



Your Ref: **ABP/319866/24**
Our Ref: **Plan03814/2024**
(Please quote in all related correspondence)

31/10/2024
Marine / Climate Section
An Bord Pleanála
64 Marlborough Street
Dublin 1
D01 V902
Via email to marine@pleanala.ie

Re: Notification under the Planning and Development Act, 2000, as amended.

Proposed Development: North Irish Sea Array Offshore Wind Farm.

A chara

I refer to correspondence received in connection with the above. Outlined below are heritage-related observations/recommendations of the Department co-ordinated by the Development Applications Unit under the stated heading(s).

Archaeology

It is noted that the EIAR submitted as part of the planning application incorporates a desk-based Archaeological Impact Assessment (AIA) which was carried out in relation to the on-shore or terrestrial elements of the proposed development by IAC Ltd (EIAR Chapter 25; date June 2024).

It is noted that the AIA has been informed by the results of Advance Archaeological Geophysical Survey and Advance Archaeological Test Excavation.

Therefore, the Department advises that the following should be included as a condition of any grant of permission. Note these recommended conditions align with Sample Conditions C4 and C5 as set out in *OPR Practice Note PN03: Planning Conditions* (October 2022), with appropriate site-specific additions/adaptations based on the particular characteristics of this development and informed by the findings of the EIAR.

Archaeological Requirements:

1. All mitigation measures in relation to archaeology and cultural heritage as set out in Chapter 25 of the EIAR (IAC Ltd; date June 2024) shall be implemented in full, except as may otherwise be required in order to comply with the conditions of this Order.



2. A Project Archaeologist shall be appointed to oversee and advise on all aspects of the scheme from design, through inception to completion.
 - a. The Project Archaeologist shall liaise with the National Monuments Service (NMS) to agree in advance the appropriate scope for all archaeological works required as part of mitigation for the project (as identified in Chapter 25 of the EIAR or by any subsequent investigations associated with the project).
 - b. The Project Archaeologist shall advise on, and establish appropriate Exclusion Zones around the external-most elements of vulnerable Heritage Assets that are to be preserved *in situ* (as identified in Chapter 25 of the EIAR or by any subsequent investigations associated with the project).
 - i. Exclusion Zones shall be fenced off or appropriately demarcated for the duration of construction works in the vicinity of the monuments. The location and extent of each Exclusion Zone and the appropriate methodology for fencing off or demarcating at each location shall be agreed in advance with the National Monuments Service and the planning authority.
 - ii. No groundworks of any kind (including but not limited to advance geotechnical site investigations) and no machinery, storage of materials or any other activity related to construction will be permitted within Exclusion Zones.
3. The Construction Environment Management Plan (CEMP) shall include the location of any and all archaeological or cultural heritage constraints relevant to the proposed development as set out in Chapter 25 of the EIAR (IAC Ltd; date June 2024) and by any subsequent archaeological investigations associated with the project. The CEMP shall clearly describe all identified likely archaeological impacts, both direct and indirect, and all mitigation measures to be employed to protect the archaeological or cultural heritage environment during all phases of site preparation and construction activity.
4. The planning authority and the National Monuments Service shall be furnished with a final archaeological report describing the results of all archaeological monitoring and any archaeological investigative work/excavation required, following the completion of all archaeological work on site and any necessary post-excavation specialist analysis. All resulting and associated archaeological costs shall be borne by the developer.

Reason: To ensure the continued preservation (either *in situ* or by record) of places, caves, sites, features or other objects of archaeological interest.



Underwater Archaeology

Background to Submission

The following submission relates solely to the application for development of the project seaward of the High Water Mark (HWM). The Minister for Housing, Local Government and Heritage is a person prescribed for the purposes of Chapter III of Part XXI of the Planning and Development Act 2000 (as amended) as set out at Schedule 1 of the Planning and Development (Maritime Development) Regulations 2023.

Government policy is to enable 20 GW of supply from Ireland's Maritime Area by 2040 and 37 GW by 2050 and the following submission is provided to support this ambition by ensuring the Developers meet the State's statutory obligations to protect our underwater cultural heritage, throughout the lifecycle of the offshore wind farm project. In assisting the Developers in this regard, the Department has attended pre-planning consultations with the proponents, and we have reviewed and commented on EIAR scoping consultations, underwater cultural heritage assessment reports, and geophysical survey reports. Telecons were also held between the Developer and their archaeological consultants, with the Department to discuss the UCH aspects of the project 20th July 2021, 15th February 2022 and 04th July 2023 (EIAR Volume 8; Appendix 1.2).

Summary Project Description

North Irish Sea Array Windfarm Limited (Ltd), a joint venture between Statkraft Ireland Ltd and Copenhagen Infrastructure Partners P/S, is proposing to develop the North Irish Sea Array (NISA) Offshore Wind Farm and are applying to An Bord Pleanála under Section 291 of the Planning and Development Act 2000 (as amended) for development permission.

The proposed development is comprised of offshore and onshore infrastructure. The offshore infrastructure of the proposed development is located off the coast of counties Dublin, Meath and Louth. The offshore export cables come ashore and change to onshore cables close to the shoreline at Bremore Bay beach in Bremore, north of Balbriggan, Co. Dublin. The onshore infrastructure of the proposed development is located in County Dublin (Fingal County Council and Dublin City Council administrative areas). This section of the submission concerns the offshore infrastructure to the High Water Mark.

The proposed development was successful in the first Offshore Renewable Energy Support Scheme (ORESS 1) auction in August 2023, which guarantees consistent revenue for the duration of the support scheme (up to 20 years).

An Bord Pleanála agreed to design flexibility including in relation to the number of turbines, their foundation type, the length of offshore cabling, and the dimensions and foundation type for the Offshore Substation Platform (EIAR Sections 2.7, 2.8). The proposed development includes two project options, with detailed design to be undertaken post-consent stage, when just one option will be chosen as the preferred option and subsequently constructed. The final selection of foundation types will depend on detailed design.



The key parameters of Option 1 are:

- 49 Wind Turbine Generators (WTGs)
- One Offshore Substation Platform
- 2 No. offshore export cables, length of 18km
- Inter-array cable length of 111km

The key parameters of Option 2 are:

- 35 Wind Turbine Generators (WTGs)
- One Offshore Substation Platform
- 2 No. offshore export cables, length of 18km
- Inter-array cable length of 91km

Both options include for an underground crossing of the offshore export cables underneath Bremore Beach via a Horizontal Direct Drilling (HDD) technique.

Construction is programmed to take place between 2027-9 and the operational life of the project will be approximately 35 years, at which time it is anticipated decommissioning will occur.

The proposed offshore wind farm array is located 11.3 km from land at its closest point, within which water depths vary from 30 – 63m. The overall NISA Proposed Development site area is 125 km². Within it, the Array Area, where the WTGs (49 No. or 35 No.), the Offshore Platform (OSP) (1 No.), and associated foundations and cables will be installed, occupies an area of 89 km²; WTGs have been designed within a 500m limit of deviation and their siting will be confirmed through further detailed site investigations. The Export Cable Corridor (ECC) occupies 36 km², extending to the HWM at Bremore, north of Balbriggan, where the offshore export cables make landfall. The project has an export capacity of 500 MW.

Statutory Consents for the Project

A Maritime Area Consent (MAC) (Ref: 2022-MAC-005) to occupy a specific part of the maritime area on a non- exclusive basis for the purpose of carrying out a Permitted Maritime Usage was granted

In December 2022. The current planning application is for consent to allow for the development of that area.

Foreshore Licences (FS007358 and FS007031) were also granted for site investigations that facilitated identification of a suitable area for an offshore wind farm. Archaeological conditions were attached to the Foreshore Licences, following recommendations by the Department.



A Dumping at Sea Permit under the Dumping at Sea Act 1996 (as amended) will be applied for from the Environmental Protection Agency (EPA) to facilitate dumping of removed sediments.

Marine Archaeology and Cultural Heritage Chapter EIAR

It is noted that the plans, particulars and EIAR submitted as part of the planning application incorporates Volume 3: Offshore Chapters Chapter 18 Offshore Archaeology and Cultural Heritage (Andrew Bicket – Wessex Archaeology for Arup and Partners Ltd). A description of the project is provided in Chapter 6: Description of Development Offshore.

Chapter 18 Offshore Archaeology and Cultural Heritage examines the impacts from:

- Construction activities associated with the installation of the offshore infrastructure up to the HWM.
- Operational and maintenance activities associated with repair/reburial activities of the cables and replacement activities associated with the WTGs over the lifetime of the Project.

The baseline in Chapter 18 is informed by a desk study, which includes a review of primary and secondary historical sources and synthesises the results of the following assessment reports:

- Volume 4, Chapter 25: Onshore Archaeology, Architectural and Cultural Heritage;
- Volume 9, Appendix 18.1: Palaeogeographical Investigation;
- Volume 9, Appendix 18.2: Wreck Sheets;
- Volume 9, Appendix 18.3: Maritime and Aviation Archaeology Baseline;
- Volume 9, Appendix 18.4: Intertidal Archaeology Baseline; and
- Volume 9, Appendix 18.5: Recorded Losses.

In addition the Chapter is informed by the following surveys: intertidal walkover survey conducted on 22/09/2022 (ADCO 2023); archaeological assessments of geophysical surveys (ADCO 2022; ADCO 2023).

Summary of Marine Archaeology and Cultural Heritage Desk Study

The desk study baseline resource includes offshore archaeology and cultural heritage (known wrecks and obstructions, identified geophysical receptors), the potential for further maritime and aviation archaeological receptors, potential seabed prehistory and intertidal heritage.



The array and offshore export cable areas are generally homogenous and dominated by soft sediments including muddy sand and sandy mud, with increasing proportions of silt and gravel evident further offshore. Archaeological assessment of geophysical data has identified three features of palaeogeographical interest in the array area: two channel complexes and one distinct channel. The array area contains an extensive sedimentary stratigraphy that is identified as 'reflecting the development of a broad post-glacial palaeolandscape' (EIAR 18.3.2.1).

The study area falls within an area of significant historic shipping and navigation activity and a number of significant associated navigational hazards are noted, including the Drogheda Bar and the Cardy Rocks, off Bremore. 527 individual records of vessels and two aircraft have been identified within the broader study area, largely from the Wreck Inventory of Ireland Database (WIID). The archaeological assessment has identified one shipwreck location within the array area: SS Downshire (WA7009), an iron hulled steam collier built in 1905 sailing from Whitehaven to Dublin with a cargo of coal when it was captured by UB-64 and sunk by gunfire. It was identified in the MBBS, MBES and SSS data as a debris field measuring 94 x 24.3m. Within the Export Cable Corridor (ECC) a total of nine possible wreck or debris locations have been identified (EIAR 18.3.2.3). Their age remains unknown. The wreck of the Bell Hill (an 800-ton iron barque built in 1866 and wrecked at Bremore in February 1875, with the loss of 24 lives) lies immediately north of the ECC, close to the landfall. It is noted that there is potential for associated archaeological material to extend into the ECC; this will be included in additional surveys that remain to be completed and 'will be archaeologically assessed'.

Two aircraft losses, with unknown locations, have also been recorded within the study area: a British aircraft lost off Laytown in March 1941 and an aircraft c. 20 miles off Skerries. Located on the northern boundary of the ECC is a memorial to those that lost their lives in the Bell Hill wrecking.

Seven intertidal receptors have been identified, four within the landfall of the ECC: two pieces of probable wreck debris, a stone culvert and a small memorial constructed in 2018.

Archaeological Impacts and Effects of the Project (Design Options 1 and 2)

The impacts and effects from construction of the Project infrastructure (Options 1 and 2) are assessed as (Table 18.15):

- Direct physical disturbance of known and potential offshore archaeology and cultural heritage receptors from direct physical impact on seabed. Cumulatively, this is measured at 6.54 km² (Option 1)/ 5.68 km² (Option 2).
- Indirect physical disturbance of known and potential offshore archaeology and cultural heritage receptors.

Impact and effects on underwater cultural heritage are indicated as arising from:



- Detailed site investigations and pre-construction surveys: geophysical surveys (side scan sonar, sub bottom profiler, multibeam echosounder and magnetometer) and UxO surveys. Remotely Operated Vehicles (ROV) may also be used for further identification of findings from the geophysical surveys.
- Seabed preparation; levelling and dredging of sediments as well as the removal of any boulders and obstructions. Pre lay grapnel runs, boulder clearances (40m wide corridor to be cleared) using plough or grab. Controlled / Mass flow excavations and/or trailing suction hopper dredger. Dredging will be required for option 2 (18 No. locations) at a diameter of 87m and to a depth of 1m into the seabed.
- Landfall Horizontal Direction Drilling for export cable;
- Offshore export cable installation and cable protection installation, 18 km x 2 and burial depth between 1-3m and installed using combination of trenching, dredging, jetting, ploughing, vertical injection, and rock cutting.
- WTG foundation installation and scour protection installation. Foundations will be monopiles or jacket foundations (typically consist of three or four main legs, connected to a lattice structure with each leg secured to the sea floor by a pin-pile). Monopile (12.5m diameter) foundations require 56.25m diameter scour protection of rock placement or concrete mattresses.
- Inter-array cable installation and cable protection installation, 111 km / 91 km and burial depth between 1-3 m. Installed using combination of trenching, dredging, jetting, ploughing, vertical injection, and rock cutting.
- OSP installation on 1 or 2 No. monopile (12.5m diameter) foundations and 78m diameter scour protection of rock placement or concrete mattresses.
- WTG installation.

A range of installation vessels will be used for construction activities. This includes main installation vessels (e.g. jack-up barges or dynamic positioning (DP) vessels with heavy lifting equipment), support vessels, tugs and anchor handlers, cable installation vessels, guard vessels, survey vessels, crew transfer vessels, UXO clearance vessels, and scour/cable protection installation vessels.

Impacts are also noted from operation and decommissioning phases.

Mitigation measures that are not already embedded into the proposed development design are:

- Archaeological review of geophysical and geotechnical datasets
- Archaeological Exclusion Zones (AEZs) (100m)
- Protocols for Archaeological Discoveries (PAD)



With the adoption of the additional mitigation measures, primarily by avoidance of known receptors by

AEZs, the magnitude of significant effects is described as being reduced to negligible. Additionally, a PAD for unexpected archaeological discoveries will be in operation during the phases of the proposed development.

Residual effects, following implementation of AEZs, will be mitigated by archaeological review of geophysical and geotechnical datasets and the implementation of the PAD.

Comments on EIAR

It is noted that there is no commitment in the EIAR for archaeological assessment and prior NMS approval of the proposed extensive post consent confirmatory pre construction marine geophysical surveys and geotechnical campaign. **It is recommended that the phase 2 geotechnical campaign is the subject of archaeological assessment, for the review and approval of the NMS.**

It is noted that there is no mechanism provided for within the EIAR for NMS approval of the final offshore wind farm design arising from the proposed further confirmatory pre construction marine surveys and micro-siting of infrastructure. **It is recommended that the final offshore wind farm design is the subject of archaeological assessment, for the review and approval of the NMS.**

It is noted that there is no provision made for the complete recovery, retention and archaeological assessment and geoarchaeological analysis by a qualified and experienced geoarchaeologist of geotechnical cores. This is required in order to include a sediment deposit model that will determine the importance of the buried seabed sediments and the potential for palaeoenvironmental and submerged prehistoric evidence, and to facilitate the making of recommendations for any further pre-construction surveys or geoarchaeological laboratory investigations. It is also required to facilitate the palaeoenvironmental analysis and scientific dating of suitable core samples. **It is recommended that all future geotechnical cores are archaeological assessed and where anthropogenic/palaeolandscapes material is identified, they are subject to geoarchaeological analysis and scientific dating.**

It is noted that there is commitment in the EIAR for onboard archaeological monitoring of works that impact on the seabed and/or on underwater cultural heritage. **We recommended archaeological onboard monitoring encompass all construction activities which have the potential to impact on the seabed and/or on underwater cultural heritage.**

In light of the above, the Department regards the commitments made in the EIAR regarding the mitigation of impacts and effects on underwater cultural heritage deficient in ensuring the Developers can meet the State's statutory obligations to protect our underwater cultural heritage, throughout the lifecycle of the offshore wind farm project. Accordingly, and to



ensure there is consistency in the curation of underwater cultural heritage by all offshore wind farm developers, the following recommendations are being submitted to An Bord Pleanála.

Underwater Archaeological Recommendations:

The Department of Housing recommends the following CONDITIONS be attached to any approval of the proposed development in addition to those set out above.

5. All recommendations and mitigation measures in relation to marine archaeology as set out in Volume 3: Offshore Chapters Chapter 18 Offshore Archaeology and Cultural Heritage (Arup and Partners Ltd) shall be implemented in full, except as may otherwise be required in order to comply with the conditions of this Order. Compliance with this condition shall require a formal statement in writing from the National Monuments Service to the Marine Area Regulatory Authority/An Bord Pleanála that all mitigation measures have been implemented and approved.
6. A Project Archaeologist shall be appointed to oversee and advise on all aspects of the Project, including detailed design, construction activities and maintenance.
7. An Underwater Archaeological Impact Assessment (UAIA) report shall be forwarded by the Developer to the National Monuments Service of the Department of Housing, Local Government and Heritage for review and approval prior to all geotechnical investigation works taking place. The UAIA shall augment previous archaeological assessments and shall include the following:
 - a. Results of geophysical survey data sets assessment and archaeological interpretation by a suitably qualified and experienced maritime archaeologist, to ensure that any proposed geotechnical works do not negatively impact on locations where there is known or potential underwater cultural heritage, including historic wrecks, archaeological objects, submerged palaeolandscapes, sites and features, and to ensure no samples or cores are taken from an area where a wreck site is located. The archaeologist shall also be suitably experienced, with a track record in dealing with and the interpretation of marine geophysical data for archaeological purposes, including ensuring it is of sufficient specification for the identification of underwater cultural heritage.
 - b. The geophysical surveys shall be licenced under the National Monuments Acts 1930-2014. A Dive Survey Licence (Section 3 1987 National Monuments Act) and Detection Device consent (Section 2 1987 National Monuments Act) shall be



required. Licence applications, accompanied by Method Statements, shall be sent for approval to the National Monuments Service of the Department of Housing, Local Government and Heritage. Any dive surveys required in connection with proposed geophysical surveys or other works shall also be licenced (Section 3 1987 National Monuments Act). Any dive survey shall be accompanied by a handheld metal detection survey which shall also be licenced (Section 2 1987 National Monuments Act). All archaeological diving shall comply with the Health and Safety Authority's Safety, Health and Welfare at Work (Diving) Regulations 2018/2019.

- c. Once all geophysical surveys and archaeological interpretations have been completed, the full information shall be compiled into a final UAIA report and submitted to the National Monuments Service for review and approval, prior to undertaking any geotechnical works. The UAIA Report shall contain a detailed Archaeological Impact Assessment that addresses all identified or potential impacts on underwater cultural heritage, including on historic wrecks, archaeological objects, submerged palaeolandscapes, sites and features, and shall also make recommendations on measures to avoid (through the institution of Archaeological Exclusion Zones) or, where necessary, mitigate (by archaeological dive surveys/archaeological test excavations/archaeological geophysical surveys/archaeological monitoring/preservation by record or any other means as recommended by the National Monuments Service) all potential/identified impacts and effects on underwater cultural heritage. The Developer shall be prepared to be advised by the National Monuments Service in this regard or in regard to any subsequent recommendations that may issue. No geotechnical works shall be undertaken until approval in writing from the National Monuments Service has been received by the Developer. Compliance with this condition requires a formal statement in writing, from the National Monuments Service to the Marine Area Regulatory Authority/An Bord Pleanála, approving the UAIA report.
8. Following the completion of all geotechnical works, the Developer shall furnish the Project Archaeologist with the results of all site investigation works and shall provide access to site investigation cores and physical samples for archaeological and geoarchaeological review by a qualified geoarchaeologist. Where potential submerged palaeolandscape deposits or other anthropogenic materials are identified, they shall be subject to geoarchaeological and palaeoenvironmental analysis and scientific dating, in agreement with the National Monuments Service and subject to approval of Licences to Alter and Export from the National Museum of Ireland. Following the completion of all geotechnical and archaeological works and any necessary post-excavation specialist analysis, the National Monuments Service shall be furnished with a final archaeological report describing the results of the works. Compliance with this condition requires a formal statement in writing, from the



National Monuments Service to the Marine Area Regulatory Authority/An Bord Pleanála, approving the geoarchaeological report.

9. The Final Design for the offshore windfarm shall be the subject of an Underwater Archaeological Impact Assessment (UAIA), to be submitted to the National Monuments Service for review and approval, prior to the commencement of any seabed preparation or construction works. The UAIA report shall contain a synthesis of the archaeological outcomes of all prior geophysical, geotechnical, intertidal archaeological investigations and any other relevant investigations. The UAIA report shall contain a detailed Archaeological Impact Assessment that addresses all identified or potential impacts on underwater cultural heritage, including on historic wrecks, archaeological objects, submerged palaeolandscapes, sites and features, and shall also make recommendations on measures to avoid (through the institution of Archaeological Exclusion Zones) or, where necessary, mitigate (by archaeological dive surveys/archaeological test excavations/archaeological geophysical surveys/archaeological monitoring/preservation by record or any other means as recommended by the National Monuments Service) all potential/identified impacts and effects on underwater cultural heritage. The Developer shall be prepared to be advised by the National Monuments Service in this regard or in regard to any subsequent recommendations that may issue. No seabed preparation or construction works shall be undertaken until formal approval in writing from the National Monuments Service has been received by the Developer. Compliance with this condition requires a formal statement in writing, from the National Monuments Service to the Marine Area Regulatory Authority/An Bord Pleanála, approving the UAIA report.
10. Archaeological monitoring shall be undertaken as follows:
 - a. The services of a suitably qualified and experienced, to the satisfaction of the National Monuments Service, maritime archaeologist shall be engaged to carry out full-time onboard archaeological monitoring of all construction activities that impact on the intertidal/foreshore, seabed and/or on underwater cultural heritage and any works where material of archaeological importance may be uncovered. Archaeological monitoring shall include works for seabed preparation, foundation installation and scour protection installation, offshore export cable – landfall installation punch out, offshore export cable – offshore installation, inter-array and interconnector cable installation.
 - b. The archaeological monitoring shall be carried out by a suitably qualified and experienced, to the satisfaction of the National Monuments Service, maritime archaeologist, under a Section 26 (National Monuments Act 1930) excavation licence and in accordance with an approved method statement.



- c. A Finds Retrieval Strategy shall be implemented and agreed with the National Monuments Service, as part of the archaeological licence application. This shall include for metal detection for finds retrieval, which shall be undertaken by a suitably qualified and experienced archaeologist working under a Detection Device consent (Section 2 1987 National Monuments Act). All monitoring works that have the potential to uncover human skeletal remains shall be undertaken in conjunction with a suitably qualified and experienced osteoarchaeologist. Secure finds storage that ensures the protection and conservation of wet and dry finds, including human skeletal remains, shall be provided onboard and within the construction site compound.
- d. Sufficient, suitably experienced and qualified, to the satisfaction of the National Monuments Service, maritime archaeologists shall be in place to ensure continuous archaeological monitoring works, including 24-hour onboard archaeological monitoring of construction activities. An archaeological team shall be on standby to deal with any rescue excavation and may be augmented as required. An archaeological dive team shall be on standby in the event that underwater archaeological inspection is required by means of archaeological diving. All dive surveys shall be licenced (Section 3 1987 National Monuments Act) and shall include handheld metal detection survey, which shall also be licenced (Section 2 1987 National Monuments Act). All archaeological diving shall comply with the Health and Safety Authority's Safety, Health and Welfare at Work (Diving) Regulations 2018/2019.
- e. In order to ensure full communication is in place between the monitoring archaeologist(s) and the works contractor(s) at all times, a communication strategy shall be implemented that facilitates onboard direct archaeological monitoring of all construction activities that impact on the seabed/intertidal zone and/or on underwater cultural heritage, and provides the former with adequate notice (minimum eight weeks) of all forthcoming works that require their attendance.
- f. Should suspected/verified underwater cultural heritage materials, including wrecks, palaeolandscape materials, archaeological features or sites and/or archaeological objects be identified during the course of the archaeological monitoring activities, the monitoring archaeologist shall be authorised by the Developer to suspend all construction activities on the affected area (as defined by the monitoring archaeologist). The Developer shall immediately institute a Temporary Exclusion Zone (TEZ) to the proposed find location and its environs (as defined by the monitoring archaeologist) and all construction activities shall immediately cease



within the TEZ in order to facilitate investigative assessment, protection and prompt notification to the NMS and other statutory authorities, as required.

- g. The Developer shall undertake any ensuing mitigating action as is required by the National Monuments Service. Mitigation shall prioritise redesign or partial redesign to facilitate full or partial preservation in situ by the institution of permanent Archaeological Exclusion Zones. Mitigation may also include underwater archaeological inspection by means of archaeological diving, underwater archaeological surveys (geophysical, ROV), underwater archaeological test-excavations, underwater archaeological excavations ('preservation by record'), stabilisation works and/or archaeological monitoring, or any combination of the above or any other mitigation measures as may be recommended by the National Monuments Service. No construction activities shall recommence within the Archaeological Exclusion Zone until formally agreed in writing with the National Monuments Service. Where ensuing mitigation is required, no archaeological works shall be undertaken until after an amended method statement that describes the mitigation strategy has been submitted, reviewed and agreed in writing by the National Monuments Service. All resulting and associated archaeological costs shall be borne by the Developer.
 - h. The planning authority and the National Monuments Service shall be furnished with a final archaeological report describing the results of all archaeological monitoring and any archaeological investigative work/excavation required, following the completion of all archaeological works and any post-excavation analysis, scientific dating programmes, palaeoenvironmental analysis, geoarchaeological analysis and conservation of archaeological objects, as required by the National Monuments Service and the National Museum of Ireland, with all resulting and associated archaeological costs to be borne by the Developer. Compliance with this condition requires a formal statement in writing, from the National Monuments Service to the Marine Area Regulatory Authority/An Bord Pleanála, approving the final report submission.
11. The Construction Environment Management Plan (CEMP) shall be updated to include the location of any and all archaeological or underwater cultural heritage constraints relevant to the proposed development as set out in the Final Design UAIA and EIAR. The CEMP shall clearly describe all identified likely archaeological impacts, both direct and indirect, and all mitigation measures to be employed to protect the archaeological or underwater cultural heritage environment during all phases of site preparation and construction activity.



12. An Archaeological Management Plan (AMP) shall be forwarded by the Developer to the National Monuments Service of the Department of Housing, Local Government and Heritage for review and approval prior to all confirmatory investigation and/or construction works taking place. The AMP shall set out the commitments made by the Developer in the EIAR, regarding archaeological procedures and protocols for the archaeological monitoring of construction activities and the recording, reporting of any and all archaeological materials discovered during the construction phase.
13. In default of agreement on any requirements of the National Monuments Service, the matter shall be referred to the Marine Area Regulatory Authority/An Bord Pleanála for determination.

Nature Conservation

These observations are intended to assist An Bord Pleanála (“the Board”) in meeting their obligations in relation to national and EU legislation and policies for nature conservation and biodiversity, in the context of the proposed development.

1. Potential Impacts on marine habitats (estuaries, mudflats and sandflats and reefs) listed under Annex I of the EU Habitats Directive.

The Department agrees that the proposed development is not likely to affect the integrity of any Special Areas of Conservation (SAC) with respect to the three marine habitats (estuaries, mudflats and sandflats and reefs) listed in Annex I of the EU Habitats Directive. There is, however, potential for accidental introduction of contaminants during the construction, operation and decommissioning of the proposed project and this can be reduced by adherence to the proposed Construction and Vessel Environmental Management Plans.

The Department is of the view that while the National Parks and Wildlife Service (NPWS) of this Department may be invited to comment on such plans, any agreements should only be made between the applicant and the competent authority. There is no statutory basis for which the Department/NPWS can “agree” such plans or similar details after consent has been granted. The Department notes the advice in the Department’s *Development Management: Guidelines for Planning Authorities* (Section 7.9), which states that

“Conditions requiring matters to be the subject of consultation with, or to be agreed with, a named officer of the planning authority, or with a particular department or branch of the local authority, or with another public authority, should not be attached to a permission.”

As a result, it is recommended that the proposal for such post-consent agreements with NPWS is not accepted by An Bord Pleanála.

2. Birds



2.1 Review of Offshore Ornithology Assessment Methodology Note

In November 2023, NPWS commissioned an independent review of an Offshore Ornithology Assessment Methodology Note (dated December 2022) prepared by consultants representing ARUP and GoBe (APEM Group) on behalf of the (unnamed) applicant of several proposed wind energy developments (including the current proposed development). The objective of the Note was to inform and consult stakeholders of their intended approach to the ornithological impact assessment. NPWS' Review was undertaken by ABPmer with contributions from leading experts in this field. The full Review report is provided as Appendix I to this submission. The Board is advised that this Review was undertaken prior to the submission of the application for development consent. The Board are also advised that the review focused on the proposed methods of assessment and not on the quality and accuracy of the underpinning data.

2.2 Migratory waterbird species

Ireland is of international importance for a range of waterbird species that migrate along the East Atlantic flyway to over-winter in Ireland. Ireland has a network of Special Protected Areas (SPAs) designated for a range of waterbird species that over-winter here. A significant number of these waterbirds (in terms of both species and absolute numbers) migrate to and from Ireland across the Irish Sea. As such, the proposed development has potential to have significant impacts upon migratory waterbirds and the conservation objectives of the SPAs for which they are listed as special conservation interests (SCIs).

The Department notes that the application does not appear to have included sufficient collection of field data on migratory waterbird species at key migration times (i.e. spring and autumn) to inform a robust assessment of the development's potential impact upon them. The primary surveying undertaken by the applicant to inform their assessment appears to rely on coastal vantage point surveys. These are insufficient to assess the migratory movements of waterbirds (or indeed any birds) through the proposed development area. Despite this, the applicant includes the following statement with regard to source-pathway-receptor assessments of various migratory waterbirds through it: "*Survey data show little or no evidence of these species occurring within the proposed development boundary*". The existing data sources referred to by the applicant does not address this deficiency, and are insufficient to base conclusions upon them.

The application includes a collision risk model (CRM) to inform the assessment. A key parameter in the CRM is the avoidance rate of bird species, i.e. the rate at which a given bird species avoids interaction with offshore wind energy infrastructure. A total of 26 waterbird species were deemed relevant for the CRM impact assessment. However, there appears to be conflicting statements between the Natura Impact Statement (NIS) and its various relevant appendices as to the actual source of the avoidance rates used (and various errors in associated citations and references).



From a review of the stated avoidance rates used in the model, it is apparent the rates included for waterbirds are from the cited resource Woodward et al. (2023)¹. Woodward et al. (2023) clearly state that there are very low confidence levels associated with the avoidance rate estimates for 24 of the 26 migratory species included in the CRM.

Therefore, the CRM included relies both on limited empirical data on the migratory movements of waterbirds through the proposed development area and avoidance rates estimates for which there are very low confidence levels. The Board is, therefore, advised that these deficiencies may undermine the validity of the conclusions drawn in the assessment.

It is recommended that the applicant develop and implement more appropriate methodologies to gather detailed empirical data so that the level of (water)bird migration through the proposed development area, and the potential impact of the proposed development, can be robustly assessed, e.g. considering technologies such as radar. Furthermore, the applicant should consider how such survey methods can be used for further monitoring and to support actions to mitigate any potential negative impacts on migratory (water)bird species that move through the proposed development area, for use during operation (at least), should the development proceed.

2.2 Terrestrial Bird Species

There are a number of sources of data that could have been more fully considered in the initial “screening” with respect to land-based avifauna. Such available sources of information include:

- Data from BTO Bird Track, particularly for near shore areas; and which has been used by Woodward et al. (2023) in its analysis of likely movements of species for which there is information available. As set out in that report, the likely corridor of movement/migration presented for some species is likely larger than actual due to the inaccuracy of available information and/or information gaps.
- Ringing and tracking studies of relevant avifauna have focused on marine bird species groups; yet there is some available information and/or published studies (see Woodward et al. 2023; Wright et al. 2012; BTO Migration Atlas and others) with

¹ Woodward et al (2023) report available here:

<https://www.gov.scot/binaries/content/documents/govscot/publications/research-and-analysis/2023/10/strategic-study-collision-risk-birds-migration-further-development-stochastic-collision-risk-modelling-tool-work-package-1-strategic-review-birds-migration-scottish-waters/documents/strategic-study-collision-risk-birds-migration-further-development-stochastic-collision-risk-modelling-tool-work-package-1-strategic-review-birds-migration-scottish-waters/strategic-study-collision-risk-birds-migration-further-development-stochastic-collision-risk-modelling-tool-work-package-1-strategic-review-birds-migration-scottish-waters/govscot%3Adocument/strategic-study-collision-risk-birds-migration-further-development-stochastic-collision-risk-modelling-tool-work-package-1-strategic-review-birds-migration-scottish-waters.pdf>



respect to movements/likely movements of land-based avifauna including across the Irish Sea:

- White-tailed Eagle – known movements across the Irish Sea from tagged birds.
- Hen Harrier – as above (Wexford Harbour and Slobbs SPA – wintering site).
- Short-eared Owl – likely.
- Corncrake – likely.
- Merlin – likely.
- Golden Eagle – likely.
- Woodcock – Games Conservancy Trust satellite-tagging study and BTO Migration Atlas.
- Chough – limited, likely due to low number ringed/marked in Ireland up until recent times.
- Peregrine (Migration Atlas).
- Passerine examples (Migration Atlas include Song Thrush; Sand Martin).
- National Biodiversity Data Centre Citizen Science Data Portal holds records for
 - Kingfisher see [Recording System: Species Stats \(biodiversityireland.ie\)](https://biodiversityireland.ie/RecordingSystem/SpeciesStats). Note that this species is not listed in the desk-study results presented in Table 1.

For land-based birds, no new empirical data for the proposed offshore development area (or adjacent) has been sought/collected as part of the completed monitoring programme. Thus, any assertions regarding avoidance/reduced collision risk are based on very general assumptions.

The SOSS Migration Assessment Tool was used to assess the risk of offshore windfarm development to migratory birds (please refer to the BTO report by Wright et al. (2012)). The applicant has not considered, however, the more recent Woodward et al. (2023) Scottish Government report that incorporated more updated estimates of flight speeds for migrating birds for example, while setting out clear shortcomings with respect to the proportions of birds at collision risk height and the extent of avoidance behaviour. Also, it is important to highlight that CRM models, including the SOSSMAT Tool employed here, cannot typically provide robust yearly collision estimates for land-based birds with a high degree of confidence (given the limitations and caveats implicit with respect to the species attribute information upon which those models are based).

Surveying/monitoring of birds, and specifically species groups including songbirds, rails, small waders, is challenging in the marine environment, as movements are transient; detectability is very low given their typical body-size/s even in good sea and weather conditions. Strategic survey efforts combined across territorial waters in the Irish Sea and wider would greatly increase understanding of bird movements and usage of these marine



waters and would have helped to inform cumulative assessment. There are previous studies of passerine migration, with shortcomings detailed (see recent North Sea example by Brust & Hüppop 2022).

Survey/monitoring options that were not considered and/or taken forward by the applicant include the following:

- Targeted deployment of passive acoustic devices at headlands and offshore nocturnal boat transects
- Review of available ringing/tracking data for migratory species and/or species which are known/likely to conduct staging/dispersal movements
- Thermal imaging devices (hand-held/drone) surveys (boat-based surveys) targeted at likely peak periods of passage

In summary, the applicant should have not only considered, but implemented appropriate survey methodologies in order to detect and assess the level of bird migration through the proposed development area, working collaboratively with other ORE applicants, to determine more fully the potential impact and cumulative impacts of the proposed development/s across the territorial waters in the Irish Sea. It is recommended that the applicant is requested to respond to these observations by provision of clarifications or further information as the Board deems appropriate.

The applicant should also have considered how vertical radar systems and emerging technologies could be employed to further such monitoring effort and to support mitigation for any potential negative impacts on migratory species that move through the proposed development area, for use during operation (at least), should the development proceed. The detection of peak movements/passage of non-marine birds is feasible (albeit not always possible to species level).

In the absence of substantive empirical data on the migratory movements of land-based avifauna through the proposed development area, and wider, the applicant has not expressly detailed any results for these species in their collision risk model (CRM); assessment of barrier effects etc.

The application does not appear to include any consideration of potential indirect effects of the proposed development on the likely prey-base (i.e. Salmon) for resident Kingfisher, an Annex I species and a Special Conservation Interest for the River Boyne and Blackwater SPA (004232). There does not appear to be any consideration of the potential effects with respect to either the associated construction works and/or operation of the development on the Conservation Objectives of the River Boyne and River Blackwater SPA (004232); which is connected to the River Boyne SAC (002299), Boyne Coast and Estuary SAC (001957) and the offshore marine waters of the Irish Sea.

The offshore ornithology assessment does not explicitly provide sufficient details on the source information used to estimate populations of terrestrial birds passing through the development site and details are lacking regarding how “new Irish populations” or how the



“flyway” populations for migratory raptor species (which were not specified) and Corncrake were derived.

2.3 Seabirds

2.3.1 Red-throated Diver, Great Northern Diver and Common Scoter

It is noted that the data collected by the applicant’s digital aerial surveys does not appear to cover the marine waters along and adjacent to the proposed cable route. Instead, the assessment relies on the ObSERVE Phase I data presented in Jessopp et al.’s (2018) report. Based on this data the applicant estimated the densities of Red-throated Diver and Common Scoter in the vicinity of the cable route to be 0.4 - 0.9 and 3.0 individuals km⁻² respectively (as per Table 2-2 of Appendix 17 Offshore and Intertidal Ornithology Displacement Analysis). The desktop review summarized in Table 15.3 of the EIAR did not appear to include the results generated from a series of digital aerial surveys of marine waters off Gormanstown that was commissioned by the Marine Institute and referenced in the NPWS Conservation Objective document for the North-west Irish Sea Special Protection Area (SPA) (i.e. HiDef 2019). The area covered as part of this study overlaps with the proposed cable route and is near the proposed array area. Several of the overall densities quoted for Red-throated Diver are notably larger than those densities that informed the applicant’s assessment of mortality caused by displacement-disturbance effects for this proposed development (i.e. 3.26 individuals km⁻² on 29/12/2018; 1.35 individuals km⁻² on 16/01/19; 3.45 individuals km⁻² on 04/02/19; 2.99 individuals km⁻² on 23/03/19). These Gormanstown surveys are also likely to be relevant for the assessment of other species that the applicant is advised to reconsider (e.g. Great Northern Diver, Common Scoter).

Additionally, and specifically with regard to Red-throated Diver, the applicant utilised a 4km buffer to inform the assessment of mortality as a result of displacement. This is as per Appendix 17 Offshore and Intertidal Ornithology Displacement Analysis paragraph 2.2.1 *“Guidance from SNCBs in UK OWFs (SNCBs, 2022) has recommended the use of a 2 km buffer for displacement assessments for the majority of species, with a 4 km buffer recommended for divers and sea ducks.”*). In the reference section of Appendix 17, there was no reference to *“SNCBs, 2022”* but *“SNCBs, 2017”* was noted. In January 2022, the 2017 advice was updated to include reference to the Joint SNCB Interim Advice on the Treatment of Displacement for Red-Throated Diver. SNCBs (2022a) recommends a buffer of 10km to be used. This advice is elaborated in a standalone document (i.e. SNCBs 2022b) which advises that, on account of more recent evidence which indicates that this species avoid a much larger area in the vicinity of offshore windfarms, *“a pragmatic displacement buffer of at least 10km is recommended for use in site characterization, impact assessments and post-consent monitoring where a plan or project is within 10km of a SPA designated for non-breeding red-throated diver”*(SNCBs, 2022b). The Board are reminded that this development is proposed within the North-west Irish Sea SPA, which lists Red-throated Diver as an SCI.

The Department requests that further information be provided to inform a revision of the assessment of impacts of the marine birds of the North-west Irish Sea SPA in



relation to this proposed development. Specifically, that the survey data from HiDef (2019) be integrated into the displacement analyses; and (b) the findings of the following papers indicating displacement impacts of greater than 4km for Red-throated Diver: Webb et al. 2017; APEM 2021; Heinänen et al. 2016; Zydelis et al. 2016; Mendel et al. 2019; Heinänen et al. 2020; and Vilela et al. 2020 be taken into account as part of the revision of the assessment.

2.3.2 Kittiwake - displacement

The Method Statement - Offshore Wind Ornithology Assessment for East Coast Phase 1 Projects referred to in section 2.1 of this submission, states that “Kittiwake will not be assessed for displacement because they have low habitat use specificity and have considerably large foraging ranges over which they are likely to find alternative favourable foraging habitat. Additionally, there is limited evidence that they are displaced by wind farms, Likewise Manx shearwater have vast foraging ranges and have very low vulnerability to displacement by offshore wind farms, scored 1 by Bradbury et al. (2014) and given a species concern index value of 2 by Furness et al. (2013).”

As noted above, ABPmer was commissioned by NPWS to undertake a review of this method statement (ABPmer 2023). In relation to the above extract of the method statement, the Review states “There is a need to provide evidence underpinning the assertion of low habitat use specificity. The phrase “considerably large foraging range” is unclear, and is not a simple comparison with the list of species proposed for displacement assessment that includes Northern Gannet. There is a need to clarify the ‘limited evidence’ for displacement more fully – there is at least some evidence for displacement of Black-legged Kittiwake (see Vanermen & Stienen 2019). Therefore, a precautionary approach would be to include this species in displacement assessment. Uncertainty in the extent of displacement (displacement rate) can be varied using the Displacement Matrix and Individual Based Modelling (IBM) approaches.”

The applicant responded to the Review in Appendix 16 (i.e. *Method Statement Review Consultation and Justification Log*) of the NIS and specifies:

“Further justification for methodology is provided in the EIAR/NIS relating to why kittiwake is not considered for displacement, based on low levels of displacement sensitivity (Bradbury et al. 2014, which informs the vulnerability element of all screening for displacement), as well as relatively low densities (0.79 flying birds km⁻²) within the offshore development area.”

It is noted that section 2.15.3 states that Kittiwakes were recorded in the proposed array area in 28 out of 29 months, with abundance and density peaking at 1,105 birds and 12.48 birds km⁻².

Table 5.9 of the NIS indicates that for the North-west Irish Sea SPA, Kittiwake “screens in” for *inter alia* “Spatial distribution and disturbance and Barrier effects”. However, this species did not screen in for *inter alia* Ireland’s Eye SPA, Howth Head SPA and Lambay Island SPA even though the estimated foraging range of Kittiwake (which is a Special Conservation



Interest (SCI) for all of these sites) is greater than the distances of these aforementioned SPAs from the proposed array.

The NIS states *“As per the Irish Phase 1 Method Statement, kittiwake were screened out for displacement assessments in the SISAA due to their large foraging ranges (mean max +1SD 300.6km) (Woodward et al., 2019), over which alternative suitable foraging habitat are likely to be found in combination with their low habitat specificity. Furthermore, there is limited evidence to suggest kittiwake are displaced by OWF and this species is not considered within displacement assessments across England and Wales as per MIG-Birds (2022).”* It is noted that “MIG-Birds (2022)” equates to “SNCBs 2022a” in these observations.

The “MIG-Birds (2022)” advice ascribes a score of “2 – 2” to Kittiwake and notes that *“As a general guide, any species scoring 3 or more ... and which is present in the OWF site or buffer should be progressed to the matrix stage unless there is strong empirical evidence to the contrary. Gannet, with a score of 2, is an obvious exception to this general guide as there are empirical studies demonstrating they are sensitive to displacement and barrier effects”*.

ABPmer (2023) makes reference to Vanermen & Stienen (2019) as a source of evidence and Peschko et al (2020) investigated how offshore wind energy developments affected the densities and distributions of seabird breeding in the southern North Sea and if the effects varied among seasons using a ‘before–after control impact’ (BACI) analysis approach. This approach was based on a large-scale and long-term dataset covering 14 years before and three years after the construction of offshore wind energy developments. Relative density of Kittiwake in the proposed offshore wind energy development footprint decreased by 45% in the breeding season. This study also estimated the response radii to the proposed offshore wind energy development, finding that Kittiwake showed a response radius of ~20 km in the breeding season.

The Department highlights that NatureScot (2023) advise that for species where both collision risk and displacement are considered (e.g. gannet, kittiwake), that these impacts should be considered as additive. Table 1 of that advice sets out a displacement rate and mortality rate of 30% and 1 – 3% for Kittiwake displacement and associated mortality respectively. SNCBs (2022a) sets out their position in that *“the two impacts (collision and displacement) as additive and advise that they should be summed”*.

Therefore, taking into account the facts noted above, it is regarded that the evaluation of impacts of specific SCI birds (e.g. Kittiwake) associated with the North-west Irish Sea SPA; Lambay Island SPA; Ireland’s Eye SPA; and Howth Head SPA in relation to this proposed development cannot currently support the making of a determination as to the impact on the relevant conservation objectives. It is recommended that the applicant re-analyse the impact of displacement of such marine birds by the proposed development in relation to the attributes for specific relevant conservation objectives’ such as population size; spatial distribution; and forage spatial distribution, extent, abundance and availability.

2.3.3 Predicting mortalities of seabirds resulting from collision events



“Appendix 18 Offshore and Intertidal Ornithology Collision Risk Modelling Assessment” recounts that the collision risk modelling (CRM) was undertaken for several seabird species (i.e. Kittiwake, Black-headed gull, Common gull, Great black-backed gull, Herring gull, Lesser black-backed gull, Roseate tern, Common tern, Arctic tern, “Commic” tern (Common and arctic tern), Manx shearwater, Fulmar, and Gannet. With the exception of the latter, all of these species are listed as SCIs for the North-west Irish Sea SPA.

Appendix 18 notes that: *“a key input parameter in the CRM assessment is determining the proportion of birds at collision risk height. This is determined from flight height distributions. These can either be based on generic data, or from site-specific data. Generic data is taken from Johnston et al., (2014) which uses pre-construction data across 32 potential OWFs, providing flight height distributions for 25 marine bird species. This dataset incorporates large sample sizes (predominantly >10,000 birds for species included in this assessment, and over 40,000 individuals for both gannet and kittiwake). However, there is potential for flight heights to vary across different areas (potentially due to behavioural differences, e.g., whether birds are using the area for foraging, or are passing through on migration), and therefore it is also possible to run the CRM assessment using site-specific data if it is available.”*

The technical baseline Appendix states that site and species-specific flight height data was collected by way of DAS and vessel-based surveys. The recorded data is presented in Tables 2.60 and 2.61. For some species there is a high degree of variation between both sources e.g. for Roseate Tern 19% of all DAS observations were estimated to be at heights greater than 31m, which contrasts with 0% from the vessel based analysis. The technical baseline Appendix notes *“Given this inconsistency in flight height distribution between the two datasets, site-specific flight height data is not taken forward to use in the collision risk modelling (CRM) assessment”*.

Building on this, Appendix 18 states: *“Site-specific seabird flight height was collected both during vessel-based surveys and DAS data... However, the flight height data from the two collection methods was inconsistent. The DAS data indicated that birds were predominantly at higher flight heights, whereas the vessel data recorded birds at considerably lower heights. Owing to these discrepancies, only generic flight height data from Johnston et al. (2014) was used in the assessment (i.e., Option 2). This data was considered most appropriate for the assessment given its large sample size (data from over 10,000 birds for most included species)”*.

Roseate Tern flight height data and its analysis were not presented in the Johnston et al (2014) paper. It is unclear what particular dataset determined the flight parameters used for the Roseate Tern CRM undertaken as part of the application.

It is recommended that clarification be sought as to the sources of the precise parameters for Roseate Tern flight behaviour used in the CRM as well as a statement regarding the robustness of such data.

The effects of marine renewable energy developments on seabirds are uncertain because of the relative infancy of the industry. This prompted Wade et al (2016) to undertake a study



that uses novel methods to demonstrate uncertainty in two indices that ranked the vulnerability of seabird populations to such developments. The uncertainty indices highlight those aspects lacking data, identify robust predictions and indicate where particular caution in interpreting vulnerability indices should be applied. With regard to Roseate Tern, Wade et al (2016) determined that the uncertainty level is 'very high' with regard to the percentage of time this species flies at altitudes overlapping with turbine blades and a 'high' level of uncertainty with regard to displacement caused by structures, as well as displacement caused by vessels and/or helicopters.

Various other parameters are needed for each species in order to undertake such modelling e.g. avoidance rate, flight speed, occurrence within the Array footprint etc. With regard to the latter, Appendix 18 notes that the monthly density estimates were extracted from site-specific digital aerial survey (DAS) data and presented in Table 2-4 of Appendix 18. It should be noted there that Roseate Tern is ascribed a 0.0 birds km⁻² density value for all months, with the exception of June (0.12 birds km⁻²). Further cross-referencing these values with "Appendix 12 Offshore and Intertidal Ornithology Technical Baseline" (which is duplicated as "Appendix 15.1 Offshore and Intertidal Ornithology Technical Baseline") has helped to clarify where this figure may have been derived. The technical baseline noted that "*Roseate terns were recorded in the array area in two of 29 months, with two birds recorded in June 2020 and June 2021. Abundance and density peaked at 23 birds and 0.26 birds/km² respectively*". Apparently, the 0.12 birds km⁻² used for the CRM is an average of the three June density values presented in the technical baseline i.e. 0.10, 0.26 and 0.00 birds km⁻² for the period 2020-21 inclusive. The reported frequency of occurrence is higher when one assesses the proposed array area plus 2km buffer (see Table 2.31 of the technical baseline).

The technical baseline does mention the relatively recent Roseate Tern tracking work undertaken by Perrow et al (2019) but unlike the accounts of Kittiwake, Guillemot and other species, the relevant section of appendix does not provide a summary figure of the Roseate Tern track data. For the benefit of the Board, Figure 1 below provides an overview of Perrow et al's (2019) track data for Roseate Tern breeding on Rockabill SPA and using the nearby proposed array area. Perrow et al (2019) studied the at-sea foraging ecology of Roseate Terns at Rockabill over one single breeding season (2018). In this study, tracking was undertaken over 11 days in three periods: mid-June, early-July and mid-July; broadly corresponding to late incubation, intermediate and late chick development or fledging respectively.

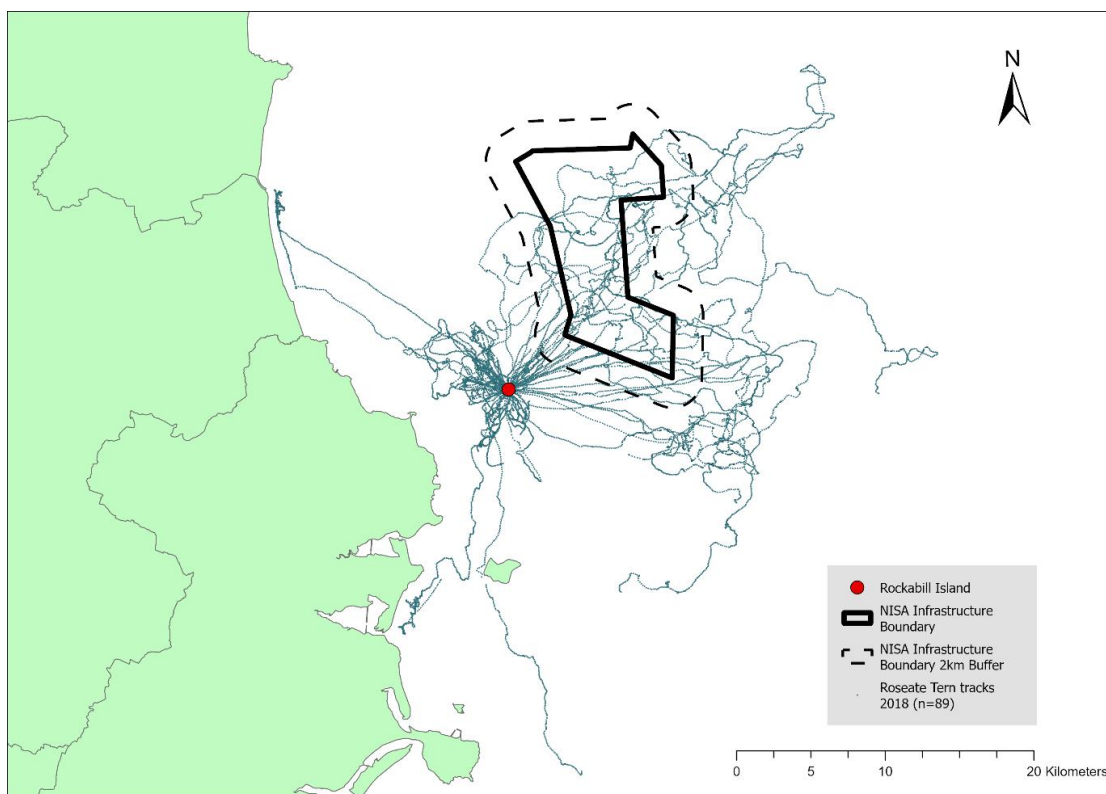


Figure 1: Roseate Tern tracking data mid-June to mid-July 2018

It should be noted that although the CRM analysis predicted zero collisions for Roseate Tern during the month of July (this is on account of the lack of records from within the array by relying exclusively upon the applicant's DAS data), a proportion of the tracks displayed in Figure 1 above were from birds flying within the array area in July 2018.

This data suggests that the Roseate Tern population breeding on Rockabill and foraging within the North-west Irish Sea SPA can vary their foraging areas over successive breeding seasons. Thaxter et al (2015), citing various sources, notes that it is well known that changes in food availability may alter the behaviour of birds through the course of a single breeding season and between years, which may lead to the use of alternative foraging areas and different commuting patterns. Therefore, the movements of birds must be characterised over longer periods to fully appreciate the potential for variation in seabird–array interactions. Such evidence would suggest that the applicant's DAS data informing the CRMs may not capture all relevant inter-annual and intra-annual variation of how the marine waters of North-west Irish Sea SPA are utilised by the SPA's listed interests and other marine birds and hence not provide an accurate basis for the impact assessment to be undertaken.

Such variation was also commented on by Warwick-Evans et al (2016) after a multi-year tracking study to investigate the inter-annual variation in the foraging behaviour and location of a population of Gannet breeding on Alderney in the English Channel. They concluded that the at-sea distribution of seabirds primarily depends on the distance from their breeding



colony, and the abundance, distribution and predictability of their prey, which are subject to strong spatial and temporal variation.

The SNCBs (2022a) note that two years of pre-construction monthly survey data should be considered the minimum required for assessment purposes; and that a more appropriate approach is to initially conduct a power analysis to confirm how many years of survey data are required to adequately characterise any potential changes to bird abundances (on a species-by-species basis) in response to future proposed offshore wind energy development.

It is recommended that the applicant is requested to re-evaluate the CRM in the context of the limitations that have been identified in these observations, through the collection of additional information or re-analysis of existing data and to reassess the implications of these on the conservation objectives of the listed species for the relevant SPAs.

2.3.4 Migratory movements by seabirds within the Array area

The Department has concerns over the assessments of seabird movements on migration through the array area in terms of data collection and desk review. Using terns by way of an example, it seems that empirically derived data from DAS disproportionately influenced the outcomes of some of the assessments even though such data can only be collected during the day and when the wind speeds and sea states are relatively low. This constraint is further compounded in that the frequency of such survey flights are optimised to get an understanding of marine birds using the array area and environs throughout the year as opposed to getting a sufficient understanding on bouts of migratory activities which are, by their nature, not uniformly distributed across the year.

Section 2.15.74 of the Technical Baseline notes that “*based on the absence of Arctic terns within the DAS data presented in Table 2.36 and Table 2.37 during the migratory periods, there is minimal overlap between migrating birds and the array area. This is likely to be because terns tend to undertake migrations close to the coast (WWT & MacArthur Green, 2014).*” This narrative is problematic. Firstly, the DAS data presented in Table 2.36 and Table 2.37 during the migratory periods may not include the likely proportion of Arctic Tern recorded as ‘commic’ terns as presented Tables 2.38 and 2.39. Also the sentence, which is supported by the reference “WWT & MacArthur Green, 2014” is potentially misleading without reference to the full text. The relevant sentence in the WWT & MacArthur Green (2014) report reads as follows: “*Migration of Scottish and Scandinavian Arctic terns through Scottish waters is likely to track coastlines in a narrow band from 0 to 20 km from shore.*” It should be noted that the array area comes within circa 11km of the mainland shoreline of Ireland and circa 5km of the shore of Rockabill island and therefore could feasibly be included in such a migration corridor.

Burke et al (2020) provides a useful introduction to an Irish post-breeding tern survey, which was established to identify, and to determine the relative importance of roost sites used by terns after the breeding season. This source was not referenced in the EIAR Ornithology Chapter, CRM Appendix 18, the NIS nor the technical baseline Appendix.



Post-breeding, terns beginning their southerly migration towards Africa undertake movements within the Irish Sea, which belies a simple assumption that post-breeding terns leave the colonies and immediately migrate south. For example, a significant proportion of recently fledged Sandwich Tern dispersing from their natal colony in Lady's Island Lake SPA in the SE of Ireland, and prior to their southern migration, moves northward into the Irish Sea, with a preference for the eastern side of the Irish Sea (Murray et al 2021).

The CRM analysis presented in Appendix 18 used species-specific mean nocturnal activity levels used in the models (see Table 2-6). For all tern species modelled a value of zero was used. This runs contrary to the fact that terns can migrate during the night e.g. Roseate Tern, (Gochfeld, M. and J. Burger, 2020); and Sandwich and Common Tern (Ward, 2000).

2.3.5 The contextualisation of predicted mortalities on the marine birds of the North-west Irish Sea SPA and the wider marine regional area.

For some of the SCI seabird species of North-west Irish Sea SPA, the development and operation of the proposed development will result in mortalities from displacement and/or collision events. From collision events alone, annual mortalities of the following species are predicted: Kittiwake, 1.74 – 45.74; Common Gull, 0.40 – 14.45; Great Black-backed Gull, 1.71 – 69.97; and Herring Gull, 9.77 – 140.05.

Particularly for the non-breeding period, the characterisation of the marine birds using the North-west Irish Sea SPA by NPWS are principally derived from the fine-scale surveys of the western Irish Sea as presented in Jessopp et al 2018.

In terms of intensity of survey effort, and relative to the applicant's DAS programme aimed at the array area and immediate hinterland, the coverage of the North-west Irish Sea SPA was low. This is unsurprising because Jessopp et al.'s (2018) survey was extensive and covered circa 900km², which equates to multiples of the NISA study area. The fine-scale transects of the western Irish Sea study area was covered once for each of the following seasons: Summer, 18th & 23rd June and 3rd & 5th July 2016; Autumn, 15th, 17th, 19th and 20th September 2016; Winter, 29th, 30th November, 1st & 19th December 2016, and 19th Jan 2017.

The survey approach by Jessopp et al. (2018) differs in some regards from the applicant's DAS approach. Therefore, due to the different methodologies and intensities of the ObSERVE Phase I fine scale survey and the applicant's DAS, direct comparisons of marine bird use of the array area and the wider SPA may be problematic.

To summarise, the Board are advised that the applicant's approach to defining bespoke reference populations for this SPA relies upon larger population estimates pertaining to a wider region (as opposed to the smaller defined footprint of the SPA) as the basis for the impact assessment. It is the Department's view that this approach does not permit a full understanding of the implications of the proposed development on the conservation objectives of the relevant SPAs.



With regard to the conservation management of a listed species for an SPA the favourable conservation status of a species is achieved when *inter alia*: *there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis*. This is further elaborated in the following section using Guillemot **as an example**. The predicted impacts of this proposed development must be assessed against the full scope of the conservation objectives for the North-west Irish Sea SPA on its own merits.

2.3.6 Displacement effects

The species prioritised as being vulnerable to displacement effects will typically be diver and sea duck species, guillemot, razorbill, puffin and gannet (SNCBs 2022a). Of this list, the North-west Irish Sea SPA lists Red-throated Diver, Great Northern Diver, Common Scoter, Guillemot, Razorbill and Puffin as SCIs. The following section of observations focuses, by way of an example, on Guillemot.

In terms of estimated population size, Lambay Island SPA is consistently the most important Irish site for the conservation of Common Guillemot (hereafter Guillemot). The most recent published population estimate is of 59,983 individuals and is considered to be of international importance (Burnell et al., 2023; AWEA, 2018). Contrary to section 2.13.4 of the Technical Baseline which states that Lambay Island SPA is located 22.2km from the array area, a more accurate estimate of the distance between Lambay Island SPA and the Array is <15km. It should be noted that this is not an isolated error in describing distances from the proposed array to SPAs. However, the correct distance between Lambay Island SPA and the array is set out in the main NIS document.

Describing the outputs of the ObSERVE Phase I series of aerial surveys, Rogan et al. (2018) and Jessopp et al. (2018) highlight the importance of the western Irish Sea in terms of the relative abundance of auk species. During the broad scale surveys as described by Rogan et al. (2018), Razorbills, common guillemots and Atlantic puffins could not be differentiated by eye from the aircraft flying at 600 feet, and were therefore grouped into an aggregate auk species category. Rogan et al. (2018) noted that modelled density distributions showed a clear area of high density for auks throughout stratum 5 (i.e. western Irish Sea) in both summer 59,823 individuals (95% CIs 47,363 – 75,601) and winter 39,619 individuals (95% CIs 26,852 – 60,833). The approximate densities of auk species recorded in the western Irish Sea were 5.1 and 3.1 individuals km⁻² for summer and winter respectively.

The western Irish Sea was also flown more intensively and at a fine scale over three periods: June/July 2016; September 2016; and December 2016/January 2017 – Jessopp et al. (2018) noted that Razorbill and Guillemot could not always be differentiated from the aircraft and sightings were therefore combined into a single group. Mean density of razorbills/guillemots across grid cells was 3.95 individuals km⁻² in summer, 17.4 individuals km⁻² in autumn and 4.61 individuals km⁻² in winter. 10% and 25% utilization distributions for razorbills/guillemots showed relatively consistent areas of highest sightings density east of Howth, but with a more northerly concentration in autumn. Design-based population estimates for this group were 36,255 individuals (95% CIs 32,869-39,990); 159,503 (95% CIs 143,540-177,241) and 42,296 (95% CIs 37,122-48,190) for summer autumn and winter respectively.



These fine-scale results of ObSERVE Phase I accord with a modelled output from Wakefield et al. (2017) of percentage at-sea utilization distribution (UD) of seabirds breeding within Britain and Ireland during late incubation/early chick-rearing.

ObSERVE Phase II completed its flying missions and the final report is now nearing finalisation. Unpublished analyses of the data were available to scrutinise in order to produce these observations. Based on modelled data for both the summer and winter periods, it is readily apparent that not only does the western Irish Sea remain important in terms of auk abundances, but also the marine waters of North-west Irish Sea SPA and the proposed array area plus a 2km buffer. Based on digital aerial surveys that can distinguish the auk group to species level, it can be considered that the majority of auks occurring in the western Irish Sea are Guillemots.

The auk and or guillemot/razorbill densities reported out under ObSERVE Phase I for the western Irish Sea (and reproduced above) are notably less than those values estimated from the DAS for the proposed array area (i.e. ObSERVE 3.1 – 17.4 km⁻² in compared to 3.3 – 207.6 km⁻²). It should be noted that the Guillemot density values presented in the Technical Baseline (and which informed the EAIR and NIS) accounted for ‘availability bias’ which was not factored into the ObSERVE estimates.

It was noted that relative to ObSERVE data and other data sets, some of the Guillemot monthly density estimates presented in the technical baseline document area are extremely high.

With regard to the applicant’s characterisation of the use of the marine waters of the proposed array area and the wider context by Guillemot and the subsequent assessment of impact should the development proceed, there are a number of concerns. Firstly, there appears to be miscalculations or typographical errors with the display of the survey data and its analyses. Table 2.40 of Appendix 12 Offshore and Intertidal Ornithology Technical Baseline presents a zero count of Guillemot for the November 2020 survey. This is at odds with the non-zero density Guillemot heat map for November 2020 (page 84), nor does it correspond to the estimate of density and abundance for Guillemot for November 2020. The Guillemot Density Heat map (dated February 2021, page 85) indicates that no Guillemots were present during that particular survey, which corresponds to the zero count in Table 2.40 but which appears to be at odds with the non-zero estimates of abundance and density for Guillemot for February 2021.

Contrary to Furness et al.’s (2015) definition of the Guillemot breeding season for UK colonies and waters, section 2.11.3 of the Technical Baseline sets out the applicant’s position that project-specific DAS data showed earlier post-breeding dispersal from breeding colonies and that this large peak in Guillemot abundance in July is therefore highly likely to be a result of post-breeding dispersal of Guillemots from colonies across the wider regional population (as opposed to being breeding birds).

On foot of this data, the applicant considered that the breeding season ceases at the end of June in the waters of the western Irish Sea. Not only is this position contrary to Furness et al. (2015), it is also at odds with NatureScot (2020) guidance. This guidance states that the Guillemot breeding period (when adults are strongly associated with the nest site) extends



to mid-July and the period of breeding site attendance (not closely associated with the nest site) extends to the end of July. The applicant's view also runs contrary to the understanding of the Guillemot breeding period in Irish waters (see Merne and Walsh, 2005).

Section 2.40 of the Technical Baseline Appendix quoted increases in the number of Guillemot recorded on DAS transects from May-June, in July 2022 and to a lesser extent in July 2020 but not in July 2021. These differences may well be a function of when precisely in July the DAS flights were undertaken. It is very likely that a proportion of the high July counts are made up of young of the year with attending adults. However, it is also very likely that some proportion of unfledged Guillemot chicks remain on the cliff faces of Lambay and elsewhere into early July.

Indeed, the DAS data with regard to recorded flight direction activity of Guillemot during the survey of July 2022 shows a pronounced SW direction possibly indicating birds flying either from, or through the proposed array area broadly towards the breeding colony at Lambay or Ireland's Eye.

It is further considered that the description of Guillemot phenology as set out in Furness et al. (2015) i.e. "*Breeding colonies in the UK are deserted in August, with modal departure in July*" is broadly similar to an Irish context.

There are consequences of regarding the July period as non-breeding results in the breeding mean peak count bio season for the proposed array area plus 2km, to be 1,813 (95% CIs 1,258 - 2,385) individuals as opposed to 13,703 (95% CIs 8,940 - 18,414) individuals (see Table 3-1 of Appendix 17 Offshore and Intertidal Ornithology Displacement Analysis). This has consequences when apportioning estimated mortality figures arising from displacement impacts to guillemot populations breeding at Lambay Island SPA, Ireland's Eye SPA and others.

The Board are advised that the Department does not agree with the applicant's determination that the Irish east coast Guillemot breeding season ends at the end of June. It is recommended that the applicant is requested to re-evaluate the data in this context and to re-interpret the consequences for the impacts on the conservation objectives of the SPA.

Page 247 of the NIS notes that contrary to the recommended SNCBs guidance ('MIG-Birds, 2022'), which sets out a mortality range of 1-10%, the applicant has applied a mortality rate of 1% and a range of up to 5% have been applied within the displacement assessments presented in Table 5.14.

This Table also sets out the pre-supposed SNCB's position in relation to five recent wind energy development proposals in the UK with regard to the displacement rate for auks – in all instances a displacement rate of 70% was recommended. The applicant states that "*As such, and based on the above presented evidence, it is concluded that presenting displacement impacts at 50% displacement and 1% mortality is suitably precautionary.*"

Applying these metrics to the abundance estimates outlined in Table 3-1 of Appendix 17 Offshore and Intertidal Ornithology Displacement Analysis, the projected mortality levels relative to the estimated guillemots using the array +2km area are as follows:



Bio-Season	Projected mortality	Lower 95% CI	Upper 95% CI
Applicant's approach			
Breeding (Apr-Jun)	9	6	12
Non-breeding (Jul-Mar)	149	105	192
Furness approach			
Breeding (Mar-Jul)	69	45	92
Non-breeding (Aug-Feb)	149	105	192

Applying a 70% displacement and 2% mortality approach as described above, as recommendations for four out of five recent proposed offshore wind energy developments, in UK waters by the relevant SNCBs the projected mortality levels relative to the estimated guillemots using the array +2km area are as follows:

Bio-Season	Projected mortality	Lower 95% CI	Upper 95% CI
Applicant's approach			
Breeding (Apr-Jun)	25	18	33
Non-breeding (Jul-Mar)	417	295	537
Furness approach			
Breeding (Mar-Jul)	192	125	258
Non-breeding (Aug-Feb)	417	295	537

For auks (including Guillemot) and other species, NatureScot (2023) sets out precise displacement rates and mortality rate ranges to be used in impact assessments. The advised mortality rates are season-specific and a range is given for mortality rates e.g. for Guillemot the advised displacement rate is 60%; the breeding season mortality rate is 3% and 5%; and the non-breeding season mortality rate is 1% and 3%.

Applying these metrics to the abundance estimates outlined in Table 3-1 of Appendix 17 Offshore and Intertidal Ornithology Displacement Analysis, the projected mortality levels



relative to the estimated guillemots using the proposed array +2km area are set out in the following two tables; one reflecting the lower case scenario and the other the higher:

NatureScot (2023) mortality levels – lower

Bio-Season	Projected mortality	Lower 95% CI	Upper 95% CI
Applicant's approach			
Breeding (Apr-Jun)	33	23	43
Non-breeding (Jul-Mar)	179	127	230
Furness approach			
Breeding (Mar-Jul)	247	161	331
Non-breeding (Aug-Feb)	179	127	230

NatureScot (2023) mortality levels – higher

Bio-Season	Projected mortality	Lower 95% CI	Upper 95% CI
Applicant's approach			
Breeding (Apr-Jun)	54	38	72
Non-breeding (Jul-Mar)	536	380	690
Furness approach			
Breeding (Mar-Jul)	411	268	552
Non-breeding (Aug-Feb)	536	380	690

Depending on a) the definition of the Guillemot's breeding season b) the most appropriate estimated level of displacement and c) the most appropriate associated level of mortality rates, the proposed development is likely to result in the death of individual Guillemots. Using the 95% Confidence Intervals set out in the tables above, the annual mortality levels could be 6 – 552 individual Guillemots during the breeding season and 105 – 690 during the non-breeding season.

As per the preceding section of these observations (i.e. the contextualisation of predicted mortalities on the marine birds of the North-west Irish Sea SPA and the wider marine regional



area), the assessment needs to be revised to take due regard of North-west Irish Sea SPA on its own merits.

Also as stated above, issues arise when comparing numbers derived from more intensive survey effort against denominator values from a larger area that was subject to more extensive survey effort. This led the applicant to conclude that, as no population estimate was derived from a series of surveys of similar intensity to the applicant's DAS for Guillemot occurring within the North-west Irish Sea SPA for each bio-season, that *"no conclusions regarding integrity can be drawn from this assessment."*

The site-specific conservation objectives for this SPA include a target for a sufficient number of locations, area, and availability (in terms of timing and intensity of use) of suitable habitat to support Guillemot across both the breeding and non-breeding periods (NPWS, 2023).

The proposed array + 2km area (and factoring out the circa 2.8km² of this area overlapping with Rockabill SPA) accounts for circa 8.5% of the total marine area under designation as North-west Irish Sea SPA.

The boundary of this SPA was defined in part due to the relatively high suitability of these marine waters as a resource for Guillemot. Recent modelling of auk densities in Irish waters based on ObSERVE II data show that the proposed array + 2km area contains, relative to some other areas within the SPA, high density areas.

Even if one was to assume a uniform suitability of the marine waters of this SPA for Guillemot, and taking into account the UK SNCBs advice in relation to the adoption of a 2km buffer, the proposed development would reduce the suitability of an area equating to 8.5% of the North-west Irish Sea SPA. The Board is advised that it is NPWS's view that this would contravene the conservation objective for the SPA, which is to maintain its favourable conservation condition.

3.0 Marine mammals

3.1 Pinniped Species

The NIS stated that both pinniped species, grey seal and harbour seal, occur within the offshore windfarm area. As part of their normal ecological activity both pinniped species travel varying distances from haul-out sites and thus may forage within the offshore windfarm area or transit the offshore windfarm area to foraging areas further afield. The nearest SACs designated for an Annex II pinniped species are situated at Lambay Island SAC (14.8 km).

Monitoring for pinniped species at the location where the proposed development interacts with the shore was not carried out by the applicant and therefore there is no information on whether seals use this site.

It is recommended that further information should be provided by means of specific surveys of the site for pinnipeds and that this should also be set in the context of seasonal changes in distribution of these species.



3.2 Cetaceans

The use of the proposed development area and area immediately adjacent to it by various species of cetacean (i.e. whales, dolphins and porpoises) is described and referred to in the documentation provided. The available data collectively indicate that several species of cetacean occur regularly within the area. Most appear to be small-toothed cetacean species, particularly harbour porpoise, short-beaked common dolphin and minke whale. Other species, such as bottlenose dolphin and Risso's dolphin also occur. All are wide-ranging pelagic species that may travel over many tens or hundreds of kilometres as part of their normal ecological activity and annual life history cycles. The SACs designated for an Annex II cetacean species are situated at Rockabill to Dalkey Island SAC (2.4 km).

All available data collectively indicate that the offshore windfarm area represents an area of importance for harbour porpoise. Describing the outputs of the ObSERVE Phase I series of aerial surveys Rogan et al. (2018) highlight the importance of the Irish Sea for harbour porpoise, particularly during the summer months. The highest summer density/abundance across 2016 and 2017 were recorded in the Irish Sea (and Celtic Sea) with the predicted distribution of harbour porpoise also highlighting the importance of the Irish Sea.

Acoustic surveys do not appear to have been undertaken as part of the collection of baseline data to inform the impact assessment. Acoustic surveys are a useful survey and monitoring tool as, in comparison to visual surveys, they are not restricted by weather or daylight hours and collect data on the exploration of fine scale habitat use by odontocete species. Although they can be spatially constrained, this depends on the number of units deployed. The omission of acoustic monitoring does not allow the site to be fully characterised for all Annex IV species.

It is recommended that further acoustic information to fully characterise the site is requested from the applicant to understand the implications of the proposed development. Acoustic surveys to allow for monitoring of baleen whales, such as minke whale, should also be considered.

It is advised that when assessing the risk of collisions between marine mammals and vessels, the applicant must include all data relevant to Irish waters and not solely rely on reports from UK monitoring programmes, e.g. those reported in Irish Whale and Dolphin Group Cetacean Stranding Schemes and Irish Whale & Dolphin Group Deep Diving and Rare Species Investigation Programme (both supported by NPWS funding).

Under current legislation in Ireland², it is an offence to disturb or injure a marine mammal whether this occurs via introduced sound or another anthropogenic source. Temporary Threshold Shift (TTS) in hearing can have a negative effect on the ability of a marine mammal to use natural sounds for a period of minutes, hours or days and thus may constitute such an injury. Therefore, anthropogenic sound sources with the potential to cause TTS in a receiving marine mammal contain the potential for both disturbance and injury to the animal.

² Under the Wildlife Acts 1976-2023 as amended and the European Communities (Birds and Natural Habitats) Regulations 2011 as amended.



The application should determine ranges over which both disturbance and injury could occur to all marine mammal species and in determining the appropriate mitigation measures.

As per NIS Appendix 10: Marine Mammal Mitigation Plan, the final project design has not been presented and thus further information on the final noise abatement systems would be required to fully understand the effectiveness of any measures proposed in this context. It is not clear as to whether acoustic deterrent devices (ADD) will be used as a mitigation tool. The NIS states ADD will be used, however Appendix 10 of NIS states *“In addition, the applicant may also deploy an ADD prior to commencing operations to encourage marine mammals to move out of the mitigation zone.”* The use of the word *“may deploy”* does not provide clarity if an ADD will be used as a mitigation tool or not. If an ADD is to be included as a mitigation tool, then clear decisions regarding the reasoning/justifications for proposed ADD methodology need to be included. The proposed use of ADD as a potential mitigation tool would be improved if justifications for plan and estimation of individuals of each species that are likely to be affected was assessed and included.

It is recommended that further information is requested regarding the proposed use of ADD as a potential mitigation tool. Such information should include a consideration of any in-combination effects with surrounding anthropogenic source and estimation of individuals of each species that are likely to be affected. Consideration as to whether such deliberate disturbance will require derogation under Article 16 of the Habitats Directive should also be provided.

The applicant's approach in using Passive Acoustic Monitoring as a monitoring tool in addition to MMO is noted. It must too be noted that as per NPWS (2014) guidance, PAM may be used as a supplementary mitigation tool in order to optimise marine mammal detection, but not as a primary mitigation tool. The mitigation methods for geophysical acoustic surveys as outlined in NPWS (2014) guidance should also be considered.

4. Bats (offshore and migratory)

The consultants have undertaken a comprehensive literature review and, recognising that very limited data was available for the Irish Sea, extended their review to Europe and in particular to the growing body of literature about bats and wind farms in the North Sea.

New bat surveys were undertaken to inform the project in 2022 and 2023. The collected bat data appears to suggest that Leisler's bats may be migrating from UK (perhaps North Wales) to Ireland in September. This is the strongest evidence of this species migrating into Ireland to date. No evidence of any other migratory behaviour was found offshore, although the results for Nathusius's pipistrelle bats from the North Dublin coast may indicate some migratory movement of this species in autumn.

The applicant's assessment of likely significant effects determined that the turbines are located too far offshore (c12-15km) to be visited by coastal foraging bats. Therefore, it was suggested that there would be no impact on land-based populations. However, there was evidence of Leisler's bats throughout the summer and autumn at Rockabill (some 6km



offshore) and longer foraging flights by this species are known. A potential roost of pipistrelles on Rockabill needs further investigation, before they could be ruled out as foraging in the area.

Whilst the applicant has claimed that any risk to migrating bats has been ruled out, data collected by the applicant, particularly in relation to Leisler's bats, provides the strongest indication to date that this species may migrate between the UK and Ireland.

It is recommended further data should be acquired or more data analysed to allow further consideration of the implications of the proposed development on offshore bat activity. These analyses should include use of the data collected during vessel and headland surveys in 2024 as well as further surveys of the buildings at Rockabill Island to determine if a bat roost is present and should address the potential for any interaction between bats on Rockabill and the offshore development area. Consideration as to whether there is need for mitigation of significant impacts on bats and secondly, a risk a potential for deliberate disturbance which will require derogation under Article 16 of the Habitats Directive should also be addressed.

5. Onshore Biodiversity

Concerning the restoration of the habitats disturbed by works on onshore elements of the NISA windfarm project and biodiversity enhancement, it is noted that in Section 23.6.1.7 of the EIAR it is stated:

“Reseeding of grassland habitats will be implemented using hay transfer. This is an effective near-natural solution for grassland restoration, which avoids importing a seed mix and instead utilises the existing seed bank and seed resource. Adjacent, or nearby, grassland similar to the grassland that is being removed will be cut when grasses and flowering plants are in seed. These cuttings will be laid over the reinstated bare ground for natural colonisation. This method will be used, but not limited to, the following scenarios: at the margins of arable and agricultural grassland fields, at field boundaries where drainage ditches and hedgerows are crossed, at watercourse riparian edges if HDD has not been used and at temporary compound locations where semi-natural grassland is present.”

As set out in the Habitat and Species Management Plan (HSMP) included in EIAR Appendix 23.10, it is intended to use this hay transfer method of grassland reinstatement at the several locations along the onshore cables corridor where the cables were laid off-line to route them under watercourses as well as at the Belcamp substation, all sites which are to pass outside of the control of the project applicant post-construction.

However, at the grid facility site in Bremore it is intended as a biodiversity enhancement measure to sow a species rich grassland mix on an area of 33,483 square metres, as well as the planting a riparian grass and herb mix in an attenuation basin measuring 6,411 square metres. At Blake's Cross North, an additional area of species rich grassland will be sown measuring 5,500 square metres. The sowing of these grassland areas combined with the reinforcement of existing hedgerows and planting of new hedges is aimed in particular to benefit the locally breeding red listed bird species yellowhammer and meadow pipit. It is



stated the species rich grassland seed mixtures will preferably be sourced locally, “*or at a minimum, consist of species that are of native Irish origin, and which are well-suited to the soil conditions.*”

In this context, it should be noted the All-Ireland Pollinator Plan advises against planting wildflower seed outside a garden setting. To clarify, the following points are taken from the Position Paper by the Dublin Naturalists’ Field Club entitled ‘*The case against ‘Wildflower’ seed mixtures*’ which is endorsed by the All-Ireland Pollinator Plan and reproduced on their website.

- Seeds of non-local origin – even if the species are native – introduce new genetic strains which may displace or compromise the local, naturally occurring flora.
- Local, native species do not need to be sown. Native plants colonise suitable habitats by natural means.
- Seeds which are commercially produced and deliberately sown cannot, by definition, be wild and introducing them to the natural environment does not contribute to addressing biodiversity loss.

The genetic integrity of what remains of Ireland’s rare and ecologically significant native species is therefore threatened by the introduction of seed from external sources. Pollen from these geographical insertions and intrusions cannot be prevented from fertilising the local native stock of the same species or causing hybridisation with other closely related species.

It is recommended that if any permission is granted in response to the current application, that in order to preserve local floral biodiversity, it should be a condition of the permission that the landscaping plan for the grid facility site in Bremore should be amended to remove proposals to use wildflower seeds and replace with management of the existing seedbank to encourage natural germination and recolonisation. It is recommended that the modified HSMP shall be submitted to the Fingal County Council for their written agreement. The modified HSMP should include either a strategy for sourcing wildflower seeds of local origin to utilise in establishing areas of species rich grasslands proposed for the grid facility and Blake’s Cross North sites or a methodology to promote wildflowers establishing themselves on these sites by germinating from the existing soil seed banks and by natural dispersal. The modified HSMP shall also include proposals for sourcing, subject to the permission of the relevant landowners, aquatic plants and their seeds from local sites where such plants grow abundantly to use in planting up the attenuation basin area at the grid facility.

Summary of Recommendations

- It is recommended that any proposal for post-consent agreement of method statements, Construction Environmental Management Plan or similar documentation with NPWS is not adopted by An Bord Pleanála.



- It is recommended that the applicant develop and implement more appropriate methodologies to gather detailed empirical data so that the level of (water)bird migration through the proposed development area, and the potential impact of the proposed development, can be robustly assessed, e.g. considering technologies such as radar. Furthermore, the applicant should consider how such survey methods can be used for further monitoring and to support actions to mitigate any potential negative impacts on migratory (water)bird species that move through the proposed development area, for use during operation (at least), should the development proceed.
- In regards to assessment of impacts on land-based birds, the applicant should have not only considered, but implemented appropriate survey methodologies in order to detect and assess the level of bird migration through the proposed development area, working collaboratively with other ORE applicants, to determine more fully the potential impact and cumulative impacts of the proposed development/s across the territorial waters in the Irish Sea. It is recommended that the applicant is requested to respond to these observations by provision of clarifications or further information as the Board deems appropriate.
- The Department requests that further information be provided to inform a revision of the assessment of impacts of the marine birds of the North-west Irish Sea SPA in relation to this proposed development. Specifically, that the survey data from HiDef (2019) be integrated into the displacement analyses; and secondly the findings of the following papers indicating displacement impacts of greater than 4km for Red-throated Diver: Webb et al. 2017; APEM 2021; Heinänen et al. 2016; Zydalis et al. 2016; Mendel et al. 2019; Heinänen et al. 2020; and Vilela et al. 2020 be taken into account as part of the revision of the assessment.
- It is regarded that the evaluation of impacts of specific SCI birds (e.g. Kittiwake) associated with the North-west Irish Sea SPA; Lambay Island SPA; Ireland's Eye SPA; and Howth Head SPA in relation to this proposed development cannot currently support the making of a determination as to the impact on the relevant conservation objectives. It is recommended that the applicant re-analyse the impact of displacement of such marine birds by the proposed development in relation to specific relevant conservation objectives' attributes such as population size; spatial distribution; and forage spatial distribution, extent, abundance and availability.
- It is recommended that clarification be sought as to the sources of the precise parameters for Roseate Tern flight behaviour used in the CRM as well as a statement regarding the robustness of such data.
- It is recommended that the applicant is requested to reevaluate the CRM in the context of the limitations that have been identified in this section (see 2.3.3 in this submission), through the collection of additional information or re-analysis of existing data and to reassess the implications of these on the conservation objectives of the listed species for the relevant SPAs.



- The Board are advised that the applicant's approach to defining bespoke reference populations for this SPA relies upon larger population estimates pertaining to a wider region (as opposed to the smaller defined footprint of the SPA) as the basis for the impact assessment. It is the Department's view that this approach does not permit a full understanding of the implications of the proposed development on the conservation objectives of the relevant SPAs.
- The Board are advised that the Department does not agree with the applicant's determination that the Irish east coast Guillemot breeding season ends at the end of June. It is recommended that the applicant is requested to re-evaluate the data in this context and to re-interpret the consequences for the impacts on the conservation objectives of the SPA.
- It is recommended that further information should be provided by means of specific surveys of the site for pinnipeds and that this should also be set in the context of seasonal changes in distribution of these species.
- It is recommended that further acoustic information to fully characterise the site is requested from the applicant to understand the implications of the proposed development. Acoustic surveys to allow for monitoring of baleen whales, such as minke whale, should also be considered.
- It is recommended that further information is requested regarding the proposed use of ADD as a potential mitigation tool. Such information should include a consideration of any in-combination effects with surrounding anthropogenic source and estimation of individuals of each species that are likely to be affected. Consideration as to whether such deliberate disturbance will require derogation under Article 16 of the Habitats Directive should also be provided.
- It is recommended further data should be acquired or more data analysed to allow further consideration of the implications of the proposed development on offshore bat activity. These analyses should include use of the data collected during vessel and headland surveys in 2024 as well as further surveys of the buildings at Rockabill Island to determine if a bat roost is present and should address the potential for any interaction between bats on Rockabill and the offshore development area. Consideration as to whether there is need for mitigation of significant impacts on bats and secondly a risk a potential for deliberate disturbance which will require derogation under Article 16 of the Habitats Directive should also be addressed.
- It is recommended that if any permission is granted in response to the current application, that in order to preserve local floral biodiversity, it should be a condition of the permission that the landscaping plan for the grid facility site in Bremore should be amended to remove proposals to use wildflower seeds and replace with management of the existing seedbank to encourage natural germination and recolonisation. It is recommended that the modified HSMP shall be submitted to the Fingal County Council for their written agreement. The modified HSMP should include either a strategy for sourcing wildflower seeds of local origin to utilise in establishing areas of species rich grasslands proposed for the grid facility and Blake's



Cross North sites or a methodology to promote wildflowers establishing themselves on these sites by germinating from the existing soil seed banks and by natural dispersal. The modified HSMP shall also include proposals for sourcing, subject to the permission of the relevant landowners, aquatic plants and their seeds from local sites where such plants grow abundantly to use in planting up the attenuation basin area at the grid facility.

You are requested to send any further communications to this Department's Development Applications Unit (DAU) at manager.dau@npws.gov.ie, or to the following address:

The Manager
Development Applications Unit (DAU)
Government Offices
Newtown Road
Wexford
Y35 AP90

Is mise, le meas

A handwritten signature in blue ink, appearing to read 'J Lyons'.

Joanne Lyons
Development Applications Unit
Administration



Nature Conservation Relevant Sources:

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