Partners in UK offshore wind

MORGAN OFFSHORE WIND PROJECT: GENERATION ASSETS

Annex 4.8 to Response to Hearing Action Point 15: Great Orme Head SSSI Clarification Note

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Image of an offshore wind farm

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Glossary

Term	Meaning
Applicant	Morgan Offshore Wind Limited.
Apportioning	A method that assigns unknown entities to known entities based on weighing factors. In this report, it refers to birds of unknown origin within the study area that are assigned to colonies based on distance to colony and colony size.
Biologically Defined Minimum Population Scale (BDMPS)	Minimum regional population size of a particular bird species at a certain time of year, defined for a range of species in Furness (2015).
Collision risk	Risk of a bird lethally colliding with a wind turbine within a wind farm.
Collision risk model	A model that calculates collision risk for a species within a wind farm based on a set of wind farm and bird species specific parameters. Collision risk models can be run deterministically or stochastically.
Development Consent Order (DCO)	An order made under the Planning Act 2008 granting development consent for a Nationally Significant Infrastructure Project (NSIP).
Morgan Array Area	The area within which the wind turbines, foundations, inter-array cables, interconnector cables, scour protection, cable protection and offshore substation platforms (OSPs) forming part of the Morgan Offshore Wind Project: Generation Assets will be located.
Morgan Offshore Wind Project: Generation Assets	This is the name given to the Morgan Generation Assets project as a whole (includes all infrastructure and activities associated with the project construction, operations and maintenance, and decommissioning).
Parameter	Parameters are the input elements of a model that together affect the output of a model. In collision risk models, examples of parameters are the number of wind turbines and the length of the bird.
The Planning Inspectorate	The agency responsible for operating the planning process for applications for development consent under the Planning Act 2008.

Acronyms

Acronym	Description
BDMPS	Biologically Defined Minimum Population Scale
CRM	Collision Risk Modelling
EIA	Environmental Impact Assessment
HRA	Habitats Regulations Assessment
NRW	Natural Resources Wales
SNCB	Statutory Nature Conservation Body
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TCE	The Crown Estate

Units

Unit	Description
%	Percentage

1 GREAT ORME SSSI CLARIFICATION NOTE

1.1 Introduction

1.1.1.1 This note has been developed on behalf of Morgan Offshore Wind Limited, hereafter referred to as 'the Applicant', in response to a Relevant Representation comment from Natural Resources Wales (NRW) (RR-027). The comment addressed in this note (as stipulated within the Applicant's response RR-027.14 to the Relevant Representations in PD_3 Applicant's Response to Relevant Representations (PD1-017)) is number 8, which queries the following points for all three species that are features of the Pen y Gogarth / Great Ormes Head SSSI (kittiwake, guillemot and razorbill):

1. *"How the apportionment values of <0.01 for the site in the non-breeding seasons (presented in Tables 5.41, 5.44 and 5.52 of Volume 2 Chapter 5, APP-023) have been calculated, as no information is provided on non-breeding season apportionment to non-SPA colonies in Volume 4, Annex 5.5 'Apportioning Technical Report' [APP-057]*
2. *Whether the SSSI population numbers of individuals given in Tables 5.41, 5.44 and 5.52 of Volume 2, Chapter 5 [APP-023] are the number of breeding adults or the number of birds of all ages (adults and immatures). We suggest that these are based on the number of adults*
3. *What mortality rates have been used for the calculations of baseline mortality and the proportions of baseline mortality that the predicted impacts equate to. We suggest these should use the adult mortality rates".*

1.1.1.2 In addition, NRW also raised further points that are relevant to the content of this note including:

- Comment 9: "*Additionally, the apportioned impacts across the SNCB advised range of % displacement (30-70%) and % mortality (1-10%) rates should also be provided in addition to the Applicant's preferred rates of 50% displacement and 1% mortality."*
- Comment 21: "We do not consider the use of the kittiwake adult proportion that was calculated for Hornsea 2 to be appropriate to apply to Morgan…".

1.1.1.3 This report either provides clarifications to these points or updated calculations and assessments where such information is required.

1.2 Apportioning

1.2.1 Breeding Season

1.2.1.1 The apportioning values for the species that are features of the Pen y Gogarth / Great Ormes Head SSSI are presented in the species-specific appendices of Volume 4, Annex 5.5 Offshore ornithology apportioning technical report (APP-057). These are detailed in Table 1.2 alongside the population used for each species.

Table 1.1: Breeding season apportioning values used for features of the Pen y Gogarth /Great Ormes Head SSSI.

Feature	Population	Apportioning value
Kittiwake	1,304 breeding individuals	0.07
Guillemot	622 individuals	0.02
Razorbill	196 individuals	0.04

1.2.2 Non-breeding Seasons

1.2.2.1 The calculation of apportioning values for non-breeding seasons (post-breeding, non-breeding and pre-breeding) has followed SNCB guidance (Natural England, 2021). For apportionment, the contribution of adult birds from an individual colony, as derived from the Seabird Monitoring Programme (SMP) Database (JNCC *et al.*, 2024), to the relevant Biologically Defined Minimum Population Scale (BDMPS) population for each species/season combination is divided by the total BDMPS population.

1.2.2.2 The individual colony populations that are incorporated into the apportioning calculations for non-breeding seasons are usually sourced from Furness (2015). Furness (2015) presents colony-specific data for SPA populations but not for smaller populations such as those found at the Pen y Gogarth / Great Ormes Head SSSI. In accordance with SNCB advice, the population used for the Pen y Gogarth / Great Ormes Head SSSI was therefore taken from the Seabird 2000 seabird census the data from which are comparable in timeframe, survey methods and units used to the data used in Furness (2015). Furness (2015) also provides the proportion of birds from a colony expected to be present in a given BDMPS area during the season in question. As the Pen y Gogarth / Great Ormes Head SSSI is not explicitly included in Furness (2015) the proportions applied have been taken from the closest colony that is included in Furness (2015).

1.2.2.3 The populations used for each feature at the Pen y Gogarth / Great Ormes Head SSSI, the proportion of birds in the given BDMPS area and the resulting seasonal apportioning values are presented in Table 1.3. Note that the populations for guillemot and razorbill are corrected from individuals (as provided in the SMP database) to breeding pairs using a correction factor of 1.34 from Harris *et al*. (2015), as it is currently the most up-to-date and widely used in the industry. The kittiwake population is multiplied by two to correct breeding pairs (as provided in the SMP database) to breeding adults.

Table 1.2: Populations, proportions and apportioning values for each feature of the Pen y Gogarth / Great Ormes Head SSSI.

Feature	Season	Population from the SMP database	Population (breeding adults)	Proportion of adults in UK western waters in non-breeding season	BDMPS population (UK western waters)	Apportioning value
Kittiwake	Post-breeding	652 breeding pairs	1,304	0.6	911,586	0.001
	Pre-breeding			0.6	691,526	0.001
Guillemot	Non-breeding	622 individuals	833	1	1,139,220	0.001

Feature	Season	Population from the SMP database	Population (breeding adults)	Proportion of adults in UK western waters in non-breeding season	BDMPS population (UK western waters)	Apportioning value
Razorbill	Post-breeding	196 individuals	263	0.98	606,914	<0.001
	Non-breeding			0.4	341,422	<0.001
	Pre-breeding			0.98	606,914	<0.001

1.3 Updated assessment

1.3.1 Baseline mortality rates

1.3.1.1 As identified by NRW, the assessments presented in Volume 2, Chapter 5: Offshore ornithology (APP-023) used an average baseline mortality rate that represents the average baseline mortality rate across all age classes for each species. The populations for the Pen y Gogarth / Great Ormes Head SSSI against which impacts have been assessed comprises breeding adults only and therefore the assessment needs to use a baseline mortality rate for adult birds only. The Applicant is therefore following the approach recommended in NRW's Relevant Representation (RR-027), and this clarification note therefore provides an updated calculation using a baseline mortality rate for adult birds only. The baseline mortality rates used for each species have been taken from Horswill and Robinson (2015) and are consistent with those used to inform the calculation of average baseline mortality rates in Volume 2, Chapter 5: Offshore ornithology (APP-023).

1.3.1.2 The assessments presented in Volume 2, Chapter 5: Offshore ornithology (APP-023) for the Pen y Gogarth / Great Ormes Head SSSI are repeated in the following sections with adult only baseline mortality rates now applied as recommended by NRW.

1.3.2 Populations

1.3.2.1 The populations used for assessment are those incorporated into the Seabirds Count census. This approach is normally applied when considering the impact of a project on individual breeding colonies and aligns with the approach taken in HRA Stage 2 information to support an appropriate assessment Part Three: Special Protection Areas and Ramsar Site assessments (APP-098). The populations used represent breeding adults only and have been corrected using standard correction factors for each species as described in paragraph 1.2.3.3.

1.3.3 Apportioning

1.3.3.1 NRW, in their Relevant Representation (RR-027) indicated that they did not support the use of the apportioning approach applied for kittiwake in the breeding season. The Applicant can however, confirm that this approach was not applied for the kittiwake feature of the Pen y Gogarth / Great Ormes Head SSSI in Volume 2, Chapter 5: Offshore ornithology (APP-023). It was assumed that all birds present at the Morgan Generation Assets from the Pen y Gogarth / Great Ormes Head SSSI during the breeding season were breeding adult birds with no immature birds present. This is

therefore precautionary and represents an over-estimate of the likely impact as it is well documented that immature kittiwake visit natal waters during the breeding season (e.g. Coulson, 2011) and will therefore be present at the Morgan Generation Assets.

1.3.4 Disturbance and displacement from airborne noise, underwater sound, and presence of vessels and infrastructure

1.3.4.1 The assessments provided in Volume 2, Chapter 5: Offshore ornithology (APP-023) applied the Applicant's evidence-based displacement and mortality rates only. The assessment of disturbance and displacement from airborne noise, underwater sound, and presence of vessels and infrastructure provided in the following sections also considers the displacement and mortality rates applied by the Secretary of State as part of their assessments for guillemot and razorbill in relation to impacts associated with the Hornsea Four and Sheringham Shoal and Dudgeon Extensions projects. Specifically, a displacement rate of 70% and mortality rate of 2% have been applied for both species of relevance with the Secretary of State's decisions on those projects representing the precedent for the upper range of displacement and mortality rates for this type of assessment.

Operations and maintenance phase

Applicant's assessment using preferred rates of 50% displacement and 1% mortality

1.3.4.2 The predicted annual and seasonal impacts associated with the Morgan Generation Assets on the guillemot population of the Pen y Gogarth / Great Ormes Head SSSI represents less than a 1% increase in the baseline mortality of the SSSI population (Table 1.3).

1.3.4.3 The impact is predicted to be of local spatial extent, medium-term duration, continuous and reversible. It is predicted that the impact will affect the receptor directly. The magnitude is, therefore, considered to be negligible for the SSSI population. This conclusion is consistent with the conclusion reached in Volume 2, Chapter 5 Offshore ornithology (APP-023).

Table 1.3: Calculation of displacement impacts for guillemot at the Pen y Gogarth / Great Ormes Head SSSI when using displacement and mortality rates proposed by the Applicant.

Season	Displacement impact (no. of birds)	Apportioning value	Apportioned impact	SSSI adult population (no. of individuals) (year)	Adult baseline mortality	Increase in baseline mortality (%)
Breeding	20	0.02	0.49	3,508 (2017)	214.0	0.23
Non-breeding	19	<0.01	0.01			0.01
Annual	-	-	0.50			0.23

1.3.4.4 The predicted annual and seasonal impacts associated with the Morgan Generation Assets on the razorbill population of the Pen y Gogarth / Great Ormes Head SSSI represents less than a 1% increase in the baseline mortality of the SSSI population (Table 1.4).

1.3.4.5 The impact is predicted to be of local spatial extent, medium-term duration, continuous and reversible. It is predicted that the impact will affect the receptor directly. The magnitude is, therefore, considered to be negligible for the SSSI population. This conclusion is consistent with the conclusion reached in Volume 2, Chapter 5 Offshore ornithology (APP-023).

Table 1.4: Calculation of displacement impacts for razorbill at the Pen y Gogarth / Great Ormes Head SSSI when using displacement and mortality rates proposed by the Applicant.

Season	Displacement impact (no. of birds)	Apportioning value	Apportioned impact	SSSI adult population (no. of individuals) (yearError! Bookmark not defined.)	Adult baseline mortality	Increase in baseline mortality (%)
Breeding	<1	0.04	0.01	192 (2017)	20.1	0.03
Post-breeding	1	<0.01	<0.01			<0.01
Non-breeding	6	<0.01	<0.01			0.01
Pre-breeding	2	<0.01	<0.01			<0.01
Annual	-	-	0.01			0.05

Assessment based on Secretary of State's displacement and mortality rates (70% displacement and 2% mortality)

1.3.4.6 The predicted annual and seasonal impacts associated with the Morgan Generation Assets on the guillemot population of the Pen y Gogarth / Great Ormes Head SSSI represents less than a 1% increase in the baseline mortality of the SSSI population when applying NRW's parameter assumptions.

1.3.4.7 The impact is predicted to be of local spatial extent, medium term duration, continuous and reversible. It is predicted that the impact will affect the receptor directly. The magnitude is, therefore, considered to be negligible for the SSSI population. This conclusion is consistent with the conclusion reached in Volume 2, Chapter 5: Offshore ornithology (APP-023).

Table 1.5: Calculation of displacement impacts for guillemot at the Pen y Gogarth / Great Ormes Head when using displacement and mortality rates used by the Secretary of State.

Season	Displacement impact (no. of birds)	Apportioning value	Apportioned impact	SSSI adult population (no. of individuals) (yearError! Bookmark not defined.)	Adult baseline mortality	Increase in baseline mortality (%)
Breeding	56	0.02	1.37	3,508 (2017)	214.0	0.64
Non-breeding	54	<0.01	0.04			0.02

Season	Displacement impact (no. of birds)	Apportioning value	Apportioned impact	SSSI adult population (no. of individuals) (yearError! Bookmark not defined.)	Adult baseline mortality	Increase in baseline mortality (%)
Annual	-	-	1.41			0.66

1.3.4.8 The predicted annual and seasonal impacts associated with the Morgan Generation Assets on the razorbill population of the Pen y Gogarth / Great Ormes Head SSSI represents less than a 1% increase in the baseline mortality of the SSSI population.

1.3.4.9 The impact is predicted to be of local spatial extent, medium term duration, continuous and reversible. It is predicted that the impact will affect the receptor directly. The magnitude is, therefore, considered to be negligible for the SSSI population. This conclusion is consistent with the conclusion reached in Volume 2, Chapter 5: Offshore ornithology (APP-023).

Table 1.6: Calculation of displacement impacts for razorbill at the Pen y Gogarth / Great Ormes Head SSSI when using displacement and mortality rates used by the Secretary of State.

Season	Displacement impact (no. of birds)	Apportioning value	Apportioned impact	SSSI adult population (no. of individuals) (yearError! Bookmark not defined.)	Adult baseline mortality	Increase in baseline mortality (%)
Breeding	0	0.04	0.02	192 (2017)	20.1	0.09
Post-breeding	4	<0.01	<0.01			0.01
Non-breeding	16	<0.01	0.01			0.03
Pre-breeding	5	<0.01	<0.01			0.01
Annual	-	-	0.03			0.13

1.3.5 Collision risk

Operations and maintenance phase

1.3.5.1 Table 1.7 provides the range of collision risk estimates calculated using the parameters advocated by both the Applicant and NRW. The only other difference when compared to the assessments presented in Volume 2, Chapter 5: Offshore ornithology (APP-023) is in relation to the baseline mortality rate with Table 1.7 using the rate calculated following NRW's advice in their Relevant Representation (RR-027) (see section 1.3.1).

1.3.5.2 The predicted annual and seasonal impacts associated with the Morgan Generation Assets on the kittiwake population of the Pen y Gogarth / Great Ormes Head SSSI represents less than a 1% increase in the baseline mortality of the SSSI population.

1.3.5.3 The impact is predicted to be of local spatial extent, medium-term duration, continuous and reversible. It is predicted that the impact will affect the receptor directly. The magnitude is, therefore, considered to be negligible for the SSSI population. This conclusion is consistent with the conclusion reached in Volume 2, Chapter 5 Offshore ornithology (APP-023).

Table 1.7: Calculation of collision risk impacts for kittiwake at the Pen y Gogarth / Great Ormes Head SSSI.

Season	No. of collisions	Apportioning value	Apportioned impact	SSSI adult population (no. of individuals) (yearError! Bookmark not defined.)	Adult baseline mortality	Increase in baseline mortality (%)
Pre-breeding	3 to 14	<0.01	<0.01 to 0.02	1,330 (2017)	194.2	<0.01 to 0.01
Breeding	2 to 8	0.07	0.13 to 0.55			0.07 to 0.28
Post-breeding	4 to 18	<0.01	<0.01 to 0.02			<0.01 to 0.01
Annual	9 to 40	-	0.14 to 0.59			0.07 to 0.30

1.4 Conclusion

1.4.1.1 This report has described the assessment process for the Pen y Gogarth / Great Ormes Head SSSI as applied in Volume 2, Chapter 5 Offshore ornithology (APP-023) responding to specific queries raised by NRW in their Relevant Representation (RR-027).

In summary, the methodologies used for apportioning follow SNCB guidance (Natural England, 2021) and are consistent with methods normally applied to impact assessments of this nature (e.g. Ørsted, 2018; The Crown Estate, 2020; Ørsted, 2021; RWE Renewables UK, 2022). The populations used for assessment are from the Seabirds Count census, representing the most recent counts for each colony and comprise breeding adult birds only. Relevant impact assessment calculations have been performed using an adult only baseline mortality rate in line with NRW's Relevant Representation recommendation. Whilst these indicate a slightly higher impact magnitude than previously calculated, it does not change the assessment conclusions on site integrity previously reached in Volume 2, Chapter 5 Offshore ornithology (APP-023). The impact magnitude for all species therefore remains negligible leading to an impact that is not significant. A summary for each of the comments identified in section 1.1 is provided in Table 1.8.

Table 1.8: Summary of how NRW's Relevant Representation comments have been addressed in this clarification note.

Comment no.	Comment	Summary of response
8 (1)	How the apportionment values of <0.01 for the site in the non-breeding seasons (presented in Tables 5.41, 5.44 and 5.52 of Volume 2 Chapter 5, APP-023) have been calculated, as no information is provided on non-breeding season apportionment to non-SPA colonies in Volume 4, Annex 5.5 'Apportioning Technical Report' [APP-057].	The methodology used to calculate the apportioning values in the non-breeding season is provided in section 1.2.2 and follows standard guidance for the calculation of apportioning values in the non-breeding season(s).

Comment no.	Comment	Summary of response
8 (2)	Whether the SSSI population numbers of individuals given in Tables 5.41, 5.44 and 5.52 of Volume 2, Chapter 5 [APP-023] are the number of breeding adults or the number of birds of all ages (adults and immatures). We suggest that these are based on the number of adults.	The populations used for assessment are those incorporated into the Seabirds Count census. This approach is normally applied when considering the impact of a project on individual breeding colonies and aligns with the approach taken in HRA Stage 2 information to support an appropriate assessment Part Three: Special Protection Areas and Ramsar Site assessments (APP-098). The populations used represent breeding adults only and have been corrected using standard correction factors for each species as described in paragraph 1.2.2.3.
8 (3)	What mortality rates have been used for the calculations of baseline mortality and the proportions of baseline mortality that the predicted impacts equate to. We suggest these should use the adult mortality rates.	The baseline mortality rates used in Volume 2, Chapter 5 Offshore ornithology (APP-023) represented average baseline mortality rates. These have been updated to adult-only baseline mortality rates in section 1.3.
9	Additionally, the apportioned impacts across the SNCB advised range of % displacement (30-70%) and % mortality (1-10%) rates should also be provided in addition to the Applicant's preferred rates of 50% displacement and 1% mortality.	Section 1.3 provides an assessment incorporating displacement and mortality rates used as part of the Secretary of State's assessments for the Hornsea Four and Sheringham Shoal and Dudgeon Extensions projects (i.e. a 70% displacement rate and 2% mortality rate).
21	We do not consider the use of the kittiwake adult proportion that was calculated for Hornsea 2 to be appropriate to apply to Morgan…"	The breeding season apportioning value used for kittiwake in Volume 2, Chapter 5 Offshore ornithology (APP-023) did not incorporate consideration of immature birds and therefore the impact magnitude calculated assumed all birds were breeding adults. This is discussed in paragraph 1.3.3.1.

1.5 References

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