BirdWatch Ireland submission/observation to An Bord Pleanála Case OA06D.321992 (Dublin Array Offshore Wind Farm)

A submission by staff at BirdWatch Ireland

Contact: Rochelle Streker, Marine Spatial Planning Officer
BirdWatch Ireland Address for correspondence: BirdWatch Ireland, Unit 20 Block D, Bullford Business Campus, Kilcoole/Greystones, Co. Wicklow.
Phone: + 353 87 4374401
Email: rstreker@birdwatchireland.ie

Introduction

BirdWatch Ireland is Ireland's leading charity focused on the conservation of wild birds. Established in 1968, we currently have over 15,000 members and supporters and a local network of over 30 branches nationwide. As an organisation, our conservation team is actively involved in seabird conservation, research, and monitoring. Our policy and advocacy team are active stakeholders contributing to marine conservation at a national and EU level. We are the Irish partner of Birdlife International and are members of the Irish Environmental Network, Stop Climate Chaos, and the Sustainable Water Network, and a founding partner of the Fair Seas coalition.

Our vision is that Ireland should become a world leader in marine conservation and the sustainable management of our marine environment. The protection and restoration of Ireland's biodiversity is vital, and rapid decarbonisation is an essential element of this process. BirdWatch Ireland therefore supports the production of renewable energy and offshore wind to help achieve this. However, offshore renewable energy (ORE) devices and infrastructure must be sensitively located to minimise negative impacts on marine and terrestrial ecosystems, especially on seabirds as they may be more impacted than other taxa.

Ireland's Seabirds

Ireland's marine environment plays host to a huge diversity of ornithological life year-round. In summer, our offshore islands and cliffs host seabird breeding colonies, many of which are of international importance or regional significance. In winter, our coasts and estuaries are of huge importance for wintering waterbirds. Seabirds, as apex marine feeders, are exposed to all threats affecting the ocean and are excellent biodiversity indicators, providing us with an insight into the health of, and pressures facing, our marine environment [1].

However, 23 of 24 breeding seabirds in Ireland are either Red or Amber listed Birds of Conservation Concern [2]. They are highly vulnerable, facing current pressures and future threats, including (ranked in order of frequency of occurrence) [3].

- Bycatch and incidental killing (due to fishing and hunting activities) [4]
- Desynchronisation of biological/ecological processes due to climate change
- Decline or extinction of related species (e.g. food source/prey, predator/parasite, symbiote, etc.)
- Other invasive alien species (other than species of Union concern)
- Potential impacts from wind, wave and tidal power, including the associated infrastructure

Even though Ireland has designated a network of Special Protected Areas (SPAs) at coastal sites aimed at protecting the most important areas for breeding seabirds, trends in population

and range for some species are declining [5]. At a European level, of the 24 seabird species regularly breeding in Ireland, nine are declining (Atlantic puffin *Fratercula arctica*, Black-headed gull *Larus ridibundus*, European herring gull *Larus argentatus*, European shag *Gulosus aristotelis*, Fulmar *Fulmarus glacialis*, Great black-backed gull *Larus marinus*, Kittiwake *Rissa tridactyla*, Little tern *Sternula albifrons*, and Mediterranean gull *Larus melanocephalus*) and an additional four have an unknown population trend (Black guillemot *Cepphus grylle*, European storm petrel *Hydrobates pelagicus*, Leach's storm petrel *Hydrobates leucorhous*, and Manx shearwater *Puffinus puffinus*) [6]. Nationally, of these 24 species, two species are declining in Ireland (Atlantic puffin and Kittiwake) with an additional two species (Arctic tern *Sterna paradisaea* and Common tern *Sterna hirundo*) facing probable declines due to Highly Pathogenic Avian Influenza (HPAI) H5N1 since last census; population trends for a further three species (European Shag, Fulmar, and Great cormorant *Phalacorax carbo*) are unknown [5 and Pers Comm Dr. Steve Newton, Senior Seabird Conservation Advisor, BirdWatch Ireland October 8th 2024]. Due to the sensitive nature of these populations, special consideration should be given to the potential effects of offshore developments on these seabird species. In particular, the cumulative effects of multiple developments must be adequately assessed.

For many years BirdWatch Ireland has been working to gather data and information on the importance and usage of our marine environment for seabirds and waterbirds. Our work includes tagging and tracking of seabirds at key sites, Digital Aerial Survey (DAS) work and observations on the daily movements and flight lines of a range of species. In addition to annual monitoring and management of key seabird colonies in the Irish Sea for more than 20 years (carried out largely under contract to the National Parks and Wildlife Service (NPWS)), we also monitor seabird populations at the Cliffs of Moher (under contracts) and since 2002, have annually monitored Kittiwake populations and productivity at Downpatrick Head (Co Mayo). Additionally, we have produced bird wind sensitivity mapping for terrestrial wind developments. The resulting map, hosted on the website of the National Biodiversity Data Centre, and the report accompanying it, is another tool in the toolbox to assist in the careful roll out of renewable energy infrastructure and to minimise the impacts to wild birds [7]. BirdWatch Ireland therefore has a unique understanding of the importance of Ireland for birds and the possible impacts of new offshore windfarm developments on their populations.

The main impacts of ORE windfarm projects on seabirds and waterbirds include displacement, disturbance, and collision risks. However, there are a range of other possible impacts, including:

- Barrier effects: wind turbines and structural development can interfere with birds foraging and migration routes, potentially increasing their individual energy expenditure and limiting the available habitat.
- Cumulative impacts: how are the cumulative impacts being examined? We are extremely concerned that the cumulative impacts of all current and future ORE projects within and around the Irish marine environment are not being adequately assessed.

- Wider ecological impacts on fish stocks/prey base and its impact on fishing effort and location: Knowledge of the impact on the prey base/fish stocks is essential to be able to fully assess the impacts on seabirds. How will fishing efforts be shifted and what is the likely impact of such a shift on seabird foraging opportunities? Consideration should be given during construction and post-construction on how the additional disturbance and new structures within the marine environment may change prey location and numbers.
- Impacts on non-seabird species, waterbirds and other larger birds using the air space: The flight heights are not known for key species and this data has not been collected, as many digital aerial surveys don't collect height data.

Within our response, we will refer to Important Bird and Biodiversity Areas (IBAs). BirdLife International maintains a global database of IBAs, sites which are of particular importance for the conservation of wild birds and their habitats [8]. While IBAs do not afford legal protection to a site, they are identified using a globally agreed standardised set of data-driven criteria and thresholds. In 2024, BirdWatch Ireland, working with BirdLife International, completed the identification of a network of colony and marine IBAs in Ireland's Exclusive Economic Zone (EEZ) [9]. Within these sites, the species identified as qualifying interests occur in regionally or nationally significant numbers [8]. The sites also support other important populations (though they may not meet the thresholds for IBA designation), highlighting how these IBAs represent the most important areas for breeding and foraging seabirds in our waters. During this process, 24 marine IBAs and 49 colony IBAs were identified (see Figure 1 and 2 respectively); these sites are available on the BirdLife Data Zone [10].

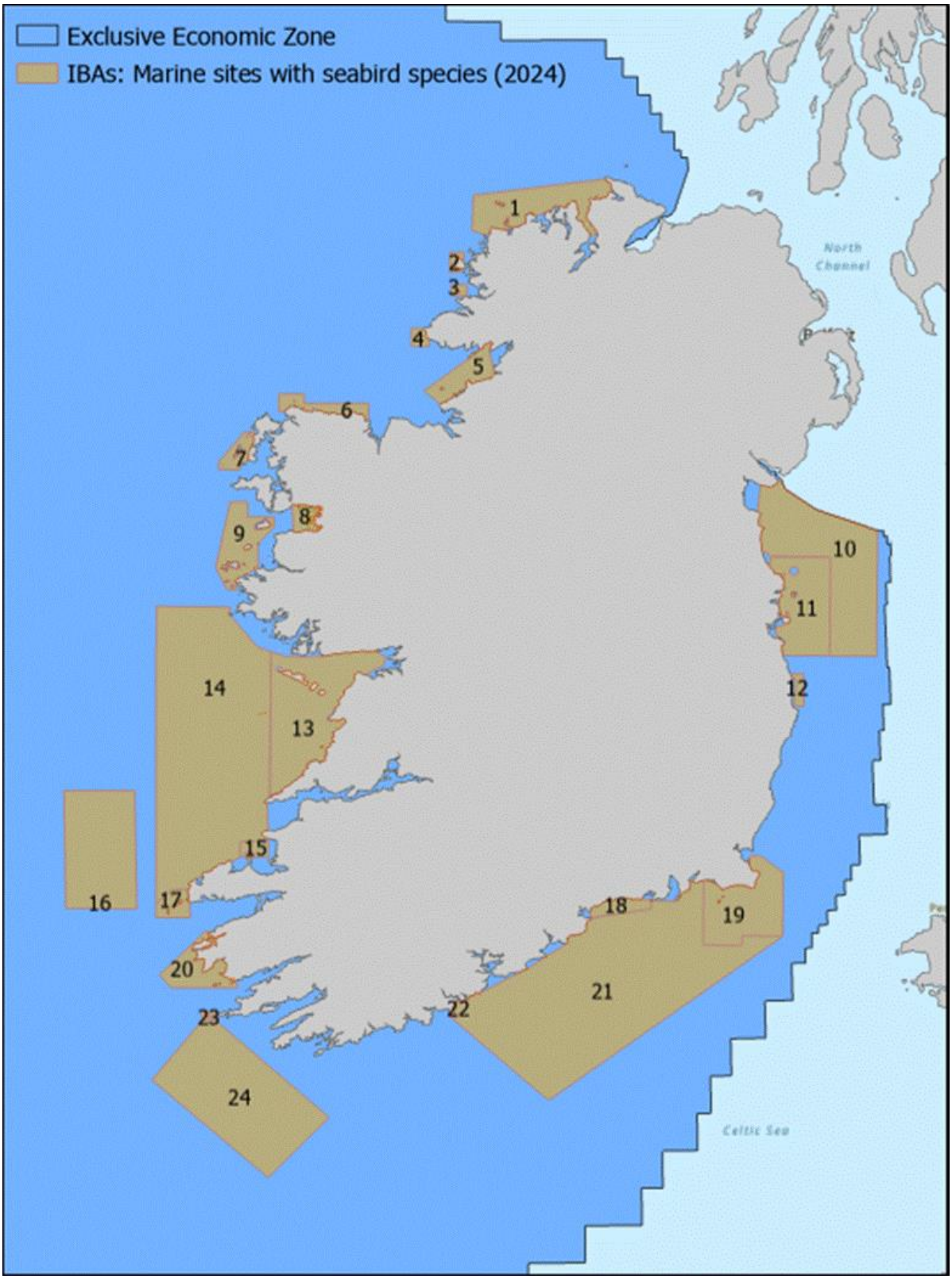

Figure 1: Ireland's marine IBA network of 24 sites.

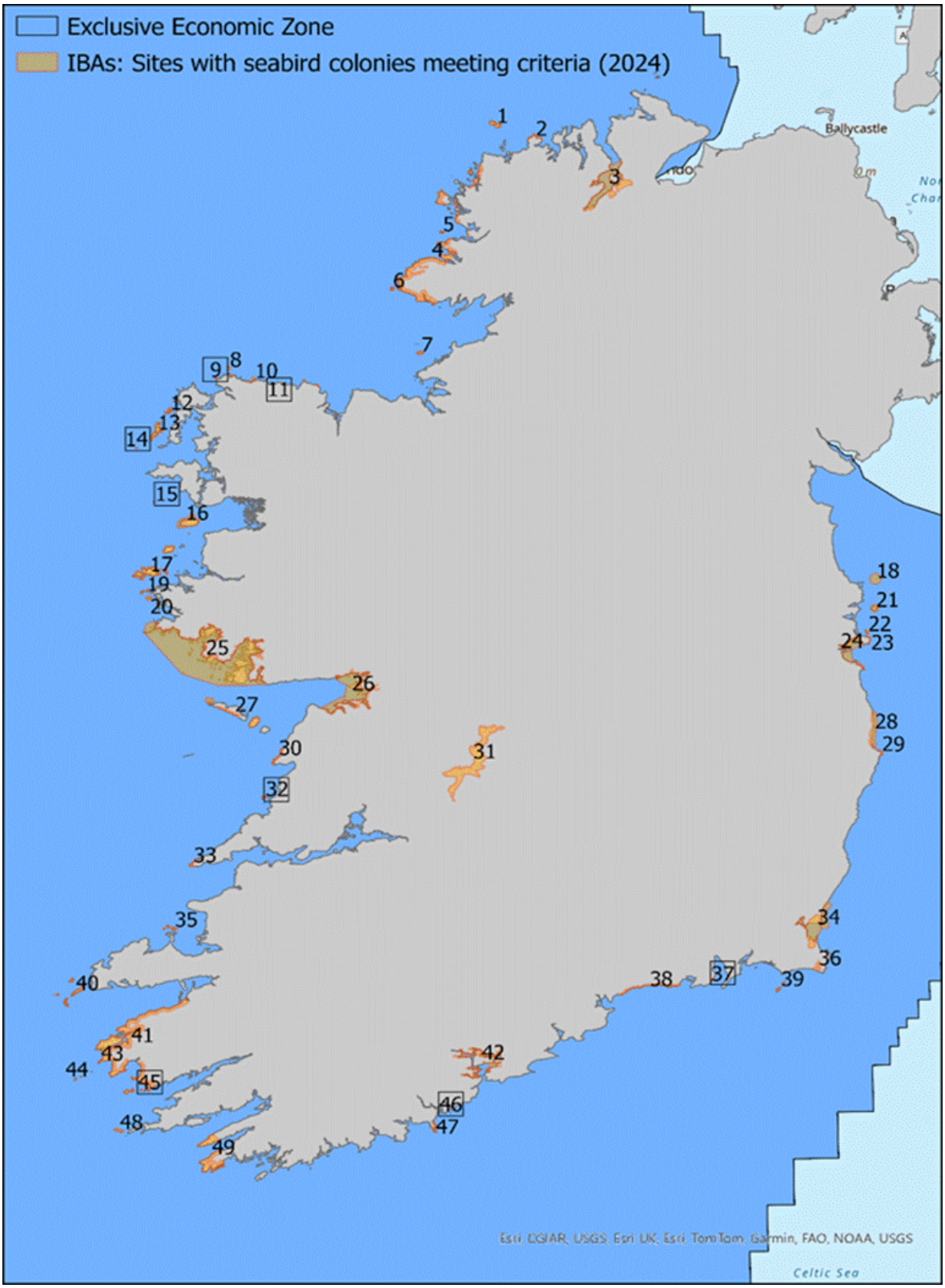

Figure 2: Ireland's colony IBA network for 49 sites. Sites with boxes around the numbers are new IBAs, where sites without were previously identified and have been updated in 2024.

Specific IBAs that could be affected and are referenced in our response include two marine IBAs that occur along the east coast of Ireland near the Dublin Array Offshore Wind Farm and offshore cabling location, and an additional six colony locations are also near to either the array area, offshore cabling area, or onshore works (Table 1).

Table 1: The two Irish marine IBAs and six Irish colony IBAs near the proposed Dublin Array Offshore Wind Farm development areas and the seabird species present at each IBA, including qualifying interest species used in designating the IBAs and other species also present within these IBAs that did not meet criteria for use in designation [9]

Type of IBA	**Name of IBA (Map reference)**	**Qualifying Interest Species (meet designation criteria)**	**Other Species Present**
Marine	Wicklow Murrough marine extension (12)	Auks (Guillemots and Razorbills), Little tern	Red-throated diver (*Gavia stellata*)
Marine	Dublin Islands and cliffs marine extension (11)	Atlantic puffin, Black guillemot, Black-legged kittiwake, Common guillemot (*Uria aalge)*, Common tern, European herring gull, European shag, Great black-backed gull, Great cormorant, Manx shearwater, Northern gannet (*Morus bassana*), Razorbill (*Alca torda*), Roseate tern (*Sterna dougallii*)	Arctic tern, Common gull (*Larus canus*), Lesser black-backed gull (*Larus fuscus*), Manx shearwater, Northern fulmar
Colony	Wicklow Head (29)	Black-legged kittiwake	Black guillemot, Common guillemot, European herring gull, European shag, Great black-backed gull, Northern fulmar, Razorbill
Colony	North Wicklow coastal marshes (28)	Little tern	N/A

Colony	Dublin Bay (24)	Common tern	Arctic tern, Black guillemot, European herring gull, Great black-backed gull, Lesser black-backed gull
Colony	Howth Head (23)	Black-legged kittiwake	Black guillemot, Common guillemot, European herring gull, European shag, Northern fulmar, Razorbill
Colony	Lambay Island (21)	Atlantic puffin, Black-legged kittiwake, Common guillemot, European herring gull, European shag, Great black-backed gull, Great cormorant, Northern gannet, Razorbill	Black guillemot, Common gull, Lesser black-backed gull, Manx shearwater, Northern fulmar
Colony	Rockabill (18)	Black guillemot, Black-legged kittiwake, Common tern, Roseate tern	Arctic tern

BirdWatch Ireland submission/observation to An Bord Pleanála Case OA06D.321992 (Dublin Array Offshore Wind Farm)

BirdWatch Ireland's key concerns and questions are detailed below. We have separated our concerns into general and more specific, relating to whether the concerns are broadly about the proposed Dublin Array Offshore Wind Farm (hereby referred to as DAOWF) or more specific to the assessments and surveys taken in the offshore or intertidal areas to evaluate potential impacts to birds. This was done to aid in the understanding of where our concerns lie within the context of all the proposed development associated with the DAOWF project. We stress that these concerns may not be comprehensive, as additional concerns could arise as our knowledge increases and/or seabird populations change over time.

General concerns relating to the DAOWF

1. **Concerns with project flexibility and potential for greater environmental impacts**

While we understand that flexibility is important to the DAOWF development team, we are concerned at the amount of unknown information associated with this flexibility and the potential that these unknowns could lead to greater negative environmental impacts than detailed within

the DAOWF's Environmental Impact Assessment Report (EIAR) and Natura Impact Statement (NIS) documents. It is stated within the EIAR Non-Technical Summary that '*the unconfirmed details in this planning application*' include '*the size and number of turbines, the size of the offshore substation, the layout of turbines, the type and size of the foundations for the turbines and substation (including protection methods), and the length and layout of the offshore cables*'. We assume this flexibility has been given to allow for the project to move forward with the newest and most appropriate technology when construction is approved and begins; however, we are concerned that this flexibility is more than was given to other Phase I projects and is so comprehensive that it makes it unclear what and where infrastructure might be in order to properly address potential impacts to birds. This is particularly concerning as seabirds are affected throughout the construction, operation, and decommissioning phases of offshore wind farms.

We acknowledge that the DAOWF team has stated in the EIAR Non-Technical Summary that they have '*identified measures to avoid, prevent and/or reduce potential impacts from the proposed development*'; however, in Table 132 of the EIAR Volume 3: *Offshore Infrastructure Assessment*- Chapter 6: *Offshore and Intertidal Ornithology*, no additional mitigation measures have been taken at this stage for the expected effects of impacts on birds. We also have specific concerns about the lack of information about the '*type and size of the foundations for the turbines and substation, including protection methods*' as the amount and type of foundations can alter the seabed substrate from soft to hard substrate, altering the habitat type and potentially making this important seabird foraging area unsuitable for prey fish (more on this below in concern 4). With so many uncertainties about the number, size, layout of the DAOWF , coupled with the inadequate assessment of the effects on the Natura 2000 network (e.g. no reference or assessment of effects to the qualifying interests of Rockabill SPA or the Seas Off Wexford SPA), there is a significant likelihood that the environmental impacts of the project could be greater than what is reported within the EIAR and NIS assessments. We would ask that in all areas where flexibility has been given, the 'most harmful' option to the environment and biodiversity is used in assessments to ensure that the effects from impacts are not greater in reality when construction and operation of the DAOWF begins or that assessments are redone when the project has finalized its design to appropriately assess expected effects of impacts to the environment and biodiversity.

2. Lack of surveys in all sea/weather conditions

We would like to highlight that all surveys for birds within the DAOWF's marine footprint (which we define as the entirety of the offshore and intertidal areas that will be affected by DAOWF construction and operation) have only been undertaken in ideal conditions. Within the ornithology chapter, intertidal surveys '*were carried out in good weather where possible, to maximise detection rates of birds on the water*' and offshore boat-based surveys could not be completed every month '*due to poor weather conditions in some months*'. We acknowledge that

this may be due to necessity and safety, and we are not suggesting changing this or putting anyone at risk; however, it is very important to note that birds are still using the marine environment outside of these perfect conditions and therefore there could be increased or differing uses of the offshore marine footprint by birds that we do not know or understand at this time.

A potential way to address this knowledge gap would be to increase research into the offshore usage of the marine environment by seabirds using Global Positioning System (GPS) tracking studies and data. Tracking studies of seabirds have also identified differing uses of marine and tidal habitats by seabirds, such as large seabirds sheltering using natural and man-made features during hurricanes [11] and differing changes in the behaviour of different seabird species based on their size and equatorial location [12]. These studies highlight how seabird usage of the marine environment can change during adverse weather, something that is important to understand in order to accurately assess how seabirds might be impacted by offshore windfarms, which will always remain present within the marine environment. Tracking key species of concern, or species that are shown to use the DAOWF footprint in high density during ideal conditions, can give information about the usage of the marine environment by birds at any time and despite weather conditions that limit the ability to collect data using alternative methods. Radar is another alternative method to collect data on usage of the marine environment by seabirds [13], as is utilising citizen science data from 'sea watchers' who often survey from land during poor weather or completing additional surveys from land during poor weather (though this information would be limited to what seabirds and area can be seen from land) [14]. Without this information, it is possible that seabirds are using the DAOWF marine footprint differently during adverse weather and therefore could be more at risk from the impacts of permanent offshore infrastructure. Until it is known how seabirds and other birds are using and utilising the marine environment in all conditions throughout the year, it is not possible to accurately predict the effects of the DAOWF on seabirds. We would argue for caution to be taken in assessing the DAOWF offshore data and surveys until more research is done, data is assessed, and findings reached to better understand how birds are utilising the marine environment in all sea/weather conditions and during the nighttime, particularly especially considering how important the Irish Sea is to many breeding and passage birds in Ireland.

3. Cumulative effects creating a barrier to the southeast Dublin coastline

We have serious concerns about the cumulative effects of the DAOWF with the other two offshore wind farms proposed off Dublin and Wicklow counties, Codling Wind Park (An Bord Pleanála Case OA29N.320768) and Arklow Bank Wind Park 2 (An Bord Pleanála Case OA27.319864). These proposed wind parks lay in a row from Dún Laoghaire to Gorey (Figure 3 below) and have the potential to create a barrier for birds either migrating through or breeding within the Irish Sea to a large swath of the east Irish coastline, particularly those individuals

nesting along the coastline directly inshore from these three proposed offshore wind farm developments or individuals foraging on the banks the proposed wind farms will also inhabit.

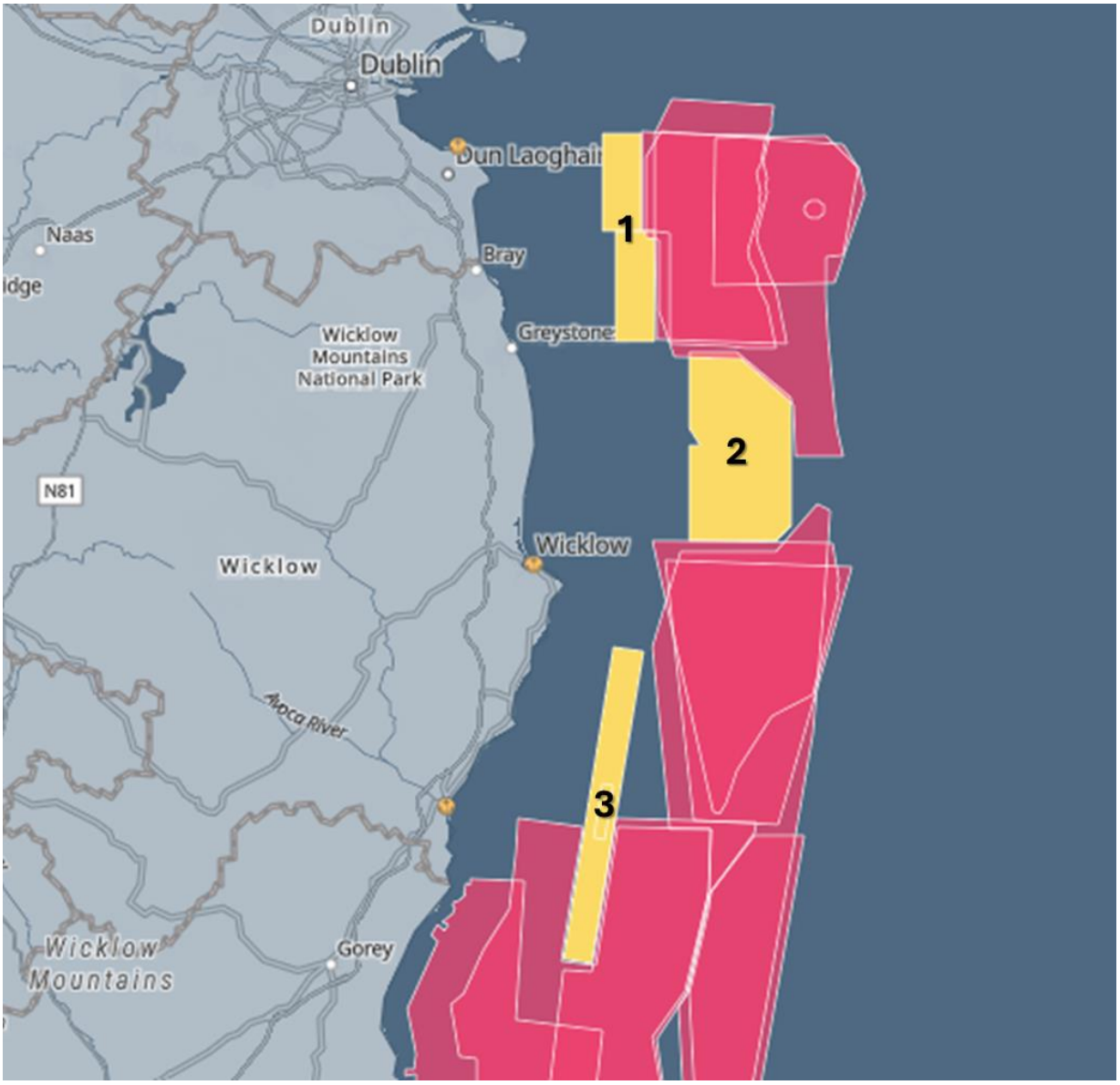

Figure 3: Map of the locations of the three proposed offshore wind farms (yellow polygons) showing the stretch of coastline they will inhabit within the Irish Sea, as taken from the 4C Offshore website [15]. From top to bottom, the wind farms are DAOWF (1), Codling Wind Park (2), and Arklow Bank Wind Park 2 (3).

We acknowledge that the EIAR Non-Technical Report states that cumulative impacts of the Dublin Array with other wind farms in the area was expected to be '*negligible to low, with no risk to seabird populations*' on the basis that '*seabirds are highly mobile and can adapt their foraging behaviour*'; however, we believe that this is an oversimplification of seabirds and their

behaviour, particularly in light of the large amount of the marine environment that is planned to be developed. This statement does not take into account the relative importance of the habitats, as foraging grounds such as Kish and Bray banks are of significant importance to foraging seabirds during the breeding season and also during vulnerable periods such as moulting or staging (more on this in concerns 4 and 5.1 below), and the restricted ability of nearby breeding seabirds to travel further away from nesting areas during the breeding season (let alone the impact of having to travel further to foraging on individual fitness and/or reproductive success) [16]. With the three windfarms within such a small section of the Irish Sea, the combined associated displacement could lead to the abandonment of breeding colonies and sites along this coastline or a decrease in their reproductive output through forcing birds to fly further to forage [17]. Potential colonies at risk include SPAs and their qualifying interest (QI) species such as Wicklow Head SPA's Kittiwake colony [18], and Rockabill, Dalkey Island and South Dublin Bay and River Tolka Estuary SPAs colonies of Roseate, Common, and Arctic terns [19, 20, 21]. Our IBA report supports these SPA colonies as regionally and nationally important, as well as identifying the Wicklow Murrough marine extension marine IBA, whose designating species include auks and Little terns, within the footprint of these three wind farms (see Table 1) [9]. The movement to these SPA breeding colonies and use of the marine IBA could be affected by these offshore developments, and the expectation that seabirds can just 'adapt' is inappropriate and lacking in scientific basis when assessing impacts to seabird species.

Specific concerns about impacts from DAOWF construction and operation

4. **Impacts to important seabird foraging habitat**

We have concerns about the potential effects of impacts from the DAOWF that will alter the substrate of the sandy substrate of Kish and Bray banks and change the prey fish availability of this important foraging area for seabirds. As stated in concern 1 of our submission, it is unknown exactly what foundation will be used for the turbines and substation, but we can assume that the foundation will be a hard substrate. This has the potential to permanently alter the seabed substrate of this area to a hard bottom, which will impact the fish communities that can use and utilise the area. This concern is recognised within the DAOWF's EIAR Volume 3: *Offshore Infrastructure Assessment*- Chapter 6: *Offshore and Intertidal Ornithology* with Impacts 4 and 6 during the construction and operation periods respectively; however, these impacts are focused on the '*indirect effects as a result of habitat loss/displacement of prey species due to increased noise and disturbance to seabed in array area and offshore export cable corridor (ECC)*' and not on the potential for wide-spread and permanent habitat change that could result in decreased prey availability. This potential for long term habitat change is acknowledged in the EIAR Non-technical Report when discussing fish and shellfish ecology, where it is stated '*important areas for spawning, nursery, and feeding might be impacted … the presence of underwater infrastructure may lead to long term habitat change*' and further expanded in Chapter 6: *Offshore and Intertidal Ornithology* when it is stated that '*the seabed habitats*

removed by the installation of infrastructure will reduce the amount of suitable habitat and available food resource for fish and shellfish species and benthic communities associated with the baseline substrates/sediments, which could in turn, reduce the availability of these prey species for foraging seabirds in the vicinity'.

When the potential for impacts to prey species for foraging seabirds is discussed within the DAOWF's EIAR, the impacts are all assessed at negligible to low due to '*the high mobility of seabirds and their ability to adapt to different prey sources*'; however, this is an over-simplification of seabird behaviour and does not take into account how important the Kish and Bray banks are as a foraging resource for seabirds. At BirdWatch Ireland, we have undertaken several surveys of the Kish bank starting in 1999 and most recently in 2017 detailing its use and importance to seabirds throughout the year, indicating '*the importance of the bank as a foraging area*' [22, 23, 24]. These surveys show that '*the assemblage of seabirds using the Kish Bank area has remained near constant over the 15 year period*' and that '*most of the locally breeding species were recorded using the bank to a lesser or greater degree during the breeding cycle and/or in the post-breeding period*' [22, 24]. This post-breeding period is particularly important for auk species such as Common guillemot and Razorbills, who use the Kish bank heavily during a vulnerable period when males accompany '*flightless but fledged offspring during dispersal away from colonies and females {are} probably flightless during the moult of their primaries*' [23]. Kish bank as a sanctuary during this vulnerable flightless period is very important to the survival of these species and the importance of this marine area is further illustrated by our identification of the Wicklow Murrough marine extension IBA with auks as an important species of interest. In our IBA identification, and based on the data, BirdLife and BirdWatch Ireland aligned the Wicklow Murrough marine extension IBA with the new Wicklow Murrough SPA extension boundary. This was for pragmatic reasons, as the top 1% of areas used by Auks in winter extends along a large portion of the east coast - an area too large to identify as a practicable management unit but that does include the DAOWF marine footprint [9].

Kish and other nearby banks, including Bennett and Bray, have also been identified as an important foraging area for seabirds and an area of '*renowned sandeel (Ammodytes tobianus) stocks*' that helps support breeding seabirds in the summer [22, 25]. It is important to highlight that sandeels are a very important prey item for many seabird species, including Kittiwakes which are a QI species for the nearby Wicklow Head SPA [18], and they prefer sandy substrates like the habitat available at Kish bank [26]. BirdWatch Ireland's Kish bank surveys found many species of seabirds, including auks and terns, bringing '*fish back to their young in their bills'* with individuals *'tracked back towards their breeding colonies following a successful dive: westward bound birds were heading to Bray Head and northward bound ones to Howth Head, Ireland's Eye, and Lambay*' [23, 24]. This surveying, as well as previous studies, show the importance of this foraging habitat for not only colonies nearby but also to other colonies of seabirds further north in the Irish Sea including Rockabill and Lambay Island SPAs [22, 23, 24, 25]. The use of the bank as an important foraging site is further illustrated by '*species richness and bird*

densities {which} tended to be highest on the shallow waters of the bank itself' where prey fish are most easily accessible to sea- and waterbirds [27].

We appreciate that effects on prey fish are considered within the DAOWF and in particular that sandeels are mentioned as important to seabirds. In EIAR Volume 3: *Offshore Infrastructure Assessment*- Chapter 6: *Offshore and Intertidal Ornithology*, it is stated that '*sandeels (and other less mobile prey species) would be affected by long term subtidal habitat loss*'. While it is mentioned within the chapter that sediments are expected to recover, it is important to acknowledge that the change in seabed substrate may also permanently displace sandeels and other prey fish due to the habitat loss and therefore alter the availability of these important prey fish for foraging and breeding seabirds. Further survey and analysis to understand the impact of construction works on sandeel populations is absolutely essential. Indeed, further information is required on the range and extent of the sandeel habitat within the Irish east coast waters, as well as their productivity and availability to seabirds during the breeding period in particular. These banks are exceptionally important for the prey of qualifying interests of the surrounding breeding colony SPAs, as evidenced by BirdWatch Ireland surveys, and therefore should be protected and impacts from the DAOWF minimized or mitigated for.

5. Specific species concerns

Below we have detailed concerns about assessments and potential impacts to specific species of seabirds that we believe have not been considered in enough detail within the DAOWF EIAR and NIS. Some of these species were highlighted above in other concerns, but here we will specifically address concerns to these key species.

5.1 Common guillemot

We are concerned about Common guillemots as they are particularly sensitive to disturbance due to offshore construction and infrastructure and the Kish bank and nearby nesting areas are important to the species. While impacts from construction and operation of the DAWOF, as well as cumulative impacts, were assessed as '*negligible to low, with no significant population-level effects anticipated*' within the EIAR for the species, we have concerns about the assessments within the EIAR and believe there is potential for significant impacts to Common guillemots due to their heavy use of the area and its importance to them during a vulnerable period of their life stage.

As stated in the EIAR Volume 3: *Offshore Infrastructure Assessment*- Chapter 6: *Offshore and Intertidal Ornithology*, Common guillemots (hereby referred to as Guillemots) are sensitive to offshore wind development and show avoidance and changes in behaviour when offshore wind infrastructure is present in post-construction studies [28, 29]. Assessments present in the DAOWF EIAR show that based on a 60% displacement rate and both a 3% and 5% mortality

rate for '*Impact 8: Displacement and barrier effects on key bird species within the array area and appropriate buffer as a result of offshore infrastructure*' showed an increase in the baseline mortality rate of greater than 1% for breeding adult guillemots (2.08% and 3.50% respectively); however the '*significance of any effect on guillemots from displacement and barrier effects associated with Dublin Array would be a Slight Negative effect, which is Not significant in EIA terms*'. We do not agree with this assessment and believe the mortality rate of greater than 1% in two of the scenarios, along with the evidence from our own surveys of Kish bank which show the importance of this habitat to a sensitive species during vulnerable periods of their life cycle (for foraging during the breeding season and for flightless individuals post-breeding), indicate that the effects from the planned DAOWF infrastructure could be very significant [22, 23, 24].

5.2 Shag

The impacts to Shags in the project proposal need be considered further due to the proximity of important breeding sites and the use of the Kish bank as an important foraging area by the species. DAOWF's own surveys show heavy use of the area by the species in both offshore and intertidal surveys undertaken. Shags were a key species seen in a majority of both survey types and they were also identified as a species of '*particularly sensitivity to disturbance*' during construction within the EIAR Volume 3: *Offshore Infrastructure Assessment*- Chapter 6: *Offshore and Intertidal Ornithology*. The '*predicted annual shag mortality due to displacement effects for adults in the breeding season and all ages in the non-breeding season*' was found to be over a 1% increase to the annual baseline mortality rate; however, '*the significance of any effect on shags from displacement and barrier effects associated with Dublin Array is a Slight Adverse effect, which is Not significant in EIA terms*'. In BirdWatch Ireland's surveys of Kish bank, there was '*a distinct peak in June when birds were still feeding young in the nes*t' with numbers '*distinctly higher on the shallowest waters of the bank*' highlighting that foraging is the main reason shags are so often present on site [23]. It is also stated that '*in some instances, Shags surfacing from a dive immediately flew off purposefully towards one of the afore-mentioned colonies*' of Howth Head, Ireland's Eye, Lambay, and Bray Head [23]. This use of the Kish bank habitat by breeding Shags is further illustrated by the research done by BirdWatch Ireland's FAME Seabird Tracking Project, which found '*the main feeding concentration was found on underwater ridges such as the Kish Bank to the south of Lambay*' when tracking Shags nesting on Lambay Island [27] (See Figures 4 and 5 below).

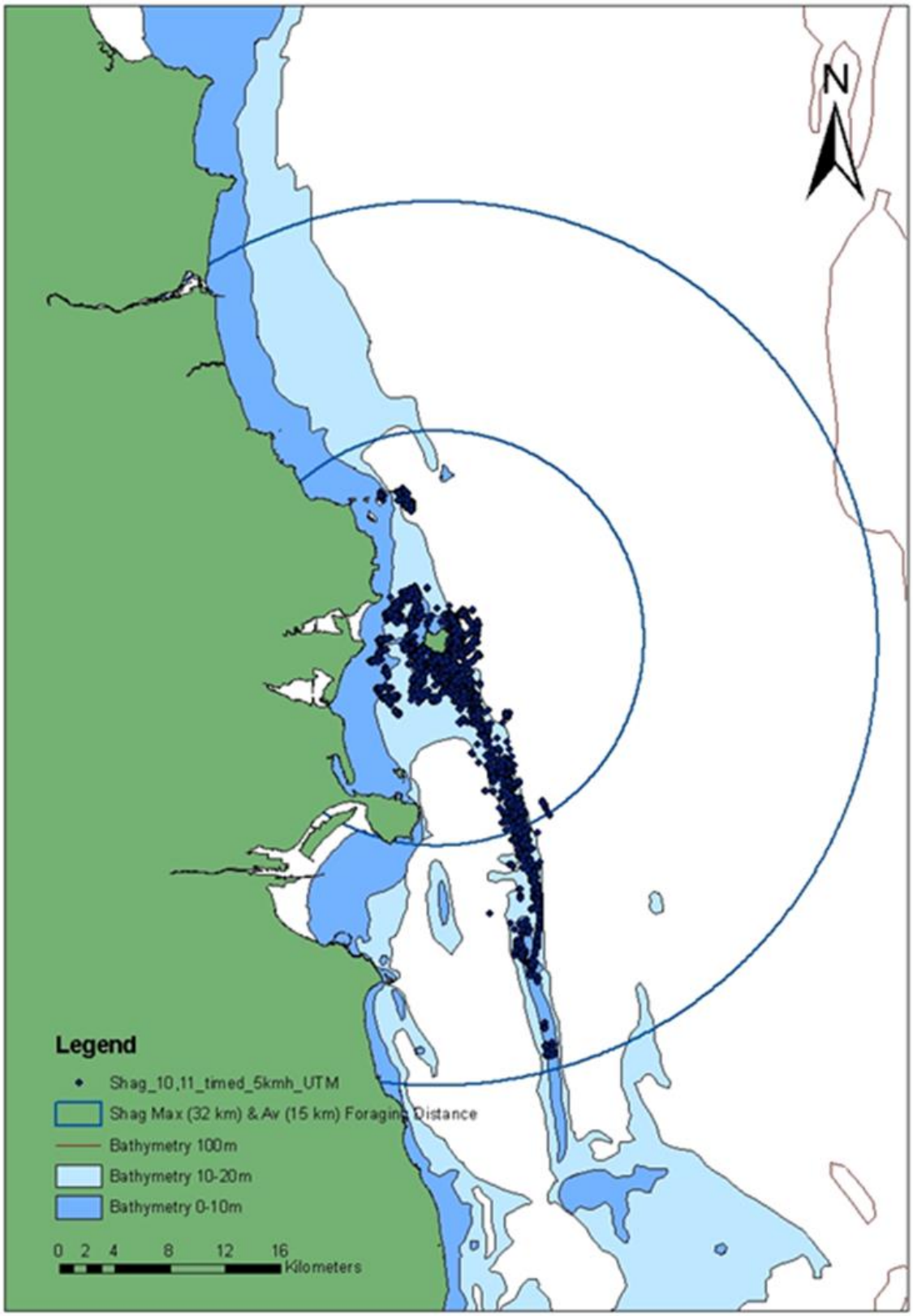

Figure 4: GPS data with mean and max distance radii of foraging Shags from Lambay island (n=22 individuals) [27]

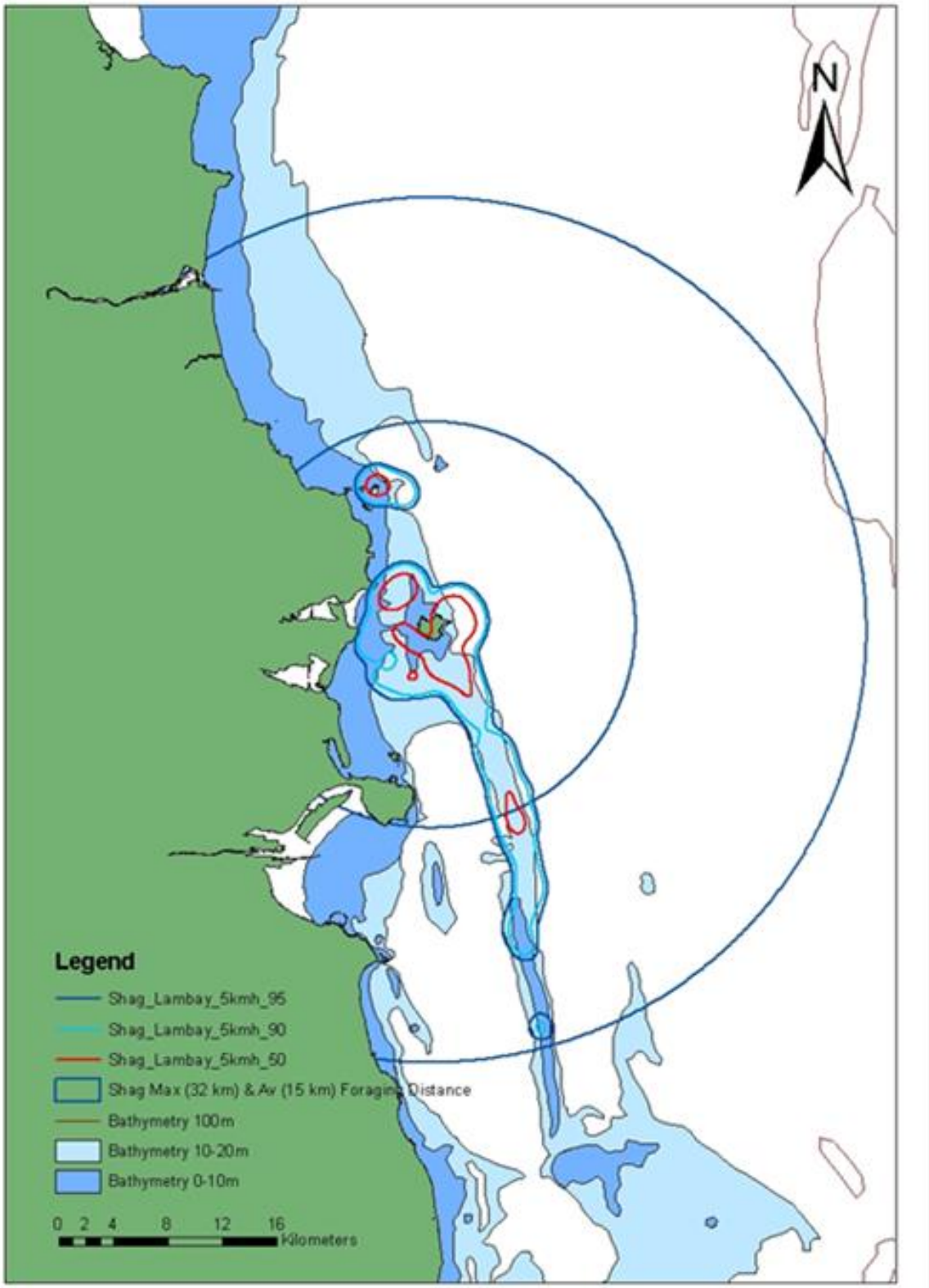

Figure 5: GPS data Kernel density analysis of foraging Shags from Lambay island (n=22 individuals) [27]

Due to the heavy use of the area by Shags, in both the offshore and intertidal, and the likelihood that a majority of this behaviour is foraging for both the individual and their offspring, this area is very important to the survival of local populations including Lambay SPA, where Shag are a qualifying interest, and likely for Shags that breed at other coastal SPAs also. It is not possible to rule out significant adverse impacts to this species based on the information provided in the DAOWF assessments, but more importantly based on the evidence of importance from tracking data.

5.3 European herring gull

European herring gulls (hereby referred to as Herring gulls) were recorded frequently in surveys for the DAOWF's EIAR Volume 3: *Offshore Infrastructure Assessment*- Chapter 6: *Offshore and Intertidal Ornithology*, being recorded in 70% of the Intertidal surveys and recorded on baseline surveys in all months for the offshore area. It is also interesting to note that these surveys showed opposite seasonal peaks in use, with the peak counts of Herring gulls in the Intertidal area in January and September and peaks mean counts in the breeding season in the offshore surveys, highlighting the importance of the DAOWF's entire footprint to the species throughout the year. Additionally, Herring gulls had one of the higher collision risks for a seabird species; though the DAOWF's EIAR found that '*collision effects associated with Dublin Array is a Not Significant effect*'. We appreciate that the DAOWF acknowledges that many of these Herring gull individuals will '*potentially originate from a number of SPAs in the region, as well as non-SPA colonies*' and would highlight that our IBAs also support the assertion that nearby areas are important to the species [9]. Our major concerns lie in the potential for cumulative collision effects on Herring gulls. We acknowledge that the cumulative collision mortality estimate for herring gulls presented in Table 116 of Chapter 6: *Offshore and Intertidal Ornithology* does not cross the 1% increase to mortality threshold; however at 0.97% it is very close to the threshold and worth extra consideration given the close proximity of other offshore windfarms and the potential for serious cumulative effects on Herring gulls (see concern 3 for more information on our general cumulative impact concerns). We would ask for extra caution and consideration for impacts to Herring gulls from the DAOWF.

5.4 Roseate tern

Roseate terns are an Annex 1 species and Rockabill SPA is the largest Roseate tern colony in Europe, for which they are a QI species [19, 30]. They are also a QI species for Dalkey and South Dublin Bay and River Tolka Estuary SPAs [20, 21] and a species for the Dublin Islands and cliffs marine extension marine IBA and Rockabill colony IBA (Table 1) [9]. Multiple studies show they use the DAOWF's marine footprint for travel and foraging, and due to the importance of the Irish Sea population to Irish, UK, and European populations of the species, displacement is a very real concern for this rare and threatened species. Further assessments within the EIAR

and NIS should be undertaken to better understand how the DAOWF may impact the long-term survival and reproductive success of this critical population of Roseate terns.

BirdWatch Ireland surveys of Kish bank began after '*a reconnaissance survey of the north end of the Kish Bank*' saw '*a large tern flock (100 Roseate terns) in September when most terns had assumed to have left for wintering grounds*' and these surveys recorded Roseate terns using the Kish Lighthouse and other buoys for roosting and loafing across many years [22, 23]. Additional surveys of terns, including Roseate, Common, and Arctic, have highlighted the international importance of south Dublin Bay to terns coming from all over Ireland and the UK in August and September after the breeding season [31]. While it is unknown where these terns might be foraging during this time, there is potential they are foraging at nearby Kish bank and other foraging areas within the DAOWF marine footprint, especially given the Kish bank surveys still recorded terns foraging on Kish bank during the breeding season and into September [22, 23]. The post-breeding season period is of particular importance, as terns will be foraging to build energy reserves before migration, and any changes to foraging habitat availability may have individual and population level impacts [31]. Given the importance of this area to the European population of Roseate terns, further survey work is required of the marine and intertidal areas including surveying post-breeding.

As mentioned above, the majority of the Northwest European population of Roseate terns is found at just three colonies: Rockabill SPA (Dublin), Lady's Island Lake SPA (Wexford), both in the Irish Sea, and Coquet Island SPA (Northumberland) in the English North Sea. Together these sites act as a metapopulation; Rockabill is the main source population and the other two are more often 'sinks', especially when the subpopulations nesting at Coquet and Lady's Island Lake were lower and recovering [32]. This situation may be recurring now given the recent (2022-23) outbreak of HPAI-H5N1 that disproportionately impacted Coquet Island SPA [Pers Comm Dr. Steve Newton, Senior Seabird Conservation Advisor, BirdWatch Ireland October 8th 2024]. There is continual inter-connection between the three colonies, and this inter-colony movement is illustrated by Redfern et al. (2020a) [33]. Significantly, the movement (autumn/spring migration) of Roseate terns to and from Coquet Island is largely oriented northeast-southwest overland (Northern England) rather than via the sea corridor of the North Sea. The majority of tagged birds are passing through the northeast Irish Sea lying between the Isle of Man, Cumbria and North Wales, with individuals also moving through the Irish Sea near or through the DAOWF marine footprint (see Figure 6 below). This research clearly illustrates the importance of the Irish Sea for Roseate terns moving between these three colonies.

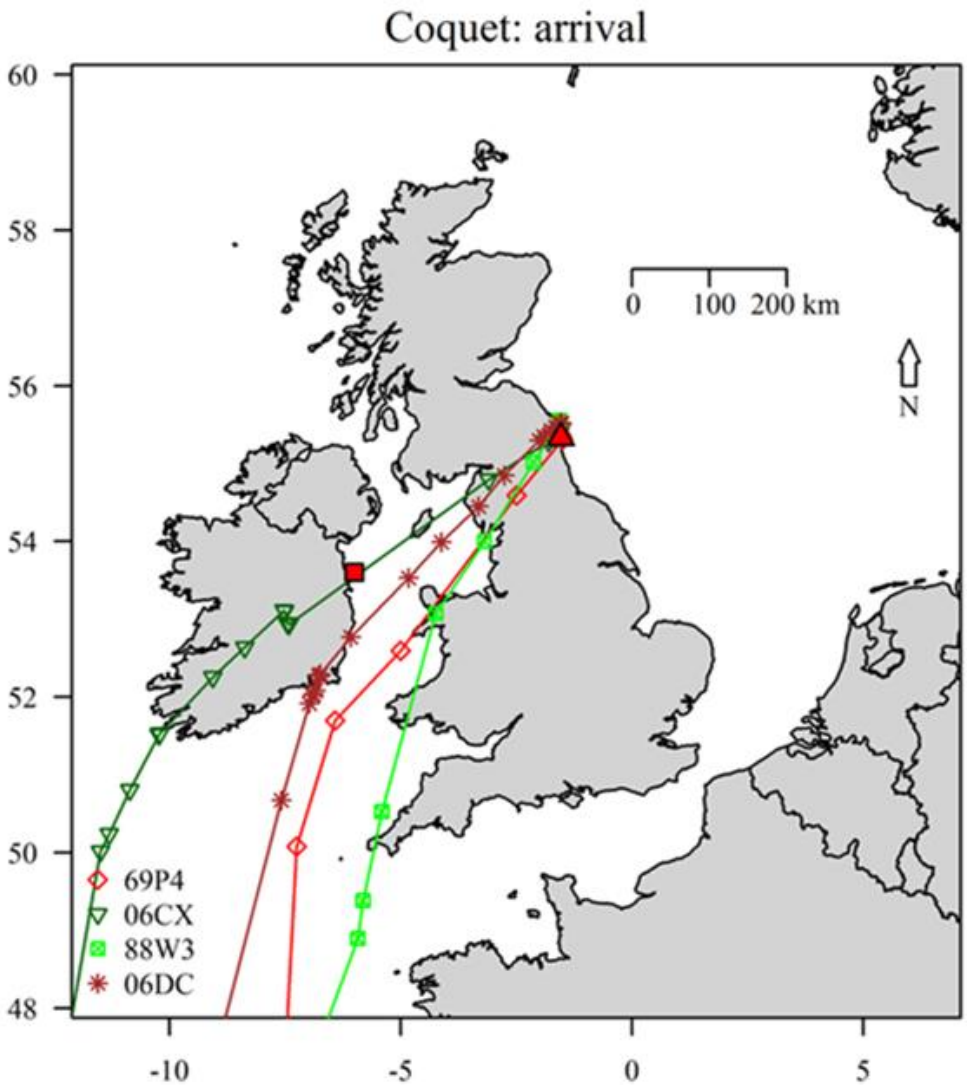

Figure 6: Tracking data on the arrival routes of 4 individual Roseate terns to Coquet Island SPA that show use of the Irish Sea in migration.

Combined these surveys show the importance of the Kish bank habitat for Roseate terns en route to and from Rockabill SPA and other colonies within the Irish Sea; therefore caution should be taken to not impact this important population and we request that the impacts of the DAOWF and all future developments in the Irish Sea consider impacts to Roseate terns and the connections between these important colonies.

Additionally, within the Collision Risk Modelling (CRM) for Roseate terns in DAOWF's EIAR Volume 3: *Offshore Infrastructure Assessment*- Chapter 6: *Offshore and Intertidal Ornithology*, Sandwich terns (*Sterna sandvicensis*) are used as a proxy species for the generic flight height data as Jonston et al. 2014 did not include Roseate terns; however, we do not believe that this was the most appropriate proxy species available for Roseate terns and that Common terns

should have been used as the proxy species instead. Common terns, which were evaluated with CRM as well, would be a more appropriate proxy species as they are closer in size and behaviour to Roseate terns than Sandwich terns [34]. Additionally, Roseate and Common terns often nest in the same colonies, including a number of colonies within the Irish Sea and near to the DAOWF (see Table 1 for more details), whereas Sandwich terns do not often nest in the same colonies with Roseate terns due to differences in habitat selection [34]. For these reasons, we feel that the CRM for Roseate terns should be redone with Common terns as the proxy species.

Conclusion

We appreciate that impacts to birds from both offshore and intertidal works associated with the DAOWF were assessed within the EIAR and NIS documents and associated appendices, but there are missed opportunities to address important issues for Irish birds. Conservative and cautionary approaches need to be taken to limit the potential of negative effects to Irish birds caused by DAOWF development, not just when data is limited but also for locally and regionally important seabirds and habitats like the QI and designating species of local SPAs and IBAs and for species that local surveying and research have identified as relying on the habitat within the DAOWF's marine footprint. Cautionary approaches tailored to the local environment and implemented with care and flexibility to address new issues or information are key to ensuring the smallest impact possible on ornithological biodiversity with offshore wind development.

To address data gaps and better understand seabird usage of the Irish Sea, further investigation and surveys should be conducted including tagging and tracking projects. We are undertaking tagging and tracking projects along the east coast, as well as projects with UK partners, to establish the movement of seabirds locally and nationally and would welcome the opportunity to collaborate on further tagging or tracking work, the results of which would further our understanding of how seabirds utilise Irish waters and could contribute to seabird conservation strategies. Another possible mitigation we feel should be added to planning is that developers should consider painting at least one turbine blade black or red as a collision-reduction measure [35, 36], and request that funding is made available to find out if painting a single blade a different, easily visible colour would lower any risk of collisions with seabirds in the Irish Sea.

From the evidence presented in the supporting documents (EIAR, NIS, and all the associated appendices) of the application and the gaps in the identification and evaluation of birds at risk from the proposed development for the Dublin Array Offshore Wind Farm, as well as our own significant tracking and survey evidence of the importance of the Kish Bank to several seabird species, it is clear that the Kish bank is an extremely important site for seabirds, and likely other marine biodiversity, in the Irish Sea. There is inadequate evidence within the application to support the conclusion that there will be no significant adverse impacts to seabirds.

References

[1] Lescroel et al. (2016) ‘Seeing the ocean through the eyes of seabirds: A new path for marine conservation?’, Marine Policy, 68, 212-220.

[2] Gilbert, G, Stanbury, A., Lewis, L., (2021) Birds of Conservation Concern in Ireland 4: 2020–2026 Irish Birds 43: 1–22 Kilcoole

[3] Cummins, S., Lauder, C., Lauder, A. & Tierney, T. D. (2019) The Status of Ireland’s Breeding Seabirds: Birds Directive Article 12 Reporting 2013 – 2018. Irish Wildlife Manuals, No. 114. National Parks and Wildlife Service, Department of Culture, Heritage

[4] Bycatch risk was based on an assessment of seabird bycatch in the UK, as there was very little data available on bycatch in Irish waters. For more details on methodology, see Cummins, S., Lauder, C., Lauder, A. & Tierney, T. D. (2019) The Status of Ireland’s Breeding Seabirds: Birds Directive Article 12 Reporting 2013 – 2018. Irish Wildlife Manuals, No. 114. National Parks and Wildlife Service, Department of Culture, Heritage.

[5] Burnell, D., Perkins, A. J., Newton, S. F., Bolton, M., Tierney, T. D., & Dunn, T. E. (2023). Seabirds Count: a census of breeding seabirds in Britain and Ireland (2015-2021). Lynx Nature Books, Barcelona.

[6] BirdLife International. (2021). European Red List of Birds. Luxembourg: Publications Office of the European Union.

[7] Mc Guinness, S., Muldoon, C., Tierney, N., Cummins, S., Murray, A., Egan, S. & Crowe, O. (2015). Bird Sensitivity Mapping for Wind Energy Developments and Associated Infrastructure in the Republic of Ireland. BirdWatch Ireland, Kilcoole, Wicklow.

[8] Donald, P. F., Fishpool, L. D. C, Ajagbe, A., Bennun, L. A., Bunting, G., Burfield, I. J., Butchart, S. H. M., Capellan, S., Crosby, M. J., Dias, M. P., Diaz, D., Evans, M. I., Grimmett, R., Heath, M., Jones, V. R., Lascelles, B. G., Merriman, J. C., O´Brien, M., Ramirez, I., Waliczky, Z. and Wege, D. C. (2018) Important Bird and Biodiversity Areas (IBAs): the development and characteristics of a global inventory of key sites for biodiversity. Bird Conserv. Internatn. doi:10.1017/S0959270918000102.

[9] Auchincloss, C., Handley, J., Newton, S., Clarke, B., Donaghy, A., Duggan, O., Davies, T., Mitchell, D. (2025). Ireland: Important Bird and Biodiversity Area identification for seabirds. Project Report (Activity 1). BirdWatch Ireland, Wicklow.

[10] BirdLife International. (n.d.). *Birdlife DataZone*. BirdLife DataZone. https://datazone.birdlife.org/country/ireland/ibas

[11] Wilkinson, B. P., Satgé, Y.G., Lamb, J.S., and Jodice, P.G.R. (2019). 'Tropical Cyclones Alter Short-Term Activity Patterns of a Coastal Seabird'. Movement Ecology 7, no. 1 (December 2019): 30. https://doi.org/10.1186/s40462-019-0178-0.

[12] Nourani, E., Safi, K., De Grissac, S., Anderson, D.J., Cole, N.C., Fell, A., Grémillet, D., Lempidakis, E., Lerma, M., McKee, J.L., Pichegru, L., Provost, P., Rattenborg, N.C., Ryan, P.G., Santos, C.D., Schoombie, S., Tatayah, V., Weimerskirch, H., Wikelski, M., and Shepard, E.L.C. (2023). 'Seabird Morphology Determines Operational Wind Speeds, Tolerable Maxima, and Responses to Extremes'. Current Biology 33, no. 6 (March 2023): 1179-1184.e3. https://doi.org/10.1016/j.cub.2023.01.068.

[13] Hüppop, O., Ciach, M., Diehl, R., Reynolds, D.R., Stepanian, P.M., and Menz. 2019, M.H.M. (2019). 'Perspectives and Challenges for the Use of Radar in Biological Conservation'. *Ecography* 42 (5): 912–30. https://doi.org/10.1111/ecog.04063.

[14] Waltho, C.M. (2005). Seawatching: An unharnessed data source of coastal bird movements. The case for a web-based seawatching database. The Seabird Group newsletter (99): February 2005. https://www.seabirdgroup.org.uk/newsletters/SGN_99.pdf

[15] 4C Offshore Map. Created by TGS using Esri software. Available at: https://map.4coffshore.com/offshorewind/ (Accessed: 25 April 2025).

[16] Kavelaars, M.M., Baert, J.M., Stienen, E.W.M., Shamoun-Baranes, J., Lens, L., and Müller, W. (2020). 'Breeding Habitat Loss Reveals Limited Foraging Flexibility and Increases Foraging Effort in a Colonial Breeding Seabird'. Movement Ecology 8 (1): 45. https://doi.org/10.1186/s40462-020-00231-9.

[17] Salas, R., Müller, W., Vercruijsse, H., Lens, L., and Stienen, E. (2020). 'Forced Nest Site Relocations Negatively Affect Reproductive Investment in a Colonial Seabird Species'. Biological Conservation 246 (June):108550. https://doi.org/10.1016/j.biocon.2020.108550.

[18] NPWS. (2024). Conservation Objectives: Wicklow Head SPA 004127. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

[19] NPWS. (2013). Conservation Objectives: Rockabill SPA 004014. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

[20] NPWS. (2024). Conservation Objectives: Dalkey Islands SPA 004172. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

[21] NPWS. (2015). Conservation Objectives: South Dublin Bay and River Tolka Estuary SPA 004024. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

[22] Newton, S.F. and Crowe, O. (1999). Kish Bank: a Preliminary Assessment of its Ornithological Importance. BirdWatch Ireland Conservation Report No. 99/8.

[23] Newton, S. and Trewby, M. (2011). Kish Bank Seabird Survey: Final Report on surveys conducted between June 2010 and June 2011. BirdWatch Ireland, Seabird Team.

[24] Newton, S. and Kavanagh, L. (2018). Ornithological Final Report for Saogus Energy Ltd.: Seabird surveys conducted between September 2016 and September 2017 Kish Bank, Irish Sea. Kish Bank March 2018 Final Report. BirdWatch Ireland.

[25] O'Toole, L. (1993). The fish food available to the Roseate Tern off Rockabill. Unpublished Irish Wildbird Conservancy Report, Monkstown, Dublin.

[26] Royal Society for the Protection of Birds. 'The Closure of Sandeel Fisheries: Our Legacy of Campaigning', n.d. https://www.rspb.org.uk/whats-happening/news/the-closure-of-sandeel-fisheries.

[27] Baer, J. and Newton, S.F. (2012). 'Integrating Irish Marine Protected Areas: The FAME Seabird Tracking Project'. BirdWatch Ireland. https://birdwatchireland.ie/app/uploads/2025/05/FAME-report-Integrating-Irish-Marine-Protected-Areas_-Baer-Newton-2012.pdf

[28] Peschko, V., Mercker, M. and Garthe, S. (2020). Telemetry reveals strong effects of offshore wind farms on behaviour and habitat use of common guillemots (Uria aalge) during the breeding season. Marine Biology 167:118. Doi:10.1007/s0027-020-03735-5

[29] Furness, R.W. and Wade, H.M. (2012), 'Vulnerability of Scottish seabirds to offshore wind turbines', (MacArthur Green), https://tethys.pnnl.gov/sites/default/files/publications/Furness%20and%20Wade%202012

[30] LIFE Programme of the European Union (LIFE14 NAT/UK/000394 ROSEATE TERN). (n.d.). *Rockabill - Protecting the rarest breeding seabird in Europe*. Roseate Tern LIFE Project. https://roseatetern.org/rockabill.html#:~:text=Rockabill%20supports%20the%20largest%20breeding,the%20population%20has%20been%20recovering

[31] Burke, B., Fitzgerald, N., Boland, H., Murray, T., Gittings, T., and Tierney, T.D. (2020). Results from the first three years of monitoring post-breeding tern aggregations in Ireland. Irish Birds 42: 35-44.

[32] Seward, A., Ratcliffe, N., Newton, S., Caldow, R., Piec, D., Morrison, P., Cadwallender, T., Davies, W. & Bolton, M. (2018). Metapopulation dynamics of roseate terns: Sources, sinks and implications for conservation management decisions. Journal of Animal Ecology. DOI: 10.1111/1365-2656.12904

[33] Redfern, C.F., Kinchin-Smith, D., Newton, S., Morrison, P., Bolton, M & Piec, D. (2020a) Upwelling systems in the migration ecology of Roseate Terns (Sterna dougallii) breeding in northwest Europe. Ibis doi:10.1111/ibi.12915

[34] Burger, J. and Gochfeld, M. (1988). Nest-site selection and temporal patterns of habitat use of Roseate and Common terns. The Auk 105: 433-438.

[35] May et al. (2020). Paint it black: Efficacy of increased wind turbine rotor blade visibility to reduce avian fatalities. Ecology and Evolution, 10: 8927– 8935. https://doi.org/10.1002/ece3.6592

[36] Ltd, reNEWS. (2025, April 23). *ECOWENDE trials red blades at HKW*. https://renews.biz/100173/ecowende-trials-red-blades-at-hkw/