

National Infrastructure Planning
Temple Quay House
2 The Square
Bristol
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By email: morganoffshorewindproject@planninginspectorate.gov.uk

Date: 31/01/2025

For the attention of: Susan Hunt

Dear Susan,

PROPOSED MORGAN OFFSHORE WINDFARM

PLANNING INSPECTORATE REFERENCE: EN010136

OUR REFERENCE: 20049491

RE: NATURAL RESOURCES WALES' FURTHER DEADLINE 5 SUBMISSION

Thank you for your Rule 8 letter, dated 12 September 2024, requesting Natural Resources Wales' (NRW) comments regarding the above.

In our Deadline 5 submission of 16 January 2025 we provided advice on the OFFSEN Offshore Wind Seabird Assessment Tool (spreadsheet of summary data) dated 23rd December 2024. In that advice we noted that the Applicant provided us with an updated version (with in-combination assessment information) of the spreadsheet on 12th January but we were unable to review this by Deadline 5.

We have since reviewed this updated version, and have met with the Applicant again (on 24 January 2025) and the Applicant has provided us with a further updated version on 27 January. This information has allowed us to move forward significantly with our advice and we believe it may be useful for the Examining Authority (ExA) to have this now rather than wait until the next examination deadline.

Please find below NRW's further offshore ornithology advice based on the additional submissions produced by the Applicant and via email on 27 January 2025.

The documents that we have reviewed include:

- Morgan Gen_Ornithological assessment clarification data Welsh sites_Higher DR.
- Morgan Gen_Ornithological assessment clarification data Welsh sites_Lower DR.
- REP5-033, SD_5_16.2 – Annex 16.2 to Ornithological assessment clarification data Welsh sites.

We have provided advice specifically on marine ornithology. Where we have not provided explicit advice, it can be taken that we have no further comments to make at this stage and that the ExA should refer to our previous submissions on those matters.

These representations should be read in conjunction with advice previously provided into the examination.

NRW continues to engage extensively and proactively with the Applicant throughout the examination in order to resolve outstanding matters.

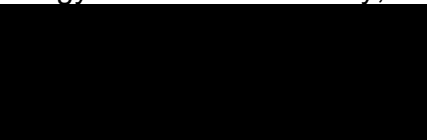
The comments provided in this submission, comprise NRW's response as a Statutory Party under the Planning Act 2008 and Infrastructure Planning (Interested Parties) Regulations 2015 and as an 'Interested Party' under S102(1) of the Planning Act 2008.

Our comments are made without prejudice to any further comments we may wish to make in relation to this application and examination whether in relation to the Environmental Statement (ES) and associated documents, provisions of the draft Development Consent Order ('DCO') and its Requirements, or other evidence and documents provided by bpENBW ('the Applicant'), the ExA or other Interested Parties.

Should further clarity be required, we will be pleased to answer these further through the Examining Authority questions and / or a Rule 17 request(s).

Please do not hesitate to contact Paige Minahan and/or Adam Cooper (marine.advice@cyfoethnaturiolcymru.gov.uk) should you require further advice or information regarding these representations.

Yn gywir / Yours sincerely,



Andrea Winterton
Marine Services Manager
Natural Resources Wales

1 Marine Ornithology

1.1 Comments on Morgan Generation Assets Annex 16.2 to Ornithological Assessment Clarification Data Welsh Sites [REP5-033]

1. After reviewing the information provided by the Applicant in the above annex, NRW can now conclude no adverse effect on site integrity (AEoSI) for the Morgan Generation Assets Project alone and in-combination impacts to all relevant Welsh Special Protection Areas (SPAs), with the exception of impacts to Grassholm SPA gannet.
2. Considering Grassholm SPA, NRW have utilised the information provided by the Applicant in an updated version of the Welsh SPA Summary data, received via email on 27 January 2025 that corrected errors identified for this site [REP5-033] and provides further information regarding the in-combination assessment (see section 1.2 below). Following review of the amended spreadsheet, a conclusion of no AEoSI for the project alone and in-combination has been reached for this site and feature. NRW of the impression the Applicant intends to submit this spreadsheet into the examination either prior or at Deadline 6 of the examination. NRW reserve the right to amend this advice if the information submitted by the Applicant differs to the spreadsheet received by NRW on 27 January 2025.
3. NRW's conclusions regarding levels of impacts to the relevant Welsh SPAs are summarised in Table 1 below, with further detail on how these conclusions have been reached in Appendix.

Table 1. Summary of conclusions for assessments of the Morgan Generation Assets Project alone and in-combination for the Habitats Regulations Assessment (HRA) scale with other plans and projects for the relevant sites and species combinations.

HRA species and site	Morgan Generation Assets Project Alone	Morgan Generation Assets in-combination with other plans & projects
Skomer, Skokholm & seas off Pembrokeshire (SSSP) SPA, Manx shearwater: displacement	No AEoSI	No AEoSI
SSSP SPA, Lesser black-backed gull: collision	No AEoSI	No AEoSI
SSSP SPA, seabird assemblage: collision and displacement	No AEoSI	No AEoSI
Grassholm SPA, gannet: collision	No AEoSI*	No AEoSI*
Grassholm SPA, gannet: displacement	No AEoSI*	No AEoSI*
Grassholm SPA, gannet: collision + displacement	No AEoSI*	No AEoSI*

Aberdaron Coast & Bardsey Island SPA, Manx shearwater: displacement	No AEO SI	No AEO SI
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*Based on information provided to NRW by the Applicant on 27 January 2025 in an updated version of the summary data spreadsheet for Welsh SPAs. Please note, this advice is subject to change should the information in this differ to that in the updated version the Applicant submits into the examination.

1.2 Comments on Grassholm SPA Gannet In-Combination, following review of the Applicant’s amended spreadsheet (received 27/01/2025)

4. Following the Applicant’s Deadline 5 Welsh SPA Summary Data Spreadsheet [REP5-033], errors were identified by NRW with the preferred minimum and maximum % displacement and % mortality rates used in the gannet assessments. In REP5-033, the Applicant used a lower value of 30% displacement and 1% mortality and an upper value of 70% displacement and 10% mortality, which does not follow the NRW advised gannet ranges (60-80% displacement and 1-10% mortality). As a result, incorrect project alone and in-combination displacement impacts were presented in REP5-033 for Grassholm SPA gannets. Following a meeting between the Applicant and NRW (24/01/2025) to discuss these errors the Applicant has now corrected and provided an updated version of the spreadsheet (27/01/2025) with the intention of submitting into examination.

5. During the meeting, NRW raised queries regarding the approaches taken in the in-combination assessments [REP5-033]. The Applicant has therefore amended the spreadsheet and provided further information on the Grassholm SPA gannet in-combination in terms of an assessment summary, which includes:
 - Information on the approaches used in calculating the apportioned impacts from each project feeding into the in-combination assessment.
 - Information on whether macro avoidance has been considered in collision predictions feeding into the in-combination assessment.
 - Population viability analysis (PVA) outputs under baseline conditions (i.e. with no additional impacts from the offshore wind farms).

6. NRW have therefore utilised this information in our advice regarding the gannet feature of the Grassholm SPA. Please see Appendix for details.

2 Appendix: NRW detailed comments/conclusions on Morgan Generation Assets Project HRA scale alone and in-combination impacts based on information presented in REP5-033.

7. The above document is a technical document submitted into the Morgan Generation Assets Project examination to provide scientific justification for NRW's advice provided on the significant of the potential impacts for HRA scale issues from the project alone and in-combination with other plans and projects, as summarised within each section below. NRW's advice is based on the best available evidence at the time of writing and is subject to change in the future, should further evidence be presented.

2.1 Skomer, Stokholm & Seas Off Pembrokeshire (SSSP) SPA: Manx Shearwater

2.1.1 Impacts from the project alone

8. Based on the summary spreadsheet data [REP5-033] (Tabs 17. 'lower proj. alone' and 'upper proj. alone'), the project alone displacement total calculated by the Applicant is 4-84 adult Manx shearwaters (rounded to whole birds) from the SSSP SPA per annum (based on 30-70% displacement and 1-10% mortality). This equates to 0.00-0.07% of baseline mortality for the SSSP SPA Manx shearwater colony. This level of impact is well below 1% of baseline mortality for the SSSP SPA Manx shearwater colony and can be considered undetectable against background mortality. Hence there will remain a thriving Manx shearwater population as the site and the Conservation Objective target population of 300,000 adults (150,000 pairs)¹ would be achieved. On the basis of these figures, NRW advice remains [Section 1.4 of REP5-038a] that an AEOsI can be ruled out for predicted displacement impacts on the Manx shearwater feature of the SSSP SPA from the project alone.

2.1.2 Impacts from the project in-combination with other plans and projects

9. Based on REP5-033 (Tab 19), the in-combination displacement total calculated by the Applicant is up to 1,932 adult Manx shearwaters (rounded to whole birds) from the SSSP SPA per annum (based on a worst-case scenario of 70% displacement and 10% mortality). This equates to up to 1.6% baseline mortality for the SSSP SPA Manx shearwater colony. This is significant at the upper end of the range and therefore requires further consideration. Therefore, it is welcomed that the Applicant has undertaken an SSSP SPA Manx shearwater in-combination displacement PVA assessment in REP5-033.
10. Manx shearwater numbers at the SSSP SPA have increased by 201% from Seabird 2000 to the most recent Seabird Count Census (Burnell et al. 2023): Seabirds 2000 Census count of 151,000 Apparently Occupied Sites (AOS) (302,000 adults) undertaken in 1998, Seabirds Count Census count of 455,156 AOS (910312 adults) undertaken in 2018. Over this time many of the offshore wind farms (OWFs) included in the in-combination

assessments have been constructed and become operational. Hence as the colony population has continued to increase, it would suggest they have not been adversely impacted by the operation of the Offshore Wind Farms (OWFs). Additionally, the PVA suggests that for an impact of up to 1,932 Manx shearwaters per annum (predicted impact for worst case scenario of 70% displacement and 10% mortality), the Manx shearwater population of the SPA will be able to continue growing beyond its current level, even with the additional impact from the OWFs, as indicated by a growth rate above 1, and the Counterfactual of Growth Rate is 0.998 (see Tab 20 of REP5-033). This suggests that there will be only a small impact on the growth rate in comparison to baseline conditions. Hence there will remain a thriving Manx shearwater population at the site and the Conservation Objective target population of 300,000 adults (150,000 pairs) would be achieved. On the basis of these figures, we can agree that an AEOsI can be ruled out beyond reasonable scientific doubt for predicted displacement impacts on the Manx shearwater feature from the project in-combination with other plans and projects for the SSSP SPA.

2.2 Skomer, Stokholm & Seas Off Pembrokeshire (SSSP) SPA: European Storm Petrel

11. NRW agrees with Table 1.70 of the HRA Stage 1 Screening Report [APP-099] that there is no likely significant effect (LSE) to European storm petrel.

2.3 Skomer, Stokholm & Seas Off Pembrokeshire (SSSP) SPA: Puffin

12. Whilst NRW considers that puffin should have been included in Table 1.70 of the HRA Stage 1 Screening Report [APP-099] as it is a qualifying feature of the SSSP SPA, based on the low abundance of the species recorded in the Morgan Generation Assets Project baseline surveys, NRW considers there is no LSE to puffin.

2.4 Skomer, Stokholm & Seas Off Pembrokeshire (SSSP) SPA: Lesser Black-Backed Gull (LBBG)

13. Based on REP5-033 (Tabs 19. 'lower proj. alone' and 'upper proj. alone'), the project alone collision total calculated by the Applicant is 0.1 adult LBBGs from the SSSP SPA per annum. This predicted collision impact equates to 0.00% of baseline mortality of the SPA LBBG colony. This level of impact is well below 1% of baseline mortality for the SSSP SPA LBBG colony and can be considered undetectable against background mortality. Hence the site and Conservation Objective target population of 40,600 adults (20,300 pairs) would be achieved. On the basis of these figures, NRW advice remains (Section 1.4 REP5-038a), that an AEOsI can be ruled out for predicted collision impacts on the LBBG feature of the SSSP SPA from the project alone.
14. NRW also consider that AEOsI from the project in-combination with other plans and projects can be ruled out for this feature of the SPA on the basis that mortalities due to the project alone constitute less than a 0.05% increase in baseline mortality.

2.5 Skomer, Stokholm & Seas Off Pembrokeshire (SSSP) SPA: Seabird Assemblage

2.5.1 Kittiwake (named component of the assemblage feature)

15. NRW continues to not recommend that displacement is assessed for kittiwake as the evidence base is considered to be insufficient (as advised during preliminary environmental information report [PEIR] stage, REP1-056 and RR-027). Hence no advice/comment on the in-combination kittiwake displacement or combined collision and displacement assessment has been provided. It is therefore welcomed that in REP5-033 the Applicant has produced an in-combination collision only table.

2.5.2 Kittiwake Project Alone

16. Based on REP5-033 (Tabs 17. 'lower proj. alone' and 'upper proj. alone'), the project alone collision total calculated by the Applicant is 0.1 adult kittiwakes from the SSSP SPA per annum. This predicted collision impact equates to 0.03% of baseline mortality for the SSSP SPA kittiwake colony and can be considered undetectable against background mortality.

2.5.3 Kittiwake In-Combination

17. Based on REP5-033 (Tab 19), the in-combination collision total calculated by the Applicant is 4 adult kittiwakes (rounded to whole birds) from the SSSP SPA per annum. This predicted in-combination collision impacts equates to 0.8% of baseline mortality of the SPA kittiwake colony based on the 2023 count as used by the Applicant. This level of impact is below 1% of baseline mortality for the SSSP SPA kittiwake colony and can be considered undetectable against background mortality. However, as kittiwake is not considered a qualifying feature of the SSSP SPA in its own right, it is a named component of the seabird assemblage feature. This should be considered in the wider context of the assemblage feature and consideration of the assemblage feature Conservation Objectives. Therefore, see section 2.5.8 (seabird assemblage (collision and displacement)) below for the overall conclusion of significance of effect on this qualifying feature.

2.5.4 Guillemot Project Alone

18. Based on REP5-033 (Tab 17. 'lower proj. alone' and 'upper proj. alone'), the project alone displacement total calculated by the Applicant is 0.3-7 adult guillemots (rounded to whole birds) from the SSSP SPA per annum (based on 30-70% displacement and 1-10% mortality). This equates to 0.01-0.26% of baseline mortality for the SSSP SPA guillemot colony. This level of impact is below 1% of baseline mortality for the SSSP SPA guillemot colony and can be considered undetectable against background mortality.

2.5.5 Guillemot In-Combination

19. Based on REP5-033 (Tab 19), the in-combination displacement total calculated by the Applicant is up to 740 adult guillemots (rounded to whole

birds) from the SSSP SPA per annum (based on a worst-case scenario of 70% displacement and 10% mortality). This equates to up to 27.9% of baseline mortality for the SSSP SPA guillemot colony. This is significant and requires further consideration and therefore welcome the Applicant has undertaken an SSSP SPA guillemot in-combination displacement PVA assessment in REP5-033.

20. Whilst for an impact of up to 740 mortalities per annum (predicted impact for worst-case scenario of 70% displacement and 10% mortality), the PVA suggests is declining population after 35 years of operation, as indicated by a growth rate below one, the Counterfactual of Growth Rate is 0.981, with the other scenario modelled by the Applicant (30% displacement rate and 1% mortality rate) showing a much lower level of impact (Tab 20 of REP5-033). This suggests that there will be a small impact on the growth rate in comparison to baseline conditions. Additionally, the count data from seabird 2000 through to counts in 2022 shows an increase from 14,848 individual guillemots in 2000 to 37,305 individual guillemots in 2022. Over this time many of the OWFs included in the in-combination assessments have been constructed and become operational. Therefore, as the colony population has continued to increase, it would suggest they have not been adversely impacted by the operation of the OWFs.

21. As guillemot is not a qualifying feature of the SSSP SPA in its own right, it is a name component of the seabird assemblage feature, this should be considered in the wider context of the assemblage feature and consideration of the assemblage feature Conservation Objectives. Therefore, see section 2.5.8 below for the overall conclusion of significance of effect on this qualifying feature.

2.5.6 Razorbill Alone

22. Based on REP5-033 (Tabs 17. 'lower proj.alone' and 'upper proj. alone', the project alone displacement total calculated by the Applicant is 0.1-2 adult razorbills (rounded to whole birds) from the SSSP SPA per annum (based on 30-70% displacement and 1-10% mortality). This equates to 0.00-0.08% of baseline mortality for the SSSP SPA razorbill colony. This level of impact is below 1% of baseline mortality for the SSSP SPA razorbill colony and can be considered undetectable against background mortality.

2.5.7 Razorbill In-Combination

23. Based on REP5-033 (Tab 19), the in-combination displacement total calculated by the Applicant is up to 36 adult razorbills (rounded to whole birds) from the SSSP SPA per annum (based on a worst-case scenario of 70% displacement and 10% mortality). This equates to up to 1.7% of baseline mortality for the SSSP SPA razorbill colony. This is significant at the upper end of the range and therefore requires further consideration. It is therefore welcomed that the Applicant has undertaken an SSSP SPA razorbill in-combination displacement PVA assessment in REP5-033.

24. The count data from seabird 2000 through to counts in 2022 shows an increase from 5,140 individual razorbills in 2000 to 14,157 individual razorbills in 2022. Over this time many of the OWFs included in the in-combination assessments have been constructed and become operational. Hence as the colony population has continued to increase, it would suggest they have not been adversely impacted by the operation of the OWFs. Additionally, the PVA suggests that for an impact of up to 36 razorbills per annum (predicted impact for worst case scenario of 70% displacement and 10% mortality), the razorbill population of the SPA will be able to continue growing beyond its current level, even with the additional impact from the OWFs, as indicated by a growth rate above 1, and the Counterfactual of Growth Rate is 0.998 (Tab 20 of REP5-033). This suggests that even at the worst-case scenario of 70% displacement and 10% mortality there will be only a small impact on the growth rate in comparison to baseline conditions.
25. As razorbill is not a qualifying feature of the SSSP SPA in its own right, it is a named component of the seabird assemblage feature, this should be considered in the wider context of the assemblage feature and consideration of the assemblage feature Conservation Objectives. Therefore, see section 2.5.8 below for the overall conclusion of significance of effect on this qualifying feature.

2.5.8 Seabird Assemblage (collision and displacement)

26. The seabird assemblage is a qualifying feature of the SSSP SPA in its own right. The Conservation Objective for the seabird assemblage feature states that: *During the breeding season the SPA will regularly support at least 67,000 individual seabirds of the following species, most of which also qualify independently as SPA features:*

- *Puffin*
- *Manx shearwater*
- *European storm petrel*
- *Lesser black-backed gull*
- *Guillemot*
- *Razorbill*
- *Kittiwake*

27. Based on the above, it has been demonstrated that the component species of the assemblage are unlikely to be significantly affected by the impacts from the project alone. Additionally, the growth rates of razorbill, Manx shearwater and kittiwake are unlikely to be significantly affected over the lifetime of the project as a result of in-combination impacts and will continue to be stable or increasing. It is only under the worst-case scenario of the in-combination displacement that the guillemot population is predicted to decline. However, there is an extremely low risk that guillemot would become locally extinct as a result of impacts from the proposed project in-combination with other plans and projects, and the species would still contribute to the assemblage. Based on this NRW consider that the abundance target (67,000 individuals) of the assemblage will be met and

that the diversity of species making up the assemblage is not at risk from the project alone and in-combination collision and displacement impacts from OWFs. As a result the Conservation Objective can be met and NRW therefore advises that an AEO SI of the seabird assemblage feature of the SSSP SPA can be ruled out beyond reasonable scientific doubt for collision and displacement impacts from both the project alone and in-combination impacts.

2.6 Aberdaron Coast & Bardsey Island (AC & BI) SPA: Manx shearwater

2.6.1 Impacts from the Project Alone

28. Based on REP5-033 (Tabs 17 'lower proj. alone' and 'upper proj. alone'), the project alone displacement total calculated by the Applicant is 0.4-9 adult Manx shearwaters (rounded to whole birds) from the AC & BI SPA per annum (based on 30-70% displacement and 1-10% mortality). This equates to 0.01-0/17% of baseline mortality for the AC & BI SPA Manx shearwater colony. This level of impact is well below 1% of baseline mortality for the AC & BI SPA Manx shearwater colony and can be considered undetectable against background mortality. Hence there will remain a thriving Manx shearwater population at the site and the Conservation Objective target population of 20,000 adults (10,000 pairs) would be achieved. Therefore, NRW advice remains (Section 1.4 REP5-038a), that an AEO SI can be ruled out for predicted displacement impacts on the Manx shearwater feature of the AC & BI SPA from the project alone.

2.6.2 Impacts from the project in-combination with other plans and projects

29. Based on REP5-033 (Tab 19), the in-combination displacement total calculated by the Applicant is up to 80 adult Manx shearwaters (rounded to whole birds) from the AC & BI SPA per annum (based on a worst-case scenario of 70% displacement and 10% mortality). This equates to up to 1.5% of baseline mortality for the AC & BI SPA Manx shearwater colony. This is significant at the upper end of the range and therefore requires further consideration. It is therefore welcomed that the Applicant has undertaken an SSSP SPA Manx shearwater in-combination displacement PVA assessment in REP5-033.

30. Manx Shearwater numbers at the AC & BI SPA have increased by 28% from Seabird 2000 to the most recent Seabird Count Census (Burnell et al. 2023): Seabirds 2000 Census count of 16,183 Apparently Occupied Sites (AOS) (32,366) undertaken in 2001, Seabirds Count Census count of 20,675 AOS (41,350 adults) undertaken in 2015. Over this time many OWFs included in the in-combination assessments have been constructed and become operational. Hence, as the colony population has continued to increase, it would suggest they have not been adversely impacted by the operation of the OWFs. Additionally the PVA suggests that for an impact of up to 80 Manx shearwaters per annum (predicted impact for worst-case scenario of 70% displacement and 10% mortality), the Manx shearwater population of the SPA will be able to continue growing beyond its current level, even with the additional impact from the OWFs, as indicated by a growth rate above

1, and the Counterfactual of Growth Rate is 0.999 (Tab 20 of REP5-033). This suggests that even at the worst-case scenario of 70% displacement and 10% mortality there will be a small impact on the growth rate in comparison to baseline conditions. There will therefore remain a thriving Manx shearwater population at the site and the Conservation Objective target population of 20,000 adults (10,000 pairs) would be achieved. Based on these figures, NRW advises that an AEOI can be ruled out beyond reasonable scientific doubt for predicted displacement impacts on the Manx shearwater feature from the Morgan Generation Assets Project in-combination with other plans and projects for the AC & BI SPA.

2.7 Grassholm SPA: Gannet

31. As noted above, the advice below for the project alone and in-combination for this site and feature are based on the amended version of the summary data spreadsheet for Welsh SPAs submitted to NRW by the Applicant on 27 January 2025. The Applicant intends to submit the same spreadsheet into the examination prior or at Deadline 6 of the examination. NRW therefore reserves the right to amend the following advice if the information submitted by the Applicant in the updated version of the spreadsheet regarding Grassholm SPA gannet assessment differs from the information provided.

2.7.1 Impacts from the Project Alone

32. Based on the information provided in the updated spreadsheet, the predicted project alone impacts to Grassholm SPA gannet are:

- Displacement: 0.3-0.37 adult gannets from the Grassholm SPA per annum (based on 60-80% displacement and 1-10% mortality), which equates to 0.01-0.14% of baseline mortality for the SPA colony.
- Collision: 0.3 adult gannets from the Grassholm SPA per annum, which equates to 0.01% of baseline mortality for the colony.
- Collision + displacement: 0.6-4 adult gannets from the Grassholm SPA per annum, which equates to 0.02-0.15% of baseline mortality for the colony.

33. These levels of impact are all below 1% of baseline mortality for the Grassholm SPA gannet colony and can be considered undetectable against background mortality and the Conservation target population of 60,000 adults (30,000 pairs) would be achieved.

34. It is again noted from tracking data (Votier et al. 2010) and utilisation distributions (Wakefield et al. 2013) suggest that gannets have been shown to display spatial segregation between colonies and that it is unlikely that gannets from Grassholm SPA will forage in the Morgan Generation Assets Project area. Therefore, it is likely that the 22.8% breeding season apportionment value calculated by the Applicant for the project and hence the apportioned collision and displacement impacts to the colony in the Applicant's assessment are precautionary.

35. Considering the above, NRW advice remains (Section 1.4 REP5-038a) that an AEoSI can be ruled out for the predicted displacement, collision and collision + displacement impacts on the gannet feature of the Grassholm SPA from the project alone.

2.7.2 Impacts from the project in-combination with other plans and projects

36. Based on the Applicant's updated spreadsheet (received 27/01/2025), for the worst-case scenario of 80% displacement and 10% mortality the predicted in-combination collision plus displacement total is 219 adult gannets (rounded to whole birds) from the SPA per annum, which equates to 8.2% of baseline mortality of the colony (based on the adult 2023 colony count and adult mortality rate of 8.1%, Horswill & Robinson (2015)).

37. From the Applicant's updated spreadsheet, the results from the PVA for this worst-case scenario (80% displacement and 10% mortality plus collisions) suggest that for an impact of 219 adult gannets per annum from the SPA, the population of the SPA will be able to continue growing even with the additional impact from the OWFs, as indicated by a growth rate above 1, and the Counterfactual of Growth Rate is 0.992.

38. As noted by the Applicant in the additional assessment summary provided in the amended spreadsheet, this assessment can be considered overly precautionary for a number of reasons:

- Tracking data (Votier et al. 2010) and utilisation distributions (Wakefield et al. 2013) suggest that gannets have been shown to display spatial segregation between colonies and that it is unlikely that gannets from Grassholm SPA will forage in the Liverpool Bay/north-east Irish sea area (Figures 1 and 2). As noted by the Applicant in the updated spreadsheet, it is likely that the breeding season apportionment values calculated by the Applicant using the generic NatureScot approach for the wind farms located in the Liverpool Bay/north-east Irish sea and in turn the apportioned in-combination collision, displacement and the apportioned in-combination collision, displacement and hence combined collision plus displacement impacts to the colony in the applicant's assessment are overly precautionary. The Applicant notes in the updated spreadsheet that if the apportioning values associated with projects located in the Liverpool Bay/north-east Irish Sea are set to zero during the breeding season, the in-combination impact (using statutory nature conservation body (SNCB) parameters for collision risk modelling, an 80% displacement rate and 10% mortality rate) reduces the in-combination collision plus displacement total to 140.2 adult gannet mortalities from the SPA per annum, which equates to 5.25% of baseline mortality.
- Evidence suggests that gannets show strong macro-avoidance of OFWs (Dierschke et al. 2016; Pavat et al. 2023). Therefore, the assessments where there has been no consideration of macro avoidance should be considered precautionary. The Applicant has confirmed that consideration of macro avoidance has only been applied in their in-combination collision assessment to the Round 4 Irish Sea project predicted impacts (i.e. those for Mona, Morgan

Generation Assets and Morecambe Generation Assets). The Applicant notes in the updated spreadsheet that applying consideration of macro avoidance to the collision predictions for the other OWFs included within the in-combination assessment would reduce the in-combination collision plus displacement total further to a total of 120.3 adult gannet mortalities from the SPA per annum, which equates to 4.51% of baseline mortality.

- Additionally, gannet has a large foraging range (mean-maximum of 516.7km for Grassholm SPA, Woodward et al. 2019) and has a high habitat flexibility (Furness & Wade 2012) suggesting that displaced birds would readily find alternative habitats including foraging areas. Therefore, it is considered unlikely that in-combination displacement mortality rates would be at the top of the range of % mortality considered and may be more likely to be towards the lower end of the range. The Applicant notes in the updated spreadsheet that if a 1% mortality rate together with a worst-case scenario displacement rate of 80% is applied, this would reduced the in-combination collision plus displacement total impact to 19.8 adult gannet mortalities from the SPA per annum, which equates to 0.74% of baseline mortality.

39. Based on the above NRW considers that the in-combination collision plus displacement mortality would be more likely to be below 1% of baseline mortality of the colony (as demonstrated by the Applicant in Tab 21 of the amended spreadsheet). This together with the PVA outputs suggesting the colony can continue to grow, even for the extreme worst-case scenario of in-combination collision plus displacement (i.e. no macro avoidance, overly precautionary breeding season apportionment to the Liverpool Bay/north-east Irish Sea OWFs and 80% displacement and 10% mortality), NRW considers that the Conservation Objective for the SPA population could be met and an AEOSI can be ruled out for in-combination collision, displacement and collision plus displacement.

Fig. 1. Gannet colony foraging ranges. (A) Gannets tracked from colonies around the British Isles forage in largely mutually exclusive areas, despite their potential home ranges overlapping (red, study colonies; yellow, others). Home ranges predicted by the hinterland model (3) form Voronoi polygons, bounded by lines of equidistance between colonies (black lines). (B) Satellite tracks from 184 individuals show that foraging birds direct their movements away from neighboring colonies (colors correspond to different colonies). Data were collected in 2011, except for St Kilda (SK), which were collected in 2010. Gray lines, 200- and 1000-m isobaths; LS, Little Skellig; TB, Bull Rock (mentioned in the text; see table S1 for colony details).

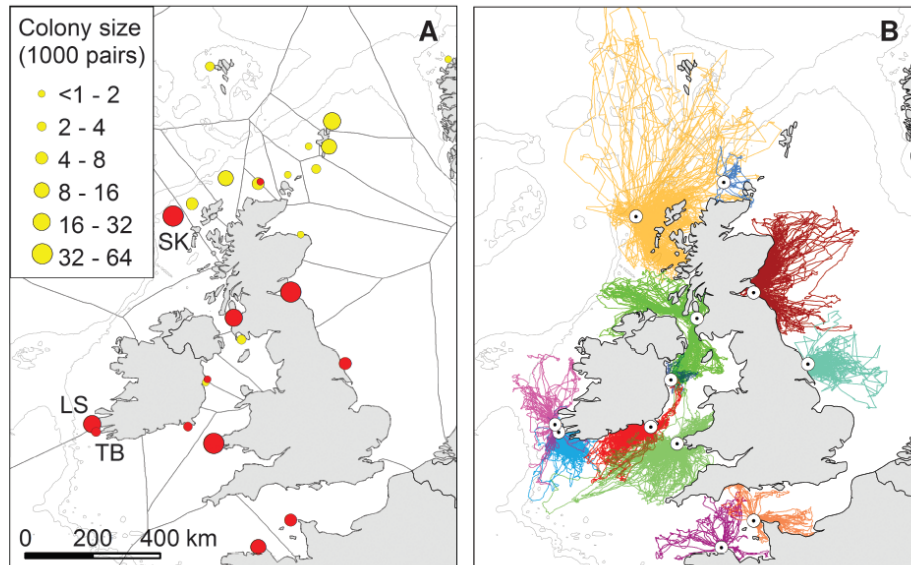


Fig. 2. Density-dependent competition and colony segregation. Density-dependent competition within and between colonies explains large-scale among-colony segregation. (A) Observed colony utilization distributions (colored polygons plus 95, 75, 50, and 25% UD contours) are largely mutually exclusive. This is at odds with the null model (predicted 75 and 95% UDs, solid and dashed lines), which assumes density-dependent competition only within colonies, predicting broad overlap between some UDs. (B) The density-dependent hinterland (DDH) model additionally assumes competition between colonies, providing a better fit to the tracking data.

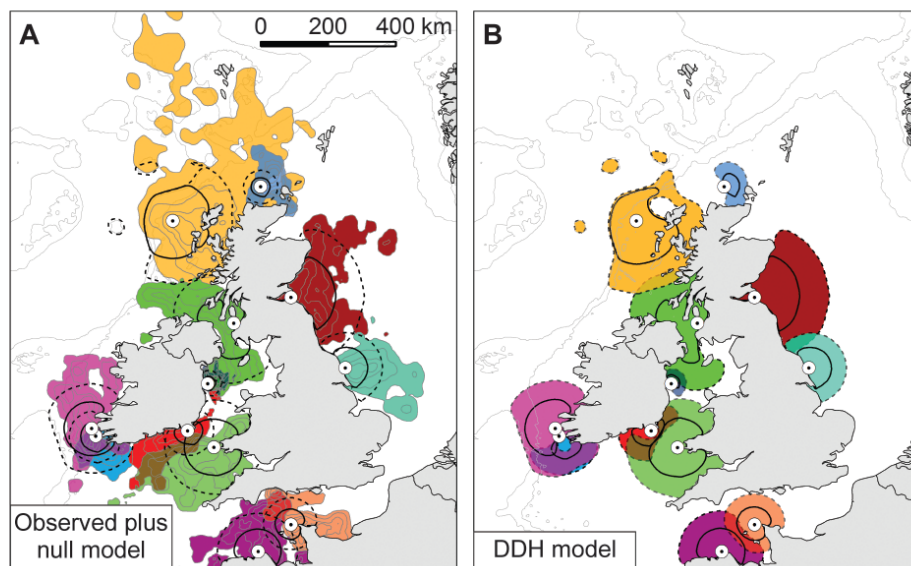


Figure 1: Spatial partitioning between gannet breeding colonies in the breeding season. Grassholm is indicated on the figure (reproduced from Wakefield et al. (2013))

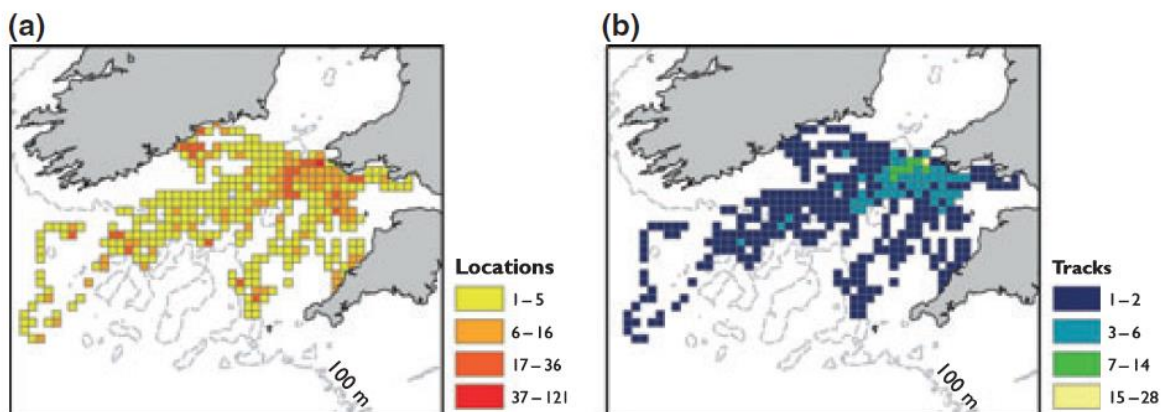


Figure 2: Plots of Grassholm gannet GPS locations: a) gannet GPS fixes 2006; b) gannet foraging tracks 2006 (reproduced from Votier et al. 2010)

3. References

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