to 10%	SNCB (JNCC et al., 2022)
Northern gannet	60 to 80%	1 to 10%	Cook et al. (2018), Skov et al. (2018), Leopold et al. (2011) and Furness & Wade (2012)
Black-legged kittiwake	30 to 70%	1 to 10%	Peschko et al. (2020); Vanermen et al. (2016); Leopold et al. (2013)
Manx shearwater	30 to 70%	1 to 10%	SNCBs (discussed at EWG meeting 2, 13 July 2022)
Red-throated diver	100%	1 to 10%	SNCBs (discussed at EWG meeting 2, 13 July 2022)

- 1.3.6.3 Disturbance and subsequent displacement of seabirds during the construction phase can also occur due to vessel traffic and construction and piling activities occurring within the site. These activities may displace individuals that would normally reside within and around the Mona Array Area.
- 1.3.6.4 As actual rates of displacement during the construction phase are difficult to determine, and as recommended by the SNCBs at the Offshore Ornithology EWG, the following methodology is proposed. Given that construction is limited both spatially and temporally and that any potential effects are unlikely to reach the same level as during the operation, the level to be used is half that of the operations and maintenance phase assessments. Table 1.6 shows the displacement and mortality rates used during the construction phase assessment.
- 1.3.6.5 Decommissioning activities within the Mona Array Area are equal to or less than those carried out during the construction phase within the Mona Array Area. Therefore, for the purpose of this assessment it is assumed that the impacts are likely to be similar.



Table 1.6: Displacement and mortality rates for use in the assessment during the construction and decommissioning phases.

Species	Displacement rates	Mortality rates
Common guillemot	15 to 35%	1 to 10%
Razorbill	15 to 35%	1 to 10%
Atlantic puffin	15 to 35%	1 to 10%
Northern gannet	30 to 40%	1 to 10%
Black-legged kittiwake	15 to 35%	1 to 10%
Manx shearwater	15 to 35%	1 to 10%
Red-throated diver	50%	1 to 10%

- 1.3.6.6 Data on predicted mortality from displacement of seabirds from the Mona Array Area plus 2 km buffer (and where applicable 4 km buffer), are then presented in the form of a gridded Matrix table (for the mean value and lower and upper confidence intervals). Predicted mortalities are given for each season and each phase. The mean seasonal peak value for the breeding, non-breeding and migratory periods are imputed into a displacement matrix to assess the potential level of impact. The matrix presents a wide range of potential displacement (10 to 100 %) and mortality rates (1 to 100 %), with the most likely displacement levels and mortality scenario cells highlighted in yellow and outlined in red.
- 1.3.6.7 In addition, cells within each matrix in the following species-specific sections are shaded red to indicate where the displacement mortality would surpass the 1 % threshold of background mortality of the relevant regional or national population for each species. The relevant population against which displacement mortality is compared and the average background mortality for each species (Section 1.4) are presented in each Matrix table.

1.4 Results

1.4.1 Common guillemot

Construction and decommissioning phase

1.4.1.1 Two seasons were defined for common guillemot in Chapter 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (<u>Document reference F6.5.1</u>). Displacement matrices for each of these seasons, using the mean-peak populations presented in Table 1.4 are presented in Table 1.7 and Table 1.8 for the construction and decommissioning phase. Upper and lower matrices are presented in Appendix C.1.



Table 1.7: Mean predicted common guillemot mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Guille			(% of	Mortal displace	ity level d birds		f mortali	ty)						
Breed	ng	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	4	8	21	42	84	127	169	211	253	295	338	380	422
level	15%	6	13	32	63	127	190	253	317	380	443	506	570	633
	20%	8	17	42	84	169	253	338	422	506	591	675	760	844
ent	25%	11	21	53	106	211	317	422	528	633	739	844	950	1055
em f di	30%	13	25	63	127	253	380	506	633	760	886	1013	1140	1266
Displacem it risk of di	35%	15	30	74	148	295	443	591	739	886	1034	1182	1329	1477
ispla risk	40%	17	34	84	169	338	506	675	844	1013	1182	1351	1519	1688
	60%	25	51	127	253	506	760	1013	1266	1519	1773	2026	2279	2532
%)	80%	34	68	169	338	675	1013	1351	1688	2026	2363	2701	3039	3376
	100%	42	84	211	422	844	1266	1688	2110	2532	2954	3376	3798	4220

Table 1.8: Mean predicted common guillemot mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (construction and decommissioning).

Guille		Mortality level (% of displaced birds at risk of mortality)												
	reeding	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	4	8	19	38	75	113	150	188	225	263	300	338	376
level	15%	6	11	28	56	113	169	225	282	338	394	451	507	563
• • • • • • • • • • • • • • • • • • • •	20%	8	15	38	75	150	225	300	376	451	526	601	676	751
ent spl	25%	9	19	47	94	188	282	376	469	563	657	751	845	939
e G	30%	11	23	56	113	225	338	451	563	676	789	901	1014	1127
Displacement it risk of displ	35%	13	26	66	131	263	394	526	657	789	920	1052	1183	1315
ispla risk	40%	15	30	75	150	300	451	601	751	901	1052	1202	1352	1502
at D	60%	23	45	113	225	451	676	901	1127	1352	1577	1803	2028	2254
%)	80%	30	60	150	300	601	901	1202	1502	1803	2103	2404	2704	3005
	100%	38	75	188	376	751	1127	1502	1878	2254	2629	3005	3380	3756

Operation and maintenance phase

1.4.1.2 Two seasons were defined for common guillemot in Chapter 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (<u>Document reference F6.5.1</u>). Displacement matrices for each of these seasons, using the mean-peak populations presented in Table 1.4 are presented in Table 1.9 and Table 1.10 for the operation and maintenance phase. Upper and lower matrices are presented in Appendix C.1.



Table 1.9: Mean predicted common guillemot mortality for the Mona Array Area plus 2 km buffer during the breeding season (operations and maintenance phase).

Guillen Breedi		Mortality level (% of displaced birds at risk of mortality)													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
ent)	10%	4	8	21	42	84	127	169	211	253	295	338	380	422	
level	20%	8	17	42	84	169	253	338	422	506	591	675	760	844	
	30%	13	25	63	127	253	380	506	633	760	886	1013	1140	1266	
ent ispl	40%	17	34	84	169	338	506	675	844	1013	1182	1351	1519	1688	
em f di	50%	21	42	106	211	422	633	844	1055	1266	1477	1688	1899	2110	
ace k of	60%	25	51	127	253	506	760	1013	1266	1519	1773	2026	2279	2532	
Displacem t risk of di	70%	30	59	148	295	591	886	1182	1477	1773	2068	2363	2659	2954	
at D	80%	34	68	169	338	675	1013	1351	1688	2026	2363	2701	3039	3376	
%)	90%	38	76	190	380	760	1140	1519	1899	2279	2659	3039	3419	3798	
	100%	42	84	211	422	844	1266	1688	2110	2532	2954	3376	3798	4220	

Table 1.10: Mean predicted common guillemot mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (operations and maintenance phase).

Guiller	not					(% of di	Mo splaced	ortality l		mortalit	v)			
Non-bi	reeding					(/0 OI UI	Spiaceu	Dilus a	i i isk oi	mortant	y j			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	4	8	19	38	75	113	150	188	225	263	300	338	376
level	20%	8	15	38	75	150	225	300	376	451	526	601	676	751
	30%	11	23	56	113	225	338	451	563	676	789	901	1014	1127
ment displa	40%	15	30	75	150	300	451	601	751	901	1052	1202	1352	1502
em di	50%	19	38	94	188	376	563	751	939	1127	1315	1502	1690	1878
ace c of	60%	23	45	113	225	451	676	901	1127	1352	1577	1803	2028	2254
Displacem It risk of di	70%	26	53	131	263	526	789	1052	1315	1577	1840	2103	2366	2629
at Di	80%	30	60	150	300	601	901	1202	1502	1803	2103	2404	2704	3005
%)	90%	34	68	169	338	676	1014	1352	1690	2028	2366	2704	3042	3380
	100%	38	75	188	376	751	1127	1502	1878	2254	2629	3005	3380	3756

1.4.2 Razorbill

Construction and decommissioning phases

1.4.2.1 Four seasons were defined for razorbill in Chapter 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (Document reference F6.5.1). Displacement matrices for each of these seasons, using the mean-peak populations presented in Table 1.4 are presented in Table 1.11 to Table 1.14 for the construction and decommissioning phase. Upper and lower matrices are presented in Appendix C.



Table 1.11: Mean predicted razorbill mortality for the Mona Array plus 2 km buffer during Spring migration (construction and decommissioning).

Razork						(% of d		ortality birds a	level t risk of	mortalit	у)			
Spring	migration	on												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	2	4	10	19	38	58	77	96	115	135	154	173	192
level	15%	3	6	14	29	58	87	115	144	173	202	231	260	289
	20%	4	8	19	38	77	115	154	192	231	269	308	346	385
ment displa	25%	5	10	24	48	96	144	192	241	289	337	385	433	481
em f di	30%	6	12	29	58	115	173	231	289	346	404	462	520	577
Displacem It risk of di	35%	7	13	34	67	135	202	269	337	404	471	539	606	673
ispla risk	40%	8	15	38	77	154	231	308	385	462	539	616	693	770
at D	60%	12	23	58	115	231	346	462	577	693	808	924	1039	1155
%)	80%	15	31	77	154	308	462	616	770	924	1078	1232	1385	1539
	100%	19	38	96	192	385	577	770	962	1155	1347	1539	1732	1924

Table 1.12: Mean predicted razorbill mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Razorbil	I				(0/-	of dien!		lortality	level k of mo	rtality)				
Breeding	9				(/0	oi dispi	aceu bii	us at 11s	ik of filo	tailty)				
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent	10%	0	0	0	1	2	2	3	4	5	6	7	7	8
ment level displacement)	15%	0	0	1	1	2	4	5	6	7	9	10	11	12
<u>ace</u>	20%	0	0	1	2	3	5	7	8	10	12	13	15	17
ent	25%	0	0	1	2	4	6	8	10	12	14	17	19	21
	30%	0	0	1	2	5	7	10	12	15	17	20	22	25
lace k of	35%	0	1	1	3	6	9	12	14	17	20	23	26	29
isplarisk	40%	0	1	2	3	7	10	13	17	20	23	26	30	33
	60%	0	1	2	5	10	15	20	25	30	35	40	45	50
%)	80%	1	1	3	7	13	20	26	33	40	46	53	59	66
	100%	1	2	4	8	17	25	33	41	50	58	66	74	83

Table 1.13: Mean predicted razorbill mortality for the Mona Array Area plus 2 km buffer during Autumn migration (construction and decommissioning).

Razorbill		n				(% of d		lortality I birds a	level t risk of	mortalit	у)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent	10%	0	0	0	1	2	3	4	5	5	6	7	8	9
ment level displacement)	15%	0	0	1	1	3	4	5	7	8	10	11	12	14
1 <u>e</u>	20%	0	0	1	2	4	5	7	9	11	13	15	16	18
ent	25%	0	0	1	2	5	7	9	11	14	16	18	20	23
	30%	0	1	1	3	5	8	11	14	16	19	22	25	27
lace k of	35%	0	1	2	3	6	10	13	16	19	22	25	29	32
isplarisk	40%	0	1	2	4	7	11	15	18	22	25	29	33	36
	60%	1	1	3	5	11	16	22	27	33	38	44	49	55
%)	80%	1	1	4	7	15	22	29	36	44	51	58	66	73
	100%	1	2	5	9	18	27	36	45	55	64	73	82	91



Table 1.14: Mean predicted razorbill mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (construction and decommissioning).

Razori	oill					(% of d		ortality I birds a	level t risk of	mortalit	:y)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	1	2	4	8	13	17	21	25	29	34	38	42
level	15%	1	1	3	6	13	19	25	32	38	44	50	57	63
	20%	1	2	4	8	17	25	34	42	50	59	67	76	84
ent	25%	1	2	5	11	21	32	42	53	63	74	84	95	105
em f di	30%	1	3	6	13	25	38	50	63	76	88	101	114	126
lace k of	35%	1	3	7	15	29	44	59	74	88	103	118	133	147
Displacem t risk of di	40%	2	3	8	17	34	50	67	84	101	118	135	151	168
at 🖂	60%	3	5	13	25	50	76	101	126	151	177	202	227	252
%)	80%	3	7	17	34	67	101	135	168	202	236	269	303	337
	100%	4	8	21	42	84	126	168	210	252	295	337	379	421

Operations and maintenance phase

1.4.2.2 Four seasons were defined for razorbill in Chapter 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (Document reference F6.5.1). Displacement matrices for each of these seasons, using the mean-peak populations presented in Table 1.4 are presented in Table 1.15 to Table 1.18 for the operations and maintenance phase. Upper and lower matrices are presented in Appendix C.

Table 1.15: Mean predicted razorbill mortality for the Mona Array Area plus 2 km buffer during Spring migration (operations and maintenance phase).

Razorb	ill					(% of d		ortality I birds a	level t risk of	mortalit	y)			
Spring	migration	on												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	2	4	10	19	38	58	77	96	115	135	154	173	192
level	20%	4	8	19	38	77	115	154	192	231	269	308	346	385
ace	30%	6	12	29	58	115	173	231	289	346	404	462	520	577
ment displa	40%	8	15	38	77	154	231	308	385	462	539	616	693	770
em f di	50%	10	19	48	96	192	289	385	481	577	673	770	866	962
Displacem t risk of di	60%	12	23	58	115	231	346	462	577	693	808	924	1039	1155
ispla risk	70%	13	27	67	135	269	404	539	673	808	943	1078	1212	1347
- O	80%	15	31	77	154	308	462	616	770	924	1078	1232	1385	1539
%)	90%	17	35	87	173	346	520	693	866	1039	1212	1385	1559	1732
	100%	19	38	96	192	385	577	770	962	1155	1347	1539	1732	1924



Table 1.16: Mean predicted razorbill mortality for the Mona Array Area plus 2 km buffer during the breeding season (operations and maintenance phase).

Razorb Breedin						(% of d		lortality I birds a	level t risk of	mortalit	у)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	0	0	1	2	2	3	4	5	6	7	7	8
level	20%	0	0	1	2	3	5	7	8	10	12	13	15	17
<u>ac</u>	30%	0	0	1	2	5	7	10	12	15	17	20	22	25
ent	40%	0	1	2	3	7	10	13	17	20	23	26	30	33
ᅙᅼᇎᄀᆖᇎ	50%	0	1	2	4	8	12	17	21	25	29	33	37	41
lace k of	60%	0	1	2	5	10	15	20	25	30	35	40	45	50
ispla risk	70%	1	1	3	6	12	17	23	29	35	40	46	52	58
at	80%	1	1	3	7	13	20	26	33	40	46	53	59	66
%)	90%	1	1	4	7	15	22	30	37	45	52	59	67	74
	100%	1	2	4	8	17	25	33	41	50	58	66	74	83

Table 1.17: Mean predicted razorbill mortality for the Mona Array Area plus 2 km buffer during Autumn migration (operations and maintenance phase).

Razorb Autumn		tion				(% of d		lortality d birds a	level t risk of	mortalit	(y)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	0	1	2	3	4	5	5	6	7	8	9
level	20%	0	0	1	2	4	5	7	9	11	13	15	16	18
	30%	0	1	1	3	5	8	11	14	16	19	22	25	27
ent	40%	0	1	2	4	7	11	15	18	22	25	29	33	36
	50%	0	1	2	5	9	14	18	23	27	32	36	41	45
lace k of	60%	1	1	3	5	11	16	22	27	33	38	44	49	55
ispla risk	70%	1	1	3	6	13	19	25	32	38	45	51	57	64
at D	80%	1	1	4	7	15	22	29	36	44	51	58	66	73
%)	90%	1	2	4	8	16	25	33	41	49	57	66	74	82
	100%	1	2	5	9	18	27	36	45	55	64	73	82	91

Table 1.18: Mean predicted razorbill mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (operations and maintenance phase).

Razorb						(% of d		ortality I birds a	level t risk of	mortali	ty)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	1	2	4	8	13	17	21	25	29	34	38	42
	20%	1	2	4	8	17	25	34	42	50	59	67	76	84
	30%	1	3	6	13	25	38	50	63	76	88	101	114	126
ent	40%	2	3	8	17	34	50	67	84	101	118	135	151	168
em f dj	50%	2	4	11	21	42	63	84	105	126	147	168	189	210
Displacem t risk of di	60%	3	5	13	25	50	76	101	126	151	177	202	227	252
ispla risk	70%	3	6	15	29	59	88	118	147	177	206	236	265	295
at 🖻	80%	3	7	17	34	67	101	135	168	202	236	269	303	337
%)	90%	4	8	19	38	76	114	151	189	227	265	303	341	379
	100%	4	8	21	42	84	126	168	210	252	295	337	379	421



1.4.3 Atlantic puffin

Construction and decommissioning phases

1.4.3.1 Two seasons were defined for puffin in in Chapter 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (Document reference F6.5.1). Displacement matrices for each of these seasons, using the mean-peak populations presented in Table 1.4 are presented in Table 1.19 and Table 1.20 for the construction and decommissioning phase. Upper and lower matrices are presented in Appendix C.3.

Table 1.19: Mean predicted Atlantic puffin mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Puffin Breedi	ina				(% of c	displace	Mortal d birds a	ity level at risk o	f mortal	ity)				
	9	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	0	0	0	1	1	1	1	1	1	2
level	15%	0	0	0	0	0	1	1	1	1	2	2	2	2
ace	20%	0	0	0	0	1	1	1	2	2	2	2	3	3
Displacement It risk of displ	25%	0	0	0	0	1	1	2	2	2	3	3	3	4
em f di	30%	0	0	0	0	1	1	2	2	3	3	4	4	5
lace k of	35%	0	0	0	1	1	2	2	3	3	4	4	5	5
ispla risk	40%	0	0	0	1	1	2	2	3	4	4	5	5	6
at 🗖	60%	0	0	0	1	2	3	4	5	5	6	7	8	9
%)	80%	0	0	1	1	2	4	5	6	7	8	10	11	12
	100%	0	0	1	2	3	5	6	8	9	11	12	14	15



Table 1.20: Mean predicted Atlantic puffin mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (construction and decommissioning). All entries are zero.

		enth	les are	2010.										
uffin							M	ortality	level					
						(% of di	isplaced	l birds a	ıt risk of	mortali	ity)			
lon-br	eeding													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ı.	10%	0	0	0	0	0	1	1	1	1	2	2	2	2
el Tie	15%	0	0	0	0	1	1	1	2	2	2	3	3	3
Displacement level at risk of displacement)	20%	0	0	0	0	1	1	2	2	3	3	4	4	4
spla	25%	0	0	0	1	1	2	2	3	3	4	4	5	6
di	30%	0	0	0	1	1	2	3	3	4	5	5	6	7
ace	35%	0	0	0	1	2	2	3	4	5	5	6	7	8
Displacement level at risk of displacem	40%	0	0	0	1	2	3	4	4	5	6	7	8	9
	60%	0	0	1	1	3	4	5	7	8	9	11	12	13
%)	80%	0	0	1	2	4	5	7	9	11	12	14	16	18
	100%	0	0	1	2	4	7	9	11	13	15	18	20	22
uffin							Morta	lity leve						
					(% of	displace			of morta	lity)				
lon-br	eeding													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
acement)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
acem	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement it risk of displ	25%	0	0	0	0	0	0	0	0	0	0	0	0	0
d d	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
i k	35%	0	0	0	0	0	0	0	0	0	0	0	0	0
at risk of disp	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
o o	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	10	0	0	10	0	0	lo	0	0	0	0



Operations and maintenance phase

1.4.3.2 Two seasons were defined for puffin in in Chapter 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (Document reference F6.5.1). Displacement matrices for each of these seasons, using the mean-peak populations presented in Table 1.4 are presented in Table 1.21 and Table 1.22 for the operations and maintenance phase. Upper and lower matrices are presented in Appendix C.3.

Table 1.21: Mean predicted Atlantic puffin mortality for the Mona Array Area plus 2 km buffer during the breeding season (operations and maintenance phase).

Puffin Breedi	ng				,	(% of di		ortality l	evel risk of	mortality	()			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	0	0	0	1	1	1	1	1	1	2
level	20%	0	0	0	0	1	1	1	2	2	2	2	3	3
ace	30%	0	0	0	0	1	1	2	2	3	3	4	4	5
Displacement It risk of displ	40%	0	0	0	1	1	2	2	3	4	4	5	5	6
em f di	50%	0	0	0	1	2	2	3	4	5	5	6	7	8
splace risk of	60%	0	0	0	1	2	3	4	5	5	6	7	8	9
sp ris	70%	0	0	1	1	2	3	4	5	6	7	8	10	11
σ	80%	0	0	1	1	2	4	5	6	7	8	10	11	12
%)	90%	0	0	1	1	3	4	5	7	8	10	11	12	14
	100%	0	0	1	2	3	5	6	8	9	11	12	14	15

Table 1.22: Mean predicted Atlantic puffin mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (operations and maintenance phase).—All entries are zero.

Puffin	eeding				(% of dis		ortality le	evel risk of r	mortality)			
•	eeding	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
<u>او</u>	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
ment displ	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacem t risk of di	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
lace k of	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	70%	0	0	0	0	0	0	0	0	0	0	0	0	0
	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	90%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0



Puffin Non-br	eeding					(% of di		ortality birds a	level t risk of	mortali	ty)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	0	0	0	1	1	1	1	2	2	2	2
el He	20%	0	0	0	0	1	1	2	2	3	3	4	4	4
level	30%	0	0	0	1	1	2	3	3	4	5	5	6	7
	40%	0	0	0	1	2	3	4	4	5	6	7	8	9
ame dis	50%	0	0	1	1	2	3	4	6	7	8	9	10	11
ace k of	60%	0	0	1	1	3	4	5	7	8	9	11	12	13
Displacement at risk of displ	70%	0	0	1	2	3	5	6	8	9	11	12	14	15
_ ,,,	80%	0	0	1	2	4	5	7	9	11	12	14	16	18
%)	90%	0	0	1	2	4	6	8	10	12	14	16	18	20
	100%	0	0	1	2	4	7	9	11	13	15	18	20	22



1.4.4 Northern gannet

Construction and decommissioning phases

1.4.4.1 Three seasons were defined for gannet in in Chapter 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (<u>Document reference F6.5.1</u>). Displacement matrices for each of these seasons, using the mean-peak populations presented in Table 1.4 are presented in Table 1.23 to Table 1.25 for the construction and decommissioning phase. Upper and lower matrices are presented in Appendix C.4.

Table 1.23: Mean predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during Spring migration (construction and decommissioning).

Ganne	et				(% of	displace		lity level at risk c	f mortal	lity)				
Spring	g migratio	on				•								
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent	10%	0	0	0	0	1	1	1	1	2	2	2	2	3
ment level displacement)	15%	0	0	0	0	1	1	2	2	2	3	3	4	4
<u> e </u>	20%	0	0	0	1	1	2	2	3	3	4	4	5	6
ent spl	25%	0	0	0	1	1	2	3	3	4	5	6	6	7
em di	30%	0	0	0	1	2	2	3	4	5	6	7	7	8
ace c of	35%	0	0	0	1	2	3	4	5	6	7	8	9	10
Displacement It risk of displ	40%	0	0	1	1	2	3	4	6	7	8	9	10	11
at at	60%	0	0	1	2	3	5	7	8	10	12	13	15	17
%)	80%	0	0	1	2	4	7	9	11	13	15	18	20	22
	100%	0	1	1	3	6	8	11	14	17	19	22	25	28

Table 1.24: Mean predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Ganne Breedi					(% of	displace		lity level at risk c	l of mortal	lity)				
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	1	1	3	5	8	10	13	15	18	20	23	25
level	15%	0	1	2	4	8	11	15	19	23	26	30	34	38
10	20%	1	1	3	5	10	15	20	25	30	35	40	45	50
ent	25%	1	1	3	6	13	19	25	31	38	44	50	56	63
	30%	1	2	4	8	15	23	30	38	45	53	60	68	75
lace k of	35%	1	2	4	9	18	26	35	44	53	61	70	79	88
ispla risk	40%	1	2	5	10	20	30	40	50	60	70	80	90	100
	60%	2	3	8	15	30	45	60	75	90	105	120	135	150
%)	80%	2	4	10	20	40	60	80	100	120	140	160	180	200
	100%	3	5	13	25	50	75	100	125	150	175	200	226	251



Table 1.25: Mean predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during Autumn migration (construction and decommissioning).

	Gannet Mortality level (% of displaced birds at risk of mortality) Autumn migration													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	0	1	1	2	2	3	3	4	5	5	6
level	15%	0	0	0	1	2	3	3	4	5	6	7	8	9
	20%	0	0	1	1	2	3	5	6	7	8	9	10	12
ent spl	25%	0	0	1	1	3	4	6	7	9	10	12	13	14
em f di	30%	0	0	1	2	3	5	7	9	10	12	14	16	17
Displacem t risk of di	35%	0	0	1	2	4	6	8	10	12	14	16	18	20
ispla risk	40%	0	0	1	2	5	7	9	12	14	16	18	21	23
at D	60%	0	1	2	3	7	10	14	17	21	24	28	31	35
%)	80%	0	1	2	5	9	14	18	23	28	32	37	41	46
	100%	1	1	3	6	12	17	23	29	35	40	46	52	58

Operations and maintenance phase

1.4.4.2 Three seasons were defined for gannet in in Chapter 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (Document reference F6.5.1). Displacement matrices for each of these seasons, using the mean-peak populations presented in Table 1.4 are presented in Table 1.26 to Table 1.28 for the operations and maintenance phase. Upper and lower matrices are presented in Appendix C.4.

Table 1.26: Mean predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during Spring migration (operations and maintenance phase).

Ganne	et				Mortality level (% of displaced birds at risk of mortality)									
Spring	pring migration													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	0	1	1	1	1	2	2	2	2	3
level	20%	0	0	0	1	1	2	2	3	3	4	4	5	6
ace	30%	0	0	0	1	2	2	3	4	5	6	7	7	8
ent spl	40%	0	0	1	1	2	3	4	6	7	8	9	10	11
ğ. G	50%	0	0	1	1	3	4	6	7	8	10	11	12	14
Displacement it risk of displ	60%	0	0	1	2	3	5	7	8	10	12	13	15	17
splarisk	70%	0	0	1	2	4	6	8	10	12	13	15	17	19
at D	80%	0	0	1	2	4	7	9	11	13	15	18	20	22
%)	90%	0	0	1	2	5	7	10	12	15	17	20	22	25
	100%	0	1	1	3	6	8	11	14	17	19	22	25	28



Table 1.27: Mean predicted northern gannet mortality for the Mona Array Area 2 km buffer during the breeding season (operations and maintenance phase).

Ganne Breedi					Mortality level (% of displaced birds at risk of mortality)									
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	1	1	3	5	8	10	13	15	18	20	23	25
level	20%	1	1	3	5	10	15	20	25	30	35	40	45	50
ment level displacem	30%	1	2	4	8	15	23	30	38	45	53	60	68	75
	40%	1	2	5	10	20	30	40	50	60	70	80	90	100
em f di	50%	1	3	6	13	25	38	50	63	75	88	100	113	125
Displacem t risk of di	60%	2	3	8	15	30	45	60	75	90	105	120	135	150
ispla risk	70%	2	4	9	18	35	53	70	88	105	123	140	158	175
at 🗖	80%	2	4	10	20	40	60	80	100	120	140	160	180	200
%)	90%	2	5	11	23	45	68	90	113	135	158	180	203	226
	100%	3	5	13	25	50	75	100	125	150	175	200	226	251

Table 1.28: Mean predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during Autumn migration (operations and maintenance phase).

Gannet Mortality level (% of displaced birds at risk of mortality) Autumn migration														
	g at	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	0	1	1	2	2	3	3	4	5	5	6
level	20%	0	0	1	1	2	3	5	6	7	8	9	10	12
	30%	0	0	1	2	3	5	7	9	10	12	14	16	17
ent	40%	0	0	1	2	5	7	9	12	14	16	18	21	23
em f di	50%	0	1	1	3	6	9	12	14	17	20	23	26	29
Displacem t risk of di	60%	0	1	2	3	7	10	14	17	21	24	28	31	35
ispla risk	70%	0	1	2	4	8	12	16	20	24	28	32	36	40
	80%	0	1	2	5	9	14	18	23	28	32	37	41	46
%)	90%	1	1	3	5	10	16	21	26	31	36	41	47	52
	100%	1	1	3	6	12	17	23	29	35	40	46	52	58

1.4.5 Black-legged kittiwake

Construction and decommissioning phases

1.4.5.1 Three seasons were defined for black-legged kittiwake in in Chapter 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (Document reference F6.5.1). Displacement matrices for each of these seasons, using the mean-peak populations presented in Table 1.4 are presented in Table 1.29 to Table 1.31 for the construction and decommissioning phase. Upper and lower matrices are presented in Appendix C.5.



Table 1.29: Mean predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during Spring migration (construction and decommissioning).

Kittiwa	ake							Morta	lity leve	I				
						(%	of displa		ds at ris		rtality)			
Spring	g <mark>migrati</mark> e	on												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	1	2	4	9	18	27	35	44	53	62	71	80	88
level acem	15%	1	3	7	13	27	40	53	66	80	93	106	119	133
	20%	2	4	9	18	35	53	71	88	106	124	141	159	177
isp	25%	2	4	11	22	44	66	88	110	133	155	177	199	221
em of d	30%	3	5	13	27	53	80	106	133	159	186	212	239	265
Displacement It risk of disp	35%	3	6	15	31	62	93	124	155	186	217	247	278	309
isp ris	40%	4	7	18	35	71	106	141	177	212	247	283	318	354
· · · · · · · · · · · · · · · · · · ·	60%	5	11	27	53	106	159	212	265	318	371	424	477	530
%)	80%	7	14	35	71	141	212	283	354	424	495	566	636	707
ی					100	14-7-7	005	251	110	530	619	707	795	884
	100%	9	18	44	88	177	265	354	442		1019	101	795	004
	100% -legged			44	88	11//	<u> </u> 265		lity lev		1019	1707	195	004
				<u> 44</u>		6 of dis		Morta	lity lev	el		101	1795	004
Black		kittiw		<u> 44</u>				Morta	lity lev	el		101	193	004
Black	-legged	kittiw		5%				Morta	lity lev	el		80%	90%	100%
Black	-legged	kittiw	ake		(%	% of dis	placed	Morta birds a	ılity leve t risk o	el f morta	lity)			
Black Pre-b	-legged reeding	kittiw 1%	ake 2%	5%	(% 10%	% of dis	placed	Morta birds a	lity leve t risk o	el f morta 60%	lity) 70%	80%	90%	100%
Black Pre-b	reeding	kittiw 1%	2% 1	5% 3	10% 6	6 of dis	30%	Morta birds a	t risk o	60%	70%	80% 46	90% 52	100% 57
Black Pre-b	reeding 10% 15%	kittiw 1%	2% 1 2	5% 3 4	(% 10% 6 9	6 of dis 20% 11 17	30% 17 26	Morta birds a 40% 23 34	50% 29 43	60% 34 52	70% 40 60	80% 46 69	90% 52 77	100% 57 86
Black Pre-b	reeding 10% 15% 20%	kittiw 1%	2% 1 2	5% 3 4 6	(%) 10% 6 9 11	20% 11 17 23	30% 17 26 34	Morta birds a 40% 23 34 46	50% 29 43 57	60% 34 52 69	70% 40 60 80	80% 46 69 92	90% 52 77 103	100% 57 86 115
Black Pre-b	10% 15% 20% 25%	1% 1 1 1	2% 1 2 2 3	5% 3 4 6 7	10% 6 9 11	20% 11 17 23 29	30% 17 26 34 43	Morta birds a 40% 23 34 46 57	50% 29 43 57 72	60% 34 52 69 86	70% 40 60 80 100	80% 46 69 92 115	90% 52 77 103 129	100% 57 86 115 144
Black Pre-b	10% 15% 20% 25% 30%	1% 1 1 1 2	2% 1 2 2 3 3	5% 3 4 6 7 9	(%) 10% 6 9 11 14 17	20% 11 17 23 29 34	30% 17 26 34 43 52	Morta birds a 40% 23 34 46 57 69	50% 29 43 57 72 86	60% 34 52 69 86 103	70% 40 60 80 100 121	80% 46 69 92 115 138	90% 52 77 103 129 155	100% 57 86 115 144 172
Black	10% 15% 20% 25% 30% 35%	1% 1 1 1 2 2	2% 1 2 2 3 3 4	5% 3 4 6 7 9	10% 6 9 11 14 17 20	20% 11 17 23 29 34 40	30% 17 26 34 43 52 60	Morta birds a 40% 23 34 46 57 69 80	50% 29 43 57 72 86 100	60% 34 52 69 86 103 121	70% 40 60 80 100 121 141	80% 46 69 92 115 138 161	90% 52 77 103 129 155 181	100% 57 86 115 144 172 201
Black Pre-b	10% 15% 20% 25% 30% 35% 40%	1% 1 1 1 2 2 2	2% 1 2 2 3 3 4 5	5% 3 4 6 7 9 10	10% 6 9 11 14 17 20 23	20% 11 17 23 29 34 40 46	30% 17 26 34 43 52 60 69	Morta birds a 40% 23 34 46 57 69 80 92	50% 29 43 57 72 86 100 115	60% 34 52 69 86 103 121 138	70% 40 60 80 100 121 141 161	80% 46 69 92 115 138 161 184	90% 52 77 103 129 155 181 207	100% 57 86 115 144 172 201 230



Table 1.30: Mean predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Kittiwa	ake					101	- 6 - 12 4		lity leve		-1 - P4- A			
Breedi	ina					(%	of displa	aced bir	ds at ris	k of mo	rtality)			
	9	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	1	2	4	7	11	14	18	21	25	28	32	35
rel ≱m€	15%	1	1	3	5	11	16	21	27	32	37	43	48	53
<u>ac e</u>	20%	1	1	4	7	14	21	28	35	43	50	57	64	71
ent	25%	1	2	4	9	18	27	35	44	53	62	71	80	89
Displacement level at risk of displacem	30%	1	2	5	11	21	32	43	53	64	74	85	96	106
k o	35%	1	2	6	12	25	37	50	62	74	87	99	112	124
isp ris	40%	1	3	7	14	28	43	57	71	85	99	114	128	142
O	60%	2	4	11	21	43	64	85	106	128	149	170	192	213
	80%	3	6	14	28	57	85	114	142	170	199	227	255	284
%)									477	242	240	204	240	OFF
	100% -legged	4 kittiw	7 ake	18	35	71	106		lity lev		248	284	319	355
Black	100% -legged			18	<u> </u>			Morta		el		Z84	319	355
Black	100% -legged			18 5%	<u> </u>			Morta	lity lev	el		80%	90%	
Black	100% -legged	kittiw	ake		(%	% of dis	placed	Morta birds a	ılity leve t risk o	el f morta	lity)			
Black Breed	100% -legged ling	kittiw	ake	5%	(% 10%	% of dis	placed	Morta birds a	lity leve t risk o	el f morta 60%	lity) 70%	80%	90%	100%
Black Breed	100% -legged ling 10%	kittiw	2% 1	5%	10%	20%	30%	Morta birds a 40%	t risk o 50%	60%	70%	80% 58	90% 65	100% 73
Black Breed	100% -legged ling 10% 15%	kittiw	2% 1 2	5% 4 5	(% 10% 7 11	6 of dis 20% 15 22	30% 22 33	Morta birds a 40% 29 44	50% 36 54	60% 44 65	70% 51 76	80% 58 87	90% 65 98	100% 73 109
Black Breed	100% -legged ling 10% 15% 20%	1% 1 1 1	2% 1 2 3	5% 4 5 7	(% 10% 7 11 15	20% 15 22 29	30% 22 33 44	Morta birds a 40% 29 44 58	50% 36 54 73	60% 44 65 87	70% 51 76 102	80% 58 87 116	90% 65 98 131	100% 73 109 145
Black Breed	100% -legged ling 10% 15% 20% 25%	1% 1 1 1 2	2% 1 2 3 4	5% 4 5 7 9	10% 7 11 15 18	20% 15 22 29 36	30% 22 33 44 54	Morta birds a 40% 29 44 58 73	50% 36 54 73 91	60% 44 65 87 109	70% 51 76 102 127	80% 58 87 116 145	90% 65 98 131 163	100% 73 109 145 182
Black Breed	100% -legged ling 10% 15% 20% 25% 30%	1% 1 1 2 2	2% 1 2 3 4	5% 4 5 7 9 11	10% 7 11 15 18 22	20% 15 22 29 36 44	30% 22 33 44 54 65	Morta birds a 40% 29 44 58 73 87	50% 36 54 73 91 109	60% 44 65 87 109 131	70% 51 76 102 127 152	80% 58 87 116 145 174	90% 65 98 131 163 196	100% 73 109 145 182 218
Black Breed	100% -legged ling 10% 15% 20% 25% 30% 35%	1% 1 1 1 2 2 3	2% 1 2 3 4 4 5	5% 4 5 7 9 11	10% 7 11 15 18 22 25	20% 15 22 29 36 44 51	30% 22 33 44 54 65 76	Morta birds a 40% 29 44 58 73 87 102	50% 36 54 73 91 109 127	60% 44 65 87 109 131 152	70% 51 76 102 127 152 178	80% 58 87 116 145 174 203	90% 65 98 131 163 196 229	100% 73 109 145 182 218 254
Black	100% -legged ling 10% 15% 20% 25% 30% 35% 40%	1% 1 1 2 2 3 3	2% 1 2 3 4 4 5 6	5% 4 5 7 9 11 13	10% 7 11 15 18 22 25 29	20% 15 22 29 36 44 51 58	30% 22 33 44 54 65 76 87	Morta birds a 40% 29 44 58 73 87 102 116	50% 36 54 73 91 109 127 145	60% 44 65 87 109 131 152 174	70% 51 76 102 127 152 178 203	80% 58 87 116 145 174 203 232	90% 65 98 131 163 196 229 261	100% 73 109 145 182 218 254 290

Table 1.31: Mean predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during Autumn migration (construction and decommissioning).

				<u> </u>				•						•
Kittiwa	ike							Morta	ality leve	l				
						(%	of displa	aced bir	ds at ris	k of mo	rtality)			
Autum	n migrat	ion												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	1	1	3	6	11	17	22	28	34	39	45	50	56
level	15%	1	2	4	8	17	25	34	42	50	59	67	76	84
• • • • • • • • • • • • • • • • • • • •	20%	1	2	6	11	22	34	45	56	67	78	90	101	112
ent spl	25%	1	3	7	14	28	42	56	70	84	98	112	126	140
	30%	2	3	8	17	34	50	67	84	101	118	134	151	168
ace k of	35%	2	4	10	20	39	59	78	98	118	137	157	176	196
ispla risk	40%	2	4	11	22	45	67	90	112	134	157	179	202	224
at D	60%	3	7	17	34	67	101	134	168	202	235	269	302	336
%)	80%	4	9	22	45	90	134	179	224	269	314	358	403	448
	100%	6	11	28	56	112	168	224	280	336	392	448	504	560



Operations and maintenance phase

1.4.5.2 Three seasons were defined for black-legged kittiwake in in Chapter 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (Document reference F6.5.1). Displacement matrices for each of these seasons, using the mean-peak populations presented in Table 1.4 are presented in Table 1.32 to Table 1.34 for the operations and maintenance phase. Upper and lower matrices are presented in Appendix C.5.

Table 1.32: Mean predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during Spring migration (operations and maintenance phase).

Kittiwa	ake					/0/ -f-1		ortality						
Spring	g migratio	on				(% or a	ispiaced	i birds a	t risk of	mortalit	(y)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	1	2	4	9	18	27	35	44	53	62	71	80	88
level	20%	2	4	9	18	35	53	71	88	106	124	141	159	177
	30%	3	5	13	27	53	80	106	133	159	186	212	239	265
Displacement at risk of disp	40%	4	7	18	35	71	106	141	177	212	247	283	318	354
Displacement it risk of displ	50%	4	9	22	44	88	133	177	221	265	309	354	398	442
x ac	60%	5	11	27	53	106	159	212	265	318	371	424	477	530
ris	70%	6	12	31	62	124	186	247	309	371	433	495	557	619
	80%	7	14	35	71	141	212	283	354	424	495	566	636	707
	90%	8	16	40	80	159	239	318	398	477	557	636	716	795
%)														
	100% -legged	9	18 ake	44	88	177	265		lity lev		619	707	795	884
Black	100% c-legged	9 kittiw		44				Morta		el		707	795	884
Black	100%	9 kittiw		5%				Morta	ility lev	el		80%	90%	
Black	100% c-legged	9 kittiw	ake		(%	6 of dis	placed	Morta birds a	ility leve t risk o	el f morta	lity)			
Black Pre-b	100% -legged breeding	9 kittiw	ake 2%	5%	(% 10%	% of dis	placed	Morta birds a	lity levent risk o	el f morta 60%	lity) 70%	80%	90%	100%
Black Pre-b	100% a-legged breeding	9 kittiw 1% 1	2% 1	5%	10% 6	6 of dis	30%	Morta birds a 40%	t risk o	60%	70%	80% 46	90% 52	100 %
Black Pre-b	100% c-legged reeding 10% 20%	9 kittiw 1% 1	2% 1 2	5% 3 6	(% 10% 6 11	6 of dis 20% 11 23	30% 17 34	Morta birds a 40% 23 46	50% 29	60% 34 69	70% 40 80	80% 46 92	90% 52 103	100 % 57 115
Black Pre-b	100% c-legged reeding 10% 20% 30%	9 kittiw 1% 1 1 2	2% 1 2 3	5% 3 6 9	(%) 10% 6 11 17	20% 11 23 34	30% 17 34 52	Morta birds a 40% 23 46 69	50% 29 57 86	60% 34 69 103	70% 40 80 121	80% 46 92 138	90% 52 103 155	100% 57 115 172
Black Pre-b	100% c-legged reeding 10% 20% 30% 40%	9 kittiw 1% 1 1 2 2	2% 1 2 3 5	5% 3 6 9 11	10% 6 11 17 23	20% 11 23 34 46	30% 17 34 52 69	Morta birds a 40% 23 46 69 92	50% 29 57 86 115	60% 34 69 103 138	70% 40 80 121 161	80% 46 92 138 184	90% 52 103 155 207	100% 57 115 172 230
Black Pre-b	100% c-legged reeding 10% 20% 30% 40% 50%	9 kittiw 1% 1 1 2 2 3	2% 1 2 3 5 6	5% 3 6 9 11	10% 6 11 17 23 29	20% 11 23 34 46 57	30% 17 34 52 69 86	Morta birds a 40% 23 46 69 92 115	50% 29 57 86 115 144	60% 34 69 103 138 172	70% 40 80 121 161 201	80% 46 92 138 184 230	90% 52 103 155 207 258	100% 57 115 172 230 287
Black Pre-b	100% c-legged 10% 20% 30% 40% 50%	9 kittiw 1% 1 1 2 2 3 3	2% 1 2 3 5 6 7	5% 3 6 9 11 14 17	10% 6 11 17 23 29 34	20% 11 23 34 46 57 69	30% 17 34 52 69 86 103	Morta birds a 40% 23 46 69 92 115 138	50% 29 57 86 115 144 172	60% 34 69 103 138 172 207	70% 40 80 121 161 201 241	80% 46 92 138 184 230 276	90% 52 103 155 207 258 310	100% 57 115 172 230 287 344
Black	100% c-legged reeding 10% 20% 30% 40% 50% 60% 70%	9 kittiw 1% 1 1 2 2 3 3 4	2% 1 2 3 5 6 7 8	5% 3 6 9 11 14 17 20	10% 6 11 17 23 29 34 40	20% 11 23 34 46 57 69 80	30% 17 34 52 69 86 103 121	Morta birds a 40% 23 46 69 92 115 138 161	50% 29 57 86 115 144 172 201	60% 34 69 103 138 172 207 241	70% 40 80 121 161 201 241 281	80% 46 92 138 184 230 276 321	90% 52 103 155 207 258 310 362	100% 57 115 172 230 287 344 402

Table 1.33: Mean predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during the breeding season (operations and maintenance phase).



Cittiwa						(% of d	M isplaced	ortality birds a		mortalit	ty)			
Breed	ing	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ıt)	10%	0	1	2	4	7	11	14	18	21	25	28	32	35
el Hei	20%	1	1	4	7	14	21	28	35	43	50	57	64	71
level acement)	30%	1	2	5	11	21	32	43	53	64	74	85	96	106
	40%	1	3	7	14	28	43	57	71	85	99	114	128	142
Displacement at risk of disp	50%	2	4	9	18	35	53	71	89	106	124	142	160	177
o o	60%	2	4	11	21	43	64	85	106	128	149	170	192	213
ris	70%	2	5	12	25	50	74	99	124	149	174	199	223	248
at C	80%	3	6	14	28	57	85	114	142	170	199	227	255	284
		10	6	16	32	64	96	128	160	192	223	255	287	319
%)	90%	3	U	10	02	<u> </u>				_				
	90% 100% -legged	4	7	18	35	71	106	142 Morta	177 lity leve		248 llity)	284	319	355
	100% c-legged	4 kittiwa	7 ake	18	35	71 % of dis	106 placed	142 Morta birds a	ılity leve t risk o	el f morta	lity)			
Black	100% -legged ding	4	7	18 5%	35 (%	71 % of dis 20%	106 placed 30%	Morta birds a	lity leve t risk o	el f morta 60%	lity) 70%	80%	90%	100%
lack	100% c-legged	4 kittiwa	7 ake	5% 4	35	71 % of dis	106 placed	142 Morta birds a	ılity leve t risk o	el f morta	lity)			
Black	100% -legged ding	4 kittiwa	7 ake 2%	18 5%	35 (%	71 % of dis 20%	106 placed 30%	Morta birds a	lity leve t risk o	el f morta 60%	lity) 70%	80%	90%	100%
Black	100% ding 10%	4 kittiw 1%	7 ake 2%	5% 4	35 (% 10% 7	71 6 of dis 20%	106 placed 30% 22	Morta birds a 40%	t risk o	60%	70%	80% 58	90% 65	100% 73
Black	100% ding 10% 20%	1% 1 1	7 ake 2% 1 3	5% 4 7	35 (% 10% 7 15	71 6 of dis 20% 15 29	106 placed 30% 22 44	142 Morta birds a 40% 29 58	50% 36 73	60% 44 87	70% 51 102	80% 58 116	90% 65 131	100% 73 145
Black	100% c-legged ding 10% 20% 30%	1% 1 1 2	7 ake 2% 1 3 4	5% 4 7 11	35 (% 10% 7 15 22	71 6 of dis 20% 15 29 44	106 placed 30% 22 44 65	142 Morta birds a 40% 29 58 87	50% 36 73 109	60% 44 87 131	70% 51 102 152	80% 58 116 174	90% 65 131 196	100% 73 145 218
Black	100% ding 10% 20% 30% 40%	1% 1 1 2 3	7 ake 2% 1 3 4 6	5% 4 7 11 15	35 (% 10% 7 15 22 29	71 6 of dis 20% 15 29 44 58	30% 22 44 65 87	142 Morta birds a 40% 29 58 87 116	50% 36 73 109 145	60% 44 87 131	70% 51 102 152 203	80% 58 116 174 232	90% 65 131 196 261	100% 73 145 218 290
Black	100% c-legged ding 10% 20% 30% 40% 50%	1% 1 2 3 4	7 ake 2% 1 3 4 6 7	5% 4 7 11 15 18	35 (% 10% 7 15 22 29 36	71 6 of dis 20% 15 29 44 58 73	30% 22 44 65 87 109	142 Morta birds a 40% 29 58 87 116 145	50% 36 73 109 145 182	60% 44 87 131 174 218	70% 51 102 152 203 254	80% 58 116 174 232 290	90% 65 131 196 261 327	100% 73 145 218 290 363
Black	100% c-legged ding 10% 20% 30% 40% 50% 60%	1% 1 1 2 3 4	7 ake 2% 1 3 4 6 7	5% 4 7 11 15 18 22	35 (% 7 15 22 29 36 44	71 6 of dis 20% 15 29 44 58 73 87	30% 22 44 65 87 109 131	142 Morta birds a 40% 29 58 87 116 145 174	50% 36 73 109 145 182 218	60% 44 87 131 174 218 261	70% 51 102 152 203 254 305	80% 58 116 174 232 290 348	90% 65 131 196 261 327 392	100% 73 145 218 290 363 436
Black	100% c-legged ding 10% 20% 30% 40% 50% 60% 70%	1% 1 1 2 3 4 4 5	7 ake 2% 1 3 4 6 7 9 10	5% 4 7 11 15 18 22 25	35 (% 10% 7 15 22 29 36 44 51	71 6 of dis 20% 15 29 44 58 73 87 102	30% 22 44 65 87 109 131 152	142 Morta birds a 40% 29 58 87 116 145 174 203	50% 36 73 109 145 182 218 254	60% 44 87 131 174 218 261 305	70% 51 102 152 203 254 305 356	80% 58 116 174 232 290 348 407	90% 65 131 196 261 327 392 457	100% 73 145 218 290 363 436 508

Table 1.34: Mean predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during Autumn migration (operations and maintenance phase).

Kittiwa	ake In migrat	ion				(% of d		ortality I birds a	level t risk of	mortali	ty)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	1	1	3	6	11	17	22	28	34	39	45	50	56
level	20%	1	2	6	11	22	34	45	56	67	78	90	101	112
e ace	30%	2	3	8	17	34	50	67	84	101	118	134	151	168
ent	40%	2	4	11	22	45	67	90	112	134	157	179	202	224
	50%	3	6	14	28	56	84	112	140	168	196	224	252	280
lace k of	60%	3	7	17	34	67	101	134	168	202	235	269	302	336
ispla risk	70%	4	8	20	39	78	118	157	196	235	274	314	353	392
	80%	4	9	22	45	90	134	179	224	269	314	358	403	448
%)	90%	5	10	25	50	101	151	202	252	302	353	403	454	504
	100%	6	11	28	56	112	168	224	280	336	392	448	504	560



1.4.6 Manx shearwater

Construction and decommissioning phases

1.4.6.1 Three seasons were defined for Manx shearwater in in Chapter 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (<u>Document reference F6.5.1</u>). Displacement matrices for each of these seasons, using the mean-peak populations presented in Table 1.4 are presented in Table 1.35 and Table 1.37 for the construction and decommissioning phase. Upper and lower matrices are presented in Appendix C.6.

Table 1.35: Mean predicted Manx shearwater mortality for the Mona Array Area plus 2 km buffer during the Spring migration (construction and decommissioning).

Manx S	Shearwa	ter			(% of	displace		lity level		itv)				
Spring	migratio	nn -			(% 01	uispiace	u bii us	al HSK U	n mortai	ity)				
opi ii ig	migratic	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ı£)	10%	0	0	0	0	0	0	0	0	00 /6	0	00 /8	0	0
el mel	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
level acement)	20%	0	0	0	0	0	0	0	0	0	0	0	1	1
	25%	0	0	0	0	0	0	0	0	0	1	1	1	1
di ig	30%	0	0	0	0	0	0	0	0	1	1	1	1	1
o g	35%	0	0	0	0	0	0	0	1	1	1	1	1	1
Displacement at risk of disp	40%	0	0	0	0	0	0	0	1	1	1	1	1	1
ᆲ	60%	0	0	0	0	0	1	1	1	1	1	1	2	2
%)	80%	0	0	0	0	0	1	1	1	1	2	2	2	2
	100%	0	0	0	0	1	1	1	2	2	2	2	3	3
	_													
Many (shoarwa	ni .					M	ortality	level					
/lanx	shearwa	ad .				(º/ of di		ortality		mortal	i4v/\			
						(% of di		_		mortal	ity)			
	shearwa migrati	on	20/	En/			splaced	birds a	t risk of			000/	000/	4000/
	migrati	on 1%	2%	5%	10%	20%	splaced	birds a	t risk of	60%	70%	80%	90%	100%
pring	migrati	on 1% 0	0	0	10%	20%	30%	40%	50%		70%	80% 0	90%	100%
pring	migrati 10% 15%	0 0 0	0	0	10% 0 0	20% 0 0	30% 0 0	40% 0 0	50% 0 0	60% 0 1	70%		90% 1 1	1
pring	migrati 10% 15% 20%	0 0 0	0 0 0	0 0 0	10% 0 0 0	20% 0 0 0	30% 0 0 0	40%	50%	60%	70%		90% 1 1 1	1 1 1
Spring	10% 15% 20% 25%	0 0 0 0	0 0 0 0	0 0 0 0	10% 0 0 0 0	20% 0 0 0 0	30% 0 0	40% 0 0	50% 0 0	60% 0 1	70%		1 1 1 1	1 1 1 2
pring	migrati 10% 15% 20% 25% 30%	0 0 0	0 0 0	0 0 0	10% 0 0 0	20% 0 0 0	30% 0 0 0	40% 0 0	50% 0 0	60% 0 1	70%	0 1 1 1 1	1 1 1 1 2	1 1 1 2 2
pring	10% 15% 20% 25% 30% 35%	0 0 0 0	0 0 0 0	0 0 0 0	10% 0 0 0 0	20% 0 0 0 0	30% 0 0 0	40% 0 0	50% 0 0	60% 0 1	70% 0 1 1 1 1 1	0 1 1 1 1 2	1 1 1 1 2 2	1 1 1 2 2 2
Spring	migrati 10% 15% 20% 25% 30%	1% 0 0 0 0	0 0 0 0	0 0 0 0	10% 0 0 0 0 0	20% 0 0 0 0 0	30% 0 0 0 0 0	40% 0 0 0 1	50% 0 0 1 1 1 1	60% 0 1 1 1 1 1 1	70% 0 1 1 1 1 1 2	0 1 1 1 1 2 2	1 1 1 1 2 2 2	1 1 1 2 2
	10% 15% 20% 25% 30% 35%	1% 0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	10% 0 0 0 0 0 0	20% 0 0 0 0 0 0 0	30% 0 0 0 0 0	40% 0 0 0 1	50% 0 0 1 1	60% 0 1 1 1 1	70% 0 1 1 1 1 1	0 1 1 1 1 2	1 1 1 1 2 2	2 2 2
Spring	10% 15% 20% 25% 30% 35% 40%	0 0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	10% 0 0 0 0 0 0 0 0 0 0	20% 0 0 0 0 0 0 0	30% 0 0 0 0 1 1	40% 0 0 0 1 1 1	50% 0 0 1 1 1 1	60% 0 1 1 1 1 1 1	70% 0 1 1 1 1 1 2	0 1 1 1 1 2 2	1 1 1 1 2 2 2	1 1 1 2 2 2 2



Table 1.36: Mean predicted Manx shearwater mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Manx S	Shearwa	ter			(% of (displace		ity level at risk c	l of mortal	ity)				
	iig	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	1	2	6	12	25	37	50	62	75	87	100	112	125
level	15%	2	4	9	19	37	56	75	94	112	131	150	169	187
	20%	2	5	12	25	50	75	100	125	150	175	200	225	250
ment displa	25%	3	6	16	31	62	94	125	156	187	219	250	281	312
em f di	30%	4	7	19	37	75	112	150	187	225	262	300	337	375
Displacem It risk of di	35%	4	9	22	44	87	131	175	219	262	306	350	393	437
ispla risk	40%	5	10	25	50	100	150	200	250	300	350	400	450	500
a t	60%	7	15	37	75	150	225	300	375	450	524	599	674	749
%)	80%	10	20	50	100	200	300	400	500	599	699	799	899	999
	100%	12	25	62	125	250	375	500	624	749	874	999	1124	1249

Table 1.37: Mean predicted Manx shearwater mortality for the Mona Array Area plus 2 km buffer during the Autumn migration (construction and decommissioning).

Manx	Shearwa	iter _					Morta	lity level	<u> </u>					
					(% of	displace	d birds	at risk c	of morta	lity)				
Autun	nn migrat	tion												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	0	1	2	4	5	7	9	11	13	15	16	18
acem	15%	0	1	1	3	5	8	11	14	16	19	22	25	27
	20%	0	1	2	4	7	11	15	18	22	25	29	33	36
Displacement at risk of displ	25%	0	1	2	5	9	14	18	23	27	32	36	41	45
em f d	30%	1	1	3	5	11	16	22	27	33	38	44	49	54
k ac	35%	1	1	3	6	13	19	25	32	38	44	51	57	64
ris	40%	1	1	4	7	15	22	29	36	44	51	58	65	73
	60%	1	2	5	11	22	33	44	54	65	76	87	98	109
%)	80%	1	3	7	15	29	44	58	73	87	102	116	131	145
							I = 4	70	0.4	400	407	4 4 5	400	400
	100%	2	4	9	18	36	54	73	91	109	127	145	163	182
	100% shearwa		4	9	18	<u> </u>		ortality	_	109	127	145	163	182
			4	9			М	ortality	_			145	163	182
/lanx		al	4	9			М	ortality	level			145	163	182
/lanx	shearwa	al	2%	9 5%			М	ortality	level			80%	90%	100%
Manx	shearwa	ai ntion	,			(% of di	M splaced	ortality birds a	level at risk of	mortal	ity)	'		
Manx Autun	shearwa	ation 1%	2%	5%	10%	(% of di	M splaced	ortality birds a	level at risk of	mortal	70%	<u>'</u>	90%	100%
Manx Autun	shearwann migra	ation 1%	2%	5%	10%	(% of di 20% 0	M splaced	ortality birds a	level at risk of	mortal	70%	80%	90%	100 %
/Janx Autun	shearwa nn migra 10% 15%	ation 1% 0 0	2% 0	5% 0	10% 0	20% 0 0	M splaced	ortality birds a 40%	level at risk of 50% 1	60%	70%	80% 1 2	90% 1 2	100% 2 2
Manx Autun	nn migra 10% 15% 20%	1% 0 0 0	2% 0 0 0	5% 0 0 0	10% 0 0	(% of di 20% 0 0 1	M splaced	birds a 40% 1 1	Som 1 1 2 2 1 2 1 1 2 1 2 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	60% 1 1 2	70% 1 2 2	80% 1 2 3	90% 1 2 3	100% 2 2 2 3
Manx Autun	10% 15% 20% 25%	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2% 0 0 0 0	5% 0 0 0	10% 0 0 0	(% of di 20% 0 0 1	M splaced	birds a 40% 1 1 1 2	Some	60% 1 1 2 2	70% 1 2 2 3	80% 1 2 3 3	90% 1 2 3 4	100% 2 2 2 3 4
Manx Autun	10% 15% 20% 25% 30%	1% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2% 0 0 0 0	5% 0 0 0 0	10% 0 0 0	(% of di 20% 0 0 1 1	30% 0 1 1 1 1 2	## Description of the image of	50% 1 1 2 2 2 3	60% 1 1 2 2 3 3	70% 1 2 2 3 3	80% 1 2 3 3 4	90% 1 2 3 4 4	100% 2 2 3 4 5
Manx	10% 15% 20% 25% 30% 35% 40%	1% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2% 0 0 0 0 0 0	5% 0 0 0 0 0 0	10% 0 0 0	(% of di 20% 0 0 1 1 1 1	30% 0 1 1 1 1 2 2	## April	50% 1 1 2 2 2 3 3	60% 1 1 2 2 3 3 4	70% 1 2 2 3 3 4	80% 1 2 3 3 4 4 5	90% 1 2 3 4 4 5 6	100% 2 2 2 3 4 5 6
/lanx	10% 15% 20% 25% 30% 35%	1% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2% 0 0 0 0 0	5% 0 0 0 0 0	10% 0 0 0	(% of di 20% 0 0 1 1 1	30% 0 1 1 1 1 2	## Description of the image of	50% 1 1 2 2 2 3	60% 1 1 2 2 3 3	70% 1 2 2 3 3 4 4	80% 1 2 3 3 4 4	90% 1 2 3 4 4 5	100% 2 2 3 4 5 6



Operations and maintenance phase

1.4.6.2 Three seasons were defined for Manx shearwater in in Chapter 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (<u>Document reference F6.5.1</u>). Displacement matrices for each of these seasons, using the mean-peak populations presented in Table 1.4 are presented in Table 1.38 and Table 1.40 for the operations and maintenance phase. Upper and lower matrices are presented in Appendix C.6.

Table 1.38: Mean predicted Manx shearwater mortality for the Mona Array Area plus 2 km buffer during the Spring migration (operations and maintenance phase).

x S	Shearwa	ter				(% of d	M lisplaced	ortality I birds a		morta <u>lit</u>	y)			
ring	migration	on				<u> </u>					• /			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
acement)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
ΈЩ	20%	0	0	0	0	0	0	0	0	0	0	0	1	1
	30%	0	0	0	0	0	0	0	0	1	1	1	1	1
dist	40%	0	0	0	0	0	0	0	1	1	1	1	1	1
o Jo	50%	0	0	0	0	0	0	1	1	1	1	1	1	2
at risk of disp	60%	0	0	0	0	0	1	1	1	1	1	2	2	2
r r	70% 80%	0	0	0	0	0	1 1	1	1 1	1	2	2	2	2
		0	0	0	0	1	1	1	1	2	2	2	2	3
%	QN0/-			10	10		1		1			_		
	90% 100% shearw	0 vater	0	0	0 (9	1 % of dis	Morta splaced	lity lev birds a		2 f morta	2 ality)	2	3	3
nx :	100%	0 vater tion	0	0	(9	% of dis	splaced	birds a	el at risk o	f morta	ılity)			
nx :	100% shearw	o vater tion 1%	2%	5 %	10%	% of dis	splaced	birds a	el at risk o	f morta	70%	80%	90% 1	
nx :	100% shearw g migrat	vater tion 1%	2% 0	5% 0	10%	% of dis	30%	40%	el at risk o	60%	ılity)			100 °
nx :	100% shearw g migrat 10% 20%	0 vater tion 1% 0 0	2% 0 0	5% 0 0	10% 0 0	% of dis	30% 0 0	40% 0 0	el st risk of 50% 0 1	60%	70% 0 1	80% 0 1	90% 1 1	100°
nx :	100% shearw g migrat 10% 20% 30%	0 vater tion 1% 0 0	2% 0 0 0	5% 0 0 0	10% 0 0	% of dis	30%	40%	el at risk o	60%	70% 0 1	80% 0 1	90% 1 1 2	100°
nx :	100% shearw migrat 10% 20% 30% 40%	0 vater tion 1% 0 0 0 0	2% 0 0 0 0	5% 0 0 0 0	10% 0 0 0	% of dis	30% 0 0 1	40% 0 0 1	el st risk o 50% 0 1 1 1 1	60% 0 1 1	70% 0 1 1 2	80% 0 1 1 2	90% 1 1 2 2	100° 1 1 2 2
nx :	100% shearw g migrat 10% 20% 30%	0 vater tion 1% 0 0	2% 0 0 0	5% 0 0 0	10% 0 0	% of dis	30% 0 0 1	40% 0 0 1 1	50% 0 1	60% 0 1	70% 0 1	80% 0 1	90% 1 1 2	100° 1 1 2
nx :	100% shearw migrat 10% 20% 30% 40% 50%	0 0 1% 0 0 0 0 0 0 0	2% 0 0 0 0	5% 0 0 0 0	10% 0 0 0 0	% of dis	30% 0 0 1 1	40% 0 0 1 1	50% 0 1 1 1 2	60% 0 1 1 1 2	70% 0 1 1 2 2	80% 0 1 1 2 2	90% 1 1 2 2 3	100° 1 1 2 2 3
nx :	100% shearw g migrat 10% 20% 30% 40% 50% 60%	0 0 1% 0 0 0 0 0	2% 0 0 0 0 0	5% 0 0 0 0 0	10% 0 0 0 0 0	20% 0 0 0 0 1	30% 0 0 1 1 1	40% 0 0 1 1 1	50% 0 1 1 1 2 2	60% 0 1 1 1 2 2	70% 0 1 1 2 2 3	80% 0 1 1 2 2 2	90% 1 1 2 2 3 3	100° 1 1 2 2 3 4
nx :	100% shearw migrat 10% 20% 30% 40% 50% 60% 70%	0 0 1% 0 0 0 0 0 0	2% 0 0 0 0 0 0	5% 0 0 0 0 0 0	10% 0 0 0 0 0 0	% of dis	30% 0 0 1 1 1 1	40% 0 0 1 1 1 2	50% 0 1 1 2 2 2	60% 0 1 1 1 2 2 3	70% 0 1 1 2 2 3 3	80% 0 1 1 2 2 3 3	90% 1 1 2 2 3 3 4	100° 1 1 2 2 3 4 4



Table 1.39: Mean predicted Manx shearwater mortality for the Mona Array Area plus 2 km buffer during the breeding season (operations and maintenance phase).

	Shearwa	ter				(% of d		ortality I birds a	level t risk of	mortali	(y)			
Breedi	ng	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	1	2	6	12	25	37	50	62	75	87	100	112	125
level	20%	2	5	12	25	50	75	100	125	150	175	200	225	250
	30%	4	7	19	37	75	112	150	187	225	262	300	337	375
ment displa	40%	5	10	25	50	100	150	200	250	300	350	400	450	500
	50%	6	12	31	62	125	187	250	312	375	437	500	562	624
lace k of	60%	7	15	37	75	150	225	300	375	450	524	599	674	749
ispla risk	70%	9	17	44	87	175	262	350	437	524	612	699	787	874
_ 0	80%	10	20	50	100	200	300	400	500	599	699	799	899	999
%)	90%	11	22	56	112	225	337	450	562	674	787	899	1012	1124
	100%	12	25	62	125	250	375	500	624	749	874	999	1124	1249

Table 1.40: Mean predicted Manx shearwater mortality for the Mona Array Area plus 2 km buffer during the Autumn migration (operation and maintenance phase).

x S	Shearwa	ter						ortality						
		ion.				(% of d	isplaced	birds a	t risk of	mortalit	y)			
ımı	n migrat	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
,	10%	0	0	1	2	4	5	7	9	11	13	15	16	18
acement	20%	0	1	2	4	7	11	15	18	22	25	29	33	36
2	30%	1	1	3	5	11	16	22	27	33	38	44	49	54
2	40%	1	1	4	7	15	22	29	36	44	51	58	65	73
at lish of disp	50%	1	2	5	9	18	27	36	45	54	64	73	82	91
2	60%	1	2	5	11	22	33	44	54	65	76	87	98	109
2	70%	1	3	6	13	25	38	51	64	76	89	102	114	127
	80%	1	3	7	15	29	44	58	73	87	102	116	131	145
_				0	16	33	49	65	82	98	114	131	147	163
2	90%	2	3	8	_	_					+			
	90% 100% shearw	2	4	9	18	36	54 Morta	73 lity lev	91 el at risk o	109	127 lity)	145	163	182
IX :	100%	2 rater ation	4	9	18	36 % of dis	54 Morta splaced	73 lity lev birds a	el at risk o	f morta	lity)			
um	100% shearw	ater ation 1%	2%	9 5%	18 (%	36 % of dis	54 Morta splaced 30%	73 lity lev	el	f morta		80%	90%	1009
um	100% shearw nn migra 10%	ation 1%	2% 0	5% 0	18 (%) 10% 0	36 % of dis	Morta splaced 30%	73 lity lev birds a	el at risk o 50%	60%	70%	80%	90%	100 ° 2
um	100% shearw nn migra 10% 20%	2 ater 1% 0 0	2% 0 0	5% 0 0	18 (%) 10% 0 0	36 % of dis 20% 0 1	Morta splaced 30% 0	73 lity lev birds a 40%	el at risk o 50% 1 2	60%	70% 1 2	80% 1 3	90% 1 3	100° 2 3
um	100% shearw nn migra 10% 20% 30%	2 atter 1% 0 0 0 0	2% 0 0 0	5% 0 0	18 (%) 10% 0	36 % of dis	54 Morta splaced 30% 0 1	73 lity lev birds a 40% 1 1 2	el	60% 1 2 3	70%	80% 1 3 4	90% 1 3 4	100° 2 3 5
um	100% shearw nn migra 10% 20%	2 ater 1% 0 0	2% 0 0	5% 0 0	18 (%) 10% 0 0	36 % of dis 20% 0 1	54 Morta splaced 30% 0 1 1 2	73 lity lev birds a 40%	el at risk o 50% 1 2	60% 1 2 3 4	70% 1 2	80% 1 3	90% 1 3	100° 2 3
um	100% shearw nn migra 10% 20% 30%	2 atter 1% 0 0 0 0	2% 0 0 0	5% 0 0	18 (%) 10% 0 0 0	36 % of dis 20% 0 1	54 Morta splaced 30% 0 1	73 lity lev birds a 40% 1 1 2	el	60% 1 2 3	70% 1 2 3	80% 1 3 4	90% 1 3 4	100° 2 3 5
um	100% shearw nn migra 10% 20% 30% 40%	2 ater ation 1% 0 0 0 0	2% 0 0 0	5% 0 0 0	18 (%) 10% 0 0 0	36 20% 0 1 1	54 Morta splaced 30% 0 1 1 2	73 lity lev birds a 40% 1 1 2 3	50% 1 2 2 3	60% 1 2 3 4	70% 1 2 3 4	80% 1 3 4 5	90% 1 3 4 6	100° 2 3 5 6
um	100% shearw nn migra 10% 20% 30% 40% 50%	2 atter ation 1% 0 0 0 0 0 0	2% 0 0 0 0	5% 0 0 0 0	18 (%) 10% 0 0 0	36 20% 0 1 1 1 2	30% 0 1 2 2	73 lity lev birds a 40% 1 1 2 3 3	50% 1 2 2 3 4	60% 1 2 3 4 5	70% 1 2 3 4 6	80% 1 3 4 5 6	90% 1 3 4 6 7	100° 2 3 5 6 8
at risk of displacement) in x	100% shearw 10% 20% 30% 40% 50%	2 ater ation 1% 0 0 0 0 0 0	2% 0 0 0 0 0	5% 0 0 0 0 0	18 (%) 10% 0 0 0 1 1 1	36 20% 0 1 1 1 2 2	30% 0 1 1 2 2 3	73 lity lev birds a 40% 1 1 2 3 3 4	50% 1 2 2 3 4 5	60% 1 2 3 4 5	70% 1 2 3 4 6 7	80% 1 3 4 5 6 8	90% 1 3 4 6 7 9	1009 2 3 5 6 8 10
um	100% shearw 10% 20% 30% 40% 50% 60% 70%	2 atter 1% 0 0 0 0 0 0 0 0 0	2% 0 0 0 0 0 0	5% 0 0 0 0 0	18 (%) 10% 0 0 0 1 1 1	36 20% 0 1 1 1 2 2 2	30% 0 1 2 2 3 3	73 lity level birds a 40% 1	50% 1 2 2 3 4 5	60% 1 2 3 4 5 6 7	70% 1 2 3 4 6 7	80% 1 3 4 5 6 8 9	90% 1 3 4 6 7 9 10	100% 2 3 5 6 8 10



1.4.7 Red-throated diver

Construction and decommissioning phases

1.4.7.1 Three seasons were defined for red-throated diver in Chapter 6, Annex 5.1: Offshore ornithology baseline characterisation technical report of the Environmental Statement (<u>Document reference F6.5.1</u>). Displacement matrices for each of these seasons, using the mean-peak populations presented in Table 1.4 are presented in Table 1.41 to Table 1.43 for the construction and decommissioning phase. Upper and lower matrices are presented in Appendix C.7.

Table 1.41: Mean predicted red-throated diver mortality for the Mona Array Area plus 4 km buffer during the Spring migration (construction and decommissioning). All entries are zero.

Red-th	Red-throated diver					Mortality level								
Spring	(% of displaced birds at risk of mortality) pring migration													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
ment level displacement)	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
le/	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
ent spl	25%	0	0	0	0	0	0	0	0	0	0	0	0	0
em di	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacem It risk of di	35%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
at .	45%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 1.42: Mean predicted red-throated diver mortality for the Mona Array Area plus 4 km buffer during the Autumn migration (construction and decommissioning). All entries are zero.

	Red-throated diver (% of displace Autumn migration						Mortality level ed birds at risk of mortality)							
	n migrat	ion 1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement It risk of displ	25%	0	0	0	0	0	0	0	0	0	0	0	0	0
em f di	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
lace k of	35%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
	45%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0



Table 1.43: Mean predicted red-throated diver mortality for the Mona Array Area plus 4 km buffer during non-breeding season (construction and decommissioning). All entries are zero.

Red-th	Red-throated diver (% of disp					displace	Mortality level laced birds at risk of mortality)							
Non-b	eeding													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
£	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
ner	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
ment level displacement)	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
nt l	25%	0	0	0	0	0	0	0	0	0	0	0	0	0
cement of displ	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
₩ ₩	35%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displad at risk d	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
Dis at ri	45%	0	0	0	0	0	0	0	0	0	0	0	0	0
 	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
ಲ	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0

1.4.7.2 Operations and maintenance phase Table 1.44Three seasons were defined for redthroated diver in Chapter 6, Annex 5.1: Offshore ornithology baseline characterisation
technical report of the Environmental Statement (Document reference F6.5.1).
Displacement matrices for each of these seasons, using the mean-peak populations
presented in Table 1.4 are presented in Table 1.46 for the operations
and maintenance phase. Upper and lower matrices are presented in Appendix C.7.

Table 1.44: Mean predicted red-throated diver mortality for the Mona Array Area plus 4 km buffer during Spring migration (operations and maintenance phase). All entries are zero.

	ed-throated diver Mortality level (% of displaced birds at risk of mortality)													
Spring	Spring migration													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
ent spl	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
em di	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
ace k of	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement it risk of displ	70%	0	0	0	0	0	0	0	0	0	0	0	0	0
at D	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	90%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0



Table 1.45: Mean predicted red-throated diver mortality for the Mona Array Area plus 4 km buffer during Autumn migration (operations and maintenance phase). All entries are zero.

	Red-throated diver Mortality level (% of displaced birds at risk of mortality) Autumn migration													
	migrat	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
ace	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement tt risk of displ	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
em f di	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
lace k of	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	70%	0	0	0	0	0	0	0	0	0	0	0	0	0
TO .	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	90%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 1.46: Mean predicted red-throated diver mortality for the Mona Array Area plus 4 km buffer during non-breeding period (operations and maintenance phase). All entries are zero.

Red-th	Red-throated diver (% of displace							Mortality level ed birds at risk of mortality)						
Non-b	Non-breeding													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
ace e	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
ent	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
lace k of	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla	70%	0	0	0	0	0	0	0	0	0	0	0	0	0
	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	90%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0



1.5 Summary Tables

1.5.1.1 Results from the matrix tables in section 1.3 are summarised below for the construction and decommissioning phases (Table 1.47) and for the operations and maintenance phase (Table 1.48).

Table 1.47: Seasonal displacement estimates for the Mona Array Area plus 2 km buffer (or Mona Array Area plus 4 km buffer if appropriate for the species) during construction and decommissioning

Species	Season	Seasonal mean peak population (Mona Array Area plus 2 km buffer or Mona Array plus 4 km if appropriate for the species)	Displacement rates (%)	Mortality rates(%)	Number of birds subject to mortality (individuals)
Common guillemot	Breeding	4,220	15%	1%	6
			30%	10%	148
	Non-breeding	3,756	15%	1%	6
			30%	10%	131
Razorbill	Pre-breeding season/spring	1,924	15%	1%	3
	migration		30%	10%	67
	Breeding	83	15%	1%	0
			30%	10%	3
	Post breeding season/autumn	91	15%	1%	0
	migration		30%	10%	3
	Non-breeding/winter season	421	15%	1%	1
			30%	10%	15
Atlantic puffin	Breeding	15	15%	1%	0
			30%	10%	1



Species	Season	Seasonal mean peak population (Mona Array Area plus 2 km buffer or Mona Array plus 4 km if appropriate for the species)	Displacement rates (%)	Mortality rates(%)	Number of birds subject to mortality (individuals)
	Non-breeding/winter season	<u>22</u> 0	15%	1%	0
			30%	10%	<u>1</u> 0
Northern gannet	Pre-breeding season/spring	28	30%	1%	0
	migration		40%	10%	1
	Non-breeding/winter season	251	30%	1%	1
			40%	10%	10
	Post breeding season/autumn	58	30%	1%	0
	migration		40%	10%	2
Black-legged	Pre-breeding season/spring	88 4 <u>574</u>	15%	1%	1
kittiwake	migration		35%	10%	<u>20</u> 31
	Breeding	355 726	15%	1%	1
			35%	10%	<u>25</u> 12
	Post breeding season/autumn	560	15%	1%	1
	migration		35%	10%	20
Manx shearwater	Pre-breeding season/spring	<u>6</u> 3	15%	1%	0
	migration		35%	10%	0
	Breeding	1,249	15%	1%	2
			35%	10%	44
		182 16	15%	1%	0



Species	Season	Seasonal mean peak population (Mona Array Area plus 2 km buffer or Mona Array plus 4 km if appropriate for the species)	Displacement rates (%)	Mortality rates(%)	Number of birds subject to mortality (individuals)
	Post breeding season/autumn				
	migration		35%	10%	<u>1</u> 6
Red-throated diver	Pre-breeding season/spring	0	50%	1%	0
	migration		50%	10%	0
	Post breeding season/autumn	0	50%	1%	0
	migration		50%	10%	0
	Non-breeding/winter season	0	50%	1%	0
			50%	10%	0



Table 1.48: Seasonal displacement estimates for the Mona Array Area plus 2 km buffer (or Mona Array Area plus 4 km buffer if appropriate for the species) during operation and maintenance

Species	Season	Seasonal mean peak population (Mona Array Area plus 2 km buffer or Mona Array plus 4 km if appropriate for the species)	Displacement rates (%)	Mortality rates(%)	Number of birds subject to mortality (individuals)
	Breeding	4,220	30%	1%	13
Common guillemot	breeding		70%	10%	295
	Non-breeding	3,756	30%	1%	11
	Non-breeding		70%	10%	263
	Pre-breeding season/spring	1,924	30%	1%	6
	migration		70%	10%	135
Razorbill	Breeding	83	30%	1%	0
	breeding		70%	10%	6
	Post breeding season/autumn	91	30%	1%	0
	migration		70%	10%	6
	Non-breeding/winter season	421	30%	1%	1
	Non-breeding/winter season		70%	10%	29
	Prooding	15	30%	1%	0
Atlantic puffin	Breeding		70%	10%	1
	Non broading/winter access	<u>22</u> 0	30%	1%	0
	Non-breeding/winter season		70%	10%	<u>2</u> 0
Northern gannet		28	60%	1%	0



Species	Season	Seasonal mean peak population (Mona Array Area plus 2 km buffer or Mona Array plus 4 km if appropriate for the species)	Displacement rates (%)	Mortality rates(%)	Number of birds subject to mortality (individuals)
	Pre-breeding season/spring migration		80%	10%	2
	Non-breeding/winter season	251	60%	1%	2
	Non-breeding/winter season		80%	10%	20
	Post breeding season/autumn	58	60%	1%	0
	migration		80%	10%	5
	Pre-breeding season/spring	884 <u>574</u>	30%	1%	<u>2</u> 3
	migration		70%	10%	6240
Black-legged	Due a dia a	355 726	30%	1%	24
kittiwake	Breeding		70%	10%	<u>51</u> 25
	Post breeding season/autumn	560	30%	1%	2
	migration		70%	10%	39
	Pre-breeding season/spring	<u>6</u> 3	30%	1%	0
	migration		70%	10%	0
Manx shearwater	Breeding	1,249	30%	1%	4
Manx Shearwater	breeding		70%	10%	87
	Post breeding season/autumn	182 16	30%	1%	<u>0</u> 4
	migration		70%	10%	13
Red-throated diver		0	100%	1%	0





Species	Season	Seasonal mean peak population (Mona Array Area plus 2 km buffer or Mona Array plus 4 km if appropriate for the species)	Displacement rates (%)	Mortality rates(%)	Number of birds subject to mortality (individuals)
	Pre-breeding season/spring migration		100%	10%	0
	Post breeding season/autumn	0	100%	1%	0
	migration		100%	10%	0
	Non-breeding/winter season	0	100%	1%	0
	non-breeding/winter season		100%	10%	0



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Appendix A: Bird data for displacement

A.1 Monthly abundance estimates

Table A. 1: Common guillemot modelled abundance (all behaviours and all ages classes) within the Mona Array Area plus associated buffer. Calendar Years 1, 2 and 3 for surveys: March 2020 to February 2022. Peak figures used in displacement assessment in each season are outlined in bold.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Mona A	rray Area	plus 2 km										
Year 1	N/A	N/A	5,739	519	154	713	436	200	215	20	1,171	642
LCI	N/A	N/A	4,895	375	88	477	301	121	144	1	815	466
UCI	N/A	N/A	6,657	683	247	1,000	601	306	313	124	1,569	839
Year 2	1,162	4,415	2,702	1,919	203	458	836	50	14	408	41	1,763
LCI	791	3,738	1,953	1,605	118	338	664	18	3	291	12	1,464
UCI	1,569	5,201	3,570	2,261	309	599	1,026	113	44	552	98	2,091
Year 3	3,097	1,648	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LCI	2,565	1,352	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UCI	3,665	1,978	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A



Table A. 2: Razorbill modelled abundance (all behaviours and all ages classes) within the Mona Array Area plus associated buffer. Calendar Years 1, 2 and 3 for surveys: March 2020 to February 2022. Peak figures used in displacement assessment in each season are outlined in bold.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Mona A	rray Area	plus 2 km										
Year 1	N/A	N/A	1,543	8	35	11	23	55	173	0	223	60
LCI	N/A	N/A	1,104	0	0	0	6	15	58	0	94	10
UCI	N/A	N/A	2,078	26	72	34	79	103	413	0	350	793
Year 2	387	2,305	1,097	130	10	17	41	9	0	0	0	619
LCI	172	1,547	769	57	0	0	0	0	0	0	0	409
UCI	735	3,219	1,484	256	28	36	99	26	0	0	0	870
Year 3	619	960	515	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LCI	409	623	357	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UCI	870	1,391	721	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A



Table A. 3: Atlantic pPuffin modelled abundance (all behaviours and all ages classes) within the Mona Array Area plus associated buffer. Calendar Years 1, 2 and 3 for surveys: March 2020 to February 2022. Peak figures used in displacement assessment in each season are outlined in bold.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Mona A	rray Area	plus 2 km										
Year 1	N/A	N/A	44	8	0	0	30	0	0	0	0	0
LCI	N/A	N/A	7	0	0	0	0	0	0	0	0	0
UCI	N/A	N/A	80	23	0	0	63	0	0	0	0	0
Year 2	0	0	0	0	0	0	0	0	0	0	0	0
LCI	0	0	0	0	0	0	0	0	0	0	0	0
UCI	0	0	0	0	0	0	0	0	0	0	0	0
Year 3	0	0	N/A	N/A	N/A	N/A						
LCI	0	0	N/A	N/A	N/A	N/A						
UCI	0	0	N/A	N/A	N/A	N/A						



Table A. 4: Northern gannet modelled abundance (all behaviours and all ages classes) within the Mona Array Area plus associated buffer. Calendar Years 1, 2 and 3 for surveys: March 2020 to February 2022. Peak figures used in displacement assessment in each season are outlined in bold.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Mona A	rray Area	plus 2 km										
Year 1	N/A	N/A	77	52	11	13	209	144	26	26	26	0
LCI	N/A	N/A	31	19	0	0	142	91	6	6	6	0
UCI	N/A	N/A	124	83	27	32	282	221	50	52	53	0
Year 2	34	0	117	212	59	13	34	66	293	89	13	12
LCI	6	0	64	138	26	0	15	30	188	59	0	0
UCI	61	0	191	302	95	32	64	121	422	131	27	38
Year 3	6	21	N/A	N/A	N/A	N/A						
LCI	0	0	N/A	N/A	N/A	N/A						
UCI	20	42	N/A	N/A	N/A	N/A						



Table A. 5: Black-legged kittiwake modelled abundance (all behaviours and all ages classes) within the Mona Array Area plus associated buffer. Calendar Years 1, 2 and 3 for surveys: March 2020 to February 2022. Peak figures used in displacement assessment in each season are outlined in bold.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Mona A	rray Area p	olus 2 km										
Year 1	N/A	N/A	548	132	5	<u>264</u> 264	127	55	0	0	242	214
LCI	N/A	N/A	337	85	0	<u>176</u> 176	80	20	0	0	146	126
UCI	N/A	N/A	822	190	16	<u>374</u> 374	188	92	0	0	367	326
Year 2	287 287	258	907	391	199	124	445 445	0	0	28	112	879
LCI	204 204	175	644	274	51	73	240 240	0	0	7	65	574
UCI	<u>385</u> 385	356	1,239	526	167	195	<u>744</u> 744	0	0	56	179	1,285
Year 3	676	861	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LCI	428	592	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UCI	1,014	1,208	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A



Table A. 6: Manx shearwater modelled abundance (all behaviours and all ages classes) within the Mona Array Area plus associated buffer. Calendar Years 1, 2 and 3 for surveys: March 2020 to February 2022. Peak figures used in displacement assessment in each season are outlined in bold.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Mona A	rray Area	plus 2 km										
Year 1	N/A	N/A	N/A <u>6</u>	<u>0</u>	0	7	324	<u>32</u> 32	<u>25</u> 25	0	0	0
LCI	N/A	N/A	N/A <u>0</u>	<u>0</u>	0	0	80	<u>6</u> 6	<u>0</u> 0	0	0	0
UCI	N/A	N/A	N/A <u>18</u>	<u>0</u>	0	20	820	<u>57</u> 57	<u>55</u> 55	0	0	0
Year 2	0	0	0	6	0	2,173	1,355	<u>331</u> 331	<u>7</u> 4	0	0	0
LCI	0	0	0	0	0	589	550	<u>115</u> 115	0	0	0	0
UCI	0	0	0	20	0	5,538	2,575	685	<u>22</u> 9	0	0	0
Year 3	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LCI	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UCI	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A



Table A. 7: Red-throated diver modelled abundance (all behaviours and all ages classes) within the Mona Array Area plus associated buffer. Calendar Years 1, 2 and 3 for surveys: March 2020 to February 2022. Peak figures used in displacement assessment in each season are outlined in bold.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Mona A	rray Area	plus 4 km										
Year 1	N/A	N/A	0	0	0	0	0	0	0	0	0	0
LCI	N/A	N/A	0	0	0	0	0	0	0	0	0	0
UCI	N/A	N/A	0	0	0	0	0	0	0	0	0	0
Year 2	0	0	0	0	0	0	0	0	0	0	0	0
LCI	0	0	0	0	0	0	0	0	0	0	0	0
UCI	0	0	0	0	0	0	0	0	0	0	0	0
Year 3	0	0	N/A	N/A	N/A	N/A						
LCI	0	0	N/A	N/A	N/A	N/A						
UCI	0	0	N/A	N/A	N/A	N/A						



Appendix B: Upper and lower confidence interval abundance estimates

B.1 Upper peak abundance estimates

Table B. 1: Upper confidence limit peak abundances for use in the assessment for each season.

Species	Pre-breeding season/spring migration	Breeding season	Post breeding season/autumn migration	Non-breeding/winter season
Common guillemot				
Peak Year 1	N/A	6,657	N/A	5,201
Peak Year 2	N/A	3,570	N/A	3,665
Mean peak	N/A	5,113	N/A	4,433
Razorbill				
Peak Year 1	2,078	72	413	793
Peak Year 2	3,219	256	26	870
Mean peak	2,649	164	220	831
Atlantic puffin				
Peak Year 1	N/A	63	N/A	<u>80</u> 0
Peak Year 2	N/A	0	N/A	0
Mean peak	N/A	31	N/A	<u>40</u> 0
Northern gannet				
Peak Year 1	121 <u>61</u>	191 282	302 <u>53</u>	N/An/a
Peak Year 2	42	422	131	N/An/a
Mean peak	<u>52</u> 82	3 <u>51</u> 06	<u>110</u> 217	N/An/a



Species	Pre-breeding season/spring migration	Breeding season	Post breeding season/autumn migration	Non-breeding/winter season
Black-legged kitt	iwake			
Peak Year 1	1,239 385	<u>822</u> 374	367	N/A
Peak Year 2	1,208	1,239744	1,285	N/A
Mean peak	1,223 <u>797</u>	<u>1,031</u> 559	826	N/A
Manx shearwater	•			
Peak Year 1	<u>18</u> 0	820	5 <u>5</u> 7	N/A
Peak Year 2	20	5,538	685 <u>22</u>	N/A
Mean peak	<u>19</u> 10	3,179	371 <u>39</u>	N/A
Red-throated diver			(
Peak Year 1	0	N/A	0	0
Peak Year 2	0	N/A	0	0
Mean peak	0	N/A	0	0



B.2 Lower peak abundance estimates

Table B. 2: Lower confidence limit peak abundances for use in the assessment for each season.

Species	Pre-Breeding season/spring migration	Breeding season	Post Breeding season/autumn migration	Non-breeding/winter season
Common guillem	ot			
Peak Year 1	N/A	4,895	N/A	3,738
Peak Year 2	N/A	1,953	N/A	2,565
Mean peak	N/A	3,424	N/A	3,151
Razorbill	,			
Peak Year 1	1,104	15	58	94
Peak Year 2	1,547	57	0	409
Mean peak	1,326	36	29	252
Atlantic puffin	,			
Peak Year 1	N/A	0	N/A	<u>7</u> 0
Peak Year 2	N/A	0	N/A	0
Mean peak	N/A	0	N/A	<u>40</u>
Northern gannet	,			
Peak Year 1	6	142	6	N/A
Peak Year 2	0	188	59	N/A
Mean peak	3	165	32	N/A
Black-legged kitt	tiwake	1	l .	I
Peak Year 1	644204	<u>337</u> 176	146	N/A



Species	Pre-Breeding season/spring migration	Breeding season	Post Breeding season/autumn migration	Non-breeding/winter season
Peak Year 2	592	644240	574	N/A
Mean peak	618398	<u>491</u> 208	360	N/A
Manx shearwater				
Peak Year 1	0	80	<u>0</u> 6	N/A0
Peak Year 2	0	589	<u>0</u> 115	N/A0
Mean peak	0	334	<u>0</u> 61	N/A0
Red-throated diver				
Peak Year 1	0	N/A	0	0
Peak Year 2	0	N/A	0	0
Mean peak	0	N/A	0	0



Appendix C: Upper and lower confidence interval matrices

C.1 Common guillemot

Table C. 1: LCI predicted common guillemot mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

	Guillemot Mortality level (% of displaced birds at risk of mortality) Breeding													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	3	7	17	34	68	103	137	171	205	240	274	308	342
level	15%	5	10	26	51	103	154	205	257	308	359	411	462	514
10	20%	7	14	34	68	137	205	274	342	411	479	548	616	685
Displacement t risk of displ	25%	9	17	43	86	171	257	342	428	514	599	685	770	856
em f di	30%	10	21	51	103	205	308	411	514	616	719	822	924	1027
lace k of	35%	12	24	60	120	240	359	479	599	719	839	959	1078	1198
ispla risk	40%	14	27	68	137	274	411	548	685	822	959	1096	1233	1369
	60%	21	41	103	205	411	616	822	1027	1233	1438	1643	1849	2054
%)	80%	27	55	137	274	548	822	1096	1369	1643	1917	2191	2465	2739
	100%	34	68	171	342	685	1027	1369	1712	2054	2397	2739	3081	3424

Table C. 2: UCI predicted common guillemot mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Guille Breed						(% of d		ortality birds a	level t risk of	mortalit	y)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	5	10	26	51	102	153	205	256	307	358	409	460	511
level	15%	8	15	38	77	153	230	307	383	460	537	614	690	767
ace	20%	10	20	51	102	205	307	409	511	614	716	818	920	1023
ment displa	25%	13	26	64	128	256	383	511	639	767	895	1023	1150	1278
em di	30%	15	31	77	153	307	460	614	767	920	1074	1227	1381	1534
Displacem it risk of di	35%	18	36	89	179	358	537	716	895	1074	1253	1432	1611	1790
ispla risk	40%	20	41	102	205	409	614	818	1023	1227	1432	1636	1841	2045
at 🖂	60%	31	61	153	307	614	920	1227	1534	1841	2147	2454	2761	3068
%)	80%	41	82	205	409	818	1227	1636	2045	2454	2863	3272	3681	4090
	100%	51	102	256	511	1023	1534	2045	2557	3068	3579	4090	4602	5113



Table C. 3: LCI predicted common guillemot mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (construction and decommissioning).

Guiller	not reeding					(% of d		ortality birds a	level t risk of	mortalit	у)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	3	6	16	32	63	95	126	158	189	221	252	284	315
level	15%	5	9	24	47	95	142	189	236	284	331	378	425	473
	20%	6	13	32	63	126	189	252	315	378	441	504	567	630
ent	25%	8	16	39	79	158	236	315	394	473	551	630	709	788
e di	30%	9	19	47	95	189	284	378	473	567	662	756	851	945
Displacem t risk of di	35%	11	22	55	110	221	331	441	551	662	772	882	993	1103
ispla risk	40%	13	25	63	126	252	378	504	630	756	882	1008	1135	1261
at D	60%	19	38	95	189	378	567	756	945	1135	1324	1513	1702	1891
%)	80%	25	50	126	252	504	756	1008	1261	1513	1765	2017	2269	2521
	100%	32	63	158	315	630	945	1261	1576	1891	2206	2521	2836	3151

Table C. 4: UCI predicted common guillemot mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (construction and decommissioning).

Guiller	not reeding					(% of d	M isplaced	ortality birds a		mortalit	y)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	4	9	22	44	89	133	177	222	266	310	355	399	443
level	15%	7	13	33	66	133	199	266	332	399	465	532	598	665
	20%	9	18	44	89	177	266	355	443	532	621	709	798	887
ent	25%	11	22	55	111	222	332	443	554	665	776	887	997	1108
em f di	30%	13	27	66	133	266	399	532	665	798	931	1064	1197	1330
lace k of	35%	16	31	78	155	310	465	621	776	931	1086	1241	1396	1551
Displacem It risk of di	40%	18	35	89	177	355	532	709	887	1064	1241	1418	1596	1773
at D	60%	27	53	133	266	532	798	1064	1330	1596	1862	2128	2394	2660
%)	80%	35	71	177	355	709	1064	1418	1773	2128	2482	2837	3192	3546
	100%	44	89	222	443	887	1330	1773	2216	2660	3103	3546	3989	4433

Table C. 5: LCI predicted common guillemot mortality for the Mona Array Area plus 2 km buffer during the breeding season (operation).

Guillen Breedi						(% of d	M isplaced	ortality birds a		mortalit	y)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	3	7	17	34	68	103	137	171	205	240	274	308	342
level	20%	7	14	34	68	137	205	274	342	411	479	548	616	685
	30%	10	21	51	103	205	308	411	514	616	719	822	924	1027
ent	40%	14	27	68	137	274	411	548	685	822	959	1096	1233	1369
	50%	17	34	86	171	342	514	685	856	1027	1198	1369	1541	1712
lace k of	60%	21	41	103	205	411	616	822	1027	1233	1438	1643	1849	2054
ispla risk	70%	24	48	120	240	479	719	959	1198	1438	1678	1917	2157	2397
	80%	27	55	137	274	548	822	1096	1369	1643	1917	2191	2465	2739
%)	90%	31	62	154	308	616	924	1233	1541	1849	2157	2465	2773	3081
	100%	34	68	171	342	685	1027	1369	1712	2054	2397	2739	3081	3424



Table C. 6: UCI predicted common guillemot mortality for the Mona Array Area plus 2 km buffer during the breeding season (operation).

Guiller	not					(% of d		ortality birds a	level t risk of	mortalit	у)			
Breedi	ing													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	5	10	26	51	102	153	205	256	307	358	409	460	511
level	20%	10	20	51	102	205	307	409	511	614	716	818	920	1023
	30%	15	31	77	153	307	460	614	767	920	1074	1227	1381	1534
ment	40%	20	41	102	205	409	614	818	1023	1227	1432	1636	1841	2045
em f di	50%	26	51	128	256	511	767	1023	1278	1534	1790	2045	2301	2557
ace k of	60%	31	61	153	307	614	920	1227	1534	1841	2147	2454	2761	3068
Displacem t risk of di	70%	36	72	179	358	716	1074	1432	1790	2147	2505	2863	3221	3579
at D	80%	41	82	205	409	818	1227	1636	2045	2454	2863	3272	3681	4090
%)	90%	46	92	230	460	920	1381	1841	2301	2761	3221	3681	4142	4602
	100%	51	102	256	511	1023	1534	2045	2557	3068	3579	4090	4602	5113

Table C. 7: LCI predicted common guillemot mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (operation).

Guiller	not					(% of d		ortality birds a	level t risk of	mortalit	у)			
	ocumg	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	3	6	16	32	63	95	126	158	189	221	252	284	315
level	20%	6	13	32	63	126	189	252	315	378	441	504	567	630
	30%	9	19	47	95	189	284	378	473	567	662	756	851	945
ent	40%	13	25	63	126	252	378	504	630	756	882	1008	1135	1261
em f di	50%	16	32	79	158	315	473	630	788	945	1103	1261	1418	1576
Displacem It risk of di	60%	19	38	95	189	378	567	756	945	1135	1324	1513	1702	1891
ispla risk	70%	22	44	110	221	441	662	882	1103	1324	1544	1765	1985	2206
at 🖂	80%	25	50	126	252	504	756	1008	1261	1513	1765	2017	2269	2521
%)	90%	28	57	142	284	567	851	1135	1418	1702	1985	2269	2553	2836
	100%	32	63	158	315	630	945	1261	1576	1891	2206	2521	2836	3151

Table C. 8: UCI predicted common guillemot mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (operation).

Guille	not reeding					(% of d	Mo isplaced	ortality l birds a		mortalit	y)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	4	9	22	44	89	133	177	222	266	310	355	399	443
level	20%	9	18	44	89	177	266	355	443	532	621	709	798	887
ace	30%	13	27	66	133	266	399	532	665	798	931	1064	1197	1330
ent spl	40%	18	35	89	177	355	532	709	887	1064	1241	1418	1596	1773
em f di	50%	22	44	111	222	443	665	887	1108	1330	1551	1773	1995	2216
Displacem It risk of di	60%	27	53	133	266	532	798	1064	1330	1596	1862	2128	2394	2660
ispla risk	70%	31	62	155	310	621	931	1241	1551	1862	2172	2482	2793	3103
at D	80%	35	71	177	355	709	1064	1418	1773	2128	2482	2837	3192	3546
%)	90%	40	80	199	399	798	1197	1596	1995	2394	2793	3192	3590	3989
	100%	44	89	222	443	887	1330	1773	2216	2660	3103	3546	3989	4433



C.2 Razorbill

Table C. 9: LCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during Spring migration (construction and decommissioning).

Razori						(% of d		ortality I birds a	level t risk of	mortali	y)			
Spring	migration													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	1	3	7	13	27	40	53	66	80	93	106	119	133
level	15%	2	4	10	20	40	60	80	99	119	139	159	179	199
<u>ac</u>	20%	3	5	13	27	53	80	106	133	159	186	212	239	265
ment level displacem	25%	3	7	17	33	66	99	133	166	199	232	265	298	331
em di	30%	4	8	20	40	80	119	159	199	239	278	318	358	398
Displacem t risk of di	35%	5	9	23	46	93	139	186	232	278	325	371	418	464
ispla risk	40%	5	11	27	53	106	159	212	265	318	371	424	477	530
at Di	60%	8	16	40	80	159	239	318	398	477	557	636	716	795
%)	80%	11	21	53	106	212	318	424	530	636	742	848	954	1060
	100%	13	27	66	133	265	398	530	663	795	928	1060	1193	1326

Table C. 10: UCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during Spring migration (construction and decommissioning).

Razori						(% of d		ortality birds a	level t risk of	mortalit	у)			
	migration	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	3	5	13	26	53	79	106	132	159	185	212	238	265
level	15%	4	8	20	40	79	119	159	199	238	278	318	358	397
ace	20%	5	11	26	53	106	159	212	265	318	371	424	477	530
ent spla	25%	7	13	33	66	132	199	265	331	397	463	530	596	662
em f di	30%	8	16	40	79	159	238	318	397	477	556	636	715	795
Displacem t risk of di	35%	9	19	46	93	185	278	371	463	556	649	742	834	927
ispla risk	40%	11	21	53	106	212	318	424	530	636	742	848	953	1059
	60%	16	32	79	159	318	477	636	795	953	1112	1271	1430	1589
%)	80%	21	42	106	212	424	636	848	1059	1271	1483	1695	1907	2119
	100%	26	53	132	265	530	795	1059	1324	1589	1854	2119	2384	2649



Table C. 11: LCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Razorbill Breeding						(% of d		lortality I birds a	level t risk of	mortalit	у)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	0	1	1	1	1	2	2	2	3	3
level	15%	0	0	0	0	1	1	2	2	3	3	3	4	4
1 <u>e</u>	20%	0	0	0	1	1	2	2	3	3	4	5	5	6
ent spla	25%	0	0	0	1	1	2	3	4	4	5	6	6	7
em f di	30%	0	0	0	1	2	3	3	4	5	6	7	8	9
Displacem t risk of di	35%	0	0	0	1	2	3	4	5	6	7	8	9	10
isplarisk	40%	0	0	1	1	2	3	5	6	7	8	9	10	11
at E	60%	0	0	1	2	3	5	7	9	10	12	14	15	17
%)	80%	0	0	1	2	5	7	9	11	14	16	18	20	23
	100%	0	1	1	3	6	9	11	14	17	20	23	26	28

Table C. 12: UCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Razorbil Breeding						(% of d		lortality I birds a	level t risk of	mortalit	у)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent	10%	0	0	1	2	3	5	7	8	10	11	13	15	16
level	15%	0	0	1	2	5	7	10	12	15	17	20	22	25
	20%	0	1	2	3	7	10	13	16	20	23	26	30	33
ent spla	25%	0	1	2	4	8	12	16	20	25	29	33	37	41
	30%	0	1	2	5	10	15	20	25	30	34	39	44	49
lace k of	35%	1	1	3	6	11	17	23	29	34	40	46	52	57
Displac	40%	1	1	3	7	13	20	26	33	39	46	52	59	66
at D	60%	1	2	5	10	20	30	39	49	59	69	79	89	98
%)	80%	1	3	7	13	26	39	52	66	79	92	105	118	131
	100%	2	3	8	16	33	49	66	82	98	115	131	148	164



Table C. 13: LCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during Autumn migration (construction and decommissioning).

Razork	oill n migrat	ion	(% of c	Mortali Iisplaced	ty level d birds a	t risk of	mortali	ty)						
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	0	1	1	1	1	2	2	2	3	3
level	15%	0	0	0	0	1	1	2	2	3	3	4	4	4
ace	20%	0	0	0	1	1	2	2	3	4	4	5	5	6
ent	25%	0	0	0	1	1	2	3	4	4	5	6	7	7
Displacem t risk of di	30%	0	0	0	1	2	3	4	4	5	6	7	8	9
lace k of	35%	0	0	1	1	2	3	4	5	6	7	8	9	10
ispla risk	40%	0	0	1	1	2	4	5	6	7	8	9	11	12
	60%	0	0	1	2	4	5	7	9	11	12	14	16	18
%)	80%	0	0	1	2	5	7	9	12	14	16	19	21	23
	100%	0	1	1	3	6	9	12	15	18	20	23	26	29

Table C. 14: UCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during Autumn migration (construction and decommissioning).

Razorbill Autumn		n			Mortality level (% of displaced birds at risk of mortality)									
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	1	2	4	7	9	11	13	15	18	20	22
level	15%	0	1	2	3	7	10	13	16	20	23	26	30	33
	20%	0	1	2	4	9	13	18	22	26	31	35	40	44
ent	25%	1	1	3	5	11	16	22	27	33	38	44	49	55
	30%	1	1	3	7	13	20	26	33	40	46	53	59	66
lace k of	35%	1	2	4	8	15	23	31	38	46	54	61	69	77
isplarisk	40%	1	2	4	9	18	26	35	44	53	61	70	79	88
	60%	1	3	7	13	26	40	53	66	79	92	105	119	132
%)	80%	2	4	9	18	35	53	70	88	105	123	141	158	176
	100%	2	4	11	22	44	66	88	110	132	154	176	198	220

Table C. 15: LCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (construction and decommissioning).

Razori	oill				Mortality level (% of displaced birds at risk of mortality)									
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
Displacement level rt risk of displacement)	10%	0	1	1	3	5	8	10	13	15	18	20	23	25
	15%	0	1	2	4	8	11	15	19	23	26	30	34	38
	20%	1	1	3	5	10	15	20	25	30	35	40	45	50
	25%	1	1	3	6	13	19	25	31	38	44	50	57	63
	30%	1	2	4	8	15	23	30	38	45	53	60	68	75
	35%	1	2	4	9	18	26	35	44	53	62	70	79	88
ispla risk	40%	1	2	5	10	20	30	40	50	60	70	80	91	101
- O	60%	2	3	8	15	30	45	60	75	91	106	121	136	151
%)	80%	2	4	10	20	40	60	80	101	121	141	161	181	201
	100%	3	5	13	25	50	75	101	126	151	176	201	226	252



Table C. 16: UCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (construction and decommissioning).

Razori	oill					(% of d		ortality birds a	level t risk of	mortalit	ty)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	1	2	4	8	17	25	33	42	50	58	67	75	83
level	15%	1	2	6	12	25	37	50	62	75	87	100	112	125
	20%	2	3	8	17	33	50	67	83	100	116	133	150	166
ent	25%	2	4	10	21	42	62	83	104	125	145	166	187	208
	30%	2	5	12	25	50	75	100	125	150	175	200	224	249
lace k of	35%	3	6	15	29	58	87	116	145	175	204	233	262	291
ispla risk	40%	3	7	17	33	67	100	133	166	200	233	266	299	333
at D	60%	5	10	25	50	100	150	200	249	299	349	399	449	499
%)	80%	7	13	33	67	133	200	266	333	399	466	532	599	665
	100%	8	17	42	83	166	249	333	416	499	582	665	748	831

Table C. 17: LCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during Spring migration (operation).

Razorb						(% of d		ortality I birds a	level t risk of	mortalit	y)			
Spring	migration													1000/
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	1	3	7	13	27	40	53	66	80	93	106	119	133
level	20%	3	5	13	27	53	80	106	133	159	186	212	239	265
ac ac	30%	4	8	20	40	80	119	159	199	239	278	318	358	398
ment level displacem	40%	5	11	27	53	106	159	212	265	318	371	424	477	530
em di	50%	7	13	33	66	133	199	265	331	398	464	530	597	663
Displacem t risk of di	60%	8	16	40	80	159	239	318	398	477	557	636	716	795
ispla risk	70%	9	19	46	93	186	278	371	464	557	650	742	835	928
at 🗖	80%	11	21	53	106	212	318	424	530	636	742	848	954	1060
%)	90%	12	24	60	119	239	358	477	597	716	835	954	1074	1193
	100%	13	27	66	133	265	398	530	663	795	928	1060	1193	1326

Table C. 18: UCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during Spring migration (operation).

Razorb	ill					(% of d		ortality I birds a	level t risk of	mortalit	y)			
Spring	migrati	on												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	3	5	13	26	53	79	106	132	159	185	212	238	265
	20%	5	11	26	53	106	159	212	265	318	371	424	477	530
	30%	8	16	40	79	159	238	318	397	477	556	636	715	795
ment displ	40%	11	21	53	106	212	318	424	530	636	742	848	953	1059
em di	50%	13	26	66	132	265	397	530	662	795	927	1059	1192	1324
lace k of	60%	16	32	79	159	318	477	636	795	953	1112	1271	1430	1589
Displacem t risk of di	70%	19	37	93	185	371	556	742	927	1112	1298	1483	1669	1854
at at	80%	21	42	106	212	424	636	848	1059	1271	1483	1695	1907	2119
%)	90%	24	48	119	238	477	715	953	1192	1430	1669	1907	2145	2384
	100%	26	53	132	265	530	795	1059	1324	1589	1854	2119	2384	2649



Table C. 19: LCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during the breeding season (operation).

Razorb Breedin						(% of di		ortality le birds at	evel risk of	mortality	/)			
	9	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	0	0	1	1	1	1	2	2	2	3	3
level	20%	0	0	0	1	1	2	2	3	3	4	5	5	6
10	30%	0	0	0	1	2	3	3	4	5	6	7	8	9
Displacement t risk of displ	40%	0	0	1	1	2	3	5	6	7	8	9	10	11
e di	50%	0	0	1	1	3	4	6	7	9	10	11	13	14
lace k of	60%	0	0	1	2	3	5	7	9	10	12	14	15	17
ispla risk	70%	0	0	1	2	4	6	8	10	12	14	16	18	20
O	80%	0	0	1	2	5	7	9	11	14	16	18	20	23
%)	90%	0	1	1	3	5	8	10	13	15	18	20	23	26
	100%	0	1	1	3	6	9	11	14	17	20	23	26	28

Table C. 20: UCI predicted razorbill mortality for the Mona Array Area 2 km buffer during the breeding season (operation).

Razorb Breedin						(% of d		lortality I birds a	level at risk of	mortalit	у)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent level splacement)	10%	0	0	1	2	3	5	7	8	10	11	13	15	16
level	20%	0	1	2	3	7	10	13	16	20	23	26	30	33
1 <u>e</u>	30%	0	1	2	5	10	15	20	25	30	34	39	44	49
	40%	1	1	3	7	13	20	26	33	39	46	52	59	66
Displacemetrisk of di	50%	1	2	4	8	16	25	33	41	49	57	66	74	82
lace k of	60%	1	2	5	10	20	30	39	49	59	69	79	89	98
isplarisk	70%	1	2	6	11	23	34	46	57	69	80	92	103	115
σ	80%	1	3	7	13	26	39	52	66	79	92	105	118	131
%)	90%	1	3	7	15	30	44	59	74	89	103	118	133	148
	100%	2	3	8	16	33	49	66	82	98	115	131	148	164

Table C. 21: LCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during Autumn migration (operation).

Razorb Autumr		tion				(% of d		ortality I birds a	level t risk of	mortali	y)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	0	0	1	1	1	1	2	2	2	3	3
level	20%	0	0	0	1	1	2	2	3	4	4	5	5	6
	30%	0	0	0	1	2	3	4	4	5	6	7	8	9
Displacement t risk of displ	40%	0	0	1	1	2	4	5	6	7	8	9	11	12
e ii	50%	0	0	1	1	3	4	6	7	9	10	12	13	15
lace k of	60%	0	0	1	2	4	5	7	9	11	12	14	16	18
ispla risk	70%	0	0	1	2	4	6	8	10	12	14	16	18	20
σ	80%	0	0	1	2	5	7	9	12	14	16	19	21	23
%)	90%	0	1	1	3	5	8	11	13	16	18	21	24	26
	100%	0	1	1	3	6	9	12	15	18	20	23	26	29



Table C. 22: UCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during Autumn migration (operation).

Razorb Autumr		tion				(% of d		ortality birds a		mortalit	y)			
	migra	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	0	1	2	4	7	9	11	13	15	18	20	22
level	20%	0	1	2	4	9	13	18	22	26	31	35	40	44
<u>ac</u>	30%	1	1	3	7	13	20	26	33	40	46	53	59	66
ment displa	40%	1	2	4	9	18	26	35	44	53	61	70	79	88
cem of di	50%	1	2	5	11	22	33	44	55	66	77	88	99	110
lace k of	60%	1	3	7	13	26	40	53	66	79	92	105	119	132
Displac	70%	2	3	8	15	31	46	61	77	92	108	123	138	154
0	80%	2	4	9	18	35	53	70	88	105	123	141	158	176
%)	90%	2	4	10	20	40	59	79	99	119	138	158	178	198
	100%	2	4	11	22	44	66	88	110	132	154	176	198	220

Table C. 23: LCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (operation).

Razorb						(% of di	Mo splaced	ortality l birds at		mortalit	y)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	1	1	3	5	8	10	13	15	18	20	23	25
level	20%	1	1	3	5	10	15	20	25	30	35	40	45	50
	30%	1	2	4	8	15	23	30	38	45	53	60	68	75
ment displa	40%	1	2	5	10	20	30	40	50	60	70	80	91	101
	50%	1	3	6	13	25	38	50	63	75	88	101	113	126
lace k of	60%	2	3	8	15	30	45	60	75	91	106	121	136	151
ispla risk	70%	2	4	9	18	35	53	70	88	106	123	141	158	176
	80%	2	4	10	20	40	60	80	101	121	141	161	181	201
%)	90%	2	5	11	23	45	68	91	113	136	158	181	204	226
	100%	3	5	13	25	50	75	101	126	151	176	201	226	252

Table C. 24: UCI predicted razorbill mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (operation).

Razorb						(% of d		ortality I birds a	level t risk of	mortalit	y)			
	Joanny	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	1	2	4	8	17	25	33	42	50	58	67	75	83
level	20%	2	3	8	17	33	50	67	83	100	116	133	150	166
	30%	2	5	12	25	50	75	100	125	150	175	200	224	249
ent	40%	3	7	17	33	67	100	133	166	200	233	266	299	333
	50%	4	8	21	42	83	125	166	208	249	291	333	374	416
lace k of	60%	5	10	25	50	100	150	200	249	299	349	399	449	499
ispla risk	70%	6	12	29	58	116	175	233	291	349	407	466	524	582
- O	80%	7	13	33	67	133	200	266	333	399	466	532	599	665
%)	90%	7	15	37	75	150	224	299	374	449	524	599	673	748
	100%	8	17	42	83	166	249	333	416	499	582	665	748	831



C.3 Atlantic puffin

Table C. 25: LCI predicted Atlantic puffin mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Puffin Breedi	ng				(% of d	isplaced	Mortalit I birds a	•	mortalit	ty)				
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
ace	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
ent	25%	0	0	0	0	0	0	0	0	0	0	0	0	0
em di	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacem t risk of di	35%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
at 🖂	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C. 26: UCI predicted Atlantic puffin mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Puffin					(% of d	lisplaced		ty level It risk of	mortali	ty)				
Breed	ing													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent	10%	0	0	0	0	1	1	1	2	2	2	3	3	3
level	15%	0	0	0	0	1	1	2	2	3	3	4	4	5
<u>e</u>	20%	0	0	0	1	1	2	3	3	4	4	5	6	6
ment level displacement)	25%	0	0	0	1	2	2	3	4	5	5	6	7	8
	30%	0	0	0	1	2	3	4	5	6	7	8	8	9
ace k of	35%	0	0	1	1	2	3	4	5	7	8	9	10	11
ispla risk	40%	0	0	1	1	3	4	5	6	8	9	10	11	13
at Di	60%	0	0	1	2	4	6	8	9	11	13	15	17	19
%)	80%	0	1	1	3	5	8	10	13	15	18	20	23	25
	100%	0	1	2	3	6	9	13	16	19	22	25	28	31



Table C. 27: LCI predicted Atlantic puffin mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (construction and decommissioning).

uffin							Morta	lity level						
					(% of	displace			of mortal	ity)				
lon-b	reeding													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
acem	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement at risk of disp	25%	0	0	0	0	0	0	0	0	0	0	0	0	0
er f	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
ik o	35%	0	0	0	0	0	0	0	0	0	0	0	0	0
ris	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
	000/	10	0	0	0	0	0	0	0	0	0	0	0	0
%)	80%				_	_	_	_	_		_	_		
	100%	0	0	0	0	0	00	0	0	0	0	0	0	0
≗ Puffin	100%		0	0	0	ļo I	М	ortality	level			0	0	00
	100%		0	0	0	ļo I	М	ortality				0	0	0
Puffin	100%		0	0		(% of di	М	ortality I birds a	level		ty)	V	0	0
Puffin	100%	1%	2%	5%	10%	(% of di	M isplaced	ortality I birds a	level t risk of	mortali	ty) 70%	80%	90%	100%
Puffin	100% preeding 10%	1% 0	2%	5%	10%	(% of di 20% 0	M splaced	ortality I birds a	level t risk of 50%	60%	70%	80%	V	
Puffin Non-b	100%	1% 0 0	2%	5% 0 0	10%	(% of di	M isplaced	ortality I birds a	level It risk of 50% 0 0	mortali	ty) 70%	80%	90%	100%
Puffin Non-b	100% oreeding 10% 15% 20%	1% 0	2% 0 0 0	5% 0 0 0	10% 0 0	(% of di 20% 0	Misplaced 30%	ortality I birds a 40%	level t risk of 50%	60%	70%	80%	90%	100%
Puffin Non-b	100% reeding 10% 15% 20% 25%	1% 0 0 0 0	2% 0 0	5% 0 0 0	10% 0 0	(% of di 20% 0	Misplaced 30% 0 0	ortality I birds a 40% 0 0	level It risk of 50% 0 0	60% 0 0	70%	80%	90%	100%
Puffin Non-b	100% oreeding 10% 15% 20%	1% 0 0 0	2% 0 0 0	5% 0 0 0	10% 0 0	20% 0 0 0	30% 0 0 0	ortality l birds a 40% 0 0 0		60% 0 0 0	70%	80%	90%	100%
Puffin Non-b	100% reeding 10% 15% 20% 25%	1% 0 0 0 0	2% 0 0 0 0	5% 0 0 0	10% 0 0 0	(% of di 20% 0 0 0 0	30% 0 0 0 0	ortality l birds a 40% 0 0 0 0		60% 0 0 0 1	70%	80%	90%	100%
Puffin	100% oreeding 10% 15% 20% 25% 30%	1% 0 0 0 0	2% 0 0 0 0 0	5% 0 0 0 0	10% 0 0 0 0	(% of di 20% 0 0 0 0	30% 0 0 0 0 0	ortality l birds a 40% 0 0 0 0		60% 0 0 1	70%	80%	90%	100%
Puffin	100% reeding 10% 15% 20% 25% 30% 35%	1% 0 0 0 0 0	2% 0 0 0 0 0	5% 0 0 0 0 0	10% 0 0 0 0 0	(% of di 20% 0 0 0 0 0 0	30% 0 0 0 0 0 0	ortality I birds a 40% 0 0 0 0 1		60% 0 0 0 1 1	70%	80% 0 0 1 1 1 1	90% 0 1 1 1 1	100% 0 1 1 1 1
Puffin	100% 10% 15% 20% 25% 30% 35% 40%	0 0 0 0 0 0 0	2% 0 0 0 0 0 0	5% 0 0 0 0 0 0	10% 0 0 0 0 0 0	(% of di 20% 0 0 0 0 0 0 0	30% 0 0 0 0 0 0	ortality l birds a 40% 0 0 0 0 1		60% 0 0 1 1 1	70% 0 0 1 1 1 1	80% 0 0 1 1 1 1	90% 0 1 1 1 1 1	100% 0 1 1 1 1 1 2

Table C. 28: UCI predicted Atlantic puffin mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (construction and decommissioning).



Puffin					(% of	displace		lity level at risk c		ity)				
Non-b	reeding													
	-	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
acem	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement at risk of disp	25%	0	0	0	0	0	0	0	0	0	0	0	0	0
Sen of d	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
sk c	35%	0	0	0	0	0	0	0	0	0	0	0	0	0
ris	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0		0 ortality		0	0	0	0	0
Puffin		0	0	0	0		М	ortality			<u> </u>	0	<u>[</u> 0	0
Puffin		0 1%	2 %	5 %	10%		М	ortality	level t risk of 50%		<u> </u>	80%	90%	
Puffin						(% of di	M splaced	ortality I birds a	level t risk of	mortali	ty)			
Puffin	reeding	1%	2%	5%	10%	(% of di	M isplaced	ortality I birds a	level t risk of 50%	mortali	ty) 70%	80%	90%	100%
Puffin	reeding	1%	2%	5%	10%	(% of di 20%	Misplaced	ortality I birds a	50% 2 3 4	mortali 60%	70%	80%	90% 4	100 %
Puffin Non-b	reeding 10% 15%	1% 0 0	2% 0 0	5% 0 0	10% 0	(% of di 20%	30% 1 2	ortality l birds a 40% 2 2	Second S	60% 2 4	70% 3 4	80% 3 5	90% 4 5	100% 4 6
Puffin Non-b	10% 15% 20%	1% 0 0	2% 0 0 0	5% 0 0	10% 0 1	(% of di 20% 1 1 2	30% 1 2 2	ortality l birds a 40% 2 2 3	50% 2 3 4	60% 2 4 5	70% 3 4 6	80% 3 5 6	90% 4 5 7	100% 4 6 8
Puffin	10% 15% 20% 25%	1% 0 0 0	2% 0 0 0 0	5% 0 0	10% 0 1 1	(% of di 20% 1 1 2 2	30% 1 2 2 3	ortality l birds a 40% 2 2 2 3 4	Second S	60% 2 4 5 6	70% 3 4 6 7	80% 3 5 6	90% 4 5 7 9	100% 4 6 8 10
Puffin	10% 15% 20% 25% 30%	1% 0 0 0 0	2% 0 0 0 0	5% 0 0	10% 0 1 1 1	(% of di 20% 1 1 2 2 2	30% 1 2 2 3 4	ortality birds a 40% 2 2 3 4	50% 2 3 4 5 6	60% 2 4 5 6	70% 3 4 6 7	80% 3 5 6 8 10	90% 4 5 7 9	100% 4 6 8 10 12
Puffin	10% 15% 20% 25% 30% 35%	1% 0 0 0 0	2% 0 0 0 0 0 0	5% 0 0 0 1 1	10% 0 1 1 1 1	(% of di 20% 1 1 2 2 2 2 3	30% 1 2 2 3 4 4	ortality l birds a 40% 2 2 2 3 4 5 6	50% 2 3 4 5 6 7	60% 2 4 5 6 7	70% 3 4 6 7 8 10	80% 3 5 6 8 10	90% 4 5 7 9 11	100% 4 6 8 10 12 14
Puffin	10% 15% 20% 25% 30% 35% 40%	1% 0 0 0 0 0	2% 0 0 0 0 0 0	5% 0 0 0 1 1 1	10% 0 1 1 1 1 1 2	(% of di 20% 1 1 2 2 2 3 3	30% 1 2 2 3 4 4 5	ortality birds a 40% 2 2 3 4 5 6	50% 2 3 4 5 6 7	60% 2 4 5 6 7 8 10	70% 3 4 6 7 8 10 11	80% 3 5 6 8 10 11	90% 4 5 7 9 11 13	100% 4 6 8 10 12 14 16

Table C. 29: LCI predicted Atlantic puffin mortality for the Mona Array Area plus 2 km buffer during the breeding season (operations and maintenance phase).

Puffin						(% of d	M isplaced	ortality birds a		mortalit	y)			
Breed	ing													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
ent	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
e G	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacem It risk of di	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	70%	0	0	0	0	0	0	0	0	0	0	0	0	0
at D	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	90%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C. 30: UCI predicted Atlantic puffin mortality for the Mona Array Area plus 2 km buffer during the breeding season (operations and maintenance phase).



Puffin Breedi	na					(% of di		ortality birds a	level t risk of	mortalit	у)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	0	1	1	1	2	2	2	3	3	3
level	20%	0	0	0	1	1	2	3	3	4	4	5	6	6
ace	30%	0	0	0	1	2	3	4	5	6	7	8	8	9
ent	40%	0	0	1	1	3	4	5	6	8	9	10	11	13
em f di	50%	0	0	1	2	3	5	6	8	9	11	13	14	16
Displacem t risk of di	60%	0	0	1	2	4	6	8	9	11	13	15	17	19
ispla risk	70%	0	0	1	2	4	7	9	11	13	15	18	20	22
at 🗖	80%	0	1	1	3	5	8	10	13	15	18	20	23	25
%)	90%	0	1	1	3	6	8	11	14	17	20	23	25	28
	100%	0	1	2	3	6	9	13	16	19	22	25	28	31

Table C. 31: LCI predicted Atlantic puffin mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (operations and maintenance phase).

Puffin						(% of d		lortality I birds a	level t risk of	mortali	y)			
	reeding	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level aceme	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement at risk of displ	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
em f di	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
lac k o	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
isp ris	70%	0	0	0	0	0	0	0	0	0	0	0	0	0
TO TO	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	90%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0
Puffin		U	U	U	U		М	ortality	level			U	V	V
					7	(% of di	M splaced	ortality I birds a	level It risk of	mortali	ty)			
	reeding	1%	2%	5%	10%	(% of di	M splaced	ortality birds a	level at risk of 50%	mortali	ty) 70%	80%	90%	100%
	reeding	1%	2%	5%	10%	(% of di 20%	Misplaced 30%	ortality birds a 40%	level at risk of 50%	60%	ty)		90%	
Non-b	10% 20%	1% 0 0	2% 0	5% 0 0	10% 0 0	(% of di 20% 0 0	Misplaced 30% 0 0	ortality l birds a 40% 0 0	level at risk of 50%	60% 0 0	ty) 70%	80%	90% 0 1	100% 0 1
Non-b	10% 20% 30%	1% 0 0 0	2% 0 0 0	5% 0 0 0	10% 0 0	(% of di 20% 0 0 0	30% 0 0 0	ortality l birds a 40% 0 0 0	level t risk of 50% 0 0 1	60% 0 0	ty) 70%	80%	90% 0 1 1	100% 0 1
Non-b	10% 20% 30% 40%	1% 0 0 0 0	2% 0 0 0 0	5% 0 0 0 0	10% 0 0 0	(% of di 20% 0 0 0	Misplaced 30% 0 0	ortality I birds a 40% 0 0 0 1	level at risk of 50%	60% 0 0 1	ty) 70%	80% 0 1 1	90% 0 1 1	100% 0 1 1 2
Non-b	10% 20% 30% 40%	1% 0 0 0 0	2% 0 0 0 0	5% 0 0 0 0	10% 0 0 0 0	(% of di 20% 0 0 0 0	30% 0 0 0	ortality l birds a 40% 0 0 0	level t risk of 50% 0 0 1	60% 0 0 1 1	70% 0 1 1 1 1	80% 0 1 1 1 2	90% 0 1 1 1 2	100% 0 1 1 2 2
Non-b	10% 20% 30% 40% 50%	1% 0 0 0 0	2% 0 0 0 0 0	5% 0 0 0 0 0	10% 0 0 0 0 0	(% of di 20% 0 0 0	30% 0 0 0	ortality I birds a 40% 0 0 0 1	level t risk of 50% 0 0 1	60% 0 0 1 1 1	70% 0 1 1 1 1 2	80% 0 1 1 1 2 2	90% 0 1 1 1 2 2	100% 0 1 1 2 2 2
Non-b	10% 20% 30% 40% 50% 60%	1% 0 0 0 0 0	2% 0 0 0 0 0 0	5% 0 0 0 0 0 0	10% 0 0 0 0 0 0	(% of di 20% 0 0 0 0	30% 0 0 0	ortality I birds a 40% 0 0 0 1	Solution Solution	60% 0 0 1 1 1 1 2	70% 0 1 1 1 1 2 2	80% 0 1 1 1 2 2 2	90% 0 1 1 1 2 2 3	100% 0 1 1 2 2 2 2 3
	10% 20% 30% 40% 50% 60% 70%	1% 0 0 0 0	2% 0 0 0 0 0 0 0	5% 0 0 0 0 0 0 0 0 0 0	10% 0 0 0 0 0 0 0 0	(% of di 20% 0 0 0 0 0 0 0	30% 0 0 0	ortality I birds a 40% 0 0 0 1	Solution Solution	60% 0 0 1 1 1 1 2 2	70% 0 1 1 1 1 2 2 2	80% 0 1 1 1 2 2 2 2 3	90% 0 1 1 1 2 2 3 3	100% 0 1 1 2 2 2
Non-b	10% 20% 30% 40% 50% 60%	1% 0 0 0 0 0	2% 0 0 0 0 0 0	5% 0 0 0 0 0 0	10% 0 0 0 0 0 0	(% of di 20% 0 0 0 0 0 0 0	30% 0 0 0	ortality l birds a 40% 0 0 1 1 1 1	Solution Solution	60% 0 0 1 1 1 1 2	70% 0 1 1 1 1 2 2	80% 0 1 1 1 2 2 2	90% 0 1 1 1 2 2 3	100% 0 1 1 2 2 2 2 3

Table C. 32: UCI predicted Atlantic puffin mortality for the Mona Array Area plus 2 km buffer during the non-breeding season (operations and maintenance phase).



Puffin						(% of d		lortality I birds a		mortali	ty)			
Non-b	reeding	40/	00/	5 0/	4.00/	000/	0.007	400/	50 0/	000/	700/	000/	000/	4000/
÷	4007	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ı nen	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level acement)	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
ner disp	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
cer of (50%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement it risk of disp	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement at risk of disp	70%	0	0	0	0	0	0	0	0	0	0	0	0	0
 % a	80% 90%	_	0	0	0	0	0	0	0	0	0	0	0	
	90%	0	0	U	U	U	U	U	_	U	_	_	_	0
	100%	0	0	0	0	0		0 ortality		0	0	0	0	0
Puffin	100%	0	0	0	0		М	10	level	10		0	0	0
Puffin	100%	0 1%	2%	5%	10%		М	ortality	level	10		80%	90%	
Puffin	100%				1	(% of di	M splaced	ortality I birds a	level t risk of	mortali	ty)			
Puffin Non-b	100%	1%	2%	5%	10%	(% of di	M splaced	ortality I birds a	level t risk of	mortali	ty) 70%	80%	90%	100%
Puffin Non-b	100% preeding	1%	2% 0	5%	10%	(% of di 20%	Misplaced	ortality I birds a 40%	level t risk of 50%	mortali 60%	70%	80%	90%	100 %
Puffin Non-b	100% preeding 10% 20%	1% 0 0	2% 0 0	5%	10% 0	(% of di 20%	Misplaced 30% 1 2	ortality l birds a 40% 2 3	level t risk of 50% 2 4	60% 2 5	70% 3 6	80% 3 6	90% 4 7	100% 4 8
Puffin Non-b	100% oreeding 10% 20% 30%	1% 0 0	2% 0 0 0	5%	10% 0 1	(% of di 20% 1 2 2	30% 1 2 4	ortality l birds a 40% 2 3 5	level t risk of 50% 2 4 6	60% 2 5 7	70% 3 6 8	80% 3 6 10	90% 4 7 11	100% 4 8 12
Puffin Non-b	100% oreeding 10% 20% 30% 40%	1% 0 0 0	2% 0 0 0 0	5%	10% 0 1 1 2	(% of di 20% 1 2 2 3	30% 1 2 4 5	ortality birds a 40% 2 3 5 6	column c	60% 2 5 7 10	70% 3 6 8 11	80% 3 6 10 13	90% 4 7 11	100% 4 8 12 16
Puffin Non-b	100% 10% 10% 20% 30% 40% 50%	1% 0 0 0 0	2% 0 0 0 0 0	5%	10% 0 1 1 2 2	(% of di 20% 1 2 2 2 3 4	30% 1 2 4 5 6	ortality birds a 40% 2 3 5 6 8	50% 2 4 6 8 10	60% 2 5 7 10 12	70% 3 6 8 11 14	80% 3 6 10 13 16	90% 4 7 11 14 18	100% 4 8 12 16 20
Puffin Non-b	100% reeding 10% 20% 30% 40% 50% 60%	1% 0 0 0 0 0	2% 0 0 0 0 0	5%	10% 0 1 1 2 2	(% of di 20% 1 2 2 3 4 5	30% 1 2 4 5 6 7	ortality birds a 40% 2 3 5 6 8 10	50% 2 4 6 8 10 12	60% 2 5 7 10 12 14	70% 3 6 8 11 14 17	80% 3 6 10 13 16 19	90% 4 7 11 14 18 22	100% 4 8 12 16 20 24
Puffin	100% 10% 10% 20% 30% 40% 50% 60% 70%	1% 0 0 0 0 0	2% 0 0 0 0 0 0 0	5% 0 0 1 1 1 1	10% 0 1 1 2 2 2 2	(% of di 20% 1 2 2 3 4 5 6	30% 1 2 4 5 6 7	ortality birds a 40% 2 3 5 6 8 10 11	50% 2 4 6 8 10 12 14	60% 2 5 7 10 12 14 17	70% 3 6 8 11 14 17 20	80% 3 6 10 13 16 19 22	90% 4 7 11 14 18 22 25	100% 4 8 12 16 20 24 28

C.4 Northern gannet

Table C. 33: LCI predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during Spring migration (construction and decommissioning).

Ganne	t				(% of	displace		lity level at risk o	f mortal	lity)				
Spring	migratio	on												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
	20%	0	0	0	0	0	0	0	0	0	0	1	1	1
ent	25%	0	0	0	0	0	0	0	0	0	1	1	1	1
	30%	0	0	0	0	0	0	0	0	1	1	1	1	1
ace k of	35%	0	0	0	0	0	0	0	1	1	1	1	1	1
ispla risk	40%	0	0	0	0	0	0	1	1	1	1	1	1	1
at Di	60%	0	0	0	0	0	1	1	1	1	1	2	2	2
%)	80%	0	0	0	0	1	1	1	1	2	2	2	2	3
	100%	0	0	0	0	1	1	1	2	2	2	3	3	3

Table C. 34: UCI predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during Spring migration (construction and decommissioning).



Ganne	et g migrati	i				(% of di		ortality I birds a	level It risk of	mortali	ty)			
ор	gingian	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
	10%	0	0	0	1	1	2	2	3	3	4	4	5	5
<u> </u>	15%	0	0	0	1	2	2	3	4	5	5	6	7	8
level	20%	0	0	1	1	2	3	4	5	6	7	8	9	10
	25%	0	0	1	1	3	4	5	7	8	9	10	12	13
a L	30%	0	0	1	2	3	5	6	8	9	11	12	14	16
ace	35%	0	0	1	2	4	5	7	9	11	13	15	16	18
Displacement	40%	0	0	1	2	4	6	8	10	12	15	17	19	21
۵	60%	0	1	2	3	6	9	12	16	19	22	25	28	31
	80%	0	1	2	4	8	12	17	21	25	29	33	37	42
	100%	1	1	3	5	10	16	21	26	31	36	42	47	52



Table C. 35: LCI predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Ganne Breedi					(% of	displace		lity level at risk c	l of mortal	lity)				
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	1	2	3	5	7	8	10	12	13	15	17
level	15%	0	0	1	2	5	7	10	12	15	17	20	22	25
	20%	0	1	2	3	7	10	13	17	20	23	26	30	33
ent	25%	0	1	2	4	8	12	17	21	25	29	33	37	41
	30%	0	1	2	5	10	15	20	25	30	35	40	45	50
lace k of	35%	1	1	3	6	12	17	23	29	35	40	46	52	58
ispla risk	40%	1	1	3	7	13	20	26	33	40	46	53	59	66
at D	60%	1	2	5	10	20	30	40	50	59	69	79	89	99
%)	80%	1	3	7	13	26	40	53	66	79	93	106	119	132
	100%	2	3	8	17	33	50	66	83	99	116	132	149	165

Table C. 36: UCI predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

anne	et						Morta	lity level						
					(% of	displace	d birds	at risk c	of mortal	ity)				
Breed	in <u>g</u>													
∵		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent	10%	0	1	2	3	6	9	12	15	18	21	25	28	31
level acement)	15%	0	1	2	5	9	14	18	23	28	32	37	41	46
	20%	1	1	3	6	12	18	25	31	37	43	49	55	61
Displacement at risk of disp	25%	1	2	4	8	15	23	31	38	46	54	61	69	77
em e	30%	1	2	5	9	18	28	37	46	55	64	74	83	92
k o	35%	1	2	5	11	21	32	43	54	64	75	86	97	107
ris	40%	1	2	6	12	25	37	49	61	74	86	98	110	123
	60%	2	4	9	18	37	55	74	92	110	129	147	165	184
%)	80%	2	5	12	25	49	74	98	123	147	172	196	221	245
					- 4	0.4		1400	150	101	1044	0.45	276	200
	100%	3	6	15	31	61	92	123	153	184	214	245	276	306
Sann		3	6	15	<u> 31</u>		M	ortality	level			245	276	306
	et					(% of di	M splaced	ortality I birds a	level t risk of	mortali	ty)			
Sann	et ling	1%	2%	5%	10%	(% of di	M splaced	ortality I birds a	level It risk of	mortali	ty) 70%	80%	90%	100%
Sann	et ling 10%	1%	2%	5%	10%	(% of di 20%	splaced 30%	ortality birds a 40%	level t risk of 50%	60%	70%	80% 28	90% 32	100 %
Sanno Breed	et ling 10% 15%	1% 0 1	2 % 1 1	5% 2 3	10% 4 5	20% 7 11	8placed 30% 11 16	ortality birds a 40% 14 21	t risk of 50% 18 26	60% 21 32	70% 25 37	80% 28 42	90% 32 47	100% 35 53
Sanno	et ling 10% 15% 20%	1% 0 1	2% 1 1	5% 2 3 4	10% 4 5 7	(% of di 20% 7 11 14	30% 11 16 21	ortality l birds a 40% 14 21 28	50% 18 26 35	60% 21 32 42	70% 25 37 49	80% 28 42 56	90% 32 47 63	100% 35 53 70
Ganno Breed	10% 15% 20% 25%	1% 0 1 1	2% 1 1 1 2	5% 2 3 4 4	10% 4 5 7 9	20% 7 11 14 18	30% 11 16 21 26	ortality birds a 40% 14 21 28 35	50% 18 26 35 44	60% 21 32 42 53	70% 25 37 49 61	80% 28 42 56 70	90% 32 47 63 79	100% 35 53 70 88
Sanno Breed	10% 15% 20% 25% 30%	1% 0 1 1 1	2% 1 1 1 2 2	5% 2 3 4 4 5	10% 4 5 7 9	20% 7 11 14 18 21	30% 11 16 21 26 32	ortality birds a 40% 14 21 28 35 42	50% 18 26 35 44 53	60% 21 32 42 53 63	70% 25 37 49 61 74	80% 28 42 56 70 84	90% 32 47 63 79 95	100% 35 53 70 88 105
Sanno Breed	10% 15% 20% 25%	1% 0 1 1	2% 1 1 1 2	5% 2 3 4 4 5 6	10% 4 5 7 9	20% 7 11 14 18 21 25	30% 11 16 21 26	ortality birds a 40% 14 21 28 35	50% 18 26 35 44 53 61	60% 21 32 42 53 63 74	70% 25 37 49 61	80% 28 42 56 70	90% 32 47 63 79	100% 35 53 70 88
Sanno Breed	10% 15% 20% 25% 30%	1% 0 1 1 1	2% 1 1 1 2 2	5% 2 3 4 4 5	10% 4 5 7 9	20% 7 11 14 18 21	30% 11 16 21 26 32	ortality birds a 40% 14 21 28 35 42	50% 18 26 35 44 53	60% 21 32 42 53 63	70% 25 37 49 61 74	80% 28 42 56 70 84	90% 32 47 63 79 95	100% 35 53 70 88 105
Sanno Breed	10% 15% 20% 25% 30% 35%	1% 0 1 1 1 1	2% 1 1 1 2 2	5% 2 3 4 4 5 6	10% 4 5 7 9 11	20% 7 11 14 18 21 25	30% 11 16 21 26 32 37	ortality birds a 40% 14 21 28 35 42 49	50% 18 26 35 44 53 61	60% 21 32 42 53 63 74	70% 25 37 49 61 74 86	80% 28 42 56 70 84 98	90% 32 47 63 79 95 111	100% 35 53 70 88 105 123
Sann	10% 15% 20% 25% 30% 35% 40%	1% 0 1 1 1 1 1	2% 1 1 1 2 2 2 3	5% 2 3 4 4 5 6 7	10% 4 5 7 9 11 12	20% 7 11 14 18 21 25 28	30% 11 16 21 26 32 37 42	ortality birds a 40% 14 21 28 35 42 49 56	50% 18 26 35 44 53 61 70	60% 21 32 42 53 63 74 84	70% 25 37 49 61 74 86 98	80% 28 42 56 70 84 98 112	90% 32 47 63 79 95 111 126	100% 35 53 70 88 105 123 140

Table C. 37: LCI predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during Autumn migration (construction and decommissioning).



Ganne	t				(% of	displace		lity leve at risk o	l of mortal	lity)				
Autum	n migrat	ion												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent	10%	0	0	0	0	1	1	1	2	2	2	3	3	3
level	15%	0	0	0	0	1	1	2	2	3	3	4	4	5
	20%	0	0	0	1	1	2	3	3	4	5	5	6	6
ent spl	25%	0	0	0	1	2	2	3	4	5	6	6	7	8
e di	30%	0	0	0	1	2	3	4	5	6	7	8	9	10
ace c of	35%	0	0	1	1	2	3	5	6	7	8	9	10	11
Displacem It risk of di	40%	0	0	1	1	3	4	5	6	8	9	10	12	13
at D	60%	0	0	1	2	4	6	8	10	12	14	16	18	19
%)	80%	0	1	1	3	5	8	10	13	16	18	21	23	26
	100%	0	1	2	3	6	10	13	16	19	23	26	29	32



Table C. 38: UCI predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during Autumn migration (construction and decommissioning).

Sanne	et				/0/ of			lity level		ia. A				
lutum	nn migrat	tion			(% OT	aispiace	a piras	at risk c	of mortal	ity)				
	migra	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	0	1	2	4	7	9	11	13	15	17	20	22
el Eme	15%	0	1	2	3	7	10	13	16	20	23	26	29	33
acem	20%	0	1	2	4	9	13	17	22	26	30	35	39	43
sp	25%	1	1	3	5	11	16	22	27	33	38	43	49	54
	30%	1	1	3	7	13	20	26	33	39	46	52	59	65
o g	35%	1	2	4	8	15	23	30	38	46	53	61	68	76
Displacement at risk of disp	40%	1	2	4	9	17	26	35	43	52	61	69	78	87
	60%	1	3	7	13	26	39	52	65	78	91	104	117	130
	80%	2	3	9	17	35	52	69	87	104	121	139	156	173
%)	00%													
Sanne	100%	2	4	11	22	43	65 M	87 ortality	108 level	130	152	173	195	217
Sanne	100%	2		11	22		М	ortality				173	195	217
Sanne	100% et nn migra	2 nt _1%	2 %	5%	10%	(% of di	M splaced	ortality I birds a 40%	level t risk of 50%	mortali	ty) 70%	80%	90%	100%
Sanne	100% et nn migra 10%	2 1% 0	2% 0		10%	(% of di 20%	M splaced 30%	ortality I birds a 40%	level t risk of 50%	mortali 60%	70%	80% 9	90%	100 %
Ganne	100% et nn migra	2 nt _1%	2 %	5%	10%	(% of di	M splaced	ortality I birds a 40%	level t risk of 50% 6 8	60% 7 10	ty) 70%	80% 9 13	90% 10 15	100% 11 17
Sanne	100% et nn migra 10%	2 1% 0	2% 0	5%	10% 1 2 2	(% of di 20%	30% 3 5 7	ortality I birds a 40%	Sevel	60% 7 10 13	70%	80% 9 13 18	90%	100% 11 17 22
Sanne	100% et nn migra 10% 15%	2 1% 0 0	2% 0 0	5% 1 1 1 1	10% 1 2 2 3	20% 2 3 4 6	30% 3 5 7 8	ortality I birds a 40% 4 7 9 11	50% 6 8 11 14	60% 7 10 13 17	70% 8 12 15 19	80% 9 13 18 22	90% 10 15 20 25	100% 11 17 22 28
Sanne	100% et nn migra 10% 15% 20%	2 1% 0 0 0 0	2% 0 0 0	5% 1 1 1 1 1	10% 1 2 2	(% of di 20% 2 3 4	30% 3 5 7	ortality l birds a 40% 4 7 9	50% 6 8 11 14 17	60% 7 10 13 17 20	70% 8 12 15 19 23	80% 9 13 18 22 26	90% 10 15 20 25 30	100% 111 17 22 28 33
Sanne	100% et 10 migra 10% 15% 20% 25%	2 1% 0 0 0 0 0 0	2% 0 0 0	5% 1 1 1 1 2 2	10% 1 2 2 3	20% 2 3 4 6	30% 3 5 7 8	ortality I birds a 40% 4 7 9 11	50% 6 8 11 14	60% 7 10 13 17	70% 8 12 15 19	80% 9 13 18 22	90% 10 15 20 25	100% 11 17 22 28
Sanne	100% et 10% 15% 20% 25% 30%	2 1% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2% 0 0 0	5% 1 1 1 1 1	10% 1 2 2 2 3	20% 2 3 4 6 7	30% 3 5 7 8 10	ortality birds a 40% 4 7 9 11 13	50% 6 8 11 14 17	60% 7 10 13 17 20	70% 8 12 15 19 23	80% 9 13 18 22 26	90% 10 15 20 25 30	100% 111 17 22 28 33
Sanne	100% et 10% 15% 20% 25% 30% 35%	2 1% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2% 0 0 0 1 1	5% 1 1 1 1 2 2	10% 1 2 2 3 3 3 4	20% 2 3 4 6 7 8	30% 3 5 7 8 10 12	ortality I birds a 40% 4 7 9 11 13 15	50% 6 8 11 14 17 19	60% 7 10 13 17 20 23	70% 8 12 15 19 23 27	80% 9 13 18 22 26 31	90% 10 15 20 25 30 35	100% 111 17 22 28 33 39
Sanne	100% et 10% 15% 20% 25% 30% 35% 40%	2 1% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2% 0 0 0 1 1 1	5% 1 1 1 1 2 2 2	10% 1 2 2 3 3 3 4 4	20% 2 3 4 6 7 8 9	30% 3 5 7 8 10 12 13	ortality birds a 40% 4 7 9 11 13 15 18	Second S	60% 7 10 13 17 20 23 26	70% 8 12 15 19 23 27 31	80% 9 13 18 22 26 31 35	90% 10 15 20 25 30 35 40	100% 11 17 22 28 33 39 44

Table C. 39: LCI predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during Spring migration (operations and maintenance phase).

Ganne	t					(% of di		ortality	level t risk of	mortalit	·v)			
Spring	migratio	o				(70 0. 0.	opiaooa			ortani	.37			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	20%	0	0	0	0	0	0	0	0	0	0	1	1	1
	30%	0	0	0	0	0	0	0	0	1	1	1	1	1
ent spl	40%	0	0	0	0	0	0	1	1	1	1	1	1	1
em f di	50%	0	0	0	0	0	0	1	1	1	1	1	1	2
lace k of	60%	0	0	0	0	0	1	1	1	1	1	2	2	2
Displacement it risk of displ	70%	0	0	0	0	0	1	1	1	1	2	2	2	2
at 🖂	80%	0	0	0	0	1	1	1	1	2	2	2	2	3
%)	90%	0	0	0	0	1	1	1	1	2	2	2	3	3
	100%	0	0	0	0	1	1	1	2	2	2	3	3	3

Table C. 40: UCI predicted northern gannet mortality for the Mona Array Area 2 km buffer during Spring migration (operations and maintenance phase).



Ganne	t					(% of d		lortality I birds a	level t risk of	mortali	ty)			
Spring	migrati	o 1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
int)	10%	0	0	0	1	2	2	3	4	5	6	7	7	8
level acement)	20%	0	0	1	2	3	5	7	8	10	11	13	15	16
acem	30%	0	0	1	2	5	7	10	12	15	17	20	22	24
disp	40%	0	1	2	3	7	10	13	16	20	23	26	29	33
Displacement it risk of disp	50%	0	1	2	4	8	12	16	20	24	29	33	37	41
v of	60%	0	1	2	5	10	15	20	24	29	34	39	44	49
risk	70%	1	1	3	6	11	17	23	29	34	40	46	51	57
at Z	80%	1	1	3	7	13	20	26	33	39	46	52	59	65
%)	90%	1	1	4	7	15	22	29	37	44	51	59	66	73
	100%	1	2	4	8	16	24	33	41	49	57	65	73	82
	10070	Gann	not.		0	110	27	100		ortality	•	100	170	O.

Gann	et			•	•	/0/ - f -1'		ortality l			- ^	•	
Sprin	g migrati	ion				(% or al:	spiaced	birds a	t risk of	mortani	у)		
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%
	10%	0	0	0	1	1	2	2	3	3	4	4	5
a	20%	0	0	1	1	2	3	4	5	6	7	8	9
level	30%	0	0	1	2	3	5	6	8	9	11	12	14
in	40%	0	0	1	2	4	6	8	10	12	15	17	19
Displacement	50%	0	1	1	3	5	8	10	13	16	18	21	23
ace	60%	0	1	2	3	6	9	12	16	19	22	25	28
lds	70%	0	1	2	4	7	11	15	18	22	25	29	33
ā	80%	0	1	2	4	8	12	17	21	25	29	33	37
	90%	0	1	2	5	9	14	19	23	28	33	37	42
ı	100%	1	1	3	5	10	16	21	26	31	36	42	47

Table C. 41: LCI predicted northern gannet mortality for the Mona Array Area 2 km buffer during the breeding season (operations and maintenance phase).

Ganne	et					/9/ of d		ortality	level t risk of	mortali	h.)			
Breed	in <u>g</u>					(% OI U	ispiaceo	i bii us a	t risk oi	mortani	.y)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	1	2	3	5	7	8	10	12	13	15	17
level	20%	0	1	2	3	7	10	13	17	20	23	26	30	33
• • • • • • • • • • • • • • • • • • • •	30%	0	1	2	5	10	15	20	25	30	35	40	45	50
ent	40%	1	1	3	7	13	20	26	33	40	46	53	59	66
em f di	50%	1	2	4	8	17	25	33	41	50	58	66	74	83
Displacement it risk of displ	60%	1	2	5	10	20	30	40	50	59	69	79	89	99
spla	70%	1	2	6	12	23	35	46	58	69	81	93	104	116
a t	80%	1	3	7	13	26	40	53	66	79	93	106	119	132
%)	90%	1	3	7	15	30	45	59	74	89	104	119	134	149
	100%	2	3	8	17	33	50	66	83	99	116	132	149	165

Table C. 42: UCI predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during the breeding season (operations and maintenance phase).



Gann	et					(% of d	M isplaced	ortality I birds a		mortalit	(y)			
Breed	ding													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	1	2	3	6	9	12	15	18	21	25	28	31
level aceme	20%	1	1	3	6	12	18	25	31	37	43	49	55	61
	30%	1	2	5	9	18	28	37	46	55	64	74	83	92
ent sp	40%	1	2	6	12	25	37	49	61	74	86	98	110	123
Displacement at risk of disp	50%	2	3	8	15	31	46	61	77	92	107	123	138	153
ac k	60%	2	4	9	18	37	55	74	92	110	129	147	165	184
isp ris	70%	2	4	11	21	43	64	86	107	129	150	172	193	214
	80%	2	5	12	25	49	74	98	123	147	172	196	221	245
%)	90%	3	6	14	28	55	83	110	138	165	193	221	248	276
Gann	100% et	3	6	15	31	61		123 ortality		184	214	245	276	306
		ion				(% of di	M splaced	ortality I birds a	level t risk of	mortali	ty)			
	et og migrat	ion 1%	2%	5%	10%	(% of di	M splaced	ortality I birds a	level t risk of 50%	mortali	ty) 70%	80%	90%	100%
	g migrat	ion 1%	2%	5% 2	10%	(% of di 20%	Misplaced 30%	ortality birds a 40%	t risk of 50%	60%	70%	80% 28	90% 32	100 %
Sprin	et g migrat 10% 20%	1% 0 1	2% 1	5% 2 4	10% 4 7	20% 7 14	30% 11 21	ortality l birds a 40% 14 28	t risk of 50% 18 35	60% 21 42	70% 25 49	80% 28 56	90% 32 63	100% 35 70
Sprin	net migrat 10% 20% 30%	0 1 1	2% 1 1 2	5% 2 4 5	10% 4 7 11	(% of di 20% 7 14 21	30% 11 21 32	ortality birds a 40% 14 28 42	18 35 53	60% 21 42 63	70% 25 49 74	80% 28 56 84	90% 32 63 95	100% 35 70 105
Sprin	ng migrat 10% 20% 30% 40%	1% 0 1 1	2% 1 1 2 3	5% 2 4 5 7	10% 4 7 11	20% 7 14 21 28	30% 11 21 32 42	ortality birds a 40% 14 28 42 56	50% 18 35 53 70	60% 21 42 63 84	70% 25 49 74 98	80% 28 56 84 112	90% 32 63 95 126	100% 35 70 105 140
Sprin	10% 20% 30% 40% 50%	1% 0 1 1 1 1 2	2% 1 1 2 3 4	5% 2 4 5 7	10% 4 7 11 14 18	20% 7 14 21 28 35	30% 11 21 32 42 53	ortality birds a 40% 14 28 42 56 70	50% 18 35 53 70 88	60% 21 42 63 84 105	70% 25 49 74 98 123	80% 28 56 84 112 140	90% 32 63 95 126 158	100% 35 70 105 140 176
Sprin	10% 20% 30% 40% 50%	ion 1% 0 1 1 1 2 2	2% 1 1 2 3 4	5% 2 4 5 7 9	10% 4 7 11 14 18 21	20% 7 14 21 28 35 42	30% 11 21 32 42 53 63	ortality birds a 40% 14 28 42 56 70 84	t risk of	60% 21 42 63 84 105 126	70% 25 49 74 98 123 147	80% 28 56 84 112 140 168	90% 32 63 95 126 158 190	100% 35 70 105 140 176 211
Sprin	10% 20% 30% 40% 50% 60% 70%	1% 0 1 1 1 2 2	2% 1 1 2 3 4 4 5	5% 2 4 5 7 9 11	10% 4 7 11 14 18 21 25	20% 7 14 21 28 35 42 49	30% 11 21 32 42 53 63 74	ortality birds a 40% 14 28 42 56 70 84 98	50% 18 35 53 70 88 105 123	60% 21 42 63 84 105 126 147	70% 25 49 74 98 123 147 172	80% 28 56 84 112 140 168 197	90% 32 63 95 126 158 190 221	100% 35 70 105 140 176 211 246
	10% 20% 30% 40% 50% 60% 70% 80%	ion 1% 0 1 1 1 2 2 2 3	2% 1 1 2 3 4 4 5	5% 2 4 5 7 9 11 12	10% 4 7 11 14 18 21 25 28	20% 7 14 21 28 35 42 49 56	30% 11 21 32 42 53 63 74 84	ortality birds a 40% 14 28 42 56 70 84 98 112	50% 18 35 53 70 88 105 123 140	60% 21 42 63 84 105 126 147 168	70% 25 49 74 98 123 147 172 197	80% 28 56 84 112 140 168 197 225	90% 32 63 95 126 158 190 221 253	100% 35 70 105 140 176 211 246 281
Sprin	10% 20% 30% 40% 50% 60% 70%	1% 0 1 1 1 2 2	2% 1 1 2 3 4 4 5	5% 2 4 5 7 9 11	10% 4 7 11 14 18 21 25	20% 7 14 21 28 35 42 49	30% 11 21 32 42 53 63 74	ortality birds a 40% 14 28 42 56 70 84 98	50% 18 35 53 70 88 105 123	60% 21 42 63 84 105 126 147	70% 25 49 74 98 123 147 172	80% 28 56 84 112 140 168 197	90% 32 63 95 126 158 190 221	100% 35 70 105 140 176 211 246

Table C. 43: LCI predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during Autumn migration (operations and maintenance phase).

Ganne	t					(% of di		ortality birds a	level t risk of	mortali	ty)			
Autum	n migrat	ion												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	0	0	1	1	1	2	2	2	3	3	3
level	20%	0	0	0	1	1	2	3	3	4	5	5	6	6
10	30%	0	0	0	1	2	3	4	5	6	7	8	9	10
ent	40%	0	0	1	1	3	4	5	6	8	9	10	12	13
	50%	0	0	1	2	3	5	6	8	10	11	13	15	16
lace k of	60%	0	0	1	2	4	6	8	10	12	14	16	18	19
ispla risk	70%	0	0	1	2	5	7	9	11	14	16	18	20	23
	80%	0	1	1	3	5	8	10	13	16	18	21	23	26
%)	90%	0	1	1	3	6	9	12	15	18	20	23	26	29
	100%	0	1	2	3	6	10	13	16	19	23	26	29	32

Table C. 44: UCI predicted northern gannet mortality for the Mona Array Area plus 2 km buffer during Autumn migration (operations and maintenance phase).

Sanne	et					(% of d		lortality I birds a	level t risk of	mortali	ty)			
Autun	nn migrat	tion												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	0	1	2	4	7	9	11	13	15	17	20	22
level	20%	0	1	2	4	9	13	17	22	26	30	35	39	43
	30%	1	1	3	7	13	20	26	33	39	46	52	59	65
Displacement it risk of disp	40%	1	2	4	9	17	26	35	43	52	61	69	78	87
Displacement at risk of disp	50%	1	2	5	11	22	33	43	54	65	76	87	98	108
lac ko	60%	1	3	7	13	26	39	52	65	78	91	104	117	130
sp ris	70%	2	3	8	15	30	46	61	76	91	106	121	137	152
co.	80%	2	3	9	17	35	52	69	87	104	121	139	156	173
%)	90%	2	4	10	20	39	59	78	98	117	137	156	176	195
	100%	2	4	11	22	43	65	87	108	130	152	173	195	217
cann	et						M	ortality	level					
	et g migrat	ion				(% of di		ortality I birds a	level It risk of	mortali	ty)			
Ganno Spring		ion 1%	2%	5%	10%	20%				mortali	ty)	80%	90%	100%
			2%	5%	1	`	splaced	l birds a	t risk of			80% 9	90%	100 %
Sprin	g migrat	1%			10% 1 2	20%	splaced	l birds a	t risk of	60%	70%			
Sprin	g migrat	1%	0		1	20%	30%	40% 4	50%	60% 7	70%	9	10	11
Sprin	g migrat 10% 20%	1% 0	0	1	1 2	20% 2 4	30% 3 7	40% 4 9	50% 6 11	60% 7 13	70% 8 15	9 18	10 20	11 22
Sprin	g migrat 10% 20% 30%	1% 0 0 0	0 0 1	1 1 2	1 2 3	20% 2 4 7	30% 3 7 10	40% 4 9 13	50% 6 11 17	60% 7 13 20	70% 8 15 23	9 18 26	10 20 30	11 22 33
Sprin	9 migrat 10% 20% 30% 40%	1% 0 0 0 0	0 0 1	1 1 2 2	1 2 3 4	20% 2 4 7 9	30% 3 7 10 13	40% 4 9 13 18	50% 6 11 17 22	60% 7 13 20 26	70% 8 15 23 31	9 18 26 35	10 20 30 40	11 22 33 44
Sprin	10% 20% 30% 40% 50%	1% 0 0 0 0	0 0 1	1 1 2 2 3	1 2 3 4 6	20% 2 4 7 9 11	30% 3 7 10 13 17	40% 4 9 13 18 22	50% 6 11 17 22 28	60% 7 13 20 26 33	70% 8 15 23 31 39	9 18 26 35 44	10 20 30 40 50	11 22 33 44 55
	10% 20% 30% 40% 50%	1% 0 0 0 0	0 0 1 1 1 1	1 1 2 2 3 3	1 2 3 4 6 7	20% 2 4 7 9 11	30% 3 7 10 13 17 20	40% 4 9 13 18 22 26	50% 6 11 17 22 28 33	60% 7 13 20 26 33 40	70% 8 15 23 31 39 46	9 18 26 35 44 53	10 20 30 40 50 59	22 33 44 55 66
Sprin	10% 20% 30% 40% 50% 60%	1% 0 0 0 0	0 0 1 1 1 1 2	1 1 2 2 3 3 4	1 2 3 4 6 7 8	20% 2 4 7 9 11 13 15	30% 3 7 10 13 17 20 23	40% 4 9 13 18 22 26 31	50% 6 11 17 22 28 33 39	60% 7 13 20 26 33 40 46	70% 8 15 23 31 39 46 54	9 18 26 35 44 53 62	10 20 30 40 50 59 69	11 22 33 44 55 66 77

C.5 Black-legged kittiwake

Table C. 45: LCI predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during Spring migration (construction and decommissioning).



Kittiwa	ke							Morta	lity leve	I				
TAILLIVE	inc					(% of di	splaced		t risk of		v)			
Spring	migratio	on				(70 01 01	оріаоо	bii ao a		ortani	.37			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	1	1	3	6	12	19	25	31	37	43	49	56	62
level	15%	1	2	5	9	19	28	37	46	56	65	74	83	93
	20%	1	2	6	12	25	37	49	62	74	86	99	111	124
Displacement at risk of displ	25%	2	3	8	15	31	46	62	77	93	108	124	139	154
em di di	30%	2	4	9	19	37	56	74	93	111	130	148	167	185
<u>k</u> 0	35%	2	4	11	22	43	65	86	108	130	151	173	195	216
Displacement It risk of disp	40%	2	5	12	25	49	74	99	124	148	173	198	222	247
	60%	4	7	19	37	74	111	148	185	222	259	297	334	371
%)	80%	5	10	25	49	99	148	198	247	297	346	395	445	494
	100%	6	12	31	62	124	185	247	309	371	432	494	556	618
Black-	-legged	kittiwa	ake					ility lev						
					(%	% of dis	placed	birds a	at risk o	f morta	ılity)			
Spring	g migrat	ion												
○		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent	10%	0	1	2	4	8	12	16	20	24	28	32	36	40
le /	15%	1	1	3	6	12	18	24	30	36	42	48	54	60
<u>ac</u>	20%	1	2	4	8	16	24	32	40	48	56	64	72	80
ent spl	25%	1	2	5	10	20	30	40	50	60	70	80	90	100
Displacement level at risk of displacement)	30%	1	2	6	12	24	36	48	60	72	84	96	107	119
ac	35%	1	3	7	14	28	42	56	70	84	98	111	125	139
spl isk	40%	2	3	8	16	32	48	64	80	96	111	127	143	159
at D	60%	2	5	12	24	48	72	96	119	143	167	191	215	239
%)	80%	3	6	16	32	64	96	127	159	191	223	255	287	318
	100%	4	8	20	40	80	119	159	199	239	279	318	358	398



Table C. 46: UCI predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during Spring migration (construction and decommissioning).

ttiwa	ake						M	ortality	level					
						(% of d	isplaced	birds a	t risk of	mortalit	y)			
oring	g <mark>migrati</mark> e	on												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent	10%	1	2	6	12	24	37	49	61	73	86	98	110	122
acement)	15%	2	4	9	18	37	55	73	92	110	128	147	165	183
	20%	2	5	12	24	49	73	98	122	147	171	196	220	245
si	25%	3	6	15	31	61	92	122	153	183	214	245	275	306
of G	30%	4	7	18	37	73	110	147	183	220	257	294	330	367
ķ	35%	4	9	21	43	86	128	171	214	257	300	343	385	428
at risk of disp	40%	5	10	24	49	98	147	196	245	294	343	391	440	489
	60%	7	15	37	73	147	220	294	367	440	514	587	661	734
%)	80%	10	20	49	98	196	294	391	489 612	587	685	783 979	881 1101	979
								1/1/2/(1	1617	1/2/		1070	111()1	11')')'
la al-	100%	12	24	61	122	245	367	489		734	856	313	11101	1223
lack	100% -legged			61			Morta	lity lev	el			313	11101	1223
lack				<u> 61</u>				lity lev	el			919	1101	1223
		kittiwa		<u> 61</u>			Morta	lity lev	el			373	1101	1223
prin	-legged	kittiwa		5%			Morta	lity lev	el			80%	90%	1009
prin	-legged	kittiwa tion	ake		(9	% of dis	Morta splaced	lity leven birds a	el at risk o	f morta	lity)			
prin	-legged g migra	kittiwa tion 1%	ake 2%	5%	10%	% of dis	Morta splaced 30%	lity level birds a	el at risk o 50%	f morta	70%	80%	90%	1009
prin	-legged g migra 10%	kittiwa tion 1%	2%	5%	10% 8	% of dis	Morta splaced 30% 24	birds a	el at risk o 50% 40	f morta 60% 48	70% 56	80% 64	90% 72	100 ° 80
prin	-legged g migra 10% 15%	kittiwa tion 1% 1	2% 2 2	5% 4 6	10% 8 12	% of dis	Morta splaced 30% 24 36	birds a 40% 32 48	50% 40	60% 48 72	70% 56 84	80% 64 96	90% 72 108	100° 80 120
prin	-legged g migra 10% 15% 20%	kittiwa tion 1% 1 1 2	2% 2 2 2 3	5% 4 6 8	10% 8 12 16	% of dis	Morta splaced 30% 24 36 48	40% 32 48 64	50% 40 60 80	60% 48 72 96	70% 56 84 112	80% 64 96 128	90% 72 108 143	100° 80 120 159
prin	10% 15% 20% 25%	kittiwa tion 1% 1 1 2 2	2% 2 2 2 3 4	5% 4 6 8 10	10% 8 12 16 20	20% 16 24 32 40	Morta splaced 30% 24 36 48 60	40% 32 48 64 80	50% 40 60 80 100	60% 48 72 96 120	70% 56 84 112 139	80% 64 96 128 159	90% 72 108 143 179 215	100° 80 120 159 199
prin	10% 15% 20% 25% 30%	kittiwa tion 1% 1 2 2 2	2% 2 2 2 3 4 5	5% 4 6 8 10 12	10% 8 12 16 20 24	20% 16 24 32 40 48	Morta splaced 30% 24 36 48 60 72	40% 32 48 64 80 96	50% 40 60 80 100 120	60% 48 72 96 120 143	70% 56 84 112 139 167	80% 64 96 128 159 191	90% 72 108 143 179	100° 80 120 159 199 239
prin	10% 15% 20% 25% 30% 35%	tion 1% 1 2 2 2 3 3 3	2% 2 2 2 3 4 5 6	5% 4 6 8 10 12 14	10% 8 12 16 20 24 28	20% 16 24 32 40 48 56	Morta splaced 30% 24 36 48 60 72 84	40% 32 48 64 80 96 112	50% 40 60 80 100 120 139 159	60% 48 72 96 120 143 167	70% 56 84 112 139 167 195	80% 64 96 128 159 191 223 255	90% 72 108 143 179 215 251	100° 80 120 159 199 239 279
ent) eut)	10% 15% 20% 25% 30% 35% 40%	kittiwa tion 1% 1 1 2 2 2 2 3	2% 2 2 3 4 5 6	5% 4 6 8 10 12 14 16	10% 8 12 16 20 24 28 32	20% 16 24 32 40 48 56 64	Morta splaced 30% 24 36 48 60 72 84 96	40% 32 48 64 80 96 112 128	50% 40 60 80 100 120 139	60% 48 72 96 120 143 167 191	70% 56 84 112 139 167 195 223	80% 64 96 128 159 191 223	90% 72 108 143 179 215 251 287	100° 80 120 159 199 239 279 319

Table C. 47: LCI predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Cittiwa	ake					104	ملاد مائم سام		lity leve					
Breed	lina					(%	of displa	iced bir	ds at ris	k of moi	tality)			
	9	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	0	1	2	4	6	8	10	12	15	17	19	21
level aceme	15%	0	1	2	3	6	9	12	16	19	22	25	28	31
	20%	0	1	2	4	8	12	17	21	25	29	33	37	42
Displacement at risk of disp	25%	1	1	3	5	10	16	21	26	31	36	42	47	52
Displacement it risk of disp	30%	1	1	3	6	12	19	25	31	37	44	50	56	62
x ac	35%	1	1	4	7	15	22	29	36	44	51	58	66	73
ris	40%	1	2	4	8	17	25	33	42	50	58	67	75	83
	60%	1	2	6	12	25	37	50	62	75	87	100	112	125
%)	80%	2	3	8	17	33	50	67	83	100	116	133	150	166
	40001			4.0	- 4	140	~ ~							
	100% c-legged	2 kittiw	4 ake	10	21	42 % of dis		83 lity lev		125	146 lity)	166	187	208
Black	c-legged			10				lity lev	el			166	187	208
Black Breed	c-legged			5%			Morta	lity lev	el			80%	90%	
Black Breed	c-legged	kittiw	ake		(9	% of dis	Morta splaced	lity lev	el it risk o	f morta	lity)			
Black Breed	k-legged ding	kittiw	ake 2%	5%	10%	% of dis	Morta splaced 30%	lity lev birds a	el at risk o 50%	f morta	70%	80%	90%	1009
Black Breed	t-legged ding 10%	1% 0	ake 2%	5% 2	10% 5	% of dis	Morta splaced 30%	birds a	el at risk o 50% 25	60%	70%	80% 39	90% 44	100 9
Black Breed	ding 10%	1% 0	2% 1	5% 2 4	10% 5 7	20% 10 15	Morta splaced 30% 15 22	birds a 40% 20 29	50% 25 37	60% 29 44	70% 34 52	80% 39 59	90% 44 66	100% 49 74
Black Breed	ding 10% 15% 20%	1% 0 1	2% 1 1 2	5% 2 4 5	10% 5 7 10	20% 10 15 20	Morta splaced 30% 15 22 29	40% 20 29 39	50% 25 37 49	60% 29 44 59	70% 34 52 69	80% 39 59 79	90% 44 66 88	100% 49 74 98
Black Breed	ding 10% 15% 20%	1% 0 1	2% 1 1 2 2	5% 2 4 5 6	10% 5 7 10 12	20% 10 15 20 25	Morta splaced 30% 15 22 29 37	40% 20 29 39 49	50% 25 37 49 61	60% 29 44 59 74	70% 34 52 69 86	80% 39 59 79 98	90% 44 66 88 110	1009 49 74 98 123
Black Breed	ding 10% 15% 20% 25% 30%	1% 0 1 1	2% 1 1 2 2 3	5% 2 4 5 6 7	10% 5 7 10 12 15	20% 10 15 20 25 29	Morta splaced 30% 15 22 29 37 44	40% 20 29 39 49 59	50% 25 37 49 61 74	60% 29 44 59 74 88	70% 34 52 69 86 103	80% 39 59 79 98 118	90% 44 66 88 110 133	1009 49 74 98 123 147
eut)	10% 15% 20% 25% 30% 35%	1% 0 1 1 1 1 2	2% 1 1 2 2 3 3	5% 2 4 5 6 7	10% 5 7 10 12 15 17	20% 10 15 20 25 29 34	Morta splaced 30% 15 22 29 37 44 52	40% 20 29 39 49 59 69	50% 25 37 49 61 74 86	60% 29 44 59 74 88 103	70% 34 52 69 86 103 120	80% 39 59 79 98 118 137	90% 44 66 88 110 133 155	1009 49 74 98 123 147 172
Black Breed	10% 15% 20% 25% 30% 35% 40% 60%	1% 0 1 1 1 2 2	2% 1 1 2 2 3 3 4	5% 2 4 5 6 7 9	10% 5 7 10 12 15 17 20	20% 10 15 20 25 29 34 39	Morta splaced 30% 15 22 29 37 44 52 59	40% 20 29 39 49 59 69 79	50% 25 37 49 61 74 86 98	60% 29 44 59 74 88 103 118	70% 34 52 69 86 103 120 137	80% 39 59 79 98 118 137 157	90% 44 66 88 110 133 155 177	100% 49 74 98 123 147 172 196

Table C. 48: UCI predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during the breeding season (construction and decommissioning).



Cittiwa	ake					/0/ -f -l		ortality						
Breed	lina					(% or a	isplaced	birds a	t risk of	mortalit	(y)			
	ig	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ievei acement)	10%	1	1	3	6	11	17	22	28	34	39	45	50	56
level aceme	15%	1	2	4	8	17	25	34	42	50	59	67	75	84
	20%	1	2	6	11	22	34	45	56	67	78	89	101	112
Displacement at risk of disp	25%	1	3	7	14	28	42	56	70	84	98	112	126	140
G G	30%	2	3	8	17	34	50	67	84	101	117	134	151	168
ik ac	35%	2	4	10	20	39	59	78	98	117	137	157	176	196
Displacement it risk of disp	40%	2	4	11	22	45	67	89	112	134	157	179	201	224
	60%	3	7	17	34	67	101	134	168	201	235	268	302	335
%)	80%	4	9	22	45	89	134	179	224	268	313	358	402	447
)	4000/		144			1440	400							
	100% c-legged	6 kittiwa	11 ake	28	56	112 % of dis		224 lity lev		335	391 lity	447	503	559
	c-legged			28				lity lev	el			<u> 447</u>	503	559
Black Breed	c-legged ding			5%			Morta	lity lev	el			80%	90%	
Black Breed	c-legged ding	kittiw	ake		(9	% of dis	Morta splaced	lity lev birds a	el at risk c	f morta	lity)			
Black Breed	c-legged ding	kittiwa	ake 2%	5%	10%	% of dis	Morta splaced 30%	lity lev birds a	el at risk o 50%	f morta	70%	80%	90%	100
Black Breed	c-legged ding	1%	2% 2	5%	10%	% of dis	Morta splaced 30% 31	birds a	el at risk o 50% 52	60%	70%	80% 82	90% 93	100 ° 103
Black	c-legged ding	1% 1 2	2% 2 2	5% 5 8	10% 10 15	% of dis	Morta splaced 30% 31 46	birds a 40% 41 62	50% 52 77	60% 62 93	70% 72 108	80% 82 124	90% 93 139	100° 103 155
Black	c-legged ding	1% 1 2 2	2% 2 3 4	5% 5 8 10	10% 10 15 21	% of dis	Morta splaced 30% 31 46 62	40% 41 62 82	50% 52 77 103	60% 62 93 124	70% 72 108 144	80% 82 124 165	90% 93 139 186	100° 103 155 206
Black Breed	c-legged ding	1% 1 2 2 3	2% 2 3 4 5	5% 5 8 10 13	10% 10 15 21 26	20% 21 31 41 52	Morta splaced 30% 31 46 62 77	40% 41 62 82 103	50% 52 77 103 129	60% 62 93 124 155	70% 72 108 144 180	80% 82 124 165 206	90% 93 139 186 232	1009 103 155 206 258
Black	c-legged ding	1% 1 2 2 3 3	2% 2 3 4 5 6	5% 5 8 10 13 15	10% 10 15 21 26 31	% of dis 20% 21 31 41 52 62	Morta splaced 30% 31 46 62 77 93	40% 41 62 82 103 124	50% 52 77 103 129 155	60% 62 93 124 155 186	70% 72 108 144 180 217	80% 82 124 165 206 247	90% 93 139 186 232 278	100° 103 155 206 258 309
Black Breed	c-legged ding	1% 1 2 2 3 3 4	2% 2 3 4 5 6 7	5% 5 8 10 13 15	10% 10 15 21 26 31 36	20% 21 31 41 52 62 72	Morta splaced 30% 31 46 62 77 93 108	40% 41 62 82 103 124 144	50% 52 77 103 129 155 180	60% 62 93 124 155 186 217	70% 72 108 144 180 217 253	80% 82 124 165 206 247 289	90% 93 139 186 232 278 325	100° 103 155 206 258 309 361
Black Breed	10% 15% 20% 25% 30% 35% 40% 60%	1% 1 2 2 3 3 4 4	2% 2 3 4 5 6 7 8	5% 5 8 10 13 15 18 21	10% 10 15 21 26 31 36 41	20% 21 31 41 52 62 72 82	Morta splaced 30% 31 46 62 77 93 108 124	40% 41 62 82 103 124 144 165	50% 52 77 103 129 155 180 206	60% 62 93 124 155 186 217 247	70% 72 108 144 180 217 253 289	80% 82 124 165 206 247 289 330	90% 93 139 186 232 278 325 371	1009 103 155 206 258 309 361 412

Table C. 49: LCI predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during Autumn migration (construction and decommissioning).

Kittiwa	ıke n migrat	tion				(% of d	isplaced		ality leve t risk of		ty)			
•	IIIIIgrai	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	1	2	4	7	11	14	18	22	25	29	32	36
level	15%	1	1	3	5	11	16	22	27	32	38	43	49	54
	20%	1	1	4	7	14	22	29	36	43	50	58	65	72
Displacement It risk of displ	25%	1	2	4	9	18	27	36	45	54	63	72	81	90
em f di	30%	1	2	5	11	22	32	43	54	65	76	86	97	108
lace k of	35%	1	3	6	13	25	38	50	63	76	88	101	113	126
isplarisk	40%	1	3	7	14	29	43	58	72	86	101	115	130	144
	60%	2	4	11	22	43	65	86	108	130	151	173	194	216
%)	80%	3	6	14	29	58	86	115	144	173	201	230	259	288
	100%	4	7	18	36	72	108	144	180	216	252	288	324	360

Table C. 50: UCI predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during Autumn migration (construction and decommissioning).



Kittiwa		ion				(% of d		ortality I birds a	level t risk of	mortali	ty)			
Autun	n migrat	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	1	2	4	8	17	25	33	41	50	58	66	74	83
level	15%	1	2	6	12	25	37	50	62	74	87	99	112	124
ace	20%	2	3	8	17	33	50	66	83	99	116	132	149	165
ent spla	25%	2	4	10	21	41	62	83	103	124	145	165	186	207
em f di	30%	2	5	12	25	50	74	99	124	149	173	198	223	248
Displacem t risk of di	35%	3	6	14	29	58	87	116	145	173	202	231	260	289
ispla risk	40%	3	7	17	33	66	99	132	165	198	231	264	297	330
	60%	5	10	25	50	99	149	198	248	297	347	397	446	496
%)	80%	7	13	33	66	132	198	264	330	397	463	529	595	661
	100%	8	17	41	83	165	248	330	413	496	578	661	744	826

Table C. 51: LCI predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during Spring migration (operations and maintenance phase).

iwa	ake					(% of d		ortality birds a	level t risk of	mortalit	v)			
ring	migration	on				(70 01 0	юріаоса	Sii do d	t Holt Of	ortani	,			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent	10%	1	1	3	6	12	19	25	31	37	43	49	56	62
acement)	20%	1	2	6	12	25	37	49	62	74	86	99	111	124
	30%	2	4	9	19	37	56	74	93	111	130	148	167	185
at risk of displ	40%	2	5	12	25	49	74	99	124	148	173	198	222	247
of d	50%	3	6	15	31	62	93	124	154	185	216	247	278	309
sk c	60%	4	7	19	37	74	111	148	185	222	259	297	334	371
ij	70%	4	9	22	43	86	130	173	216	259	303	346	389	432
	80%	5	10	25	49	99	148	198	247	297	346	395	445	494
			11	28	56	111	167	222	278	334	389	445	500	556
%)	90%	6	_			404	405	0.47	000	074	400	40.4		040
	90% 100% -legged	6	12	31	62	124 % of dis		247 lity lev birds a	309 el at risk o	371 f morta	432 lity)	494	556	618
ack	100%	6 kittiwa	12 ake	31	62	% of dis	Morta splaced	lity lev birds a	el at risk o	f morta	lity)			
ack orin	100% -legged g migrat	6 kittiwa tion 1%	12 ake 2%	31 5%	62 (%	% of dis	Morta splaced 30%	lity lev birds a	el at risk o 50%	f morta	lity) 70%	80%	90%	100
ack orin	100% -legged g migrat	6 kittiwa tion 1%	12 ake 2%	5% 2	62 (%	% of dis	Morta splaced 30% 12	birds a	el at risk o 50% 20	60%	70%	80% 32	90% 36	100 40
ack orin	100% -legged g migrat	6 kittiwa tion 1%	12 ake 2% 1 2	5% 2 4	62 (%	20% 8 16	Morta splaced 30%	lity lev birds a	el at risk o 50%	60% 24 48	lity) 70%	80% 32 64	90%	100
ack orin	100% -legged g migrat	6 kittiwa tion 1%	12 ake 2%	5% 2	62 (%	% of dis	Morta splaced 30% 12	birds a	el at risk o 50% 20	60%	70%	80% 32	90% 36	100 40 80
ack orin	100% -legged g migrat 10% 20%	6 kittiwa tion 1% 0 1	12 ake 2% 1 2	5% 2 4	62 (% 10% 4 8	20% 8 16	Morta splaced 30% 12 24	birds a 40% 16 32	50% 20 40	60% 24 48	70% 28 56	80% 32 64	90% 36 72	100 40 80 119
ack orin	100% -legged g migrat 10% 20% 30%	6 kittiwa tion 1% 0 1	12 ake 2% 1 2 2	5% 2 4 6	10% 4 8 12	% of dis	Morta splaced 30% 12 24 36	40% 16 32 48	50% 20 40 60	60% 24 48 72	70% 28 56 84	80% 32 64 96	90% 36 72 107	100 40 80 119 159
ack orin	100% -legged g migrat 10% 20% 30% 40%	6 kittiwa tion 1% 0 1 1 2	12 ake 2% 1 2 2 3	5% 2 4 6 8	10% 4 8 12 16	20% 8 16 24 32	Morta splaced 30% 12 24 36 48	40% 16 32 48 64	50% 20 40 60 80	60% 24 48 72 96	70% 28 56 84 111	80% 32 64 96 127	90% 36 72 107 143	100 40 80 119 159
ack orin	100% -legged g migrat 10% 20% 30% 40% 50%	6 kittiwa tion 1% 0 1 1 2 2	12 ake 2% 1 2 2 3 4	5% 2 4 6 8 10	10% 4 8 12 16 20	20% 8 16 24 32 40	Morta splaced 30% 12 24 36 48 60	40% 16 32 48 64 80	50% 20 40 60 80 100	60% 24 48 72 96 119	70% 28 56 84 111 139	80% 32 64 96 127 159	90% 36 72 107 143 179	100 40
ack	100% -legged g migrat 10% 20% 30% 40% 50% 60%	6 kittiwa tion 1% 0 1 1 2 2 2	12 ake 2% 1 2 2 3 4 5	5% 2 4 6 8 10	10% 4 8 12 16 20 24	20% 8 16 24 32 40 48	Morta splaced 30% 12 24 36 48 60 72	40% 16 32 48 64 80 96	50% 20 40 60 80 100 119	60% 24 48 72 96 119 143	70% 28 56 84 111 139 167	80% 32 64 96 127 159 191	90% 36 72 107 143 179 215	100 40 80 119 159 199 239
ack orin	100% -legged g migrat 10% 20% 30% 40% 50% 60% 70%	6 kittiwa tion 1% 0 1 1 2 2 2 3	12 ake 2% 1 2 2 3 4 5 6	5% 2 4 6 8 10 12	10% 4 8 12 16 20 24 28	20% 8 16 24 32 40 48 56	Morta splaced 30% 12 24 36 48 60 72 84	40% 16 32 48 64 80 96 111	50% 20 40 60 80 100 119 139	60% 24 48 72 96 119 143 167	70% 28 56 84 111 139 167 195	80% 32 64 96 127 159 191 223	90% 36 72 107 143 179 215 251	100 40 80 119 159 199 239 279

Table C. 52: UCI predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during Spring migration (operations and maintenance phase).

ittiw	ake						M	ortality	level					
						(% of d	isplaced	birds a	t risk of	mortalit	y)			
prinç	g migration													
∵		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent	10%	1	2	6	12	24	37	49	61	73	86	98	110	122
acement)	20%	2	5	12	24	49	73	98	122	147	171	196	220	245
	30%	4	7	18	37	73	110	147	183	220	257	294	330	367
isp	40%	5	10	24	49	98	147	196	245	294	343	391	440	489
at risk of disp	50%	6	12	31	61	122	183	245	306	367	428	489	550	612
i X	60%	7	15	37	73	147	220	294	367	440	514	587	661	734
Z :E	70%	9	17	43	86	171	257	343	428	514	599	685	771	856
	80%	10	20	49	98	196	294	391	489	587	685	783	881	979
%)	90%	11	22	55	110	220	330	440	550	661	771	881	991	1101
								1400	1610	1724	056	1070	11101	14222
le el	100%	12	24	61	122	245	367	489	612	734	856	979	1101	1223
lack	100% -legged			61	<u> </u>		Morta	lity lev	el			1919	11101	1223
lack				<u> 61</u>	<u> </u>			lity lev	el			919	1101	1223
		kittiwa		<u> 61</u>	<u> </u>		Morta	lity lev	el			373	11101	1223
prin	degged	kittiwa		5%	<u> </u>		Morta	lity lev	el			80%	90%	100%
prin	degged	kittiwa tion	ake		(9	% of dis	Morta splaced	lity lev birds a	el at risk o	f morta	lity)			
prin	degged	kittiwa tion 1%	ake 2%	5%	10%	% of dis	Morta splaced 30%	lity lev birds a	el at risk o 50%	f morta	lity) 70%	80%	90%	100%
prin	degged	kittiwa tion 1%	2%	5%	10% 8	% of dis	Morta splaced 30% 24	birds a	el at risk o 50% 40	f morta 60% 48	70% 56	80% 64	90% 72	100 %
prin	degged	kittiwa tion 1% 1 2	2% 2 3	5% 4 8	10% 8 16	20% 16 32	Morta splaced 30% 24 48	birds a 40% 32 64	50% 40 80	60% 48 96	70% 56 112	80% 64 128	90% 72 143	100% 80 159
prin	degged	kittiwa tion 1% 1 2 2	2% 2 3 5	5% 4 8 12	10% 8 16 24	20% 16 32 48	Morta splaced 30% 24 48 72	40% 32 64 96	50% 40 80 120	60% 48 96 143	70% 56 112 167	80% 64 128 191	90% 72 143 215	100% 80 159 239
prin	degged	kittiwa tion 1% 1 2 2 3	2% 2 3 5 6	5% 4 8 12 16	10% 8 16 24 32	20% 16 32 48 64	Morta splaced 30% 24 48 72 96	40% 32 64 96 128	50% 40 80 120 159	60% 48 96 143 191	70% 56 112 167 223	80% 64 128 191 255	90% 72 143 215 287	100% 80 159 239 319
prin	degged	tion 1% 1 2 2 3 4	2% 2 3 5 6 8	5% 4 8 12 16 20	10% 8 16 24 32 40	20% 16 32 48 64 80	Morta splaced 30% 24 48 72 96 120	40% 32 64 96 128 159	50% 40 80 120 159 199	60% 48 96 143 191 239	70% 56 112 167 223 279	80% 64 128 191 255 319	90% 72 143 215 287 359	100% 80 159 239 319 399
prin eut)	degged	kittiwa tion 1% 1 2 2 3 4 5	2% 2 3 5 6 8 10	5% 4 8 12 16 20 24	10% 8 16 24 32 40 48	20% 16 32 48 64 80 96	Morta splaced 30% 24 48 72 96 120 143	40% 32 64 96 128 159	50% 40 80 120 159 199 239	60% 48 96 143 191 239 287	70% 56 112 167 223 279 335	80% 64 128 191 255 319 383	90% 72 143 215 287 359 430	100% 80 159 239 319 399 478
prin	degged	tion 1% 1 2 2 3 4 5 6	2% 2 3 5 6 8 10	5% 4 8 12 16 20 24 28	10% 8 16 24 32 40 48 56	20% 16 32 48 64 80 96 112	Morta splaced 30% 24 48 72 96 120 143 167	40% 32 64 96 128 159 191 223	50% 40 80 120 159 199 239 279	60% 48 96 143 191 239 287 335	70% 56 112 167 223 279 335 391	80% 64 128 191 255 319 383 446	90% 72 143 215 287 359 430 502	100% 80 159 239 319 399 478 558

Table C. 53: LCI predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during the breeding season (operations and maintenance phase).

Cittiwa	ake					(0)		ortality						
Breed	lina					(% of d	isplaced	l birds a	t risk of	mortalit	(y)			
	<u>9</u>	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	0	1	2	4	6	8	10	12	15	17	19	21
level acemo	20%	0	1	2	4	8	12	17	21	25	29	33	37	42
	30%	1	1	3	6	12	19	25	31	37	44	50	56	62
Displacement at risk of disp	40%	1	2	4	8	17	25	33	42	50	58	67	75	83
e d	50%	1	2	5	10	21	31	42	52	62	73	83	94	104
sk o	60%	1	2	6	12	25	37	50	62	75	87	100	112	125
ris	70%	1	3	7	15	29	44	58	73	87	102	116	131	146
(% at	80%	2	3	8	17	33	50	67	83	100	116	133	150	166
_	90%	2	4	9	19	37	56	75	94	112	131	150	168	187
9			4	4.0	0.4	40	00	00	404	405	4 40			
	100% c-legged	2 kittiw	4 ake	10	21	42 % of dis		83 ality lev		125	146	166	187	208
Black	100% c-legged			10			Morta	ality lev				166	187	208
Black Breed	100% c-legged			10 5%	10%		Morta	ality lev	el			166 80 %	90%	
Black Breed	100% c-legged	kittiw	ake		(9	% of dis	Morta splaced	ality lev birds a	el at risk c	f morta	lity)			
Black Breed	100% s-legged ding	kittiw	ake 2%	5%	10%	% of dis	Morta splaced 30%	ality lev birds a	el at risk o	f morta	70%	80%	90%	1009
Black Breed	100% ding 10%	1% 0	2% 1	5%	10% 5	% of dis	Morta splaced 30%	birds a	el at risk o 50% 25	f morta 60% 29	70%	80% 39	90%	100 9
Black Breed	100% ding 10% 20%	1% 0 1	2% 1 2	5% 2 5	10% 5 10	20% 10 20	Morta splaced 30% 15 29	birds a 40% 20 39	el at risk of 50% 25 49	60% 29 59	70% 34 69	80% 39 79	90% 44 88	100 9 49 98
Black Breed	100% c-legged ding 10% 20% 30%	1% 0 1	2% 1 2 3	5% 2 5 7	10% 5 10 15	% of dis	Morta splaced 30% 15 29 44	40% 20 39 59	50% 25 49 74	60% 29 59 88	70% 34 69 103	80% 39 79 118	90% 44 88 133	1009 49 98 147
Black Breed	100% c-legged ding 10% 20% 30% 40%	1% 0 1 1 2	2% 1 2 3 4	5% 2 5 7 10	10% 5 10 15 20	20% 10 20 29 39	Morta splaced 30% 15 29 44 59	40% 20 39 59 79	50% 25 49 74 98	60% 29 59 88 118	70% 34 69 103 137	80% 39 79 118 157	90% 44 88 133 177	100% 49 98 147 196
Black Breed	100% c-legged ding 10% 20% 30% 40% 50%	1% 0 1 1 2 2	2% 1 2 3 4 5	5% 2 5 7 10 12	10% 5 10 15 20 25	20% 10 20 29 39 49	Morta splaced 30% 15 29 44 59 74	40% 20 39 59 79 98	50% 25 49 74 98 123	60% 29 59 88 118 147	70% 34 69 103 137 172	80% 39 79 118 157 196	90% 44 88 133 177 221	1009 49 98 147 196 246
Uisplacement level	100% c-legged ding 10% 20% 30% 40% 50% 60%	1% 0 1 1 2 2 3	2% 1 2 3 4 5	5% 2 5 7 10 12 15	10% 5 10 15 20 25 29	20% 10 20 29 39 49 59	Morta splaced 30% 15 29 44 59 74 88	40% 20 39 59 79 98 118	50% 25 49 74 98 123 147	60% 29 59 88 118 147	70% 34 69 103 137 172 206	80% 39 79 118 157 196 236	90% 44 88 133 177 221 265	1009 49 98 147 196 246 295
Black Breed	100% c-legged ding 10% 20% 30% 40% 50% 60% 70%	1% 0 1 1 2 2 3 3	2% 1 2 3 4 5 6 7	5% 2 5 7 10 12 15	10% 5 10 15 20 25 29 34	20% 10 20 29 39 49 59 69	Morta splaced 30% 15 29 44 59 74 88 103	40% 20 39 59 79 98 118 137	50% 25 49 74 98 123 147 172	60% 29 59 88 118 147 177 206	70% 34 69 103 137 172 206 241	80% 39 79 118 157 196 236 275	90% 44 88 133 177 221 265 309	100% 49 98 147 196 246 295 344

Table C. 54: UCI predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during the breeding season (operations and maintenance phase).



Kittiwa	ake						M	ortality	level					
						(% of d	splaced	birds a	t risk of	mortalit	y)			
Breed	in <u>g</u>													
∵		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
en	10%	1	1	3	6	11	17	22	28	34	39	45	50	56
level acement)	20%	1	2	6	11	22	34	45	56	67	78	89	101	112
	30%	2	3	8	17	34	50	67	84	101	117	134	151	168
neu isp	40%	2	4	11	22	45	67	89	112	134	157	179	201	224
Sen of d	50%	3	6	14	28	56	84	112	140	168	196	224	252	279
olac sk c	60%	3	7	17	34	67	101	134	168	201	235	268	302	335
Displacement at risk of disp	70%	4	8	20	39	78	117	157	196	235	274	313	352	391
	80%	4	9	22	45	89	134	179	224	268	313	358	402	447
%)	90%	5	10	25	50	101	151	201	252	302	352	402	453	503
Disale	100%	6	11	28	56	112	168	224	279	335	391	447	503	559
Віаск	-legged	KITTIWa	ike		40			ility lev						
					(%	% of dis	placed	birds a	ıt risk o	f morta	lity)			
Breed	ling	404		=0.4	400/	2001	2001	100/	=/	2001	 00/	000/		4000/
÷		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
en	10%	1	2	5	10	21	31	41	52	62	72	82	93	103
vel	20%	2	4	10	21	41	62	82	103	124	144	165	186	206
1 <u>e</u>	30%	3	6	15	31	62	93	124	155	186	217	247	278	309
ent	40%	4	8	21	41	82	124	165	206	247	289	330	371	412
em f di	50%	5	10	26	52	103	155	206	258	309	361	412	464	516
ac	60%	6	12	31	62	124	186	247	309	371	433	495	557	619
Displacement level at risk of displacement)	70%	7	14	36	72	144	217	289	361	433	505	577	650	722
at a	80%	8	16	41	82	165	247	330	412	495	577	660	742	825
%	90%	9	19	46	93	186	278	371	464	557	650	742	835	928
	100%	10	21	52	103	206	309	412	516	619	722	825	928	1,031



Table C. 55: LCI predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during Autumn migration (operations and maintenance phase).

Kittiwa	ike n migrat	ion				(% of d		ortality birds a	level t risk of	mortalit	y)			
	J a	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	1	2	4	7	11	14	18	22	25	29	32	36
level	20%	1	1	4	7	14	22	29	36	43	50	58	65	72
	30%	1	2	5	11	22	32	43	54	65	76	86	97	108
ent	40%	1	3	7	14	29	43	58	72	86	101	115	130	144
em di	50%	2	4	9	18	36	54	72	90	108	126	144	162	180
Displacem t risk of di	60%	2	4	11	22	43	65	86	108	130	151	173	194	216
ispla risk	70%	3	5	13	25	50	76	101	126	151	176	201	227	252
at D	80%	3	6	14	29	58	86	115	144	173	201	230	259	288
%)	90%	3	6	16	32	65	97	130	162	194	227	259	291	324
	100%	4	7	18	36	72	108	144	180	216	252	288	324	360

Table C. 56: UCI predicted black-legged kittiwake mortality for the Mona Array Area plus 2 km buffer during Autumn migration (operations and maintenance phase).

Kittiwa						(% of di		ortality I birds at	evel risk of	mortality	/)			
Autum	n migrat	ion												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	1	2	4	8	17	25	33	41	50	58	66	74	83
level	20%	2	3	8	17	33	50	66	83	99	116	132	149	165
	30%	2	5	12	25	50	74	99	124	149	173	198	223	248
ent	40%	3	7	17	33	66	99	132	165	198	231	264	297	330
em f di	50%	4	8	21	41	83	124	165	207	248	289	330	372	413
Displacem t risk of di	60%	5	10	25	50	99	149	198	248	297	347	397	446	496
ispla risk	70%	6	12	29	58	116	173	231	289	347	405	463	520	578
at D	80%	7	13	33	66	132	198	264	330	397	463	529	595	661
%)	90%	7	15	37	74	149	223	297	372	446	520	595	669	744
	100%	8	17	41	83	165	248	330	413	496	578	661	744	826



C.6 Manx shearwater

Table C. 57: LCI predicted Manx shearwater mortality for the Mona Array Area plus 2 km buffer during Spring migration (construction and decommissioning).

	Shearwat				(% of d	isplaced	Mortalit I birds a	•	mortalit	ty)				
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
ent spl	25%	0	0	0	0	0	0	0	0	0	0	0	0	0
em di	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacem t risk of di	35%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
at a	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C. 58 UCI predicted Manx shearwater mortality for the Mona Array Area plus 2 km buffer during Spring migration (construction and decommissioning).

	Shearwat migratio				(% of d	isplaced	Mortalit birds a	_	mortalit	у)				
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
level acement)	10%	0	0	0	0	0	0	0	0	1	1	1	1	1
level	15%	0	0	0	0	0	0	1	1	1	1	1	1	1
	20%	0	0	0	0	0	1	1	1	1	1	2	2	2
Displacemen at risk of disp	25%	0	0	0	0	0	1	1	1	1	2	2	2	2
e m f	30%	0	0	0	0	1	1	1	1	2	2	2	3	3
lac k o	35%	0	0	0	0	1	1	1	2	2	2	3	3	3
isp ris	40%	0	0	0	0	1	1	2	2	2	3	3	4	4
	60%	0	0	0	1	1	2	2	3	4	4	5	5	6
%)	80%	0	0	0	1	2	2	3	4	5	6	6	7	8
	100%	0	0	0	1	2	3	4	5	6	7	8	9	10

Manx	shearwa	iter						Morta	lity leve	d .				
						(% of di	splaced	birds a	ıt risk of	mortali	ty)			
Spring	migrati	on												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
	10%	0	0	0	0	0	1	1	1	1	1	2	2	2
<u> </u>	15%	0	0	0	0	1	1	1	1	2	2	2	3	3
level	20%	0	0	0	0	1	1	2	2	2	3	3	3	4
	25%	0	0	0	0	1	1	2	2	3	3	4	4	5
me	30%	0	0	0	1	1	2	2	3	3	4	5	5	6
ace	35%	0	0	0	1	1	2	3	3	4	5	5	6	7
Displacement	40%	0	0	0	1	2	2	3	4	5	5	6	7	8
Ö	60%	0	0	1	1	2	3	5	6	7	8	9	10	11
	80%	0	0	1	2	3	5	6	8	9	11	12	14	15
	100%	0	0	1	2	4	6	8	10	11	13	15	17	19



Table C. 59 LCI predicted Manx shearwater mortality for the Morgan Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Manx S	Shearwa	ter			(% of d	lisplaced		ty level at risk o	f mortal	ity)				
	iig	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	1	2	3	7	10	13	17	20	23	27	30	33
level	15%	1	1	3	5	10	15	20	25	30	35	40	45	50
ace	20%	1	1	3	7	13	20	27	33	40	47	53	60	67
ment displa	25%	1	2	4	8	17	25	33	42	50	58	67	75	84
em f di	30%	1	2	5	10	20	30	40	50	60	70	80	90	100
lace k of	35%	1	2	6	12	23	35	47	58	70	82	94	105	117
Displacem It risk of di	40%	1	3	7	13	27	40	53	67	80	94	107	120	134
at D	60%	2	4	10	20	40	60	80	100	120	140	160	180	201
%)	80%	3	5	13	27	53	80	107	134	160	187	214	241	267
	100%	3	7	17	33	67	100	134	167	201	234	267	301	334

Table C. 60: UCI predicted Manx shearwater mortality for the Morgan Array Area plus 2 km buffer during the breeding season (construction and decommissioning).

Manx S	Shearwa	ter			(% of	displace		ity level at risk o		ity)				
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	3	6	16	32	64	95	127	159	191	223	254	286	318
level	15%	5	10	24	48	95	143	191	238	286	334	381	429	477
	20%	6	13	32	64	127	191	254	318	381	445	509	572	636
ent	25%	8	16	40	79	159	238	318	397	477	556	636	715	795
em f di	30%	10	19	48	95	191	286	381	477	572	668	763	858	954
Displacem t risk of di	35%	11	22	56	111	223	334	445	556	668	779	890	1001	1113
ispla risk	40%	13	25	64	127	254	381	509	636	763	890	1017	1144	1272
at 🖂	60%	19	38	95	191	381	572	763	954	1144	1335	1526	1717	1907
%)	80%	25	51	127	254	509	763	1017	1272	1526	1780	2034	2289	2543
	100%	32	64	159	318	636	954	1272	1589	1907	2225	2543	2861	3179

Table C. 61: LCI predicted Manx shearwater mortality for the Morgan Array Area plus 2 km buffer during Autumn migration (construction and decommissioning).

	Shearwat n migrat				(% of c	lisplaced		ity level at risk o	f mortal	ity)				
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	1	1	2	2	3	4	4	5	5	6
level	15%	0	0	0	1	2	3	4	5	5	6	7	8	9
t le	20%	0	0	1	1	2	4	5	6	7	8	10	11	12
Displacement t risk of displ	25%	0	0	1	2	3	5	6	8	9	11	12	14	15
em f	30%	0	0	1	2	4	5	7	9	11	13	15	16	18
lace k of	35%	0	0	1	2	4	6	8	11	13	15	17	19	21
ispla risk	40%	0	0	1	2	5	7	10	12	15	17	19	22	24
a c	60%	0	1	2	4	7	11	15	18	22	25	29	33	36
%)	80%	0	1	2	5	10	15	19	24	29	34	39	44	48
	100%	1	1	3	6	12	18	24	30	36	42	48	55	61



Table C. 62: UCI predicted Manx shearwater mortality for the Morgan Array Area plus 2 km buffer Autumn migration (construction and decommissioning).

nx	Shearwa	iter _					Morta	lity level						
					(% of	displace	d birds	at risk c	of mortal	ity)				
ıtum	nn migra	tion												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent	10%	0	1	2	4	7	11	15	19	22	26	30	33	37
acement)	15%	1	1	3	6	11	17	22	28	33	39	45	50	56
	20%	1	1	4	7	15	22	30	37	45	52	59	67	74
at risk of disp	25%	1	2	5	9	19	28	37	46	56	65	74	83	93
ę d	30%	1	2	6	11	22	33	45	56	67	78	89	100	111
×	35%	1	3	6	13	26	39	52	65	78	91	104	117	130
ris	40%	1	3	7	15	30	45	59	74	89	104	119	134	148
	60%	2	4	11	22	45	67	89	111	134	156	178	200	223
	/	3	6	15	30	59	89	119	148	178	208	237	267	297
%)	80%	3		_		_	_	_	-					
	80% 100% shearwa	4	7	19	37	74	111	148 Morta	186	223 I	260	297	334	371
	100%	4		_		74		Morta	186 lity leve	I		297	334	371
anx	100%	4 ater		_		74		Morta	lity leve	I		297	334	371
anx	100% shearwa	4 ater		_		74		Morta	lity leve t risk of 50%	I		80%	90%	
anx	100% shearwa	4 ater ation	7	19	37	74 (% of di	splaced	Morta I birds a	lity levent risk of 50%	l mortali	ty)	80%	•	
anx	100% shearwa	4 ater ation 1%	7 2%	19 5%	37 10%	74 (% of di 20%	splaced	Morta l birds a 40% 2 2	lity leve t risk of 50%	60% 2 4	70% 3 4	80% 3 5	90%	100%
anx	100% shearwa	4 ater ation 1%	2%	5% 0	37 10%	74 (% of di 20%	30%	Morta l birds a 40%	t risk of 50% 2 3 4	60% 2 4 5	70%	80% 3 5 6	90%	100 %
anx	100% shearwa nn migra 10% 15%	4 ater 1% 0 0	2% 0 0	5% 0 0	37 10% 0	74 (% of di 20% 1 1 2 2	30% 1 2 2 3	Morta l birds a 40% 2 2 3 4	50% 2 3 4 5	60% 2 4 5 6	70% 3 4 5 7	80% 3 5 6 8	90% 4 5	100% 4 6 8 10
anx	100% shearwa nn migra 10% 15% 20%	4 ater ation 1% 0 0 0	2% 0 0 0	5% 0 0	10% 0 1	74 (% of di 20% 1 1 2	30% 1 2 2	Morta l birds a 40% 2 2 3	t risk of 50% 2 3 4	60% 2 4 5	70% 3 4 5	80% 3 5 6	90% 4 5 7	100% 4 6 8
anx	100% shearwa nn migra 10% 15% 20% 25%	4 ater 1% 0 0 0 0 0 0 0	2% 0 0 0 0	5% 0 0	10% 0 1 1	74 (% of di 20% 1 1 2 2	30% 1 2 2 3	Morta l birds a 40% 2 2 3 4	50% 2 3 4 5	60% 2 4 5 6	70% 3 4 5 7	80% 3 5 6 8	90% 4 5 7 9	100% 4 6 8 10
anx	100% shearwa 10% 15% 20% 25% 30%	4 ater 1% 0 0 0 0 0	2% 0 0 0 0 0	5% 0 0	10% 0 1 1 1	74 (% of di 20% 1 1 2 2 2	30% 1 2 2 3 4	Morta l birds a 40% 2 2 3 4 5	50% 2 3 4 5 6	60% 2 4 5 6 7	70% 3 4 5 7	80% 3 5 6 8 9	90% 4 5 7 9 11	100% 4 6 8 10 12
anx	100% shearway 10% 15% 20% 25% 30% 35%	4 ater 1% 0 0 0 0 0 0 0	2% 0 0 0 0 0	5% 0 0 0 0 1	10% 0 1 1 1 1	74 (% of di 20% 1 1 2 2 2 2 3	30% 1 2 2 3 4 4	Morta l birds a 40% 2 2 2 3 4 5 5	50% 2 3 4 5 6 7	60% 2 4 5 6 7	70% 3 4 5 7 8 10	80% 3 5 6 8 9	90% 4 5 7 9 11	100% 4 6 8 10 12 14
anx	100% shearwa 10% 15% 20% 25% 30% 35% 40%	4 ater 1% 0 0 0 0 0 0 0 0 0	2% 0 0 0 0 0 0	5% 0 0 0 0 1	10% 0 1 1 1 1 1 2	74 (% of di 20% 1 1 2 2 2 3 3	30% 1 2 2 3 4 4 5	Morta l birds a 40% 2 2 3 4 5 5 6	50% 2 3 4 5 6 7	60% 2 4 5 6 7 8	70% 3 4 5 7 8 10	80% 3 5 6 8 9 11	90% 4 5 7 9 11 12	100% 4 6 8 10 12 14 16

Table C. 63: LCI predicted Manx shearwater mortality for the Mona Array Area plus 2 km buffer during Spring migration (operation).

	Shearwa					(% of di	Mo isplaced	ortality l birds a		mortalit	у)			
	migration	on 1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
ent	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
em di	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
lace k of	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacem It risk of di	70%	0	0	0	0	0	0	0	0	0	0	0	0	0
ë ₩	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	90%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0



Table C. 64: UCI predicted Manx shearwater mortality for the Mona Array Area plus 2 km buffer during Spring migration (operation).

lanx	Shearwa	ter				(% of d		lortality	level t risk of	mortalit	v)			
Spring	g migrati	on				(// 5.1 5.					· 3 7			
		1%	2%	5%	10%	20%	30%	40%	50 %	60%	70%	80%	90%	100%
level acement)	10%	0	0	0	0	0	0	0	0	1	1	1	1	1
level	20%	0	0	0	0	0	1	1	1	1	1	2	2	2
	30%	0	0	0	0	1	1	1	1	2	2	2	3	3
Displacement at risk of disp	40%	0	0	0	0	1	1	2	2	2	3	3	4	4
Displacement trisk of disp	50%	0	0	0	0	1	1	2	2	3	3	4	4	5
ik c	60%	0	0	0	1	1	2	2	3	4	4	5	5	6
ris ris	70%	0	0	0	1	1	2	3	3	4	5	6	6	7
	80%	0	0	0	1	2	2	3	4	5	6	6	7	8
		0	0	0	1	2	3	4	4	5	6	7	8	9
%)	90%				-			1	I =	۱,	I	۱,	_	4.0
	90% 100% shearwa	0	0	0	1	2	3		5 lity leve		7	8	9	10
Manx	100%	0 ater		0	1			Morta		I	,	8	9	10
Manx	100% shearwa	0 ater		5%	10%			Morta	lity leve	I	,	8 80%	90%	10 100%
Manx	100% shearwa	0 ater ion	0			(% of di	splaced	Morta I birds a	lity leve t risk of	l mortali	ty)			
Manx Spring	100% shearwa	0 ater ion 1%	2%	5%	10%	(% of di	splaced	Morta I birds a	lity leve t risk of	l mortali	ty)	80%	90%	100%
Manx Spring	100% shearway migrat	0 ater ion 1% 0	2% 0	5%	10%	(% of di 20% 0	splaced	Morta l birds a 40%	lity levent risk of 50%	mortali 60%	70%	80% 2	90% 2	1 00 %
Manx Spring	100% shearway migrate 10% 20%	0 ater ion 1% 0 0	2% 0 0	5% 0	10% 0 0	(% of di 20% 0	30% 1	Morta l birds a 40% 1 2	t risk of 50% 1 2	60% 1 2	70% 1 3	80% 2 3	90% 2 3	100% 2 4
Manx Spring	100% shearway migrat 10% 20% 30%	0 ater ion 1% 0 0 0	2% 0 0 0	5% 0 0 0	10% 0 0	(% of di 20% 0 1	30% 1 1 2	Morta l birds a 40% 1 2 2	t risk of 50% 1 2 3	60% 1 2 3	ty) 70% 1 3 4	80% 2 3 5	90% 2 3 5	100% 2 4 6
Manx Spring	100% shearway 10% 10% 20% 30% 40%	0 ater ion 1% 0 0 0 0 0	2% 0 0 0 0	5% 0 0 0 0	10% 0 0	(% of di 20% 0 1 1 2	30% 1 1 2 2	Morta birds a 40% 1 2 2 3	50% 1 2 3 4	60% 1 2 3 5	70% 1 3 4 5	80% 2 3 5 6	90% 2 3 5 7	100% 2 4 6 8
Manx Spring	100% shearway 10% 20% 30% 40% 50%	0 ater ion 0 0 0 0 0 0	2% 0 0 0 0	5% 0 0 0 0	10% 0 0	(% of di 20% 0 1 1 2 2	30% 1 1 2 2 3	Morta l birds a 40% 1 2 2 3 4	50% 1 2 3 4 5	60% 1 2 3 5 6	70% 1 3 4 5 7	80% 2 3 5 6 8	90% 2 3 5 7 9	100% 2 4 6 8 10
Manx Spring	100% shearway migrate 10% 20% 30% 40% 50% 60%	0 ater ion 1% 0 0 0 0 0 0 0	2% 0 0 0 0 0	5% 0 0 0 0	10% 0 0 1 1 1	(% of di 20% 0 1 1 2 2 2	30% 1 1 2 2 3 3	Morta birds a 40% 1 2 2 3 4 5	50% 1 2 3 4 5 6	60% 1 2 3 5 6	70% 1 3 4 5 7 8	80% 2 3 5 6 8 9	90% 2 3 5 7 9	100% 2 4 6 8 10
Manx	100% shearwa g migrat 10% 20% 30% 40% 50% 60% 70%	0 ater ion 0 0 0 0 0 0 0 0 0 0	2% 0 0 0 0 0 0	5% 0 0 0 0 0 1	10% 0 0 1 1 1 1	(% of di 20% 0 1 1 2 2 2 3	30% 1 1 2 2 3 3 4	Morta birds a 40% 1 2 2 3 4 5 5	50% 1 2 3 4 5 6 7	60% 1 2 3 5 6 7	70% 1 3 4 5 7 8 9	80% 2 3 5 6 8 9 11	90% 2 3 5 7 9 10	100% 2 4 6 8 10 11 13



Table C. 65: LCI predicted Manx shearwater mortality for the Morgan Array Area plus 2 km buffer during breeding (operation).

Manx S	Shearwa ing	ter				(% of d		ortality birds a	level t risk of	mortalit	ty)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	0	1	2	3	7	10	13	17	20	23	27	30	33
level	20%	1	1	3	7	13	20	27	33	40	47	53	60	67
	30%	1	2	5	10	20	30	40	50	60	70	80	90	100
ent spl	40%	1	3	7	13	27	40	53	67	80	94	107	120	134
	50%	2	3	8	17	33	50	67	84	100	117	134	150	167
ace k of	60%	2	4	10	20	40	60	80	100	120	140	160	180	201
ispla risk	70%	2	5	12	23	47	70	94	117	140	164	187	211	234
ᇘ	80%	3	5	13	27	53	80	107	134	160	187	214	241	267
%)	90%	3	6	15	30	60	90	120	150	180	211	241	271	301
	100%	3	7	17	33	67	100	134	167	201	234	267	301	334

Table C. 66: UCI predicted Manx shearwater mortality for the Morgan Array Area plus 2 km buffer during breeding (operation).

Manx S	Shearwa	ter				(% of d		ortality birds a	level t risk of	mortalit	у)			
	9	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ent)	10%	3	6	16	32	64	95	127	159	191	223	254	286	318
level	20%	6	13	32	64	127	191	254	318	381	445	509	572	636
	30%	10	19	48	95	191	286	381	477	572	668	763	858	954
ent	40%	13	25	64	127	254	381	509	636	763	890	1017	1144	1272
em f di	50%	16	32	79	159	318	477	636	795	954	1113	1272	1430	1589
Displacem t risk of di	60%	19	38	95	191	381	572	763	954	1144	1335	1526	1717	1907
ispla risk	70%	22	45	111	223	445	668	890	1113	1335	1558	1780	2003	2225
	80%	25	51	127	254	509	763	1017	1272	1526	1780	2034	2289	2543
%)	90%	29	57	143	286	572	858	1144	1430	1717	2003	2289	2575	2861
	100%	32	64	159	318	636	954	1272	1589	1907	2225	2543	2861	3179



Table C. 67 LCI predicted Manx shearwater mortality for the Morgan Array Area plus 2 km buffer during Autumn migration (operation). All results are zero

	Shearwa					(% of d		lortality I birds a	level t risk of	mortalit	y)			
Autun	nn migra			-	100/			1001						10001
÷		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
le l	10%	0	0	0	1	1	2	2	3	4	4	5	5	6
level acement)	20%	0	0	1	1	2	4	5	6	7	8	10	11	12
	30%	0	0	1	2	4	5	7	9	11	13	15	16	18
Displacement it risk of disp	40%	0	0	1	2	5	7	10	12	15	17	19	22	24
cer of (50%	0	1	2	3	6	9	12	15	18	21	24	27	30
Displacement at risk of disp	60%	0	1	2	4	7	11	15	18	22	25	29	33	36
JIS t ris	70%	0	1	2	4	8	13	17	21	25	30	34	38	42
 % at	80%	0	1	2	5	10	15	19	24	29	34	39	44	48
	90%	1	1	3	5	11	16	22	27	33	38	44	49	55
- 5	1000/	1	14	2	6	140	110				140	140		
	100% shearwa	1 ater	1	3	6	12	18		30		42	48	55	61
Manx			1	3	6			Morta		I		<u> 48</u>	55	61
lanx	shearwa		2%	5 %	10%			Morta	lity leve	I		80%	90%	
/lanx	shearwa	ition	'			(% of di	splaced	Morta birds a	lity leve t risk of	l mortali	ty)			
/lanx Autum	shearwa	ation 1%	2%	5%	10%	(% of di	splaced	Morta birds a	lity leve t risk of 50%	l mortali 60%	ty) 70%	80%	90%	100%
Manx Autum	shearwann migra	1% 0	2%	5%	10%	(% of di 20%	30%	Morta birds a 40%	lity levent risk of 50%	mortali 60%	70%	80%	90% 0	100 %
Manx Autum	shearwann migra 10% 20%	1% 0 0	2% 0 0	5% 0	10% 0 0	20% 0 0	30% 0 0	Morta birds a 40% 0 0	t risk of 50% 0 0	60% 0	70% 0 0	80% 0 0	90% 0 0	100% 0 0
Manx Autum	nn migra 10% 20% 30%	1% 0 0	2% 0 0 0	5% 0 0 0	10% 0 0	(% of di 20% 0 0	30% 0 0 0	Morta birds a 40% 0 0 0	t risk of 50% 0 0 0	60% 0 0	70% 0 0 0	80% 0 0 0	90% 0 0 0	100% 0 0
Manx Autum	10% 20% 30% 40%	1% 0 0 0	2% 0 0 0 0	5% 0 0 0	10% 0 0 0	(% of di 20% 0 0 0	30% 0 0 0 0	Morta birds a 40% 0 0 0 0	st risk of 50% 0 0 0 0	60% 0 0 0 0	70% 0 0 0 0	80% 0 0 0	90% 0 0 0	100% 0 0 0 0
Manx Autum	10% 20% 30% 40%	1% 0 0 0 0	2% 0 0 0 0 0	5% 0 0 0 0	10% 0 0 0 0 0	20% 0 0 0 0 0 0	30% 0 0 0 0 0	Morta birds a 40% 0 0 0 0 0	Solution Solution	60% 0 0 0 0 0	70% 0 0 0 0 0	80% 0 0 0 0	90% 0 0 0 0	100% 0 0 0 0
Manx Autum	10% 20% 30% 40% 50%	1% 0 0 0 0 0 0 0	2% 0 0 0 0 0	5% 0 0 0 0 0	10% 0 0 0 0 0	20% 0 0 0 0 0 0 0 0	30% 0 0 0 0 0 0 0	Morta birds a 40% 0 0 0 0 0 0 0	Solution Solution	60% 0 0 0 0 0	70% 0 0 0 0 0 0 0	80% 0 0 0 0 0 0	90% 0 0 0 0 0	100% 0 0 0 0 0
Manx	10% 20% 30% 40% 50% 60% 70%	1% 0 0 0 0 0 0 0 0 0	2% 0 0 0 0 0 0	5% 0 0 0 0 0 0	10% 0 0 0 0 0 0	(% of di 20% 0 0 0 0 0 0 0 0	30% 0 0 0 0 0 0 0 0 0	Morta birds a 40% 0 0 0 0 0 0 0 0 0	50% 0 0 0 0 0 0 0 0	60% 0 0 0 0 0 0	70% 0 0 0 0 0 0 0 0 0	80% 0 0 0 0 0 0	90% 0 0 0 0 0 0	100% 0 0 0 0 0 0

Table C. 68 UCI predicted Manx shearwater mortality for the Morgan Array Area plus 2 km buffer during Autumn migration (operation).



lanx	Shearwa	ater						lortality						
141110	nn migra	tion				(% of d	isplaced	l birds a	t risk of	mortali	ty)			
Mutun	III IIIIgra	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
int)	10%	0	1	2	4	7	11	15	19	22	26	30	33	37
a e	20%	1	1	4	7	15	22	30	37	45	52	59	67	74
ievei acement)	30%	1	2	6	11	22	33	45	56	67	78	89	100	111
	40%	1	3	7	15	30	45	59	74	89	104	119	134	148
Displacement at risk of displ	50%	2	4	9	19	37	56	74	93	111	130	148	167	186
o g	60%	2	4	11	22	45	67	89	111	134	156	178	200	223
ısp ris	70%	3	5	13	26	52	78	104	130	156	182	208	234	260
	80%	3	6	15	30	59	89	119	148	178	208	237	267	297
	000/	3	7	17	33	67	100	134	167	200	234	267	301	334
%)	90%			_										
	100%	4	7	19	37	74	111	148	186	223	260	297	334	371
		4	7	_	37			Morta	lity leve	I		297	334	371
	100%	4	7	_	37			Morta		I		297	334	371
lanx	100%	4 ater	7	_	37			Morta	lity leve	I		297	334	371
lanx	100% shearwa	4 ater	7 2%	_	37 10%			Morta	lity leve	I		297 80%	334 90%	
lanx	100% shearwa	4 ater ation	, , , , , , , , , , , , , , , , , , ,	19		(% of di	isplaced	Morta I birds a	lity leve t risk of	mortali 60%	70%	80%		
lanx	100% shearwa	4 ater ation 1%	2%	19 5%	10%	(% of di	isplaced	Morta I birds a 40%	lity leve t risk of 50%	l mortali 60%	ty) 70%	80%	90%	100%
lanx	100% shearwann migra	4 ater ation 1%	2%	5% 0	10%	(% of di 20%	30%	Morta I birds a 40%	lity levent risk of 50%	mortali 60%	70%	80%	90%	100 %
lanx	100% shearwann migra 10% 20%	4 ater ation 1% 0 0	2% 0 0	5% 0	10% 0 1	(% of di 20%	30% 1 2	Morta l birds a 40% 2 3	t risk of 50% 2 4	60% 2 5	70% 3 5	80% 3 6	90% 4 7	100 %
Manx	100% shearward 10% 20% 30%	4 ater ation 1% 0 0 0	2% 0 0 0	5% 0	10% 0 1	(% of di 20% 1 2 2	30% 1 2 4	Morta l birds a 40% 2 3 5	t risk of 50% 2 4 6	60% 2 5 7	70% 3 5 8	80% 3 6 9	90% 4 7 11	100% 4 8 12
lanx	100% shearwa nn migra 10% 20% 30% 40%	4 ater 1% 0 0 0 0	2% 0 0 0 0	5% 0	10% 0 1 1 2	(% of di 20% 1 2 2 3	30% 1 2 4 5	Morta a 40% 2 3 5 6	50% 2 4 6 8	60% 2 5 7 9	70% 3 5 8 11	80% 3 6 9 12	90% 4 7 11	100% 4 8 12 16
lanx	100% shearwann migra 10% 20% 30% 40% 50%	4 ater ation 1% 0 0 0 0 0	2% 0 0 0 0	5% 0	10% 0 1 1 2	20% 1 2 2 3 4	30% 1 2 4 5 6	Morta a 40% 2 3 5 6 8	50% 2 4 6 8 10	60% 2 5 7 9	70% 3 5 8 11	80% 3 6 9 12 16	90% 4 7 11 14 18	100% 4 8 12 16 20
lanx	100% shearway 10% 20% 30% 40% 50% 60%	4 ater ation 1% 0 0 0 0 0 0	2% 0 0 0 0 0	5% 0	10% 0 1 1 2 2	20% 1 2 2 3 4 5	30% 1 2 4 5 6 7	Morta a 40% 2 3 5 6 8 9	50% 2 4 6 8 10 12	60% 2 5 7 9 12	70% 3 5 8 11 14 16	80% 3 6 9 12 16 19	90% 4 7 11 14 18 21	100% 4 8 12 16 20 23
lanx	100% shearwa 10% 20% 30% 40% 50% 60% 70%	4 ater 1% 0 0 0 0 0 0 0 0 0	2% 0 0 0 0 0 0	5% 0 0 1 1 1 1	10% 0 1 1 2 2 2 2	20% 1 2 2 3 4 5 5	30% 1 2 4 5 6 7	Morta a 40% 2 3 5 6 8 9 11	50% 2 4 6 8 10 12 14	60% 2 5 7 9 12 14 16	70% 3 5 8 11 14 16 19	80% 3 6 9 12 16 19 22	90% 4 7 11 14 18 21 25	100% 4 8 12 16 20 23 27

C.7 Red-throated diver

Table C. 69: LCI predicted red-throated diver mortality for the Morgan Array Area plus 4 km buffer during the Autumn migration (construction and decommissioning).

	roated o					(%	of displa		llity leve ds at ris		rtality)			
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
<u>e</u>	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement It risk of displ	25%	0	0	0	0	0	0	0	0	0	0	0	0	0
em f di	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
lace k of	35%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
σ	45%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0



Table C. 70: UCI predicted red-throated diver mortality for the Morgan Array Area plus 4 km buffer during the Autumn migration (construction and decommissioning).

	roated o					(%	of displa		ality leve ds at ris		rtality)			
	n migrat	ion 1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
<u>ac</u>	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement It risk of displ	25%	0	0	0	0	0	0	0	0	0	0	0	0	0
em G	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
lace k of	35%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
	45%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C. 71: LCI predicted red-throated diver mortality for the Morgan Array Area plus 4 km buffer during the Spring migration (construction and decommissioning).

	roated c		(% of	Morta displace	lity level ed birds		f mortal	ity)						
Spring	migration	on												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
ent	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
	25%	0	0	0	0	0	0	0	0	0	0	0	0	0
ent spl	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
	35%	0	0	0	0	0	0	0	0	0	0	0	0	0
lace k of	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	45%	0	0	0	0	0	0	0	0	0	0	0	0	0
co.	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0



Table C. 72: UCI predicted red-throated diver mortality for the Morgan Array Area plus 4 km buffer during the Spring migration (construction and decommissioning).

Red-th	roated o	diver				(%	of displa		ality leve ds at ris		rtality)			
Spring	migration	on												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
ment level displacement)	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
ac e	25%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement it risk of displ	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
em f di	35%	0	0	0	0	0	0	0	0	0	0	0	0	0
lace k of	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	45%	0	0	0	0	0	0	0	0	0	0	0	0	0
TO .	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C. 73: LCI predicted red-throated diver mortality for the Morgan Array Area plus 4 km buffer during the non-breeding season (construction and decommissioning).

Red-th	roated c	liver				(%	of displa		ality leve ds at ris		rtality)			
Non-b	reeding													
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
ent	15%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
	25%	0	0	0	0	0	0	0	0	0	0	0	0	0
ent	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
	35%	0	0	0	0	0	0	0	0	0	0	0	0	0
lace k of	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	45%	0	0	0	0	0	0	0	0	0	0	0	0	0
co.	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0



Table C. 74: UCI predicted red-throated diver mortality for the Morgan Array Area plus 4 km buffer during the non-breeding season (construction and decommissioning).

	roated o	liver				Mortality level (% of displaced birds at risk of mortality)									
NON-D	reeding	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
ent)	10%	0	О	0	0	О	0	0	0	0	О	0	0	0	
level	15%	0	0	0	0	0	0	0	0	0	0	0	0	0	
<u>ace</u>	20%	0	0	0	0	0	0	0	0	0	0	0	0	0	
Displacement level t risk of displacement)	25%	0	0	0	0	0	0	0	0	0	0	0	0	0	
	30%	0	0	0	0	0	0	0	0	0	0	0	0	0	
lace k of	35%	0	0	0	0	0	0	0	0	0	0	0	0	0	
ispla risk	40%	0	0	0	0	0	0	0	0	0	0	0	0	0	
	45%	0	0	0	0	0	0	0	0	0	0	0	0	0	
%)	50%	0	0	0	0	0	0	0	0	0	0	0	0	0	
	60%	0	0	0	0	0	0	0	0	0	0	0	0	0	
	80%	0	0	0	0	0	0	0	0	0	0	0	0	0	
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	

Table C. 75: LCI predicted red-throated diver mortality for the Morgan Array Area plus 4 km buffer during the Autumn migration (operations phase).

	throated				Mortality level (% of displaced birds at risk of mortality)									
Autum	n migrat	ion 1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
le,	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement it risk of displ	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
em f di	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
lace k of	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	70%	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>a</i>	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	90%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0



Table C. 76: UCI predicted red-throated diver mortality for the Morgan Array Area plus 4 km buffer during the Autumn migration (operations phase).

	throated				Mortality level (% of displaced birds at risk of mortality)									
	ii iiligrat	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	О	0	0	О	0	0	О	0	0	0	0	0
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
e ace	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement it risk of displ	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
em f di	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
lace k of	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	70%	0	0	0	0	0	0	0	0	0	0	0	0	0
co.	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	90%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C. 77: LCI predicted red-throated diver mortality for the Morgan Array Area plus 4 km buffer during the Spring migration (operations phase).

	throated				Mortality level (% of displaced birds at risk of mortality)									
	migratio	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
ace	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement it risk of displa	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
em f di	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
lace k of	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	70%	0	0	0	0	0	0	0	0	0	0	0	0	0
co.	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	90%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C. 78: UCI predicted red-throated diver mortality for the Morgan Array Area plus 4 km buffer during the Spring migration (operations phase).

Red-	throated	d diver			Mortality level (% of displaced birds at risk of mortality)									
Spring	migratio	on												
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
ment level displacement)	10%	0	0	0	0	0	0	0	0	0	0	0	0	0
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
ace	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement it risk of displa	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
em f di	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
lace k of	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
ispla risk	70%	0	0	0	0	0	0	0	0	0	0	0	0	0
· · ·	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	90%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0



Table C. 79: LCI predicted red-throated diver mortality for the Morgan Array Area plus 4 km buffer during the non-breeding season (operations phase).

	throated	d diver			Mortality level (% of displaced birds at risk of mortality)									
Non-bi	reeding	1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
£	10%	0	0	0	0	0	0	0	0	0	0	0	90%	0
_ <u>=</u>			U			+	+	_		+-	U	+-	U	
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0
	30%	0	0	0	0	0	0	0	0	0	0	0	0	0
ent	40%	0	0	0	0	0	0	0	0	0	0	0	0	0
em f di	50%	0	0	0	0	0	0	0	0	0	0	0	0	0
ace k of	60%	0	0	0	0	0	0	0	0	0	0	0	0	0
Displacement it risk of displa	70%	0	0	0	0	0	0	0	0	0	0	0	0	0
<i>a</i>	80%	0	0	0	0	0	0	0	0	0	0	0	0	0
%)	90%	0	0	0	0	0	0	0	0	0	0	0	0	0
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0

Table C. 80: UCI predicted red-throated diver mortality for the Morgan Array Area plus 4 km buffer during the non-breeding season (operations phase).

Red	throated	d diver			Mortality level (% of displaced birds at risk of mortality)										
Non-b	reeding														
		1%	2%	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
ent	10%	0	0	0	0	0	0	0	0	0	0	0	0	0	
level	20%	0	0	0	0	0	0	0	0	0	0	0	0	0	
	30%	0	0	0	0	0	0	0	0	0	0	0	0	0	
ent	40%	0	0	0	0	0	0	0	0	0	0	0	0	0	
	50%	0	0	0	0	0	0	0	0	0	0	0	0	0	
lace k of	60%	0	0	0	0	0	0	0	0	0	0	0	0	0	
ispla risk	70%	0	0	0	0	0	0	0	0	0	0	0	0	0	
<i>a</i>	80%	0	0	0	0	0	0	0	0	0	0	0	0	0	
%)	90%	0	0	0	0	0	0	0	0	0	0	0	0	0	
	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	