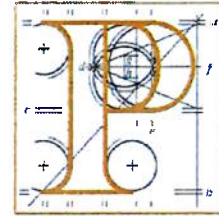


Our Case Number: ABP-319866-24

Planning Authority Reference Number:



**An
Bord
Pleanála**

Sustainable Windfarm Environmental Group (SWEG)
Maypark
46 Church Street
Skerries
Co. Dublin
K34 H793

Date: 16 August 2024

Re: Proposed development known as North Irish Sea Array ("NISA") Offshore Wind Farm
Located off the coast of Counties Dublin, Meath and Louth (www.northirishsearraysid.ie)

Dear Sir / Madam,

An Bord Pleanála has received your recent submission and fee in relation to the above-mentioned proposed development and will take it into consideration in its determination of the matter. Please accept this letter as a receipt for the fee of €50 that you have paid.

The Board will revert to you in due course with regard to the matter. Please be advised that copies of all submissions/observations received in relation to the application will be made available for public inspection at the offices of Dublin City, Fingal, Meath and Louth County Councils and at the offices of An Bord Pleanála when they have been processed by the Board.

More detailed information in relation to marine infrastructure development can be viewed on the Board's website: www.pleanala.ie.

If you have any queries in the meantime, please contact the undersigned officer of the Board or email marine@pleanala.ie quoting the above mentioned An Bord Pleanála reference number in any correspondence with the Board.

Yours faithfully,


Ellen Moss
Executive Officer
Direct Line: 01-8737285

OA03

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SWEG
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K34 H793
8th August, 2024

An Bord Pleanála,
64 Marlborough Street
Dublin 1
D01 V902.

Dear Sir/Madam,

Re: Case Reference: OA29N.319866 - North Irish Sea Array (NISA) proposal by Statkraft Ireland Ltd

Sustainable Windfarm Environmental Group (SWEG) is pleased to make our submission which highlights our observations/concerns/objections regarding Statkraft's NISA development proposal.

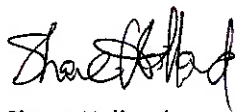
Our submission is based on information gathered at the public meetings held by Statkraft; meetings with expert birdwatchers; discussions with maths experts verifying our scaled drawings which refute the scale portrayed in Statkraft's Landscape and Visual Impact Assessment (LVIA) photomontages; as well as months of independent research.

Our main objection is the size and positioning of wind turbines in both Option 1 and Option 2 of Statkraft's development proposal, which we believe will have a detrimental effect to the seascape, landscape and visual amenity of the sensitive Fingal coastline and the European sites which form part of the Natura 2000 network.

We are extremely concerned that the wind farm array will be located a mere 200 metres from Rockabill SPA which includes the two islands the Rock and the Bill and the surrounding seas to a distance of 3.5 km. This will have a 'significant effect' on the species protected under EU legislation, particularly on the conservation status of one of the rarest seabirds - the roseate tern. Recent studies have shown that the roseate tern has a foraging range of 30 km, which is a lot greater than 3.5 km. Experts believe the range of protection around Rockabill SPA should greatly increase to match the roseate terns foraging habits.

We would very much welcome the opportunity to present our findings at an oral hearing and look forward to hearing back from An Bord Pleanála in this regard.

Yours sincerely,



Shane Holland
Chairman and Director
SWEG Sustainable Windfarm Environmental Group

'Ireland's relationship with the sea has helped define our nation's culture and history. Our seas are a critical part of our identify as an Island nation. They are part of what makes us who we are'.

MARA – the Maritime Area Regulatory Authority.

Submission in respect of

An Bord Pleanála's Case Reference: OA29N.319866

by

Skerries Windfarm Environmental Company Limited by Guarantee (SWEC)
trading as Sustainable Windfarm Environmental Group (SWEG)

Concerns/Objections/Observations

Norwegian state owned Statkraft and Danish fund management company
Copenhagen Infrastructure Partners'
North Irish Sea Array Development Proposal (NISA)

Table of Contents

1	OVERVIEW.....	4
1.1	Community Confidence – A Question of Trust.....	5
1.2	What Statkraft’s Own Consultants Have to Say	7
1.3	The Irish Sea	9
2	THE LIKELY EFFECTS ON THE ENVIRONMENT OR ANY EUROPEAN SITE OF THE PROPOSED DEVELOPMENT, IF CARRIED OUT	10
2.1	Rockabill SPA and the Skerries Islands SPA: Highly Ecologically Sensitive Areas	12
2.2	European Commission’s Report on Ireland’s Management of SPAs	14
2.3	European Court of Justice Finds Ireland in Breach of the HABITATS DIRECTIVE 92/43/EEC	17
2.4	Ireland in Breach of the BIRDS DIRECTIVE 79/409/EEC on the Conservation of Wild Birds	18
2.5	The Conservation Status of the Roseate Tern	19
2.5.1	Improving the Conservation Prospects of the Priority Species Roseate Tern throughout its Range in the UK and Ireland	20
2.5.2	International (East Atlantic) Species Action Plan for the Conservation of the Roseate Tern <i>Sterna Dougallii</i> (2021-2030)	22
2.5.3	NISA Identified as a Threat to the Population of Roseate Terns at Rockabill	23
2.5.4	Loons Abandon Eastern German Bight SPA due to Offshore Wind Farms	25
2.5.5	Severe Knowledge Gap to Make Informed Decisions.....	28
2.5.6	Closing Remarks on the Conservation of the Roseate Tern	37
2.6	Impact on Seabed and Marine Food Chain	39
2.7	Impact on Marine Mammals	40
3	THE IMPLICATIONS OF THE PROPOSED DEVELOPMENT FOR MARITIME SPATIAL PLANNING ..	41
3.1	General Failings in Proper Maritime Spatial Planning	41
3.2	Visual Impact of NISA	42
3.3	Effects on Cultural Heritage, Tourism, Economy	44
4	THE IMPLICATIONS OF THE PROPOSED DEVELOPMENT FOR PROPER PLANNING AND SUSTAINABLE DEVELOPMENT	48
4.1	Proper Planning	48
4.1.1	Excerpts from the Inspector’s Report ABP-315801-23.....	49
4.1.2	Guidance Document on Wind Energy Development and EU Nature Legislation ..	54
4.1.3	Guidance Document on Designated Renewables Acceleration Areas	58

4.1.4	Identifying Important Bird and Biodiversity Areas (IBAS) in Irish Waters	60
4.1.5	Transboundary Consultation Process – Statkraft Fail in their Obligations.....	62
4.1.6	Public Consultation Deficiencies.....	63
4.1.7	Statkraft Visualisation in Planning Application (Photo Montages)	67
4.2	Sustainable Development	70
4.2.1	Negative Impact on the Seabed	70
4.2.2	Effect on Coastal Erosion	70
4.2.3	Failure to provide adequate environmental protection - Decommissioning, deconstruction, rehabilitation	72
4.2.4	Human Rights in Wind Turbine Supply Chains	75
5	ALTERNATIVE PLANNING PROPOSALS	76
6	CONCLUDING STATEMENT	78
7	APPENDICES:	80
7.1	Ecological Sensitivity Analysis of the Western Irish Sea to Inform Future Designation of Marine Protected Areas (MPAS)	80
7.2	NPWS: Skerries Islands SPA – Site Code 004122	82
7.3	NPWS: Rockabill SPA – Site Code: 004014	84
7.4	NPWS: North-West Irish Sea cSPA – Site Code: 004236	86
7.5	NPWS: Rockabill to Dalkey (SAC) – Site Code - 03000	88
7.6	Improving the Conservation Prospects of the Priority Species Roseate Tern Throughout its Range in the UK and Ireland	90
	Appendix	92

1 OVERVIEW

Skerries Windfarm Environmental Company Limited by Guarantee (**SWEC**), trading as Sustainable Windfarm Environmental Group (**SWEG**), is a company limited by guarantee that has been established in response to Statkraft's North Irish Sea Array (NISA) proposal. We are very much in favour of harnessing the power of offshore wind to help combat the risks associated with global warming, however, we are adamant that this must be done in a manner that does not harm the rich biodiversity that exists off the Fingal coast and protects the birds and wildlife that depend on the Irish Sea for their very existence.

As such, our current main objective is to carry out a thorough examination of An Bord Pleanála's Case Reference: OA29N.319866 to ensure that the planning proposal submitted by Statkraft complies with national and European planning, nature and environmental laws.

This document will highlight our observations, concerns and objections to Statkraft's NISA planning application under the following headings:

- **The likely effects on the environment or any European site of the proposed development, if carried out,**
- **The implications of the proposed development for maritime spatial planning and**
- **The implications of the proposed development for proper planning and sustainable development.**

In his address regarding offshore wind energy to Seanad Éireann on 25 January 2023, Minister for the Environment, Climate & Communications and Minister for Transport and former leader of the Green Party, Eamon Ryan, stated:

*'We know we have the two crises of biodiversity loss and climate to address at the same time. **We must ensure the solutions to one do not impede the other.** Probably the biggest challenge is getting certainty, derisking the planning aspect **and winning the confidence of our local communities. That is what we need to get right more than anything else.**'¹*

¹ Seanad Éireann debate - Wednesday, 25 Jan 2023 (Vol. 291 No. 4) <https://www.oireachtas.ie/en/debates/debate/seanad/2023-01-25/12/>

1.1 COMMUNITY CONFIDENCE – A QUESTION OF TRUST

*'We know we have the two crises of biodiversity loss and climate to address at the same time. **We must ensure the solutions to one do not impede the other.** Probably the biggest challenge is getting certainty, derisking the planning aspect **and winning the confidence of our local communities.** That is what we need to get right more than anything else.'*²

Trust is definitely an issue when it comes to winning the confidence of our local community. On a number of occasions throughout the engagement process, Statkraft have changed the parameters of the proposed development in terms of height and number of wind turbines in the array. This has caused confusion and concern.

In relation to their photomontages displayed on their website, we do not believe that they accurately depict the size and scale of the proposal and we have covered this in depth under the heading 'implications of the proposed development for proper planning and sustainable development'.

Statkraft have made no secret of the fact that since 2019 the project team has been:

'Engaging with local community groups on the process with a view to aggregating information, feedback and submissions which could guide the direction of the Community Benefit Fund'.

The ORESS 1 Community Benefit Fund's Rulebook for Generators and Fund Administrators was published by the Government in January 2023 ahead of the first ever wind auction in May 2023. This Rulebook lays down very specific rules for the establishment and running of a Community Benefit Fund.³

We believe that anything to do with the Community Benefit Fund should be independent and transparent.

² Seanad Éireann debate - Wednesday, 25 Jan 2023 (Vol. 291 No. 4)
<https://www.oireachtas.ie/en/debates/debate/seanad/2023-01-25/12/>

³ <https://www.gov.ie/pdf/?file=https://assets.gov.ie/244348/0dece698-ab8e-459f-b885-3cc427406647.pdf#page=null>

In their Planning Application (Section 2.3.2) Statkraft claim that they have:

'previous experience of offshore wind development, having been involved in the development, construction and operation of projects in the UK including Triton Knoll, Sheringham Shoal, Dudgeon, and Dogger Bank'.

This is a very misleading statement. Statkraft sold their share of Triton Knoll and Dogger Bank before construction even commenced. Their share of Dudgeon was sold in December 2017 one month after it became operational.

Also misleading is (Section 2.7.4) - The Need for Affordable Energy: ***'The recent ORESS 1, the first offshore wind auction in Ireland, awarded successful offshore wind farm developers' contracts to provide electricity at the average weighted bid price of €86.05/MWh for a 20-year period. When compared to the average wholesale electricity price in Ireland over the 12 months prior, which were over €200/MWh¹² [SOS9], the projects successful at ORESS 1 will contribute to lower cost of electricity to the consumers in Ireland.'***

Statkraft make no mention of the fact that there was a huge spike in electricity costs in 2022 due to the war in Ukraine. Given that this planning application was submitted in June 2024, why are Statkraft using outdated wholesale electricity prices?

In December 2023, costs fell by 27.6% in the month to December 2023 and were 67.8% lower in the 12 months to December 2023.⁴ Wholesale electricity prices quickly retraced in January 2023 and traded between €100 and €130 per MWh for most of 2023. Since the start of 2024 wholesale electricity prices are consistently below €100 per MWh and slightly lower in some months.⁵ This is far different from the €200/MWh quoted by Statkraft.

Not only do Statkraft mislead with their information, they also withhold key information. We refer to the second meeting Statkraft had with An Bord Pleanála 'Record of Meeting ABP-315801-23' which reads: ***'the prospective applicant stated that it was successful in the Offshore Renewal Electricity Support Scheme (ORESS) in June 2023'***.⁶

What Statkraft representatives chose not to tell representatives of An Bord Pleanála is that Norwegian state owned Statkraft and their partner, Danish fund management company Copenhagen Infrastructure Partners (CIP), secured an Irish government backed **500 MW** project contract and not a **700 MW** government backed project contract which is what their planning application is based on.

This is very significant as it means that the number of wind turbines in this development proposal could be reduced by 40% and still fulfil Statkraft's 500 MW project contract with the Irish government. We cover this under the section: Alternative planning proposal.

⁴ <https://www.cso.ie/en/releasesandpublications/ep/p-wpi/wholesalepriceindexdecember2023/#:~:text=Wholesale%20electricity%20prices%20fell%20by%2027.6%25%20in%20the%20month%20to,exported%20goods%20rose%20by%202.4%25.>

⁵ <https://www.utilityfair.ie/business-energy-guides/wholesale-electricity-prices-in-ireland#:~:text=Wholesale%20electricity%20prices%20quickly%20retraced,slightly%20lower%20in%20some%20months.>

⁶ <https://www.pleanala.ie/anbordpleanala/media/abp/cases/records/315/p315801d.pdf?r=994129>

1.2 WHAT STATKRAFT'S OWN CONSULTANTS HAVE TO SAY

In July 2023, The Irish National Parks and Wildlife Service (NPWS) proposed a candidate special protection area cSPA in the north-west Irish Sea which spans 230,000 hectares, making it Ireland's largest protected zone for birds.

If allowed to proceed, the proposed development will be sited within the new North-West Irish Sea cSPA which as a matter of domestic law has the same level of protection as other European sites within the Natura 2000 network.

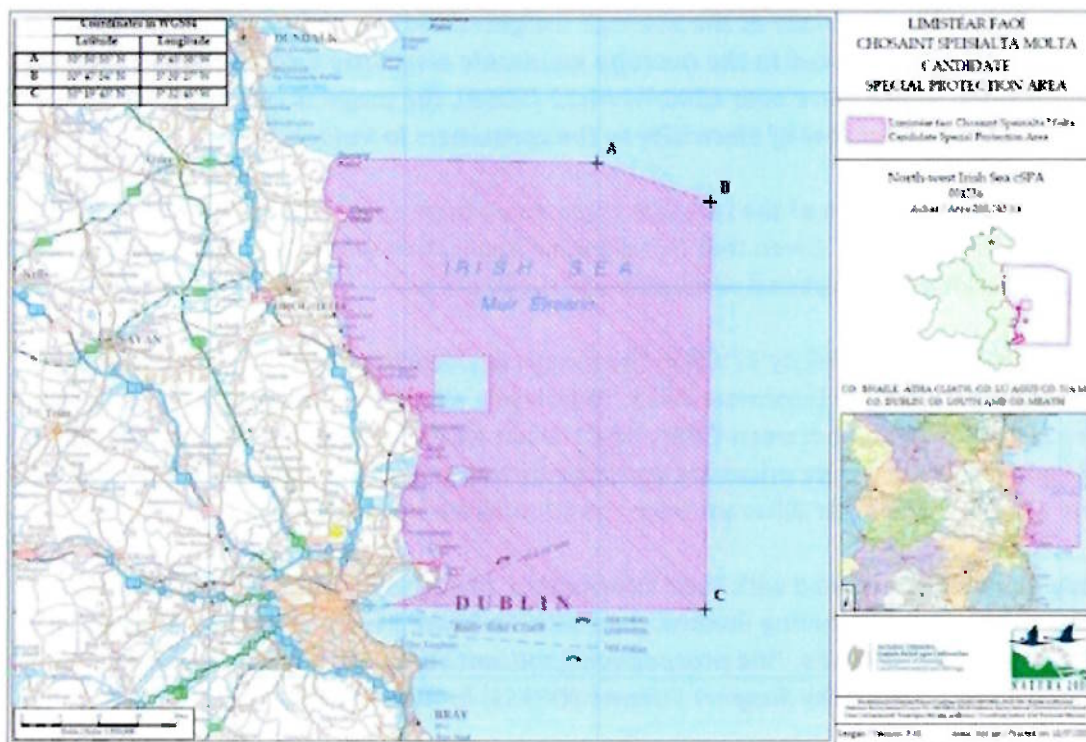


Image Source: NPWS

As stated in an article published on 20 July 2023 in offshoreWIND.biz (an online news platform that reports on global offshore wind industry developments):

The North Irish Sea Array (NISA), one of the four offshore wind projects selected in Ireland's first offshore wind auction, could end up overlapping with a bird protection area. The Irish offshore consultancy Gavin and Doherty Geosolutions (GDG) voiced concerns about the government letting this happen and warned that the project is now at risk due to the government's "failure to cooperate".

"Regrettably, the proposed SPA designation significantly overlaps with one of the designated sites for an offshore wind farm, which is integral to achieving Ireland's 2030 targets", GDG stated in a press release on 19 July, 2023.⁷

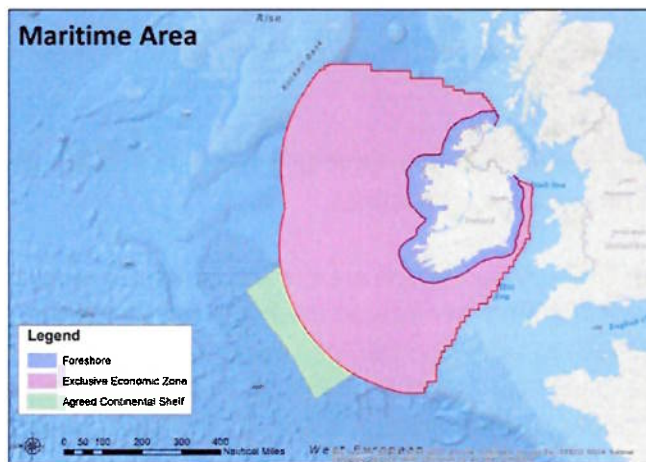
⁷ <https://www.offshorewind.biz/2023/07/20/project-ireland-selected-in-first-offshore-wind-auction-now-overlaps-with-proposed-bird-protection-area/>

GDG are consultants to almost all the Irish offshore renewable energy projects and have conducted reports on behalf of North Irish Sea Array Limited, which is a wholly owned subsidiary of Statkraft Ireland Limited.

As an advisor to the Department of the Environment, Climate and Communications (DECC) it appears that the Irish consultancy is more concerned about *“the inadequate collaboration between Irish government departments and state agencies with the offshore wind sector”* than it is about safeguarding biodiversity and our natural environment.

The appropriateness of advisors to DECC with expansive vested interests to developers looking to profit from renewable energy projects in Ireland is also of note.

According to MARA (Maritime Area Regulatory Authority) Ireland’s maritime area is seven times the size of its landmass. When the seabed is included, Ireland is one of the largest EU countries. Its 7,500km of coastline is longer than that of most EU countries.⁸



With such an expansive coastline it seems preposterous that Statkraft's NISA proposal to site some of the biggest wind turbines in the world next to such a rich collection of protected European sites that lie just off the Fingal Coastline is being considered.

This absurdity can only be put down to the fact that this is a 'developer led' project more concerned with corporate profits rather than 'plan led' with due regard for both the climate crisis and biodiversity loss.

Perhaps, it is appropriate to heed the words of Paul Doherty, Director and Founder of GDG:

“THIS PROJECT’S FUTURE AND IT WON’T BE THE ONLY ONE, IS NOW IN PERIL BEFORE IT EVEN REACHES THE PLANNING STAGE.”⁹

⁸ <https://www.maritimeregulator.ie/>

⁹ <https://www.offshorewind.biz/2023/07/20/project-ireland-selected-in-first-offshore-wind-auction-now-overlaps-with-proposed-bird-protection-area/>

1.3 THE IRISH SEA

The Irish Sea flyway is part of a Pan -European / Worldwide Migration Route used by thousands of birds moving north in spring and south in autumn. To Scotland, Iceland, Faroes, Scandinavia, Russian Arctic, Greenland, Arctic Canada the Mediterranean Basin and Africa.

Many of these seabirds, gulls, terns, ducks, waders, swans and goose species will stage and need rest along the Irish Sea offshore sandbanks on the estuaries/beaches/islands on migration or over winter. There is considerable interchange between locations especially during periods of hard weather and peak migration times.

Similarly, the Irish Sea basin receives many of the same species from across Europe moving in an east-west direction in autumn/winter and the reverse direction in spring.

Species like Red and Great Northern Divers, Great Crested grebe winter in the Irish Sea in internationally important numbers.

Common Scoter winter 'July to May' in internationally important numbers from Skerries to Dundalk Bay and move up/down the coastline.

Many bird species migrate at night often in periods of poor visibility and thus have a high collision risk with obstacles such as the proposed wind turbines.

Reviewing the figures for collision risk for the turbines, which are the size of 8 full sized soccer pitches in swept area, spinning at over 200km per hour at the blade tips, a collision avoidance rate of between 98.5% and 99.96% as set out in the NISA application is frankly unbelievable and does not stack with the expert opinion of Sean Pierce, birdwatcher, kayak instructor and author, and Balbriggan resident with experience of watching bird movements over 30 years from the Arctic to the Antarctica.

2 THE LIKELY EFFECTS ON THE ENVIRONMENT OR ANY EUROPEAN SITE OF THE PROPOSED DEVELOPMENT, IF CARRIED OUT

We believe that Statkraft's proposed development if carried out in its current format will have serious negative implications for the following European sites: The Skerries Islands SPA; Rockabill SPA; The North-West Irish Sea cSPA; Lambay Island SPA & SAC; Rockabill to Dalkey SAC as well as their respective Special Conservation Interests (SCIs) of the sites in the case of SPAs and Qualifying Interests (QIs) of the sites in the case of SACs.

The Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora) obliges European Union Member States to establish the Natura 2000 network which comprises a network of highest biodiversity importance for rare and threatened habitats and species across the European Union.

SACs and SPAs (including candidate and proposed sites) make up the pan-European network of Natura 2000 sites, and they are referred to collectively as “European sites”. Candidate and proposed SACs and SPAs have the same level of protection as European sites as a matter of domestic law. SACs are designated for the conservation of Annex I habitats (including priority types which are in danger of disappearance) and Annex II species (other than birds).

The Birds Directive (Council Directive 79/409/EEC on the conservation of wild birds) instructs members to take measures to maintain populations of all bird species naturally occurring in the wild state in the EU (Article 2). Such measures may include the maintenance and/or re-establishment of habitats in order to sustain these bird populations (Article 3).

Member states are required to classify the most suitable territories in number and size as Special Protection Areas (SPAs) for the conservation of species listed in Annex I of the Birds Directive and other regularly occurring migratory birds.

Annex I species must also be the subject of special conservation measures concerning their habitat to ensure their survival and reproduction in their area of distribution. Member states must take similar measures for regularly occurring migratory species not listed in Annex I, bearing in mind their need for protection as regards their breeding, moulting and wintering areas and staging posts along their migration routes.

The annexed habitats and species for which each site is designated correspond to the Qualifying Interests (QIs) of the sites in the case of SACs, and Special Conservation Interests (SCIs) of the sites in the case of SPAs. The Birds and Habitats Directive places a legally binding duty of care to protect the QIs and SCIs of the designated sites.

Should Statkraft be successful in their planning application, wind turbine generators almost the height of the Eiffel Tower and three times the height of the Dublin Spire will be pile driven into the seabed in very close proximity to 4 of the 6 islands that lie just off the Fingal coast and within the Rockabill to Dalkey SAC and the North-West Irish Sea cSPA.

The Shenick Islands SPA is comprised of Colt, St. Patrick's and Shenick islands. The other two islands, Lambay Island and Ireland's Eye lie further south. These European sites are of significant international importance and according to Fingal County Council:

*'The European designated sites are part of a European wide Natura 2000 network. Fingal has an international responsibility to make sure that a favourable conservation status is maintained for the habitats and species of these sites, which are rare and threatened throughout Europe. **These sites represent our critical natural capital and their protection forms the basis of the nature conservation strategy and sustainable planning framework in Fingal.***

'Rockabill has the biggest breeding colony of roseate terns in North-western Europe. Lambay Island holds Irelands largest "mixed" seabird colony and is of international importance. The three large cormorant colonies on Lambay, Irelands Eye and St. Patrick's Island collectively form a "supercolony" that comprises the largest aggregation of the species anywhere in Britain or Ireland. The most abundant sea birds are guillemots and kittiwakes. Satellite tagging studies show that seabirds undertake significant movements inland, as well as within the inshore and offshore areas to feed'.¹⁰

Astonishingly, Norwegian state owned Statkraft are planning to site a wind turbine generator almost the size of the Eiffel Tower less than 200 metres from Rockabill SPA.¹¹ This shows a complete disregard for our protected Special Areas of Conservation and the species they serve to protect.

We are particularly concerned about the 'significant effect' we believe the proposed development will have on Rockabill SPA. Our independent research indicates that siting massive wind turbine generators so close to Rockabill SPA could have a catastrophic effect on the roseate tern population and other protected bird species, in terms of collision, foraging and provisioning for chicks and would likely force the protected species to abandon the nesting grounds they have used for decades as happened in Eastern German Bight SPA.

This is covered in detail in the section: The Conservation Status of the Roseate Tern.

¹⁰ <https://www.fingal.ie/sites/default/files/2023-12/Fingal%20Biodiversity%20Action%20Plan%202023-2030.pdf>

¹¹ <https://northirishsearraysid.ie/wp-content/uploads/2024/06/Chapter-15-Offshore-Ornithology.pdf> - page 16 of 203

2.1 ROCKABILL SPA AND THE SKERRIES ISLANDS SPA: HIGHLY ECOLOGICALLY SENSITIVE AREAS

Rockabill SPA and The Skerries Islands SPA are ecologically sensitive areas and should not be considered as suitable locations for any Offshore Renewal Energy Project in their proximity. An image of Skerries with both SPAs in the background appears on the front cover of a report titled 'Ecological sensitivity analysis of the western Irish Sea to inform future designation of Marine Protected Areas (MPAs)'.¹²



Front cover of the report: 'Ecological sensitivity analysis of the western Irish Sea to inform future designation of Marine Protected Areas (MPAs)'.
of Marine Protected Areas (MPAs).

The analysis was undertaken by the Marine Protected Area Advisory Group at the request of the Department of Housing, Local Government and Heritage. The aims of this ecological sensitivity and conservation prioritisation project were to:

1. **Identify areas of higher and lower ecological sensitivity within the western Irish Sea;**
2. Engage with key stakeholders;
3. **Inform decisions to be taken about the potential siting of Offshore Renewable Energy projects, taking account of stakeholder views, conservation requirements and other sectoral activity;**
4. Develop methods for identifying, designating and managing future Marine Protected Areas under forthcoming legislation.

Statkraft's proposed North Irish Sea Array aims to site wind turbine generators, almost the height of the Eiffel Tower and three times the height of the Dublin Spire a mere 200 metres

¹² <https://www.gov.ie/pdf/?file=https://assets.gov.ie/261015/35f09f23-5a32-4492-b470-d9d26ed9eb16.pdf#page=null>

from Rockabill SPA. This is sheer recklessness and an ecological disaster waiting to happen. This must be prevented at all costs.

2.2 EUROPEAN COMMISSION'S REPORT ON IRELAND'S MANAGEMENT OF SPAS

A [European Commission report published in February 2023](#),¹³ titled 'Assessment of the measures established in Special Protection Areas (SPAs) and their effectiveness' gave a scathing report on how Ireland is performing in terms of the protection and conservation of protected species and their habitat in order to ensure their survival and reproduction in their area of distribution.

Ten SPAs were chosen in each of the 10 member countries including Ireland and ranked according to planning, implementation, site management, monitoring and conservation outcomes at the European site.

The following chart shows the progress made for each of the 10 countries selected for the Commission assessment. Ireland scored lowest across planning, implementation, site management, monitoring and conservation outcomes at SPAs, with site management scoring a mere 1% for progress made.

IRELAND RANKED IN LAST PLACE FOR ALL MEASURES BY A LARGE MARGIN

OVERALL PROGRESS RESULTS FOR EACH COUNTRY

	CROATIA	FINLAND	FRANCE	ITALY	IRELAND	LATVIA	POLAND	ROMANIA	SLOVAKIA	SPAIN	TOTAL
PLANNING	73%	65%	69%	53%	16%	48%	61%	53%	88%	71%	59%
IMPLEMENTATION	52%	40%	58%	37%	5%	65%	40%	20%	58%	52%	41%
SITE MANAGEMENT	55%	23%	56%	49%	1%	53%	46%	64%	64%	51%	44%
MONITORING	52%	70%	58%	33%	27%	53%	47%	17%	55%	46%	44%
CONSERVATION OUTCOMES	44%	71%	52%	39%	28%	54%	35%	25%	49%	47%	43%

1. PLANNING: SETTING CONSERVATION OBJECTIVES AND ESTABLISHMENT OF CONSERVATION MEASURES - PROGRESS ASSESSMENT: 16%

Setting Conservation Objectives:

- Conservation objectives aim to maintain or restore the selected bird species populations in four SPAs.
- Conservation objectives identify the status that the species and their habitats in the site shall achieve at the end of the assessment for only two SPAs.

Establishment Of Conservation Measures:

- In none of the SPAs conservation measures are based on site-specific conservation objectives and clearly linked to the objectives.
- The conservation measures are not clear and precise, sufficiently specific, detailed and quantified for any of the SPAs.
- The conservation measures do not address all significant pressures and threats affecting the bird species and their habitats on the site for any SPA.

¹³ <https://op.europa.eu/en/publication-detail/-/publication/b81bea2f-8fd0-11ed-b508-01aa75ed71a1/language-en>

The list of qualifying species given in the published Conservation Objectives often differs from the ones included on the Standard Data Form (and sometimes also from the legal Classification Act). This inconsistency on the list of species between the Classification Act, Conservation Objectives and the Standard Data Form, becomes problematic for anyone wishing to know for which species the site is protected and managed. **This leads to a situation of significant risk of legal challenge.**

Most of the conservation objectives are generic and are based on maintaining/restoring the favourable conservation condition of the habitats and species for which sites are classified. However, there is a lack of close relationship between threats officially reported for sites and the establishment of responsive conservation objectives and targets, together with an unclear timetable for site-related assessment of objective status. There is no publicly available information on the process by which conservation objectives are implemented and/or assessed.

There is a lack of a coherent national process to establish conservation measures, causing an unclear establishment and implementation of site-based conservation measures. In no case were specific, targeted, measurable and time bound formal conservation measures found to be in place to deliver the favourable status of species.

2. IMPLEMENTATION - PROGRESS ASSESSMENT: 5%

- For nine SPAs the implementation of conservation measures was considered not sufficient.
- In eight SPAs there was no engagement of stakeholders.

In general, there are insufficient capacities and resources (human and financial) for the implementation of the conservation measures. It has proven difficult to obtain traction with both governmental and nongovernmental authorities as to implementation and none of the sites have defined a co-ordination process for implementing or managing conservation measures.

3. SITE MANAGEMENT - PROGRESS ASSESSMENT: 1%

- For nine SPAs, there are no management plans. For one SPA there is a past management plan adopted for the site previously with a poor implementation assessment. It has not been updated since 2010.
- There is no governance system in place at any SPA.

Nearly all responses highlighted the issue of lack of co-ordination, sometimes in the context of governance needs. This led to a lack, at all sites, of clear governance processes, including potentially site management committees or other mechanisms to engage and involve stakeholders.

4. MONITORING - PROGRESS ASSESSMENT: 27%

- For two SPAs there is a regular monitoring of the protected bird populations, in four SPAs this monitoring is partial (in that it doesn't cover all relevant species) and for three SPAs there is no monitoring. One SPA didn't provide any information on this aspect.
- In two SPAs there is partially a regular evaluation of the efficacy of the conservation measures done by a responsible entity, while for eight SPAs there is no such evaluation.
- The quality of information in the monitoring and evaluation programme, in terms of adequacy for assessing the results of conservation measures and achievement of the conservation objectives, was good for one SPA, medium for four SPAs and poor for five SPAs

Regarding the monitoring, there is an incomplete and/or irregular monitoring of many qualifying species in general in all the ten SPAs

5. OUTCOMES - PROGRESS ASSESSMENT: 28%

- The measures do not target/benefit all the species in eight SPAs.
- The measures, such that they are, are partly effective in terms of improving (or at least preventing deterioration of) the status of the species in three SPAs, and not effective in seven SPAs.
- In one SPA there have been changes in land uses and human activities that partly benefited the species. Four SPAs replied "unknown" on this aspect.
- In two SPAs there have been changes in land uses and human activities that harmed the species. Eight SPAs replied "unknown" on this aspect.

The results show that most (86%) species declining nationally are also declining on SPAs, with only five of 37 species increasing. In addition, over half of species increasing nationally are actually decreasing on SPAs (20 of 39).

IRELAND - SPAS INCLUDED IN ASSESSMENT	
IE0004151 Donegal Bay	IE0004014 Rockabill
IE0004004 Inishkea Islands	IE0004024 Sandymount Strand
IE0004042 Lough Corrib	IE0004160 Slieve Bloom Mountains
IE0004096 Middle Shannon Callows	IE0004188 Tralee Bay Complex
IE0004017 Mongan Bog	IE0004076 Wexford Harbour and Slob

2.3 EUROPEAN COURT OF JUSTICE FINDS IRELAND IN BREACH OF THE HABITATS DIRECTIVE 92/43/EEC

In June 2023, the Court of Justice of the European Union issued its judgement in the case of C-444/21 EU Commission v Ireland - 2021/03933, known as the Measures Case, and found Ireland to be in breach of its obligations under Article 4 (4) and Article 6 (1) of the Habitats Directive.

The following is part of the judgement delivered in open court in Luxembourg on 29/06/23:

2. Declares that, by failing to define detailed site-specific conservation objectives for 140 of the 423 sites of Community importance referred to in point 1 of the operative part, Ireland has failed to fulfil its obligations under Article 4(4) of Directive 92/43, as amended by Directive 2013/17;

3. Declares that, by failing to adopt the necessary conservation measures which correspond to the ecological requirements of the natural habitat types referred to in Annex I and the species referred to in Annex II to Directive 92/43, as amended by Directive 2013/17, present on the 423 sites of Community importance referred to in point 1 of the operative part, Ireland has failed to fulfil its obligations under Article 6(1) of Directive 92/43, as amended;¹⁴

¹⁴

<https://curia.europa.eu/juris/document/document.jsf?text=&docid=275028&pageIndex=0&doclang=EN&mode=req&dir=&occ=first&part=1&cid=324932>

2.4 IRELAND IN BREACH OF THE BIRDS DIRECTIVE 79/409/EEC ON THE CONSERVATION OF WILD BIRDS

The Birds Directive 79/409/EEC on the conservation of wild birds, places a legal obligation on member states to provide clear and precise, site specific conservation measures and objectives, addressing all significant pressures and threats affecting the bird species and their habitats.

We believe that Ireland is in breach of The Birds Directive 79/409/EEC on the conservation of wild birds given that it has been established by an EU assessment that Rockabill SPA has no specific, targeted, measurable and time bound formal conservation measures in place to deliver the favourable status of species. Furthermore:

- *no conservation measures are based on site-specific conservation objectives and clearly linked to the objectives.*
- *The conservation measures are not clear and precise, sufficiently specific, detailed and quantified.*
- *The conservation measures do not address all significant pressures and threats affecting the bird species and their habitats on the site for any SPA* ¹⁵

The conservation objectives for Rockabill SPA that appear on the NPWS website is dated 8th May 2013, and the site synopsis is dated 3rd May 2015. The EU Commission report titled: 'Assessment of the measures established in Special Protection Areas (SPAs) and their effectiveness' was published in 2023. ¹⁶

The EU Commission assessment which includes Rockabill SPA, proves beyond doubt, that Ireland is not living up to its legal obligation to provide clear and precise, site specific conservation measures and objectives, addressing all significant pressures and threats affecting the bird species and their habitats in order to ensure their survival and reproduction in their area of distribution.

Statkraft have based their Environmental Impact Assessment Report and their Natura Impact Statement, as they relate to Rockabill SPA, on conservation measures and objectives that have been proven to be inadequate and insufficient. This effectively means that the information that the EIAR and the NIS is based upon is fundamentally flawed. Therefore, the application for the proposed development should be rejected as it puts the species and their habitats, protected by The Birds Directive 79/409/EEC, at great risk.

Rockabill SPA is the only marine SPA assessed in the report by the European Commission, however, it is reasonable to believe that information provided for any of the SPAs and SACs mentioned for any of the Phase 1 Relevant projects would also prove to be unreliable and inadequate. **We believe that the European Court of Justice would find Ireland to be in breach of The Birds Directive 79/409/EEC in a similar way Ireland was found to be in breach of The Habitats Directive 92/43/EEC.**

¹⁵ Source: European Commission, Directorate-General for Environment, *Assessment of the measures established in special protection areas and their effectiveness – Final report*, Publications Office of the European Union, 2023, <https://data.europa.eu/doi/10.2779/488430>

¹⁶ <https://www.npws.ie/protected-sites/spa/004014>

2.5 THE CONSERVATION STATUS OF THE ROSEATE TERN

'The roseate tern remains one of our rarest seabirds, with an estimated 2,000 pairs confined to a few colonies around these islands, and in 2023 both the Rockabill and Lady's Island Lake tern colonies were impacted by a Highly Pathogenic Avian Influenza (HPAI) outbreak'.¹⁷

The roseate tern is a Species of European Conservation Concern (SPEC 3) because of its rarity and is listed in Annex I of the Directive 2009/147/EC on the Conservation of Wild Birds (European Wild Birds Directive), Annex II of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1979) and Annex II of the Convention of Migratory Species of Wild Animals (Bonn Convention, 1979); the OSPAR Convention includes roseate tern among 9 birds listed as threatened and/or declining species and habitats.¹⁸

The roseate tern breeds in just two areas of Europe, namely the Azores and the far northwest. The northwest metapopulation is spread across a small number of sites in France, Ireland and the UK. Five UK SPAs host roseate tern, but only one of these, Coquet Island, currently supports an established population.

In Ireland, three SPAs host roseate tern: two as breeding sites (Rockabill and Lady's Island Lake) and one mainly as a post-breeding site (Dalkey Island). 58% of the entire northwest Europe metapopulation of roseate tern are concentrated on Rockabill SPA. Therefore, safeguarding this critical principal and breeding site is of the utmost importance to ensure the survival and reproduction of the protected species in their area of distribution.

There are two major risks associated with the concentration of the majority (58%) of the population in just one colony at Rockabill Island (IE):

The LIFE programme is the EU's funding instrument which supports environmental, nature conservation and climate action projects throughout the European Union. Due to the conservation status of the roseate tern, the species is considered as a priority for LIFE funding. The French sites have been targeted by a previous LIFE project (LIFE05 NAT/F/137), and (LIFE14 NAT/UK/000394) was designed to build on the previous one.¹⁹

'Improving the conservation prospects of the priority species roseate tern throughout its range in the UK and Ireland' was the title and objective of the LIFE project which began on 1 October 2015 and ended on the 31 December 2020. The Royal Society for the Protection of Birds in the UK was the project coordinator and North Wales Wildlife Trust and BirdWatch Ireland were project participants.

¹⁷ [https://www.npws.ie/news/successes-seabirds-ireland-new-census-results#:~:text=However%2C%20the%20Roseate%20Tern%20remains,Avian%20Influenza%20\(HPAI\)%20outbreak.](https://www.npws.ie/news/successes-seabirds-ireland-new-census-results#:~:text=However%2C%20the%20Roseate%20Tern%20remains,Avian%20Influenza%20(HPAI)%20outbreak.)

¹⁸ <https://www.ospar.org/work-areas/bdc/species-habitats/list-of-threatened-declining-species-habitats/birds>

¹⁹ <https://webgate.ec.europa.eu/life/publicWebsite/project/LIFE14-NAT-UK-000394/improving-the-conservation-prospects-of-the-priority-species-roseate-tern-throughout-its-range-in-the-uk-and-ireland>

2.5.1 IMPROVING THE CONSERVATION PROSPECTS OF THE PRIORITY SPECIES ROSEATE TERN THROUGHOUT ITS RANGE IN THE UK AND IRELAND ²⁰

The overall goal of the LIFE14 roseate tern project was to improve the conservation prospects of roseate tern (*Sterna dougallii*) in the UK and Ireland. This aim would contribute to a long-term goal of improving the conservation status of roseate tern across Europe.

SPECIFIC OBJECTIVES:

- Increase the population of roseate tern in the UK and Ireland by enhancing habitat management and reducing threats at the three principal colonies (Rockabill and Lady's Island Lake in Ireland and Coquet Island in the UK).
- Provide the conditions needed for a re-expansion of roseate tern in the UK and Ireland through enhanced management and restoration of all SPAs designated for this species.
- Identify long-term options for the management and establishment of tern colonies across northwest Europe, in view of predicted changes to the climate and coastlines.
- Improve understanding of key issues affecting roseate terns in northwest Europe and in wintering areas in West Africa.
- Develop and disseminate guidance and plans for the management of roseate tern breeding sites.
- Develop the conservation strategy covering the whole northwest European metapopulation of roseate tern.
- Deploy geolocators to understand roseate tern migration patterns (Redfern et al. 2021)

OUTCOMES:

- Visual tracking of roseate terns from Rockabill revealed the effective foraging range and patterns (Perrow et al. 2019). Roseate terns forage up to 30 km from the colony.
- Sandeel and alternative prey species reviews led to the development of prey hotspot areas for future management (Green 2017).
- Roseate terns actively search for bird aggregations initiated by auks or marine mammals driving the fish to the surface (Perrow et al. 2020).
- Roseate tern demography study based on ringing and resighting of roseate tern chicks over the period of 1996-2016 revealed that Rockabill (IRL) has been producing a surplus of birds to disperse to other colonies and that the Coquet's population growth relied on immigration from Ireland (Seward et al. 2019).
- The growth of Irish colonies was driven more by productivity and the survival of juveniles/adults (Seward et al. 2019).
- The wintering hotspots in Ghana were surveyed and illegal tern trapping is confirmed to still be ongoing in places (Quartey et al. 2018). Geolocators have also been deployed to understand roseate tern migration patterns (Redfern et al. 2021)

²⁰ <https://webgate.ec.europa.eu/life/publicWebsite/project/LIFE14-NAT-UK-000394/improving-the-conservation-prospects-of-the-priority-species-Roseate-tern-throughout-its-range-in-the-uk-and-ireland>



Visual tracking of roseate terns from Rockabill revealed the effective foraging range and patterns.

The prey items for provisioning chicks at Rockabill can be carried from a long distance, utilising the whole of the foraging range up to 20-30km from the colony (Perrow et al. 2019).

[Short video of roseate tern on Rockabill](#)



Thanks to the amazing conservation work that has gone on for over three decades, the roseate tern has been assessed as a species of Least Concern (LC) by the IUCN Europe because the population is increasing, and range maintained. However, the population status and range remain far below historic levels, and the species is still facing multiple threats, hence a revision of the species' threat status can be justified. NISA HAS BEEN NAMED AS A THREAT TO THE SPECIES.

[Short video of roseate terns on nesting boxes at Rockabill](#)

The lessons learnt from the practical management, networking and research actions during the project were used for the development of the International (East Atlantic) Action Plan, developed within the EU framework. The EU East Atlantic roseate tern Action Plan ²¹ was updated as part of the project setting future direction for full recovery. ²²

²¹ Piec, D. & Dunn, E.K. (2021). International (East Atlantic) Species Action Plan for the Conservation of the roseate tern *Sterna dougallii* (2021-2030). Developed under the framework of the Roseate Tern LIFE Project (LIFE14 NAT/UK/000394). European Commission 2021.

²² https://www.unep-aewa.org/sites/default/files/document/aewa_mop8_inf_7_issap_roseate_tern.pdf

2.5.2 INTERNATIONAL (EAST ATLANTIC) SPECIES ACTION PLAN FOR THE CONSERVATION OF THE ROSEATE TERN STERNA DOUGALLII (2021-2030) ²³

The overall goal of the Action plan (2021-2030) is to maintain the growth of the East Atlantic roseate tern population, while securing suitable sites for colonisation within a coherent network of European colonies.

There are two major risks associated with the concentration of the majority (58%) of the population in just one colony at Rockabill Island (IE):

- 1) there are signs of density dependent effects on Rockabill (the largest colony) with lower-than-average productivity in the last five years, meaning that the site is producing fewer individuals to sustain the recent growth rate of the metapopulation. We can expect that the growth will therefore slow down or plateau.
- 2) in the case of a stochastic event affecting Rockabill, the colony may disperse to less suitable sink sites where productivity might be below the population maintenance level (so-called buffer effect).

The following threats have been linked to reduced productivity on the breeding grounds:

- Predation by large gulls and other avian predators, native and invasive non-native mammals
- Disturbance through uncontrolled human access and egg collecting
- Climate change related threats
 - o Extreme weather events
 - o Loss of nesting sites to coastal change
 - o Long-term impacts of climate-driven environmental change
- Shortages of food
- Development of offshore windfarms
- Lack of sufficient protection of foraging areas
- The impact of commercial fishing

International (East Atlantic) species action plan for the conservation of the roseate tern specifically addresses concerns relating to Statkraft's NISA development proposal.

²³ https://www.unep-aewa.org/sites/default/files/document/aewa_mop8_inf_7_issap_roseate_tern.pdf

2.5.3 NISA IDENTIFIED AS A THREAT TO THE POPULATION OF ROSEATE TERNS AT ROCKABILL

ROC – NORTH IRISH SEA ARRAY OFFSHORE WIND FARM (NISA) PLANNED AND TO BE ADJACENT TO ROCKABILL REQUIRING RESOURCES FOR MAJOR CASEWORK URGENTLY (as reported in: LIFE14_NAT_UK_000394_AfterLIFE.pdf)

Development of offshore windfarms is a potential threat for roseate terns, which might have a threefold effect: collision risk, reduction of foraging area and changes to pelagic fish habitat. Collision risk is generally low for terns. Recent visual tracking study of roseate terns undertaken at Rockabill showed that the tracked birds were at 1-15 m above the sea surface 83% of the time and 96% of foraging attempts were made from <15 m (Perrow et al. 2019).

However, birds might pass through the windfarm rather than utilising this area for foraging, either because of an avoidance response to turbines or lack of suitable prey items within the windfarm area (M. Perrow, pers. comm.), a possible contributory factor being large predatory fish moving into the resultant reef-like structures and competing for small prey (Dannheim et al. 2019, Gill & Wilhelmsson 2019).

In the case of large windfarms, avoidance can effectively deprive birds of significant sections of their foraging area, as was demonstrated in the case of Sandwich terns breeding at Blakeney Point in relation to the Sheringham Shoal offshore windfarm (Harwood et al. 2017).

*The indirect effects include impacts of construction on pelagic fish. One study linked the decline in foraging success of little terns *Sternula albifrons* with the decline of abundance of juvenile Atlantic herring during the pile-driving operation at Scroby Sands offshore wind farm, **which eventually led to the unprecedented abandonment of eggs and very poor breeding success during the two years of construction (Perrow et al. 2011).***

The accelerating rate of offshore windfarm developments and other spatially occurring threats is further concerning in the light of the lack of sufficient protection of foraging areas around the colonies.

This is aggravated by the slowness in the process of reviewing SPA- and other Marine Protected Area (MPA) networks in all principal states within the breeding range of the roseate tern.²⁴

²⁴ https://www.unep-aewa.org/sites/default/files/document/aewa_mop8_inf_7_issap_roseate_tern.pdf

ROC – NORTH IRISH SEA ARRAY OFFSHORE WIND FARM (NISA) PLANNED AND TO BE ADJACENT TO ROCKABILL REQUIRING RESOURCES FOR MAJOR CASEWORK URGENTLY

THREATS	ACTION, APPROACH FOR PROJECT SITES	RESPONSIBILITY
I. Potential impacts of offshore renewable energy and other coastal/ marine developments	Action 1.3.1 Require impact assessments which adequately evaluate and monitor direct and indirect ecosystem impacts of windfarms, nuclear power plants and other large-scale coastal/marine developments near roseate tern colonies, especially those potentially affecting forage fish and roseate tern foraging area use a. Ensure that the assessment guidance of competent authorities includes the need to assess offsite impact pathways, and indirect impact pathways – especially through direct effects on food resources and foraging area use of roseate terns (IE, UK). b. Ensure applicants for coastal and offshore developments undertake to provide the information on forage fish and roseate tern foraging areas necessary to carry out the analysis for informing the impact assessment. - ROC – North Irish Sea Array Offshore Wind Farm (NISA) planned and to be adjacent to Rockabill requiring resources for major casework urgently Action 1.3.2 Undertake strategic impact assessments for long-term offshore wind energy development plans for offsite and indirect impact pathways on key current and potential roseate tern colonies to be used by spatial planning authorities early in the development application process (IE, UK) a. Review and identify gaps in data on spawning/nursery grounds, dispersal capabilities and stocks of forage fish utilised by roseate terns for early consideration in the planning process.	National competent authorities Statutory agencies Applicants seeking development consent Environmental consultancies and academic institutions NGOs

One of our researchers came across the information highlighted above while conducting an online search. The report specifically mentions the North Irish Sea Array Offshore Wind Farm (NISA) and highlights the need for resources to carry out major casework urgently. The report was downloaded to her computer.

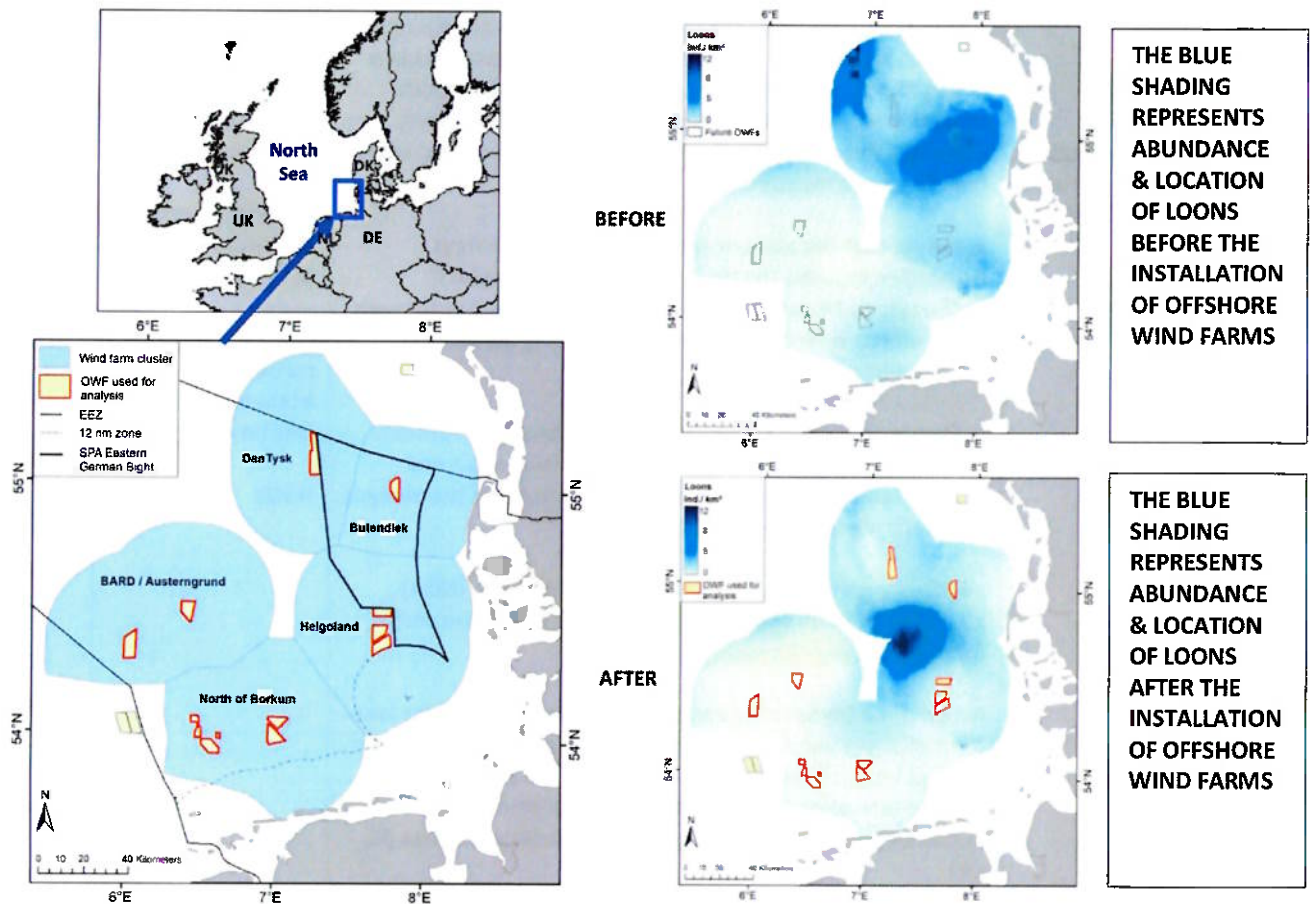
For some unknown reason the link to the report is no longer working and instead the following message appears:

Your file couldn't be accessed
It may have been moved, edited, or deleted.
ERR_FILE_NOT_FOUND

It is rather suspicious that a report specifically mentioning NISA and calling for urgent resources for major casework to be carried has been removed from public view. We are attaching a copy of the report with our submission.

2.5.4 LOONS ABANDON EASTERN GERMAN BIGHT SPA DUE TO OFFSHORE WIND FARMs

25



Location of the five wind farm clusters in the south-eastern North Sea in northwest Europe. Blue areas delineate the five considered wind farm clusters. The map represents all OWFs in 2015 and 2016. The thick black line indicates the Special Protection Area (SPA) 'Eastern German Bight' designated according to the EU Birds Directive.²⁵

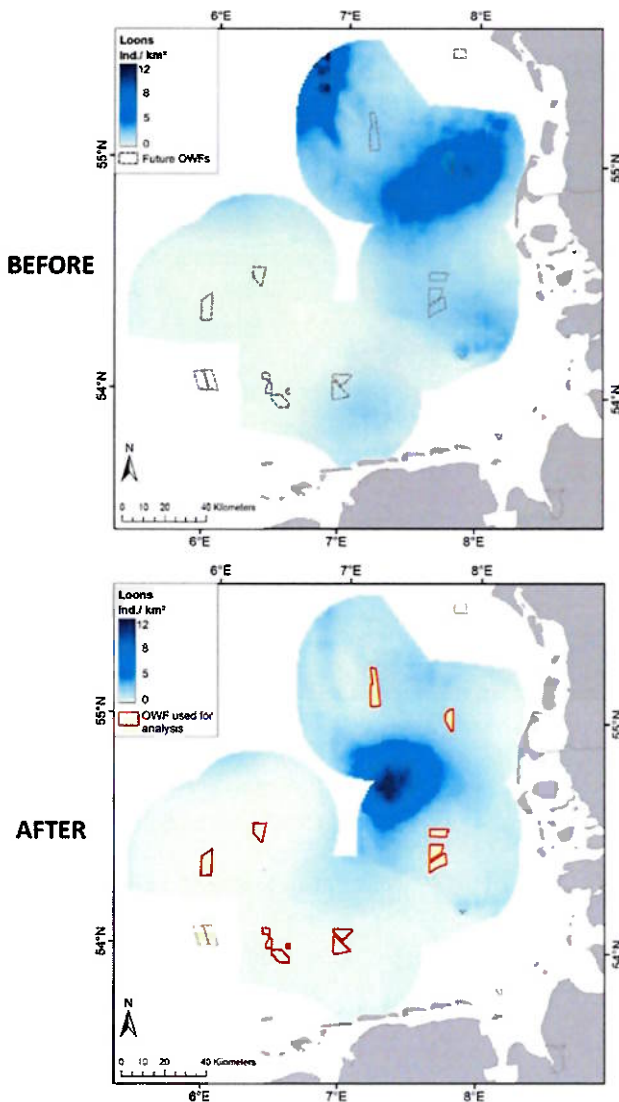
Large-scale effects of offshore wind farms on seabirds of high conservation concern

The North Sea is a key area worldwide for the installation of offshore wind farms (OWFs). We analysed data from multiple sources to quantify the effects of OWFs on seabirds from the family Gaviidae (loons) in the German North Sea. The distribution and abundance of loons changed substantially from the period before to the period after OWF construction. Densities of loons were significantly reduced at distances of up to 9–12 km from the OWF footprints. Abundance declined by 94% within the OWF + 1 km zone and by 52% within the OWF + 10 km zone. The observed redistribution was a large-scale effect, with birds aggregating within the study area at large distances from the OWFs. **Although renewable energies will be needed to provide a large share of our energy demands in the future, it is**

²⁵ Garthe, S., Schwemmer, H., Peschko, V. *et al.* Large-scale effects of offshore wind farms on seabirds of high conservation concern. *Sci Rep* **13**, 4779 (2023). <https://doi.org/10.1038/s41598-023-31601-z>

²⁶ <https://www.nature.com/articles/s41598-023-31601-z>

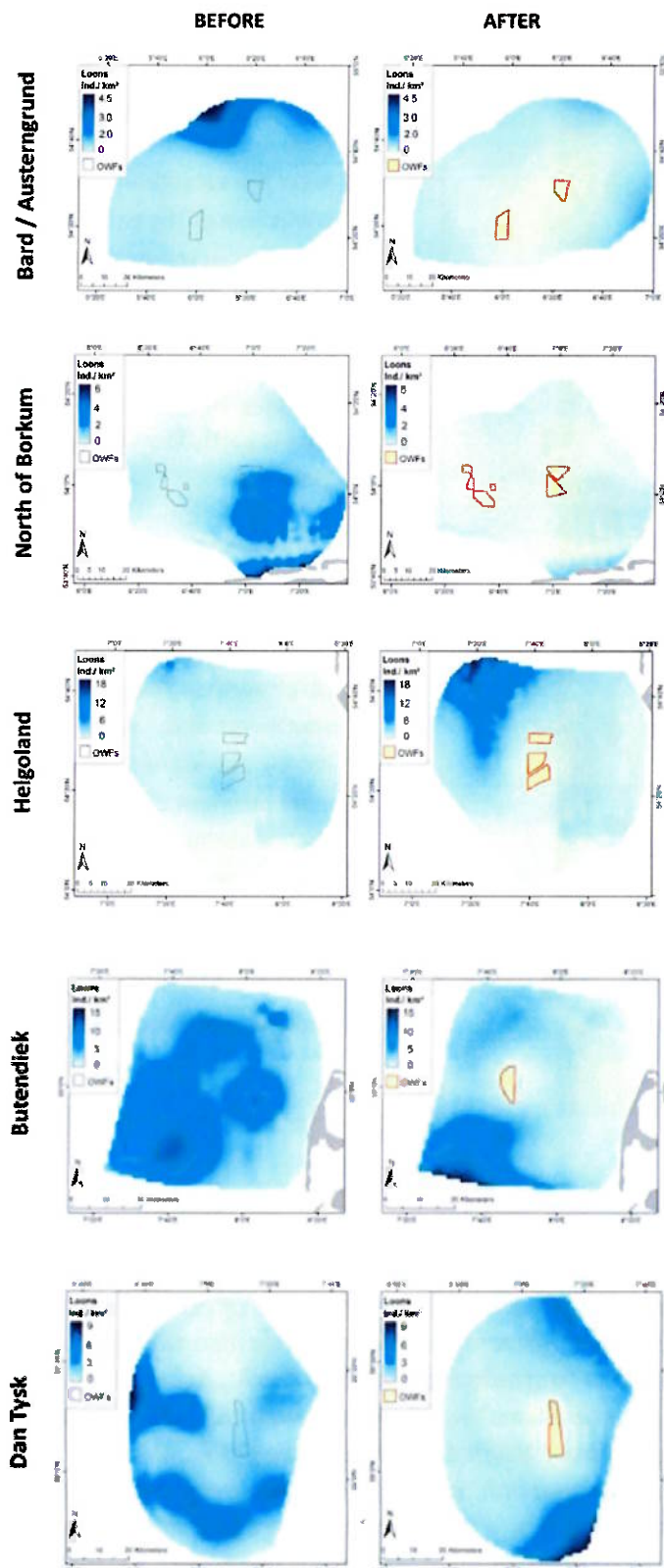
necessary to minimize the costs in terms of less-adaptable species, to avoid amplifying the biodiversity crisis.



KEY FINDINGS

- After the establishment of the OWFs one of the two previous loon hot spots in the study region, located inside the SPA, has disappeared.
- The only one new distribution hot spot is partly located outside the SPA.
- Consequences of these changes for the functioning of the SPA concept need to be investigated.
- Large areas in the south and southwest of the study area were largely abandoned after the establishment of five OWFs and their associated OWF supply- and maintenance-vessel traffic.
- This change was significantly related to the avoidance of the proximity of wind farms.

Different seabird species respond differently to the development of OWFs, with behavioural reactions ranging from complete avoidance to attraction. A recent review of 20 OWFs in European waters found that species responded differently and sometimes inconsistently across studies, ranging from strong avoidance to strong attraction to OWFs. Avoidance was mainly due to birds responding to OWF structures and was stronger when the turbines were operating, but could also occur as a result of boat traffic to and from the OWFs. When avoiding OWFs, species may experience functional habitat loss due to displacement, which could in turn result in increased energy consumption if the alternative foraging habitats are of poorer quality or if the individuals have to travel longer distances to reach their foraging areas. In contrast, if seabirds do not avoid OWFs or are even attracted to them, they risk colliding with the rotors or turbines, leading to increased mortality (reviewed in ref.21). However, the possible long-term effects of the different reactions towards OWFs at the population level are difficult to estimate.



KEY FINDINGS

- The distribution and abundance of loons changed substantially from the period before to the period after OWF construction. Densities of loons were significantly reduced at distances of up to 9–12 km from the OWF footprints.
- Total population estimates for all wind farm clusters declined by almost a third, from 34,865 individuals before construction to 24,672 individuals after construction.
- Focusing on the significantly affected 10-km zones around the wind farm clusters, numbers declined from 7750 individuals before to 2893 individuals after OWF construction.
- This indicated a population decline of 63% within the 10-km zones of all wind farm clusters, and a decline of 20% (27,116 to 21,779 individuals) beyond the 10-km radius.

**THIS CANNOT BE
ALLOWED TO HAPPEN TO
THE ROSEATE TERN
COLONY ON ROCKABILL
SPECIAL PROTECTED AREA**

2.5.5 SEVERE KNOWLEDGE GAP TO MAKE INFORMED DECISIONS

UPDATE ON THE CURRENT STATE OF KNOWLEDGE ON THE IMPACTS OF OFFSHORE WIND FARMS ON BIRDS IN THE OSPAR REGION: 2019-2022 ²⁷

Ireland is in its infancy in terms of offshore wind power generation. If managed properly, this puts our country at a great advantage as we can adopt best practice from the experience of other European countries while at the same time avoiding costly mistakes.

A great many studies have taken place over the years to inform the impacts wind farms have on birds. However, very few studies address the effects in the Irish Sea which makes sense as to date there are only 7 small wind turbine generators located off the coast of Arklow.

This is about to change significantly with developers queueing up to grab a piece of the Irish coast with many commentators describing the rush to renewable energy as 'The new Gold Rush.'

SWEG is very much in favour of sustainable and renewable energy, however, we are adamant that this must not come at the expense of biodiversity. As Minister Ryan has said: ***'We know we have the two crises of biodiversity loss and climate to address at the same time. We must ensure the solutions to one do not impede the other.'***

What is clear from the vast amount of studies and literature published for established offshore wind farms is that comprehensive studies must take place before the construction of offshore wind farms, especially in the case of areas of high sensitivity and biodiversity value. Studies undertaken must be **SITE-SPECIFIC and SPECIES-SPECIFIC** to ensure that:

- Ireland does not breach The Birds Directive 79/409/EEC
- Ireland does not breach The Habitats Directive 92/43/EEC
- There are no significant or adverse effects on the qualifying interests (QIs) for Special Areas of Conservation (SAC)
- There are no significant or adverse effects on the special conservation interests (SCI) for Special Protected Areas (SPAs)

The Dutch ministry of Agriculture, Nature and Food Quality commissioned Bureau Waardenburg to update a literature review on the effects of offshore wind on birds. This review follows up on an earlier review and covers peer-reviewed literature since the end of 2019 up until mid-2022 and the most relevant grey literature for the topics dealt with.

This review shows that the geographical scope of published studies on offshore wind farm effects in the OSPAR region is concentrated around British, German, Dutch and Belgian waters in the southern North Sea. FEW STUDIES ADDRESS THE EFFECTS IN THE IRISH SEA and Baltic Sea, while studies of offshore wind farm effects in the Northern Atlantic are lacking.

²⁷ https://www.ospar.org/site/assets/files/1389/bird_litt_review_2029_2022_final.pdf

Leemans, J.J. & M.P. Collier, 2022. Update on the current state of knowledge on the impacts of offshore wind farms on birds in the OSPAR Region: 2019-2022. Bureau Waardenburg Report 22-198. Bureau Waardenburg, Culemborg.

The report provides an update of earlier reports on the state of knowledge on the impacts of offshore wind farms, which are summarized by Zoutenbier et al. (2020). We assumed that these earlier reports cover the relevant literature up to the end of September 2019. Therefore, this report will merely include literature from October 2019 onwards and up to the end of July 2022. Furthermore, the current literature review is limited to the effects on birds in the OSPAR Region, thus literature focusing on other species groups or other regions is not included. Furthermore, our review limits itself to literature directly related to offshore wind farm developments. Hence, we acknowledge that many publications that are relevant for impact assessments but were merely conducted as ecological studies, such as for instance offshore distributions of seabirds, their biology or the availability of their food sources and coherent carrying capacity of offshore areas are not covered by our work. In addition, we focussed on scientific studies generating new knowledge, and less on reviews that often relied on literature from the period before 2019.

The primary focus of this literature review is on scientific, peer-reviewed papers. However, substantial amounts of knowledge on the impacts of offshore wind farms may additionally be collected in impact assessment frameworks (referred to as 'grey literature') and generally only few of these are eventually published (Marques et al. 2021). This report will therefore also include some grey literature that fills important knowledge gaps that are not covered by scientific literature, even if it involves work carried out before the above mentioned cut-off date. As this substantially increases the number of potential sources, we only include relevant grey literature covering the following knowledge gaps:

- Collision risk per species.
- Species-specific avoidance rates.
- Barrier effects.
- Displacement/habitat loss per species.
- Disturbance distances per species.
- Use of corridors in wind farms.

The following are summaries and findings of various reports covered in the literature review:

Potiek et al. (2022) and follow-up studies (Collier et al. 2022, Soudijn et al. 2022a) used the stochastic Collision Risk Model to calculate the estimated number of collision victims in all operational, planned, and proposed wind farms in the southern North Sea up to 2030 for the species of seabirds (10 species) and migrants (8 species) that are most vulnerable to suffer population impacts due to collision mortality. Among the 10 seabirds, the estimated number of collision victims was highest for northern gannet and lowest for arctic skua (*Stercorarius parasiticus*), while among the migratory species collisions were highest for common starling and lowest for Bewick's swan (*Cygnus (columbianus) bewickii*) (Table 1). The cumulative effects of these collisions were assessed at the population level for different scenarios of wind farm development. Collision victims among northern gannet and herring gull exceeded acceptable levels of population impact in all scenarios (see Chapter 2.6), while for black-legged kittiwake and great black-backed gull these thresholds were violated in one scenario. For all other species, thresholds were not exceeded.

Table 1

Numbers of estimated annual collision victims ($\pm$ SD) per species in all operational, planned, and proposed wind farms in the southern North Sea up to 2030. Adapted from Potiek et al. (2022).

SPECIES COLLISIONS	
Lesser black-backed gull	441 $\pm$ 10
Herring gull	655 $\pm$ 27
Little gull	143 $\pm$ 2
Great black-backed gull	2,174 $\pm$ 73
Black-legged kittiwake	1,268 $\pm$ 55
Northern gannet	7,001 $\pm$ 126
Arctic skua	2 $\pm$ 0.03
Great skua	29 $\pm$ 1.7
Common tern	99 $\pm$ 2
Sandwich tern	65 $\pm$ 0.9
Bewick's swan	10 $\pm$ 0.04
Brent goose	104 $\pm$ 0.13
Common shelduck	473 $\pm$ 5
Eurasian curlew	670 $\pm$ 5
Black tern	33 $\pm$ 0.2
Common starling	22,411 $\pm$ 41
Red knot	1,245 $\pm$ 0.7
Bar-tailed godwit	729 $\pm$ 3

Welcker & Vilela (2018, 2019) and Welcker (2019) wrote several reports on nocturnal bird migration in the German North Sea and Baltic Sea. Using radars, they found that nocturnal bird migration through these areas peaked in April and October. Migration intensities strongly increased after sunset, peaked before midnight, and subsequently decreased through the night. Higher bird flux rates were related to increasing tailwinds, and to a lesser extent, with seaward crosswinds. Additionally, weather conditions with low humidity and high barometric pressure, moderate winds and no precipitation were generally preferred by nocturnal migrants. In spring, migration intensity was positively correlated with higher ambient temperatures, while migration intensity increased with lower temperatures in autumn. The intensity of migration in the German North Sea declined with increasing distance to shore. Within the vertical range of the radars up to 1 km, 35% of all flights were recorded below 200 m. In the North Sea sites, the mean flight height was about 100 m higher in spring than in autumn, which is suggested to be due to seasonal differences in the prevailing wind direction in the area. Probably for the same reason, in autumn, flight height decreased with increasing distance to shore. Flight heights were positively correlated with migration intensity. At the end of the night, birds generally flew at lower altitudes, which suggests that an increasing proportion of birds prepares to land. This pattern likely explains the increase of the rate of flight calls in the course of the night, with highest rates usually being reached just before dawn. Migration intensity as measured by the radar was positively

correlated with the number of recorded flight calls of nocturnal migrants, especially in October and November when migration of the most vocal species (e.g. thrushes) peaked. In both seasons, the highest flight call rates were recorded in conditions with completely overcast skies, while in autumn the flight call rate was also higher with clear skies. In overcast conditions, birds might decrease their flight height and/or increase their call frequency due to decreased visibility, while clear skies in autumn are generally related to increasing migration intensities. In total, flight calls of 127 bird species were recorded in the offshore sites in the German North Sea and Baltic Sea at night.

Displacement refers to the reduced density of species in the wind farm area (plus buffer) compared to the pre-construction densities (Marques et al. 2021). For offshore wind farms this is likely to relate to disturbance from the presence of the turbines, increased vessel activity and/or changes in prey availability related to OWF presence. In contrast, densities of birds in and around a wind farm may increase due to for example the provision of roosting spots or increase of prey resources or habituation. However, note that attraction not necessarily has a positive effect on birds as it may also increase collision risk (Marques et al. 2021). Marques et al. (2021) reviewed all available literature on bird displacement, concluding that negative effects of wind farms on bird abundance are often reported, yet other studies frequently found no displacement effects or even attraction effects. This variability suggests that displacement varies between species and within individuals of the same species, depending on the age and life cycle of the individual, in combination with local circumstances, the characteristics of the relevant wind farms and time after construction. Still, differences in the design of studies may also explain variability in the results (Marques et al. 2021).

After six years of post-construction monitoring at Thornton Bank, Vanermen et al. (2019a) showed that the numbers of northern gannet, razorbill and common guillemot have dropped by 98%, 75-80%, and 60-63% respectively. Herring gull and great black-backed gull were found to be attracted to the wind farm with respectively 3.9-4.9 and 5.3-6.6 times increases in densities in the wind farm area. Great cormorants (*Phalacrocorax carbo*) were also strongly attracted, showing an increase in numbers with factors of 40-43, as they were virtually absent in the area before construction. No significant or inconclusive results were found for northern fulmar (*Fulmarus glacialis*), great skua (*Stercorarius skua*), little gull (*Hydrocoloeus minutus*), common gull, lesser black-backed gull, black-legged kittiwake, and Sandwich tern.

Peschko et al. (2020a) carried out a Before-After Impact-Control (BACI) analysis to study the displacement of common guillemot and black-legged kittiwake after the construction of four offshore wind farms north of Helgoland. The analysis showed that relative density of kittiwakes inside the wind farms decreased by 45% in the breeding season, and by 10% in spring, this latter effect not being significant. The relative density of guillemot in the wind farms was reduced by 44% in the breeding season, and by 63% in spring. The authors estimated that guillemots showed a response radius to the wind farms of approximately 9 km in spring, whereas for kittiwakes this radius was around 20 km in the breeding season. In another study, guillemots were shown to strongly avoid offshore wind farms close to their colony on Helgoland with a 63% reduction in the resource selection of the offshore wind farm areas compared with the surroundings (Peschko et al. 2020b). Furthermore, when turbine blades were rotating, the avoidance of guillemots increased to 75%.

Vanermen et al. (2021) used GPS tracking data to compare the numbers of lesser blackbacked gull before and after the construction of the Belgian Norther wind farm. They found a decrease in occurrence by 71% compared to the pre-construction period and accounting for the trend in control areas. However, large gulls such as lesser black-backed gulls tend to be attracted to fishing vessels. As such, the authors argue that it is hard to assess whether this distribution is due to disturbance induced by wind turbines, the absence of fishing activities inside the wind farm or a combination of both. Nonetheless, it is suggested that collision mortality is still the main concern for lesser black-backed gull, rather than the impact of habitat loss.

Based on aerial and ship-based surveys, a recent study analysed the effects of all operating offshore wind farms (OWFs) in the German EEZ on six seabird species (Garthe et al. 2022, Peschko et al. in prep.). A 'before-after control impact' (BACI) analysis was conducted to estimate the possible effects of OWF presence on the species density and to estimate the response range to the OWFs. For common guillemots, in autumn and in winter, a strong decline in abundance of respectively 91% and 67% was detected inside OWFs + 1 km buffer and of respectively 80% and 54% inside OWFs + 5 km buffer. Guillemot density was significantly affected up to a distance of 18-21 km in autumn and 15-18 km in winter. For razorbills, a decline in abundance of 55% inside OWFs + 1 km buffer and of 47% inside OWFs + 5 km buffer was detected in winter. Razorbill density was significantly affected up to a distance of 0-3 km. For northern gannets, in summer and autumn, abundance declined by respectively 75% and 81% inside OWFs + 1 km buffer and by respectively 32% and 43% inside OWFs + 5 km buffer. Northern gannet density was significantly affected in summer and autumn up to a distance of 0-3 km. For northern fulmars, in spring and summer, abundance declined by respectively 91% and 64% inside OWFs + 1 km buffer and by respectively 84% and 43% inside OWFs + 5 km buffer. Northern fulmar density was significantly affected up to a distance of 3-6 km in spring and 0-3 km in summer. For blacklegged kittiwakes, in spring, abundance declined by 35% inside OWFs + 1 km buffer and birds were affected up to a distance 0-3 km. In winter, an abundance increase was detected for black-legged kittiwakes, which was not found to be significant for OWFs + 1 km buffer, while for OWF + 5 km buffer an increase in abundance of 27 % was detected. For lesser black-backed gulls in summer an insignificant increase was detected for OWFs + 1 km buffer, while an abundance decline was found of 42% inside OWFs + 5 km buffer. Lesser black-backed gull density was significantly reduced up to a distance of 12-15 km. In autumn an increase in abundance of 70% was detected for OWFs + 1 km buffer.

The distribution of red-throated divers in the German Bight was found to be affected by ship traffic, including wind farm related ships (Burger et al. 2019). Divers were significantly more abundant in areas with low-frequency ship traffic. Ships sailing at high speed were seemed to be more disturbing than slow-speed ships. Also, Mendel et al. (2019) found that ship traffic had a significant negative impact on loons (*Gavia spp.*), indicating that offshore wind farms deterred loons through the combined effect of the wind turbines themselves and the associated ship traffic. In addition, ship speed was identified to have a strong effect on divers: after disturbance from high-speed vessels, resettlement of the disturbed area took longer than after disturbance from slow- or medium speed vessels (Dorsch et al. 2019). This latter study also indicated that divers kept longer distances to offshore wind farms at night, when wind turbines were illuminated with bright red aviation lights and white navigation lights (Dorsch et al. 2019).

Hansen et al. (2020) experimentally showed that common guillemots (*Uria aalge*) respond to underwater noise, with indications of a greater response with higher sound levels.

Grey literature

Besides direct effects that offshore wind farms may have on birds, the large-scale at which these developments are expected to take place may have substantial effects also on local wind patterns, wave generation, tidal amplitudes, stratification of the water column, dynamics of suspended particles and bedload transport of sediment, while also providing extra hard substrate for biota. These developments are yet to occur, but the first modelling studies for the North Sea have been conducted that indicate that in certain areas major changes could take place (Boon et al. 2019, Zijl et al. 2021).

Cumulative and population level effects

There is a general agreement that there is a key need for an understanding of the potential cumulative impacts of offshore wind farms on birds (Fox & Petersen 2019, May et al. 2019). There have been several attempts to carry out such cumulative assessments, each with different assumptions and without a general consensus on a certain approach (May et al. 2019). For instance, Gusatu et al. (2021) proposed a holistic cumulative methodology to assess impacts of 18 different offshore wind farm related pressures on seabed habitats, and reference species of fish, seabird and mammal species in the entire North Sea. Based on a literature review that was validated through expert questionnaires, the study identified that barrier effects, habitat loss, and risk of contact with fuel or chemicals would be the pressures to which the investigated bird species (fulmars, razorbills and guillemots) would be the most sensitive. Piet et al. (2021) goes further in their unpublished report than the cumulative assessments of offshore wind farms, with the aim to assess the cumulative impacts of all main human activities in the North Sea under various planning scenarios. They used a semi-quantitative risk assessment, including the pressures of the different human activities and the impacted ecosystem components, which was then applied to identify the main threats to the North Sea biodiversity and evaluate the effectiveness of the management measures to mitigate those threats. The study suggests that considerable potential reduction in impact risk can be reached for birds, depending on the design of the wind turbines or their location. This relates respectively to increasing capacity of wind turbines (cf. Thaxter et al. 2017) and planning offshore wind farms in areas with lower bird densities (cf. Leopold et al. 2015). In contrast, Soudijn et al. (2022) and Potiek et al. (2022) modelled in their unpublished works in more detail the cumulative impacts respectively of habitat loss and collisions caused by offshore wind farms in the Southern North Sea on all relevant bird species (the results of the studies are discussed in above chapters). In another report, Searle et al. (2022) examined how seabird collisions, displacement and barrier effects could be integrated in one individual-based mechanistic model of seabird movement, behaviour, demographics and OWF interactions (i.e. the so-called SeabORD model). They concluded that further research is needed on the quantitative population level effects of displacement and on seabird behaviour outside the breeding period. In chapter 2.1 we also split up published literature to studies on breeding- and migratory birds. However, a cumulative impact assessment would also mean to evaluate effects throughout the whole annual cycle of an individual. For example, Thaxter et al. (2019) also demonstrated, using GPS telemetry, that the vulnerability of lesser black-backed gulls to collisions was high near to colonies but was also high at some migration bottlenecks and wintering sites where exposure to turbines was greatest.

These tradeoffs of grasping cumulative impacts of all human activities together (or alternatively all wind farm developments both onshore and offshore) or evaluating all relevant bird species in detail depict the difficulty of the issue of cumulative impact assessments. Nonetheless, as May et al. (2019) also concluded, while the current monitoring- and modelling techniques may be unable to describe the whole complexity of wind and wildlife interactions, we need to use the best available methods to describe natural variability of animal populations to support risk-based decision-making. Policies that support the use of adaptive management will promote assessments at the population level.

In addition to the difficulty to quantify the impacts of all relevant human activities that lead to bird mortality, translating these into population level effects has its own challenge. Population viability analyses are now routinely used during the consenting process for offshore wind energy developments to assess potential impacts to seabirds (Miller et al. 2019). But how these models are used gives still space for improvement. For instance, Horswill et al. (2022) argues based on the example of data collected from 70 colonies of black-legged kittiwakes across the UK and Ireland that including temporal trends in population viability assessments dramatically influences the projected rate of population decline. Therefore, they argue that environmental factors driving current population dynamics need to be incorporated in population viability impact assessments. In another study, Horswill et al. (2021) also pointed out the danger of using values from surrogate species or other populations of the same species in population level assessments when no data is available from the target population. Also for this study, they used black-legged kittiwakes breeding in the United Kingdom and Ireland as an example to indicate that using surrogate values to fill in missing parameters have large potential demographic impact, and that resulting biases are driven in unpredictable directions thus precluding assessments from being consistently precautionary.

Furthermore, even if the effects are calculated at the population level, impact assessments need to be able to make statements whether or not these effects will have a significant negative impact on the population. Such evaluations have often been carried out using relatively simple criteria and thresholds like the the Potential Biological Removal (PBR). However, this approach has been challenged as e.g. it does not take any environmental variability into account and it implicitly assumes a fixed level of undemonstrated density dependence in population development (O'Brien et al. 2017, Miller et al. 2019). To solve such problems, the Dutch government has recently initiated the development of a novel method of impact assessment based on the outcome of population models. Within this approach, species-specific thresholds were defined for 21 bird species that consist of two parts:

- A threshold population decline 30 years after the onset of a continuous prolonged impact, as a percentage X of the projected population size without the impact, which is considered acceptable.
- A threshold probability Y that X is below this acceptable level after 30 years, which is considered an acceptable risk.

FINAL REMARKS AND RECOMMENDATIONS

Studies published since 2019 mainly describe displacement and figures relating to collisions, often following standard methods and being site-, and development-specific so being less

relevant here. In connection with collision risk, several studies show evidence for avoidance. The level and scale at which displacement occurs varies between species and studies, likely to do with species sensitivity, and wind farm and habitat characteristics. As these studies are predominantly described from peer-reviewed literature, there is undoubtedly publication bias towards where effects have been demonstrated.

This review shows that the geographical scope of published studies on offshore wind farm effects in the OSPAR region is concentrated around British, German, Dutch and Belgian waters in the southern North Sea. Few studies address the effects in the Irish Sea and Baltic Sea, while studies of offshore wind farm effects in the Northern Atlantic are lacking. This limited geographical scope may partly be explained by the number of offshore wind farms in these areas, which is generally less than in the southern North Sea. Nonetheless, it shows that knowledge gaps on the effects of offshore wind farms on birds in these regions remain to be addressed by future studies. The geographical scale of the density maps produced by Waggitt et al. (2019) show how the coherence of bird occurrence in the whole Northeast Atlantic can be achieved. Such studies on recent bird densities, extended by local age composition, -bird behaviour, and -flight characteristics could certainly help planning and assessment of offshore wind farms (e.g. Cleasby et al. 2020, Fauchald et al. 2021, Fijn et al. 2021, Potiek et al. 2019).

This review also shows that no studies address the effect of different configurations of offshore wind farms, or for instance the use of corridors intended for birds, which is therefore another knowledge gap to be filled. Yet, in the coming years we reach the period when the lifetime of the first offshore wind farms is reached, raising the question around the effects of decommissioning of these structures. Currently, knowledge regarding the biological communities that develop on these structures and their ecological role in the North Sea is currently insufficient to inform such decommissioning decisions (Fowler et al. 2019).

Recently, concern has also risen about potential 'knock on' effects through the food chain that could be caused by OWF-induced ecosystem shifts such as, e.g., changes in seasonal and spatial stratification patterns, hydro-morphological changes and maybe even changes due to increases in benthic production on the foundations of the turbines and adjacent platforms (Zijl et al. 2021).

What these reports prove is that there is a substantial knowledge gap to adequately assess the potential impacts offshore wind farms may have on specific bird species. How for example:

Flight height can be affected by seasonality and prevailing wind direction; how flight heights change depending on the time of night; flight call rates in overcast versus clear conditions; how displacement varies between species and within individuals of the same species, depending on the age and life cycle of the individual, in combination with local circumstances, the characteristics of the relevant wind farms and time after construction; how the relative density inside the wind farm differs between species, at different distances during different seasons and how avoidance rates dramatically increase in certain species when turbine blades are rotating; the avoidance and negative effect that the frequency and speed of construction and maintenance ships has on different species; the danger of using

values from surrogate species or other populations of the same species in population level assessments when no data is available from the target population.

2.5.6 CLOSING REMARKS ON THE CONSERVATION OF THE ROSEATE TERN

What is clear is that there is simply not enough species specific knowledge available to assess what the effects the North Irish Sea Array will have on the artic tern; common tern; purple sandpiper and the roseate tern.

For over thirty years the roseate tern has been the subject of conservation measures with great success. Current conservation measures will be funded by the EU LIFE programme up to 2030 and could even be extended beyond this timeframe.

It is also clear that Statkraft's willingness to site a wind farm array 200 metres from Rockabill SPA²⁸ shows a complete disregard for one of the rarest seabirds in Europe. As we have suspected all along, Statkraft are more interested in corporate profits than they are in protecting biodiversity and nature. Furthermore, we regard Statkraft's methods of determining collision and other risks to roseate terns for their EIA, NIS and AA as utterly inadequate. Their claim that birds will fly below the 40-metre clearance of rotor blades does not stand up to scrutiny. The following picture shows terns flying around and above Rockabill lighthouse, which stands at 46.5 metres above sea level.



What we also know for a fact is the devastating impact offshore wind farms have had on the protected colony of loons once abundant in the Eastern German Bight SPA in the North Sea. We cannot let this happen to Rockabill SPA and the species protected by EU legislation.

Rockabill SPA is the largest breeding colony of roseate terns in Europe. As a source colony, immigration from Rockabill is necessary to support the roseate tern population on Coquet Island SPA, which is located on the northeast coast of Britain. The potential significant effects of this proposed development and the implications are far reaching and could well signal the end of the Rockabill roseate tern colony which would affect the entire Northwest metapopulation.

²⁸ <https://northirishsearraysid.ie/wp-content/uploads/2024/06/Chapter-15-Offshore-Ornithology.pdf> - page 16 of 203

Given the seriousness of the situation we would have expected Statkraft to have initiated transboundary consultations with the appropriate UK authorities, however, this does not appear to be the case.

It is also reasonable to expect that the EU Court of Justice would be surprised that the fate of the roseate tern, a rare seabird and the subject of substantial EU funding for conservation measures, could be placed in such a precarious position.

We believe that in order to fully protect the species, an exclusion zone mirroring the roseate terns foraging area of 30 km should be put in place around the ecologically sensitive Rockabill SPA. This would protect and conserve the roseate tern population and other protected species and their habitat, and would ensure the survival and reproduction in their area of distribution.

According to the White Paper on Offshore Wind Energy (Partial review of the National Water Plan Holland Coast and area north of the Wadden Islands ²⁹ **(Dutch White Paper)** published by the Dutch Ministry of Infrastructure and the Environment and the Dutch Ministry of Economic Affairs in September 2014, no more than 1% wildlife mortality is acceptable. This practice placed the nearest turbines 50km from the nearest lesser black-backed gull colonies. The Dutch White Paper states on page 29: 'For the protection of the lesser black-backed gull (*Larus fuscus*), special provisions have been made in respect of those parts of the northern Holland Coast area that lie within 50km of the Texel gull colony'.

²⁹ [EN010080-001201-spirit Energy Marine 10 - White Paper on Offshore Wind Energy Netherlands Ministry of Infrastructure and the Environment 09_2014.pdf \(planninginspectorate.gov.uk\)](#)

2.6 IMPACT ON SEABED AND MARINE FOOD CHAIN

The drilling and piledriving required for Monopile installation will be likely to create massive amounts of sediment and may sometimes include chemical additives used as drilling cutting agents. Drilling cutting agents are a chemical pollutant which disrupt seabed nurseries for Phytoplankton, fish and shellfish. Phytoplankton is a main food source for fish stocks. Chemical pollutants such as drilling agents, lubricants will also disrupt the spawning areas for sand eels. Sand eels are the main food source for Terns which are the most red-listed breeding birds on Rockabill. Placing large foundations in the proposed location may change the dynamics of the sandbanks and cause a silt build-up around the base foundations of up to 14m in diameter. In essence, the marine ecosystems may be altered and threatened by the proposed 49 units in option 1 or the 35 units in option 2 of the proposed development.

2.7 IMPACT ON MARINE MAMMALS

The North Irish Sea is home to a diverse range of marine life, including harbour porpoises, dolphins, whales, basking sharks, and numerous local seals. We are deeply concerned that the noise generated during the installation of offshore wind farms will cause hearing loss for these marine creatures, many of whom rely on sonar to navigate and forage. Our concern is further heightened by the potential for hearing loss in these marine mammals. Harbour porpoises, dolphins, and whales are European Protected Species under Annex IV of the Habitats Directive (Council Directive 92/43/EEC), and the Grey and Harbour seals are known to breed in the North Irish Sea area. Any harm to these protected animals under the Natura 2000 programme is not acceptable.

Industrial noise, particularly from the construction process, poses a significant risk to their hearing, potentially impairing their ability to thrive and survive. Under the Natura 2000 programme, any harm to these protected marine mammals is unacceptable.

For instance, Orsted, the world's largest offshore wind farm developer, received approval to investigate the seabed off Gippsland, Australia, for its planned 2.8-gigawatt project located 56-100km offshore. The approval came with strict conditions, including a requirement that "all work must stop if any marine mammal is injured or killed, and work cannot resume without government approval" (Renew Energy, July 2024). We expect a similarly rigorous approach from Irish authorities.³⁰

In 2018, the Guardian quoted Job Schot, chairman of EMK, an action group of Dutch fishermen, in saying 'They claim that the area around the windfarms creates some kind of paradise of biodiversity. It is exactly the opposite. The acoustic sound from the turbines discourages fish and if it carries on long enough they just don't come back. There are lots of oysters and mussels around the turbines, but not fish. It's a dead area.'

'The ramming of seabed kills everything within 6km. The porpoises are deafened and once they lose their hearing, they die. There has not been enough research, but we see what is happening every day.'³¹

Additionally, NISA recently secured a license from MARA for drilling, allowing noise levels of up to 162 dB. However, research published by *Nature* (Scientific Reports, srep11083)³² indicates that noise levels exceeding 130 dB cause marine mammals to avoid the area—a behavior known as porpoising. With pile-driving noise peaking at 180 dB, well beyond the 162 dB threshold, there is a high risk of long-term damage to harbour porpoises, potentially compromising their survival.

In summary, the levels of noise associated with these activities present a serious threat to the hearing and overall well-being of protected marine mammals. We urge that all necessary precautions and mitigation measures, such as the use of bubble curtains, be taken, along with measures to minimize noise from heavy ships' engines, to prevent harm to these vulnerable species.

³⁰ [World's largest offshore wind developer gets federal nod to start Gippsland studies - with conditions | RenewEconomy](#)

³¹ [Dutch fishermen to sail fleet into Amsterdam in wind turbine protest | Fishing | The Guardian](#)

³² [Harbour porpoises react to low levels of high frequency vessel noise | Scientific Reports \(nature.com\)](#)

3 THE IMPLICATIONS OF THE PROPOSED DEVELOPMENT FOR MARITIME SPATIAL PLANNING

3.1 GENERAL FAILINGS IN PROPER MARITIME SPATIAL PLANNING

DIRECTIVE (EU) 2023/2413 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652, entered into force on 20 November 2023.

The revised RED introduced new mapping and planning obligations for renewable energy projects as legally binding obligations in Articles 15b and 15c.

Article 15b requires Member States to translate their national contributions towards the revised EU renewable energy target into the areas that are required for the renewable energy projects needed to achieve those targets.

The MAC area for NISA (and 5 others in phase 1 of Ireland's ORE scheme) is not the result of proper maritime spatial planning and it thus in contravention of EU law. The MAC site was chosen about 25 years ago by developers on the basis of then prevalent technology. In the meantime, EU law has imposed further obligations on Ireland in the form of the Habitats and Birds Directives, amongst others. One of the results is the Northwest Irish Sea cSPA designation in 2023, which did not exist when the MAC site was chosen. Due to those developments, i.e. the Northwest Irish Sea cSPA and advances in technology, the MAC site for NISA is no longer appropriate. The Irish government should have scrapped the MAC site and followed proper EU protocol in developing a fully cohesive maritime spatial plan with input from all stakeholders, including the public.

In section 2 of this submission, we have outlined our key concerns with respect to the likely effects on the environment or any European site of the proposed development, if carried out.

However, we wish to highlight that much of that section is also relevant for proper maritime spatial planning as it relates to SPAs, cSPAs and SACs.

3.2 VISUAL IMPACT OF NISA

Apart from our reasons for objecting to the NISA planning application on environmental grounds outlined elsewhere in this submission, we object to the proposed scale and placement of the NISA wind farm, which goes against best practice in other EU countries, particularly for what the Fingal Development Plan describes as “The sensitive coast of Fingal” with its mixed environments such as protected islands, cliffs, rocks and beaches.

The visual obtrusion by the proposed NISA development will most affect the vista of the islands from the South end of South Strand where visual interaction with Rockabill, Colt, St. Patrick’s and Shenick islands will be felt most. The visual degradation of the seascape will have in the scale proposed and closeness to shore a detrimental quality to the tourism and recreation offering in Skerries and surrounds. For example, the annual 3-Island Challenge currach race run by the local Currachaí na Sceirí club is presented as a tourism product to rowers in the USA. These rowers will not necessarily wish to go to a supposedly unspoilt area to be North Dublin if over-dominated by mis-scaled turbines which would not be approved in most EU countries which are outside the 12 nautical miles or 22km limit and recommended to be placed at least 30km from shore if sized over 300 metres.

According to the White Paper on Offshore Wind Energy (Partial review of the National Water Plan Holland Coast and area north of the Wadden Islands ³³ **(Dutch White Paper)** published by the Dutch Ministry of Infrastructure and the Environment and the Dutch Ministry of Economic Affairs in September 2014, the impact of turbines between 250 and 320m high at 13km from the coast is “Large or Very Large”.

According to the Dutch White Paper, correct maritime spatial planning considers ecosystems, fishing, maritime radar, house prices, recreation and tourism. Views to the horizon were to remain obstructed and outside the 12 nautical mile zone as much as possible. In relation to the effect on wildlife, no more than 1% wildlife mortality is acceptable. This practice placed the nearest turbines 50km from the nearest lesser black-backed gull colonies. The Dutch White Paper states on page 29: ‘For the protection of the lesser black-backed gull (*Larus fuscus*), special provisions have been made in respect of those parts of the northern Holland Coast area that lie within 50km of the Texel gull colony’.

The report published by White Consultants in March 2020 on the Review and Update of Seascape and Visual Buffer study for Offshore Wind farms ³⁴ **(White Consultants UK Report)** on the visual impact of offshore wind farms suggests as a rule of thumb that a 1:100 turbine height to distance ratio will have a medium magnitude of visual impact, meaning that, in order to avoid a large or very large visual impact, a 100 metres high turbine should be placed at least 10km offshore, a 200 metre high turbine should be placed at least 20km offshore and a 300 metre high turbine should be placed at least 30km offshore.

The paper states ‘The analyses from the SVIA and wireline analysis are brought together with part of the NRW, 2019 analysis (Table 5.4) in Table 13.1 below. These reflect the

³³ [ENQ10080-001201-spirit Energy Marine 10 - White Paper on Offshore Wind Energy, Netherlands Ministry of Infrastructure and the Environment 09_2014.pdf \(planninginspectorate.gov.uk\)](#)

³⁴ [White_Consultants_2020_Seascape_and_visual_buffer_study_for_offshore_wind_farms.pdf \(publishing.service.gov.uk\)](#)

suggested distances for buffers depending on the maximum turbine size (as defined by the 'Rochdale Envelope') and sensitivity of seascape or receptor.'

Table 13.1 Overall analysis of the magnitude of visual effect related to distance

Offshore wind farm SVIAs	Low magnitude of effect		Medium magnitude of effect	
	Average Distance km	Maximum Distance km	Average Distance km	Maximum Distance km
107-145	19.2	26.1	14.0	15.0
150-175	21.7	26.5	15.8	17.7
176-223	26.2	31.9	20.2	26.3
250-300	38.6	47.6	27.5	31.1
301-350	35-44*	-	24-35*	-
	44**	-	32.8**	-
351-400	35-44*	-	24-35*	-

*Wireline assessment ** NRW, 2019 findings

The UK's published OESEA3 Environmental Report (March 2016) ³⁵ stated as part of Recommendation 1 that developments (individually or cumulatively) should aim to avoid causing significant detriment to amenity and well-being as a consequence of deterioration in valued attributes such as landscape, tranquillity and other factors.

In the discussion on visual buffers the report states:

'Further conclusions of the work were that for high value and high sensitivity coastlines, a distance of 30km from the coast (the limit of visual acuity) could be attributable to developments for a range of sizes (e.g. 3.6MW to 15MW)' (p291).

³⁵ [OESEA3 Environmental Report Final.pdf \(publishing.service.gov.uk\)](#)

3.3 EFFECTS ON CULTURAL HERITAGE, TOURISM, ECONOMY

Our group, SWEG, has the backing of Skerries tourism in a stance of being pro wind, but not at the cost of local tourism jobs. As Skerries is the nearest point to shore of the proposed development, we are concerned that the close proximity of 13km to shore will have the following negative impacts for the proposed 316m or 290m high options:

- Degradation of Cultural Heritage
- Loss of tourism product
- Loss of fishing grounds to both commercial and leisure fishermen
- Loss of property values in affected seafront properties

Effects on Cultural Heritage

The visual obtrusion created by the turbines against the 5 islands off Skerries creates a conflict with Maritime Spatial Planning and a seascape confusion and overbearing sense of scale particularly to St Patrick's Island (or Church Island) home of a 6th century monastery linked to St Patrick and his followers. In other Cultural Heritage considerations, Rockabill is key to an ancient, 5000-year-old, solstice alignment with the twin standing stones at Baltray on the North Side of the Mouth of the Boyne ³⁶.



According to our verified calculations, the nearest turbine of 316 metres height in option 2 of the planning application will appear 3.49x the height of Rockabill lighthouse, which stands at 46.5m tall from sea level. This has a profound detrimental effect on the seascape particularly from the south coastal side of the town near the Rugby club, the Rush Road entrance to the town with vistas of mountains, islands and coast will have a significant

³⁶ [Standing Stones, Baltray | Discover Boyne Valley Meath, Ireland](#)

negative effect on the established tourism town of Skerries. But also the 290 m high option 1 is similarly obtrusive and even more numerous at 49 units, a number which kept growing during the consultation process creating issues of trust with the proposing company and the community.

Negative Effects on Tourism

The visual obtrusion created by the proposed development will have the greatest impact on the vista of the islands from the south end of South Strand particularly Rockabill, Colt, St Patrick's and Shenick islands.

The visual degradation of the seascape, in the scale proposed and proximity to shore, will have a detrimental effect on the tourism and recreation offering in Skerries and surrounds.

The unspoiled views looking north all the way to the Mourne Mountains are a valuable asset to Skerries' tourism product and will be compromised. These views attract and have attracted visitors like Percy French who penned the famous lines, 'where the Mountains of Mourne sweep down to the sea' whilst sitting on a bench on Red Island, Skerries.

For example, the annual 3-Island Challenge currach race run by the local Currachaí na Sceirí club is presented as a tourism product to rowers in the USA. These rowers may not necessarily wish to go to a supposedly unspoiled area north of Dublin that is over dominated by mis-scaled turbines almost the height of the Eiffel Tower and only 13km from shore which would not be approved in most EU countries which demand ORE outside the 12nm or 22km limit.

See picture below of 3-Island Challenge, now a major event attracting teams from Ireland, the UK, the US and Spain.



Our group has backing of Skerries tourism in a stance of being pro-offshore wind but not at the cost of local tourism jobs in Skerries as the nearest point to shore of the proposed development.

We are also concerned of the negative economic impact on property prices and change of atmosphere from an unspoilt marine town to having an industrialised vista of very large proportions ever present nearshore.

According to the UK White Consultants Report ³⁷, 'Seascape is a consideration and marine plan authorities should take into account existing character and quality, how highly it is valued and its capacity to accommodate change.' It further advises that seascapes with national trails/coast paths, such as the Fingal coast, are of high value and should have at least a medium-large buffer size (see section on visual impact).

Submission from Skerries Tourism

Fingal Tourism Strategy 2024-2029 sets out the uniqueness of the coastline and vistas along Fingal's 88km coastline. It highlights the fact that we have a Unique Offering.

Fingal has a broad range of natural outdoor amenities and good green infrastructure, e.g. 88km of coastline with blue flag beaches, harbours etc., all in close proximity to Dublin's city centre. This represents an opportunity to dial up the outdoors, slow tourism and the urban to rural accessibility of nature on the city's doorstep; focus on sustainable tourism, including UNESCO Dublin Bay biosphere, Dublin Coastal Trail, Fingal Greenway, waterways activities.

We can champion clean and green credentials, balancing developing the county but maintaining the beauty of natural environment. Evidence of how this has been delivered locally are the recent launch of the St Patrick's Skerries Walkway and the Greenway Fingal coastal cycle path. Both these showcase the scenic views and landscape, the former as best captured by Percy French in his immortal song, written from Skerries (and celebrated with a wonderful memorial brass bench looking out at THAT view which will of course now be significantly obscured, if NISA goes ahead in its proposed form).

These are amenities that will be directly impacted by NISA, and the Statkraft planning application if approved interrupting the majesty and serenity of the views in direct contradiction to the Tourism strategy Fingal has set out. 'Developing Tourism Offering: Specific Development of Skerries and Balbriggan'. The tourism strategy specifically sets out the development of both Skerries and Balbriggan as centres for tourism growth. 'Promote and facilitate the development and growth of Balbriggan and Skerries as primary service, social, cultural and local tourist centres in North Fingal.'

This proposed array in the NISA under the current planning application will negatively impact this key objective by significantly interfering with the landscape views and marine life. There is a significant lack of tourism infrastructure in the area, specifically bed nights. The potential for new bed nights to be added will be hindered if the very strength that we

³⁷ [White Consultants 2020 Seascape and visual buffer study for offshore wind farms.pdf \(publishing.service.gov.uk\)](#)

have from a tourism offering – natural and unspoilt views, is undermined, as will be the case if this planning application is permitted.

Imagery used in document to show case the natural landscape will all be dramatically impacted by this proposed development thereby undermining what is rightly identified as one of the keys strength for tourism in the area.

[Tourism in Fingal | Fingal County Council](#)

[final-fingal-tourism-strategy-mar24.pdf](#)

4 THE IMPLICATIONS OF THE PROPOSED DEVELOPMENT FOR PROPER PLANNING AND SUSTAINABLE DEVELOPMENT

4.1 PROPER PLANNING

The National Marine Planning Framework (NMPF) is the national plan for Ireland's maritime area, and is the equivalent of the National Planning Framework onshore.

The NMPF sits at the top of a hierarchy of plans and sectoral policies for the marine area. It comprises a single plan for the entire maritime area, with more detailed regional plans envisaged at a later date. The NMPF includes a number of "Overarching Marine Planning Policies" (**OMPPs**), which will apply to all marine activities or development. These OMPPs fall into three categories: Environmental, Economic and Social. Within these categories, the NMPF sets out more detailed policy imperatives including co-existence, biodiversity, coastal and island communities and infrastructure.

Additionally, the NMPF sets out activity-specific or "sectoral marine planning policies" (**SMPPs**), which apply to particular classes of activities. The NMPF arranges these policies into 16 general sectors, including energy, wastewater treatment and disposal, fisheries, ports, and aquaculture and tourism.

4.1.1 EXCERPTS FROM THE INSPECTOR'S REPORT ABP-315801-23

The following are matters that Statkraft need to address in the planning application as noted in the Inspector's Report ABP-315801-23:

- *The National Marine Planning Framework - in particular the need to clearly indicate project compliance with NMPF policies and objectives*
- *Policy context surrounding the proposal ranging from strategic to local in relation to the Regional Spatial Economic Strategy for the Eastern & Midland Region, and the development plans for the relevant Coastal Planning Authorities*
- *Public consultation process and stakeholder engagement undertaken. The prospective applicant indicated that several public consultation exercises have already been undertaken with coastal communities.*
- *Coastal Planning Authorities consultees which include Louth, Meath and Fingal County Councils and Dublin City Council.*
- *Transboundary consultees which include the UK states that border the Irish Sea where there is potential for transboundary impacts on migratory and / or mobile species that are qualifying interest for designated sites within the respective countries (incl. sea birds & marine mammals).*
- *Visual amenity of infrastructural elements, including an assessment of landscape and seascape impacts from along the coastline and beyond.*
- *Potential impact on cultural heritage including the archaeological heritage of Bremore Head & Environs.*
- *Potential impact on biodiversity, including coastal and marine habitats and species, and migratory and / or mobile species (incl. European sites, seabirds, bats, marine mammals, fisheries & benthic communities), potential noise impacts during the construction and operational phases, including the transmission of noise into the water column from the operational turbines; and the submission of a peer reviewed analysis of monitoring data from similar operational offshore windfarms, for mobile species (incl. sea birds & marine mammals).*
- *Potential impacts on hydrodynamics, wave patterns and coastal processes (incl. patterns of erosion & deposition along the coastline); potential impacts on water quality arising from the excavation works for the turbines and OSP foundations and subsea cables (incl. suspended sediments), and the destination of any contaminated material (incl. any EPA Licence requirements).*
- *Impact on commercial fisheries*
- *Construction related practices and methodologies, which are intrinsic to the installation of the infrastructure, that are not clarified at the application stage should be set out and assessed in the application (incl. EIAR & NIS), and subject to a compliance condition which could include the submission of a CEMP. This approach is supported by several legal judgements and by legal advice to the Board.*
- *Any land acquisition/CPO/substratum requirements*
- *Location of the operational and maintenance base (probably Greenore in County Louth) and operational port (not yet determined).*

Environmental impact assessment

It is proposed to submit an environmental impact assessment report with the proposed application. The following include matters which were outlined during the course of the consultation meetings.

- *informal EIA scoping was undertaken by the prospective applicant*
- *consideration of alternatives*
- *major actions and disasters*
- *environmental factors including but non-limited to:*
- *offshore physical environment: physical processes (including hydrodynamics and wave action), marine water and sediment quality, and sediment movement (including deposition and erosion)*
- *offshore biological , environment: benthic subtidal and intertidal ecology, fish and shellfish ecology, marine mammals, birds and bats, and underwater noise*
- *Offshore human environment: commercial fisheries, shipping and navigation, seascape and visual impact, archaeology, and other marine users and activities.*
- *Onshore environment: terrestrial ecology and nature conservation, onshore archaeology and cultural heritage, noise, traffic and transport, flood risk, landscape and visual impact, and population and tourism.*
- *Construction impacts*
- *Format of the EIR*
- *Consideration of cumulative impacts*
- *Peer reviewed analysis of monitoring data from operational offshore wind farms for marine mammals and bird*

Appropriate assessment

It is proposed to submit a Natura Impact Assessment Report with the proposed application. The following include matters which were discussed during the consultation meetings:

Likely zone of impact of all elements of the proposal

Nature 2000 sites within lightly zone of impact and proximity to QIs/SCIs

The recently designated Northwest Irish cSPA

I note that the prospective applicant has concluded that the proposed development is not likely to have significant effects on a member state of the European Union or a state that is party to the transboundary convention. The board may have a different view on this issue (refer to section 8.1.1 above and section 8.4.6 below).

END OF EXCERPTS OF THE INSPECTOR'S REPORT ABP-315801-23

Our Observations

The information that Statkraft have submitted with their planning application is vast and extensive. It is impossible to read and evaluate all the documentation provided within the timeframe given to the public to make a submission.

We have read sections of the Natura Impact Statement and Environmental Impact Assessment Report and what we find striking is how little impacts are being reported given the magnitude of the proposed development. The level of compliance with the NMPF for example simply does not stack up.

As an exercise we have taken page 72 of 633 in the Natura Impact Statement (below): Potential impacts and project option with the greatest potential for AEol (adverse effect on integrity) on coastal and marine habitats and compared it with the Environmental Impact Assessment Report: Volume 3: Offshore Chapters; Chapter 15; Offshore Ornithology; Table 15.33 and 15.34 (next page)

Table 5.2: The Project Option that has the greatest potential for AEol is Identified in Blue. ³⁸

Potential effect	Project 1 (49 WTG)	Project 2 (35 WTG)	Rationale for the project option with the greatest potential for AEol on designated sites
Construction			
Increase in Suspended sediment and deposition from offshore construction activities and inputs from onshore construction activities	Total volume of suspended sediment and sediment deposition 805,292m³. WTG drill cuttings: 49 turbines foundations with 75% requiring drilling resulting in 338,233m³ of sediment. OSP foundations (array): One OSP foundation requiring seabed preparation and drill cutting resulting in the suspension of 22,089m³ of sediment. Cable trenching: Installation of 111km max of array cables resulting in the suspension of 333,000m³ of sediment. Installation of two export cables resulting in the suspension of 333,000m³ of sediment (excluding the part of the export cable within the array); and Subtidal HDD: Exit pits total volume = 3,960m³. Onshore works associated with near-stream works, and in-stream works will generate the greatest volume of suspended sediment and deposition	Total volume of suspended sediment and sediment deposition 897,061m³ WTG foundation preparatory dredging: Dredging at the seabed in preparation for foundation placement (jacket foundations only) at 50% of locations = 133,755m³ WTG drill cuttings: 35 turbines foundations with 75% requiring drilling resulting in 356,257m³ of sediment. OSP foundations (array): One OSP foundation requiring seabed preparation and drill cutting resulting in the suspension of 22,089m³ of sediment. Cable trenching: Installation of 91km max of array cables resulting in the suspension of 273,000m³ of sediment. Installation of two export cables resulting in the suspension of 108,000m³ of sediment (excluding the part of the export cable within the array); and Landfall HDD: Exit pits total volume = 3,960m³.	Project Option 2 represents the greatest magnitude of impact in relation to these impacts. The greatest magnitude of impact for foundation installation results from the largest volume suspended from seabed preparation. For cable installation, the greatest magnitude of impact results from the greatest volume installation using energetic means. This also assumes the largest number of cables and the greatest burial depth. A maximum of one OSP will be constructed within the order limits. Project Option 2 has a higher total volume than Project Option 1 (91,769m³ more volume of materials) and presents the greatest potential for AEol on integrity of designated sites. Onshore works for both project options will result in the same potential for AEol on integrity of designated

³⁸ [https://www.pleanala.ie/publicaccess/EIAR-NIS/319866/Natura%20Impact%20Statement%20\(NIS\)/Natura%20Impact%20Statement.pdf?r=867820675737](https://www.pleanala.ie/publicaccess/EIAR-NIS/319866/Natura%20Impact%20Statement%20(NIS)/Natura%20Impact%20Statement.pdf?r=867820675737)

		Onshore works associated with near-stream works, and in-stream works will generate the greatest volume of suspended sediment and deposition.	sites in relation to this impact.
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Table 15.33 Magnitude of impact on relevant fish receptor groups from the proposed development ⁴⁰

Prey species (relevant receptor groups assessed in Fish and Shellfish chapter)	IMPACT			
	Temporary increase in SSCs and sediment deposition	Habitat damage and disturbance	Reduction in water and sediment quality	Mortality Injury Impact from noise
Sandeels	Low	Low	Low	Low

Table 15.34 Significance of effects on ornithological receptors due to indirect effects on prey species

Ornithological receptor	Overall sensitivity (vulnerability and conservation importance)	Magnitude of impact on key prey species	Overall impact significance (based on matrix approach)
Roseate tern	High	Low	Moderate

Our question is: Given the level and magnitude of disturbance highlighted in Table 5.2 on the previous page, how is it possible for sandeels - the main prey for roseate terns - to be so minimally impacted? Statkraft have previously said in applications for survey work and site investigations that sandeels would be negatively impacted. How can sandeels be negatively impacted through smothering in survey work carried out over a short duration and minimally impacted with such colossal construction work carried out over a long period of time? This does not make sense.

We simply do not believe the contents of either report and feel that a thorough forensic examination of both the Natura Impact Statement and Environmental Impact Assessment Report would uncover many irregularities.

³⁹ <https://www.pleanala.ie/publicaccess/ElAR-NIS/319866/Environmental%20Impact%20Assessment%20Report/Volume%203%20Offshore%20Chapters/Chapter%2015%20Offshore%20Ornithology.pdf?r=178700479522>

⁴⁰ <https://www.pleanala.ie/publicaccess/ElAR-NIS/319866/Environmental%20Impact%20Assessment%20Report/Volume%203%20Offshore%20Chapters/Chapter%2015%20Offshore%20Ornithology.pdf?r=178700479522>

4.1.2 GUIDANCE DOCUMENT ON WIND ENERGY DEVELOPMENT AND EU NATURE LEGISLATION⁴¹

We believe that the proposed development will result in 'significant effects' on many fronts. The following guidance document on wind energy development and EU nature legislation is a lengthy document that was published on the 18 November 2020. The excerpts of the document to follow are a sample of the guidelines that need to be followed when assessing offshore wind development projects:

SIGNIFICANCE OF THE LIKELY EFFECTS

Article 6(3) of the Habitats Directive refers to the need to assess the likelihood of a plan or project having significant effects on a Natura 2000 site. The screening process assesses whether it is likely to have a significant effect on the site. If significant effects cannot be excluded with certainty, an appropriate assessment is necessary. The appropriate assessment assesses the likely effects on the Natura 2000 site against its conservation objectives and whether implementing the plan or project may or will adversely affect the integrity of the site.

One of the major challenges faced when undertaking an assessment of a plan or project is how to understand and determine when an effect is significant or not.

It is necessary first to explore the type and extent of effects ('significant effect'), and then to explore the causes likely to create such effects ('likely to have ... either individually or in combination'). Determining whether a plan or project is likely to have a significant effect will have practical and legal consequences. Therefore, when a plan or project is proposed, it is important firstly that this key issue is considered, and secondly that the consideration can stand up to scientific and expert scrutiny. The safeguards set out in Article 6(3) are triggered not by a certainty but by a likelihood of significant effects. Mitigation measures cannot be taken into account at this stage. Transboundary effects are also to be considered (European Commission, 2019).

Significance will vary depending on factors such as magnitude of effects, type, extent, duration, intensity, timing, probability, cumulative effects and the vulnerability of the habitats and species concerned.

Effects typically considered when assessing significance include the following:

Direct loss of habitat: a reduction of habitat coverage as a result of physical destruction (i.e. due to its removal or the placement of construction materials or sediments); loss of breeding, foraging, resting areas for species.

Habitat degradation: a deterioration or reduction of habitat quality, e.g. as a result of reduced abundance of the characteristic species or altered community structure (species composition); deterioration of breeding, foraging, resting areas for species.

⁴¹ <https://tethys.pnnl.gov/sites/default/files/publications/EC-Guidance-2020-Wind-Energy.pdf>

Habitat fragmentation: an alteration of distribution patches of relevant habitats and species, e.g. a contiguous area of habitat split into two or more small, isolated areas, causing a barrier between habitat fragments.

Disturbance of species: a change in the environmental conditions (e.g. noise, frequency of people and vehicles, increase in suspended sediment or dust deposition); e.g. disturbance may cause displacement of species individuals, changes in species behaviour, mortality risk. Indirect effects: an indirect change to the quality of the environment (including hydrology).

For wind energy developments, typical additional types of effects are the barrier effect and the collision risk.

Sources of information to determine the significance of effects may include evidence from similar operations affecting sites with similar conservation objectives and expert opinions based on available evidence. However, the assessment must look at the local circumstances on a site-by-site basis, as what may be significant for one site may not be so for another.

The notion of what is 'significant' needs to be interpreted objectively. The significance of effects should be determined in relation to the specific features and environmental conditions of the protected site affected by the plan or project, taking particular account of the site's conservation objectives and ecological characteristics (European Commission, 2019).

An assessment of significant effects must be based on good science (including best available methods and knowledge) and reliable data, be precautionary and, if appropriate, it should take into account the opinion of stakeholders, such as NGOs, nature conservation agencies or researchers.

The assessment must apply the principle of proportionality, be compatible with the precautionary principle and take into account:

- the nature, size and complexity of the plan or project;
- the expected effects, and
- **the vulnerability and irreplaceability of the affected EU-protected habitats and species.**

Taking a proportionate approach means assessing the significant effects on all the affected EU-protected habitats and species and effectively avoiding or reducing the effects, while not entailing excessive cost (Smeeton & George, 2014).

Rulings issued by the Court of Justice of the EU have on a number of occasions considered what effects arising from plans or projects constitute significant effects. In the context of the EIA Directive, it recently (2017) considered significant effects as potential effects on species which are protected by the Habitats Directive (or by national law).

The effects of a development, such as wind turbines, must be considered across its whole life cycle. These effects can be far reaching and could affect EU-protected habitats and species that are distant from the plan or project. The study area (spatial frame of reference) must therefore be defined to encompass the whole geographic area within which all plan or project activities and effects are likely to occur.

In the light of the effects likely to occur as a result of the plan or project, the study area may be expanded to include environmental features at a wider landscape, seascape or ecosystem scale, e.g. a river catchment. The study area may change during the assessment process if additional information is received or is required to support the assessment, mitigation planning, or if long-term monitoring requires control sites (Gullison et al., 2015).

It is also necessary to define the timeframe (temporal frame of reference) of the assessment. The effects on EU-protected species may occur for a period of time after the plan or project starts and/or finishes (Box 3-1). The timeframe should be long enough to take into account past, present and likely future baseline conditions, the total period of time over which effects are likely to be generated, the predicted effects of climate change on environmental conditions and EU-protected habitats and species as well as any foreseeable future developments, with reference to spatial plans and/or expert opinion.

Lastly, when defining the space and timeframe, the assessment should also factor in potential cumulative effects (see Chapter 3.4).

Box 3-1 Example of scenarios requiring an extended timeframe

Example 1. Long-lived species, such as large migratory birds of prey, that return to Europe and breed only after three or four years of age. The loss of immature individuals through wind turbine collision mortality soon after fledging or on migration may only be measurable in the breeding population when the breeding adults are not replaced by returning birds of breeding age. This may occur only after three to four years from the project becoming operational but will remain after the project has ceased operation.

Good practice:

With reference to the conservation objectives of the Natura 2000 site, assess the population consequences of wind turbine collision mortality from when the plan or project commences to when the effect is predicted not to occur anymore.

Example 2. Climate change-induced sea level rise reduces the extent of a coastal habitat within the next 25 years. The loss of a coastal habitat under the footprint of wind turbine foundations can be predicted at the time of construction. The significance of habitat loss over a 25-year operational phase of the plan or project may be considerably greater when the loss of coastal habitat to sea level rise is taken into account. This is especially important if implementing the project may prevent climate change-related management actions from being taken e.g. managed realignment of the coastline.

Good practice:

With reference to the conservation objectives of the Natura 2000 site, assess the loss of habitat from the footprint of the plan or project in combination with scientifically justifiable predictions of habitat loss or gain within the Natura 2000 site under different scenarios of climate change-induced sea level rise.

Example 3. Development of a reef community on turbine foundations in marine waters. Establishing communities on artificial structures, and other marine species in response, is a dynamic process that can take many years and is complicated by factors such as reduced

fishing pressure. Such effects are likely to develop over the entire operational phase of a wind energy development plan or project. If foundations and/or material such as rock armour are left in situ after decommissioning then the effects, whether positive or negative, may also last for perpetuity.

Good practice:

Identify potential trophic consequences of reef development in relation to the ecological characteristics or function of the Natura 2000 site and assess the likely effects. Conduct monitoring, not just to describe colonisation, but to evaluate the consequences for groups such as marine mammals, so that informed decisions can later be made about decommissioning.

Consider whether the development of benthic communities on emplaced substrates (e.g. rock armour) makes a positive contribution to biodiversity and ecosystem function or to the degradation of natural habitat. This will depend in part on the historical context, e.g. whether there has been past loss of hard substrate habitats.

Consider monitoring invasive non-native species that may colonise hard structures, because they tend to colonise new substrate faster than native species.

4.1.3 GUIDANCE DOCUMENT ON DESIGNATED RENEWABLES ACCELERATION AREAS⁴²

In May 2024, nearly two years on from the publication of REPowerEU, the European Commission unveiled [guidance and recommendations](#) to accelerate the renewable energy roll-out, including new guidance on Renewables Acceleration Areas (RAAs), as well as new guidance on auction design for renewable energy, marking a critical step towards an adequate implementation of the EU's Renewable Energy Directive (RED).

However, while the deployment of wind energy needs to be massively accelerated, the transition towards 100% renewable energy should not come at the expense of nature or exploit the weakening of environmental legislation.

Under the RED, EU Member States have until February 2026 to designate RAAs as a subset of the overall spatial mapping Member States need to do by May 2025 to reach their 2030 renewable energy targets. The revised RED aims to accelerate European renewable energy deployment by limiting the overall environmental permitting to one year for projects on RAAs and to two years in areas outside of RAAs.

Article 15c introduces a more targeted mapping obligation. Taking as a starting point the areas identified under Article 15b, the relevant competent authorities of Member States must identify, as a sub-set of those, areas that can be designated as “renewable acceleration areas” for at least one renewable energy technology where the deployment of such technology is not expected to have a significant environmental impact.

Article 15c indicates certain areas that must be excluded from the process of designating RAAs due to their high environmental value: Natura 2000 sites, areas designated under national protection schemes for nature and biodiversity conservation, major bird and marine mammal migratory routes as well as other areas identified on the basis of sensitivity maps and other appropriate and proportionate tools and datasets.

According to the Directive, when identifying these areas, Member States have to take into account the data available in the context of the development of a coherent Natura 2000 network, as regards both, habitat types and species covered by the Habitats Directive and birds and sites protected under the Birds Directive. Swift completion of the Natura 2000 network could facilitate the timely identification of RAAs by improving the certainty of area classification and data availability.

Data and digital tools to identify RAAs, up-to-date spatial plans and appropriate digital tools are key enablers that can support the designation of RAAs. The Commission's Energy and Industry Geography Lab supports planning choices by national and regional authorities and the identification of RAAs by providing a wide range of datasets covering relevant energy and environmental factors.

⁴² https://energy.ec.europa.eu/document/download/af3927a5-3b82-42f0-8954-7b9fdc567e43_en?filename=SWD_2024_333_2_EN_autre_document_travail_service_part1_v1.pdf

In early 2024, the Energy and Industry Geography Lab included the below datasets:

- Key biodiversity areas. The data is provided by BirdLife International on behalf of the Key Biodiversity Areas partnership.
- Important bird areas. The data is provided by BirdLife International and is a collection of data provided by partners, digitised by the BirdLife Secretariat, or third parties.
- Ecologically or biologically significant marine areas (EBSAs). The data is provided by the Convention on Biological Diversity.
- Underwater noise. This data layer provides an overview of the occurrence of all the activities that produce relevant sounds that place pressure on the environment and allows to establish the current level of continuous and impulsive sounds.
- Peatlands. This data layer presents a comprehensive peatland map for the whole of Europe and is relevant in the context of excluding areas from acceleration areas on the basis of sensitivity maps.
- Industrial facilities. This data layer includes the locations of industrial facilities, which can be considered among the priority areas for RAA designation.
- Wastewater treatment plants. This data layer includes the locations of urban wastewater treatment plants in the EU, as officially reported by Member States to the Commission

SWEG understand that the proposed development is already in the planning system and will not be designated as an RAA. We are including this information as it is important to note the datasets currently available in relation to Key biodiversity areas. The data is provided by BirdLife International on behalf of Key Biodiversity Areas partnership.

BirdWatch Ireland is a partner of BirdLife International. BirdWatch Ireland are currently in the process of identifying Important Bird and Biodiversity Areas (IBAs) in Irish waters. This information is critical to ensure that offshore wind farms are located in areas that will have the least effects on wildlife and biodiversity. They are only halfway through this process adding to the lack of information available to make an informed decision.

4.1.4 IDENTIFYING IMPORTANT BIRD AND BIODIVERSITY AREAS (IBAS) IN IRISH WATERS⁴³

2024 has been a big year for Irish seas. At the same time as momentum is growing for national MPA legislation in Ireland, BirdWatch Ireland is also undertaking [an important piece of work to identify marine Important Bird and Biodiversity Areas \(IBAs\)](#) in Ireland in collaboration with BirdLife International and BirdLife Europe and Central Asia. This is the first time that a comprehensive assessment of IBAs in Irish marine waters has been conducted.

What are IBAs?

IBAs are important sites for birds and biodiversity, and a certain proportion of a species population must be present in a site. Irish seabirds are currently of conservation concern with 23 out of 24 Irish breeding seabirds red or amber listed. Identifying the most important marine sites for seabirds represents a first step in turning this around to secure long-term population health and positive conservation outcomes for seabirds.

BirdWatch Ireland well underway in the IBA process

The IBA process is robust, data-driven and has been established for over three decades. It is standardised and determined by globally agreed conservation criteria, meaning it is based on science rather than political expediency. This adds an extra level of confidence for decision-makers.

The staff at BirdWatch Ireland have been busy with our analysis. The team has collated a large volume of data thanks to the collaboration of various data contributors. Seabird population counts from the most recent census were provided by the Joint Nature Conservation Committee. This data gives us up-to-date counts for all 24 breeding seabirds in Ireland. Seabird tracking datasets were sourced from databases such as the BirdLife International Seabird Tracking Database and Movebank, as well as through direct contact with seabird researchers from universities such as UCC and UCD following a literature review.

Following the data collection, BirdWatch Ireland held two expert consultations with various groups including government officials, seabird researchers, environmental consultancies and organisations in March and May 2024. These events were intended to maintain a transparent and collaborative approach to Marine IBA identification. Both these expert consultations were designed to introduce the concept of IBAs, showcase our work, and provide an opportunity for feedback. In March, we shared what data had been collated for the project and gave an overview of our intended analysis. Based on expert feedback, the team were able to investigate any potential gaps in data that could be incorporated into the IBA analysis. In May, we presented our initial results. Based on the expert feedback from this consultation, the team is now further refining the preliminary IBA results. Identified sites will be sent for formal review.

⁴³ <https://birdwatchireland.ie/identifying-important-bird-and-biodiversity-areas-ibas-in-irish-waters/#:~:text=BirdWatch%20Ireland%20well%20underway%20in,science%20rather%20than%20political%20expediency.>

From analysis to advocacy

Once sites have been identified, BirdWatch Ireland will advocate for new SPA designations to follow IBA criteria. As part of its commitments to protect nature at sea, the Irish government has committed to designating additional SPAs as part of the Natura 2000 network, with Minister Noonan announcing a new [“Seas off Wexford” SPA](#) in January 2024. Like other countries that have used IBAs as a base reference for their own SPAs, IBA sites should inform new SPA designations in Ireland.

Hang on – what about MPAs?

Advancing the designation of marine SPA sites contributes to the existing MPA discussion in Ireland, adding a key output for decision-makers to consider (seabird species and their habitats) when proposing and designating MPAs. This project will identify a network of Marine IBAs across the Republic of Ireland that is comparable with other important sites identified globally and across the EU. This also builds on previous efforts to identify important areas in the marine environment. For example, using seabird tracking data to provide an additional ‘layer of insight’ into existing works and link already designated colonies with important feeding grounds.

Contributing to effective protection and restoration of Irish seas

BirdWatch Ireland are at the halfway harbour in our quest to identify marine IBAs in Ireland. The analysis has been kickstarted, preliminary sites have been produced and the project has gained a solid footing in a few short months. Our advocacy work in the months ahead will build on the scientific work currently underway. Both the volume of data and level of collaboration undertaken in this project will enable us to produce key areas of importance for seabirds, ensuring that protection and restoration measures are prioritised in Ireland’s marine area.

https://energy.ec.europa.eu/document/download/af3927a5-3b82-42f0-8954-7b9fdc567e43_en?filename=SWD_2024_333_2_EN_autre_document_travail_service_part1_v1.pdf

https://energy.ec.europa.eu/document/download/ad850f73-ab84-4ce1-9e66-7430f8f0c7e5_en?filename=SWD_2024_124_1_EN_autre_document_travail_service_part1_v3.pdf

4.1.5 TRANSBOUNDARY CONSULTATION PROCESS – STATKRAFT FAIL IN THEIR OBLIGATIONS

The Espoo (EIA) Convention ⁴⁴ lays down the general obligation of States to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries. This convention is not limited to EU Member States and includes Great Britain and Northern Ireland.

In the case of an EIAR for any project that is likely to cause significant transboundary effects, contact with the relevant authorities in the UK (including Northern Ireland) or other States should be made. This may be discussed between the developer and the CA during preapplication consultation. Contact between the authorities will establish a consultation framework to consider and address these effects.

Transboundary States are required to engage in transboundary consultation, including with members of the public, in respect of projects likely to have significant effects on the environment of neighbouring States as part of the environmental impact assessment of a proposed development. For this purpose, the Transboundary State in whose territory the project is intended to be carried out is required to send to the affected State, no later than when informing its own public, a description of the project and any available information on its possible transboundary impact.

Statkraft's Environmental Impact Assessment Report (Volume 1 Non-Technical Summary) states: ***'There is low risk for the proposed development to have transboundary impacts. Due to the mobile nature of birds the assessment of transboundary impacts is inherent in the assessment of impacts on birds. There were no significant transboundary impacts determined.'***

Once again, we point to the fact that any of the studies based on any of the protected species at any of the protected sites - either SPAs or SACs is based on insufficient data and information. With specific regard to Rockabill SPA it has been established that Rockabill is a source colony for the roseate tern and has been producing a surplus of birds to disperse to other colonies. (Seward et al. 2019).

One such colony is Coquet Island located on the North East coast of the United Kingdom. Coquet Island is the only breeding site in the UK for the roseate tern and relies on immigration from Rockabill to sustain its population growth (Seward et al. 2019).

Any negative impact to the roseate tern colony on Rockabill SPA will have significant effects and devastating consequences for the colony at Coquet Island in the UK and this should have been the subject of a Transboundary Consultation with the appropriate UK authority.

STATKRAFT HAVE FAILED IN THEIR OBLIGATIONS UNDER THE ESPOO CONVENTION BY NOT INITIATING A TRANSBOUNDARY CONSULTATION WITH THE RELEVANT UK AUTHORITIES.

⁴⁴ <https://eur-lex.europa.eu/EN/legal-content/summary/convention-on-environmental-impact-assessment-in-a-transboundary-context-espo-convention-and-the-protocol-on-strategic-environmental-assessment-sea-protocol.html>

4.1.6 PUBLIC CONSULTATION DEFICIENCIES

We wish to highlight that the public consultation by Statkraft in relation to the scale of the development and the turbine height was in our view inadequate. In every step of the public consultation, the numbers and sizes of wind turbines in the proposed North Irish Sea Array (NISA) were altered leading to confusion and exasperation by members of the local community.

From the initial stage of the public consultation in Q3 2023 to the most recent stage in Q2 2024 we observed repeated changes to the layout and size options of NISA, shifting from 176/250 metres, then 250/276 metres, and finally 276/290 metres in the last consultation for options 1/2, respectively. The 316m high option 2 was never floated to the public in Statkraft's consultations.

We further note that, according to our analysis and estimates, the height representations of turbines in Statkraft' photo montages were significantly under-scaled by 15–30%. To prove this point, we selected a photo montage viewed from Skerries from NISA's website, which included Rockabill lighthouse as a known object with known height and known distance to shore. In a first step, we created physical 1/1000 scale models of the turbines and of Rockabill, placed them on a flat surface at the appropriate distances and took photos. We then established the mathematical models with the help of Dr Tom Pius Molony (Dr of Applied Mathematics ex TCD and UL) verifying the scaled figures, i.e. how big the turbines should look relative to Rockabill lighthouse, taking into account the distances to shore of each object, their height, and the earth curvature. The result of the calculations was that the nearest turbine in the option 2 array would appear 3.45 times the height of Rockabill lighthouse for the 316m high turbines and 3.15 times the height of Rockabill lighthouse for the 290m high turbines. Refined calculations with an observer height of 8m as per the photo montage resulted in an even larger ratio of 3.49.

As can be seen in the image below, which is an exact copy from the NISA website with our annotations, the actual ratio shown between the closest turbine (the left-most) and Rockabill lighthouse is 3 times, which is an underrepresentation by about 16%.



Our calculations are as follows:

Calculations for Photomontage from Red Island, Skerries

Scenario	Loughshinny
Observer height	8 m
Lighthouse height	46.5 m
Lighthouse distance	7 km
Turbine height	316 m
Turbine Distance	13.8 km
Ratio	3.49

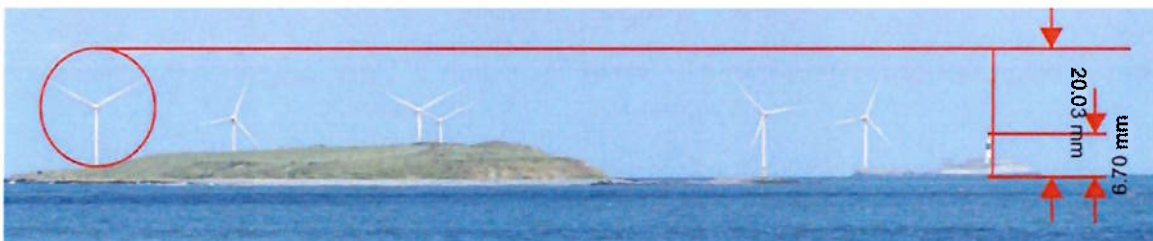
Workings

Earth's radius at 53.35° latitude R 6,364,413

observation height	h	
distance from viewer to horizon	s1	$= (\sqrt{2h \cdot R + h^2})^{0.0}$
arc length	C	
length of object	T	
polar angle	theta	$= C/R$
	theta1	$= \text{ATAN}(s1/R)$
	theta2	$= \text{theta} - \text{theta1}$
Observed distance	S	$= R \cdot \text{TAN}(\text{theta}) \cdot (1 - \text{TAN}(\text{theta1}) \cdot \text{TAN}(\text{theta2}))$
distance from horizon to object	s2	$= R \cdot \text{TAN}(\text{theta2})$
below horizon	B	$= R \cdot (\text{SEC}(\text{theta2}) - 1)$
above horizon	A	$= T - B$
Perceived height of object	H	$= R \cdot A / (R + T)$
angle of elevation	alpha	$= \text{ATAN}(H/S)$
perceived relative heights ratio	K	$= S(\text{lighthouse}) \cdot H(\text{turbine}) / S(\text{turbine}) \cdot H(\text{lighthouse})$
perceived relative angles ratio		$= \alpha(\text{turbine}) / \alpha(\text{lighthouse})$

Skerries view Option 2		
	8	
	10091.12	
Lighthouse		nearest Turbine
	7000.00	13800.00
	46.50	316.00
	0.00110	0.00217
	0.00159	0.00159
	-0.00049	0.00058
	7000.01	13800.02
	-3091.11	3708.89
	0.75	1.08
	45.75	314.92
	45.75	314.90
	0.006535472	0.022815112
	3.491522239	
	3.490966108	

We finally met with Statkraft representatives at the City North Hotel in May 2024 where our concerns were presented and a continued disagreement as to the scales was expressed and that our maths models were correct. This meeting led to one more model being produced as shown below with our annotations, which we still claim is 15% under-scaled thus leading us to conclude that the consultation process was skewed and inaccurate.

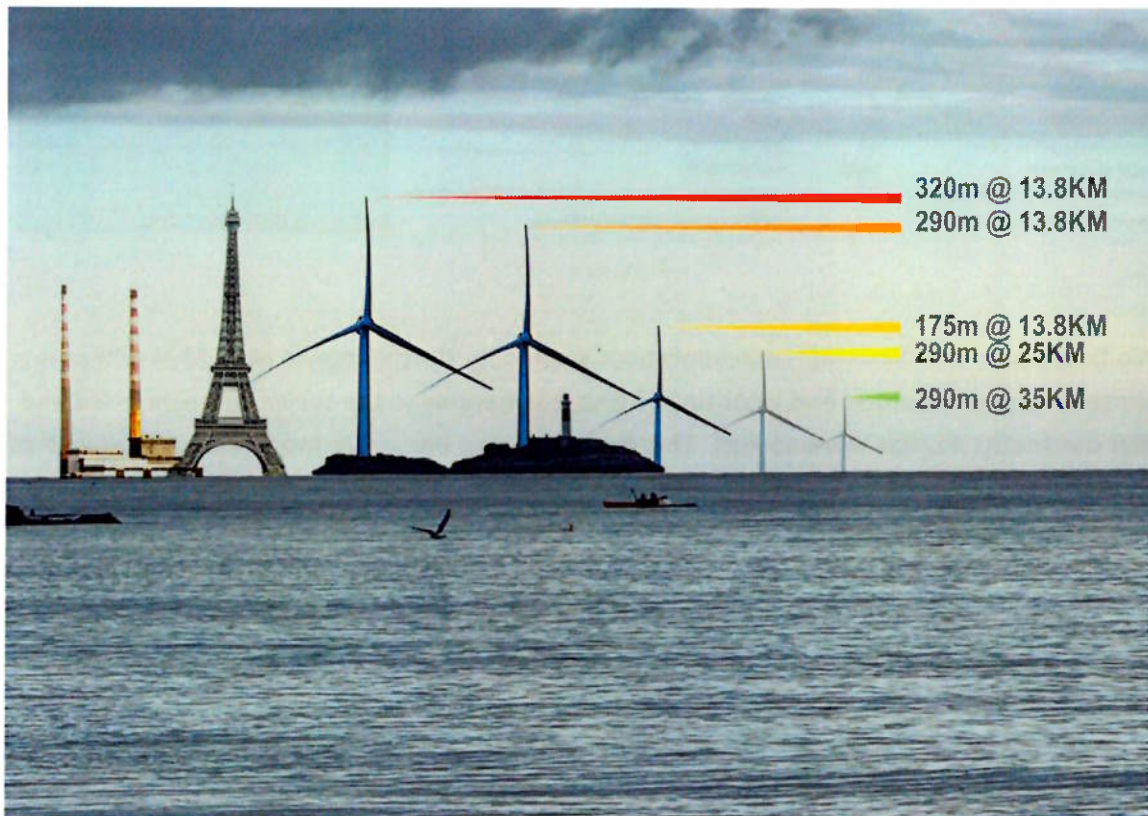


We produced our own visualisations copied below purely based on the relative height appearance when viewed from Skerries of wind turbines at different heights and distances relative to Rockabill lighthouse, which is an object of known height and distance to shore.

Note that these images are not photo montages with turbines in the proposed positions. Rather, these show the heights of turbines as they would appear relative to Rockabill. Images of the Eiffel Tower and the Poolbeg chimneys are for illustration purposes at accurate height ratios at a 13.8km distance, which is the distance to the nearest turbine in the NISA application.

Image of individual turbines at different distances

(Rockabill at 7km and Eiffel Tower and Poolbeg chimneys at 13.8km)



Images of ORE array impressions and reference objects at different distances



4.1.7 STATKRAFT VISUALISATION IN PLANNING APPLICATION (PHOTO MONTAGES)

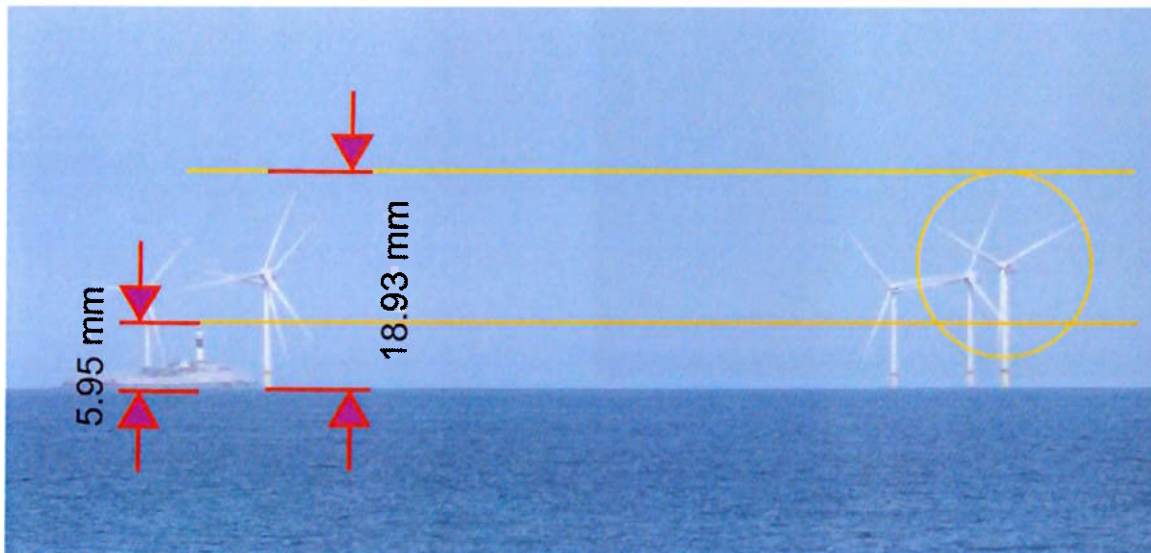
We refer to the photo montages provided by Statkraft in their planning application under 'Environmental Impact Report', 'Volume 7B1 SLVIA Photomontages Offshore Wind Farm'.

As outlined above, during Statkraft's public consultation, members of this group disagreed with Statkraft and its representatives on the proper scaling of the wind turbines in their photo montages. We believe that this continues to be the case and that the visualisations included in the documents submitted to An Bord Pleanála are under-scaled.

In order to check the scale of the turbines depicted within the photo montages, we selected a photo montage containing Rockabill lighthouse as a known object with a known height and distance from shore. It is the photo montage contained in the document 'Book-4-of-4-Project-Option-2-VPs-24-47' entitled 'VP25 Loughshinny (Fingal), Co. Dublin' on page 12. (Regrettably, the photo montage we based our original work on as described above, which in the submission to An Bord Pleanála is image 'VP24 Amenity Area Skerries (Fingal), Co. Dublin' on page 7 of the above-mentioned document, cuts off Rockabill lighthouse, which forced us to use a different photo montage).

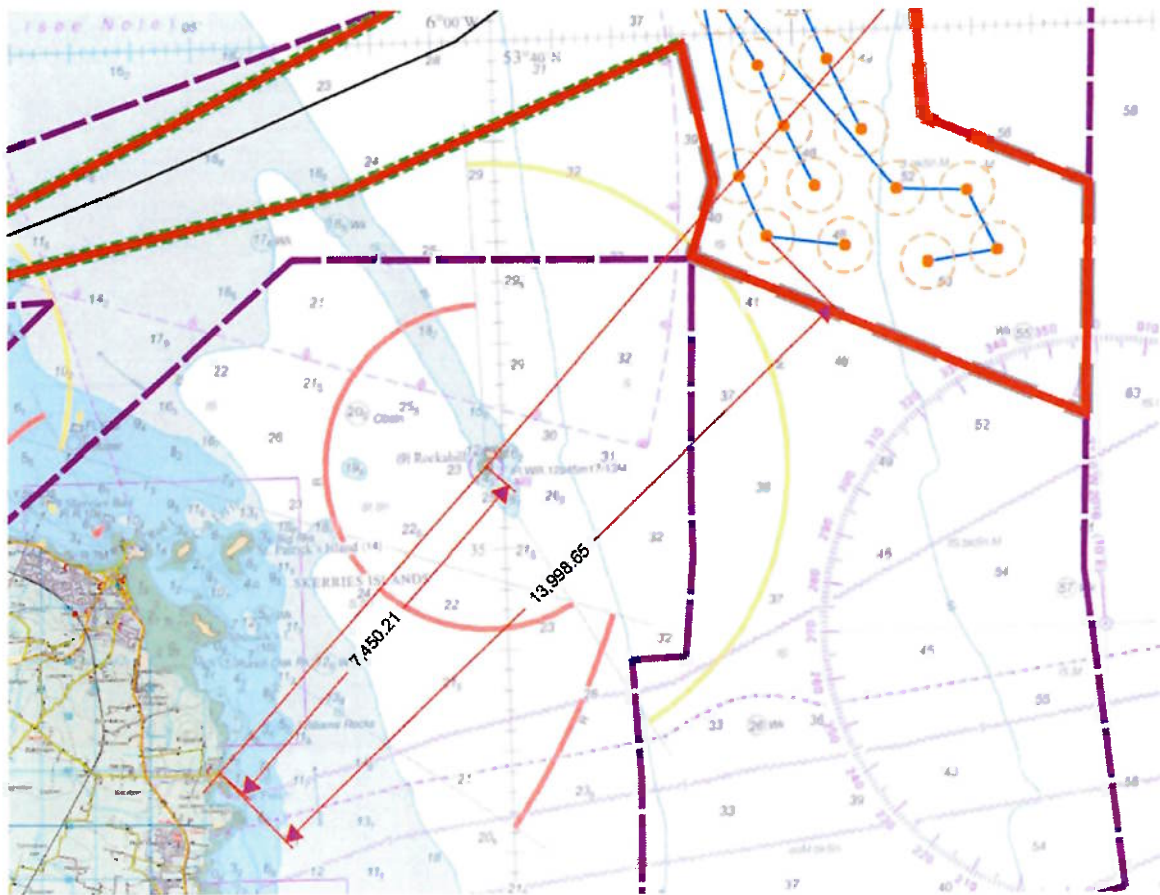
We determine that VP25 under-scales the turbines by 13%, as evidenced below.

The following image copied from VP25 shows our measurements in Adobe Acrobat Pro.



The distances from Loughshinny to Rockabill Lighthouse and the nearest turbine, respectively, were checked on Statkraft's file, as submitted to An Bord Pleanála, entitled 281240_ARP_OFS_OA_DR_PL_1011-Proposed-Layout-Project-Option-2-35-WTGs, as follows.

281240 ARP OFS OA DR PL 1011-Proposed-Layout-Project-Option-2-35-WTGs



Our calculations are as follows.

Calculations for Photomontage VP25 in NISA's planning application

Scenario	Loughshinny
Observer height	4.8 m
Lighthouse height	46.5 m
Lighthouse distance	7.5 km
Turbine height	316 m
Turbine Distance	14.0 km
Ratio	3.58

Workings

Earth's radius at 53.35° latitude R 6,364,413

observation height h
distance from viewer to horizon s1 $= (2 \cdot h \cdot R + h^2)^{0.5}$

arc length C
length of object T
polar angle theta $= C/R$
theta1 $= \text{ATAN}(s1/R)$
theta2 $= \text{theta} - \text{theta1}$

Observed distance S $= R \cdot \text{TAN}(\text{theta2}) / (1 - \text{TAN}(\text{theta1}) \cdot \text{TAN}(\text{theta2}))$
distance from horizon to object s2 $= R \cdot \text{TAN}(\text{theta2})$
below horizon B $= R \cdot (\text{SEC}(\text{theta2}) - 1)$
above horizon A $= T - B$
Perceived height of object H $= R \cdot A / (R + T)$
angle of elevation alpha $= \text{ATAN}(H/S)$
perceived relative heights ratio K $= S_{\text{lighthouse}} \cdot H_{\text{turbine}} / S_{\text{turbine}} \cdot H_{\text{lighthouse}}$
perceived relative angles ratio $= \alpha_{\text{turbine}} / \alpha_{\text{lighthouse}}$

Lighthouse height in Statkraft VP25 X in mm 5.95
Turbine height in Statkraft VP25 Y in mm 18.93
Ratio Turbine / Lighthouse Z $= Y/X$ 3.181512605
Statkraft underscaling $= 1 - (K/Z)$ -13%

Loughshinny view		
	4.8	
	7816.55	
Lighthouse	Turbine	
	7450.00	14000.00
	46.50	316.00
	0.00117	0.00220
	0.00123	0.00123
	-0.00006	0.00097
	7450.00	14000.02
	-366.54	6183.46
	0.01	3.00
	46.49	313.00
	46.49	312.98
	0.006240064	0.022352
	3.582564717	
	3.582014559	

4.2 SUSTAINABLE DEVELOPMENT

4.2.1 NEGATIVE IMPACT ON THE SEABED

The drilling and piledriving required for Monopile installation into the seabed is likely to create massive amounts of drilling waste material in the form of sediment which will cloud waters and sometimes include drilling cutting agents in the form of chemical additives. This is a pollutant which will cause disruption of seabed nurseries for phytoplankton and fish and shellfish for spawning areas for sand eels the food for Terns our most local red listed breeding birds on Rockabill. Phytoplankton is a main food source for fish stocks. The placing of large foundations in the proposed location may change the dynamics of sandbanks and silt up the areas of foundation of up to 14 metre in diameter. This has been reported in the Arklow bank development. In essence, the marine ecosystems may be altered and threatened by the 35-49 units proposed.

4.2.2 EFFECT ON COASTAL EROSION

Currently, the SPA area covering the islands around Skerries is experiencing increased coastal erosion. Due to the extent of the erosion, human burials of archaeological interest were uncovered in 2019. Further changes to tidal flows around the bases of the 35-49 turbines placed close to the islands may increase the potential for further coastal erosion by creating more sand and silt build up around the turbines which can then steal sand from depositing on the nearby islands, increasing coastal erosion and reducing the size of the habitats for nesting birds.

(ref. National Museum of Ireland, ref. IA/44/2017 Isabella Mulhall, asst. keeper and surveyed by Karl Bardy in 2017, copied below)



museum

National Museum of Ireland Ard-Mhúsaem na hÉireann

Mr Shane Holland

Maypark

Church Street

Skerries

Co. Dublin

20/07/2017

Our Ref: IA/44/2017

Dear Mr Holland,

I wish to acknowledge receipt of the completed Report of Discovery form in respect of the human remains recently discovered by you on Shenick's Island.

I would also like to take this opportunity to thank you most sincerely for all your efforts in reporting this discovery to the relevant authorities - it is indeed much appreciated.

Yours sincerely,

Isabella Mulhall

Isabella Mulhall

Assistant Keeper

Irish Antiquities Division

KILDARE STREET

Dublin 2, Ireland

TELEPHONE +353 1 4777444

FAX +353 1 47900110

SRÁID CHILL DARA

Baili Átha Cliath 2, Tíre

4.2.3 FAILURE TO PROVIDE ADEQUATE ENVIRONMENTAL PROTECTION - DECOMMISSIONING, DECONSTRUCTION, REHABILITATION

We refer to the Rehabilitation Schedule included in the planning application (Volume 8: Appendices (Introductory), Appendix 6.2)

We note that the MAP Act obligates the developers of NISA to implement a rehabilitation schedule to ensure that any adverse effects caused by the maritime usage, specifically the construction and operation of the North Irish Sea Array Offshore Wind Farm, are addressed and mitigated effectively. The Rehabilitation Schedule is intended to restore the maritime area to a satisfactory state, considering aspects such as the seabed, water quality, wildlife, natural habitats, landscape, and seascape.

Additionally, the plan aims to enable the reuse of the area for its previous purpose or for another purpose while maintaining it in a satisfactory state post-restoration.

This legal requirement aims to ensure that environmental impacts are minimized, habitats are protected, and the area is rehabilitated in compliance with relevant regulations and environmental standards. Proper rehabilitation is crucial for the overall sustainability of wind farms.

Considering the legal obligations under the MAP Act, we have the following concerns regarding aspects of the Rehabilitation Schedule included in the planning application for NISA.

1. Lack of Specific Details: While the document mentions the need for a Rehabilitation Schedule as required by the Maritime Area Consent (MAC), it does not provide detailed, concrete actions or strategies for the rehabilitation process. It mainly focuses on general principles and broad approaches without specifying exact steps or methods for rehabilitation.
2. Limited Clarity on Implementation: The schedule lacks clarity on the specific timeline for the implementation of rehabilitation activities. It mentions the start and completion points but does not provide a detailed schedule of activities or milestones to ensure effective and timely rehabilitation.
3. Inadequate Cost Estimation: The document briefly mentions estimated costs and the requirement for a Rehabilitation Bond but does not delve into specific cost breakdowns or detailed financial planning for the rehabilitation process. This lack of detailed cost estimation could lead to uncertainties in funding and executing the rehabilitation activities.

A study published in February 2024 by the Harvard Business Review on the Long-Term Costs of Wind Turbines ⁴⁵ highlights the hidden costs associated with wind turbines, especially as they grow larger. It emphasizes that while larger turbines can capture more energy, the maintenance and decommissioning costs can eventually outweigh the benefits. BIGGER IS NOT NECESSARILY BETTER! The analysis in the study suggests that pushing blade lengths beyond 70-80 metres, depending on distance to shore, becomes less efficient when all costs are fully considered. The proposed NISA blades have a length of up to 135 metres!

Wind farm operators need to factor in these realistic costs to avoid potential environmental and economic disasters in the long term. Before any planning permission is granted, the developers of NISA should present a credible cost estimate for full lifetime and rehabilitation costs and put in place a sufficient Rehabilitation Bond.

4. Ambiguity in Authorisations: While it mentions the need for obtaining other authorisations for rehabilitation, it does not clearly specify the types of authorisations required, the process for obtaining them, or the expected timelines or costs involved.
5. Lack of detail on waste disposal and recycling of materials: Blades remain problematic to recycle. Currently, most blades are shredded, incinerated, or sent to landfills.

The structural deterioration and pollution from failed and abandoned wind turbines and their associated infrastructure has caused significant environmental damage throughout Europe. The failure to implement strict licensing requirements with respect to the funding and timely dismantling of wind turbine projects has been a central issue in addressing this problem. The Netherlands, Denmark and Scotland have recently taken action by requiring the establishment of a 'dismantling fund, and a dismantling time limit of two years after operations. In the absence of these 'safeguards', and given the experimental nature of the new enlarged wind turbines used in the NISA project, the local environment, community and Irish taxpayer are being placed under unreasonable and excessive risk.

The failure to ensure a secured NISA/Statkraft 'dismantling fund for the NISA project, impacts the subsequent economic feasibility of recycling the wind turbine minerals into new turbines, which in turn necessitates the need for further mineral extraction and associated environmental damage and pollution at a global level.

The implementation of strict and progressive licensing requirements has the capacity to transform wind turbine energy into a safe and sustainable industry.

In conclusion, the Rehabilitation Schedule provided in the Planning Application lacks specificity, detailed planning, and clarity on crucial aspects such as implementation, costs,

⁴⁵ [The Long-Term Costs of Wind Turbines \(hbr.org\)](https://hbr.org)

and required authorisations, which may render it insufficient for ensuring effective and comprehensive rehabilitation of the proposed offshore wind farm development.

Also see related documents:

- Offshore wind farm decommissioning best practice [RICS, 21 May 2020] ⁴⁶
- Abandoned wind turbines and their serious impact on the lives of local residents and on the environment [European Parliament, 18 October 2023] ⁴⁷

⁴⁶ [Offshore wind farm decommissioning best practice | Journals | RICS](#)

⁴⁷ [Parliamentary question | Abandoned wind turbines and their serious impact on the lives of local residents and on the environment | E-003082/2023 | European Parliament \(europa.eu\)](#)

4.2.4 HUMAN RIGHTS IN WIND TURBINE SUPPLY CHAINS

Referring to ActionAid's publication titled Human Rights in Wind Turbine Supply Chains, January 2018 ⁴⁸

Also note the due diligence update from November 2019 ⁴⁹

The January 2018 paper states: 'To achieve the emission reduction goals set out in the Paris Agreement on climate change, governments worldwide will need to urgently increase their reliance on renewable energy. As a result, the demand for minerals needed in sustainable energy technologies like wind turbines will increase. However, the production of these minerals can bring about adverse human rights impacts and environmental risks, as we have seen illustrated in this report. It is imperative that companies and governments seize the opportunity to ensure that tackling climate change, sustainable development and protecting human rights go hand in hand.'

To work towards this goal, NISA should be obligated to follow best practice and conduct and publish an in-depth analysis of its supply chains for NISA in accordance with OECD Guidelines and UNGPs regarding due diligence in the supply chain.

Furthermore, NISA should be obligated to conduct a study on the total chemical/pollution load of the NISA development taking into account any and all activities, materials, sourcing, transporting, manufacturing, abrasion, leaking etc. from sourcing materials to the completion of deconstruction and rehabilitation of NISA.

⁴⁸ [Final ActionAid_Report-Human-Rights-in-Wind-Turbine-Supply-Chains.pdf \(somo.nl\)](#)

⁴⁹ [Human-Rights-in-Wind-Turbine-Supply-Chains-2019.pdf \(iww.org\)](#)

5 ALTERNATIVE PLANNING PROPOSALS

Statkraft and their partner, Danish fund management company Copenhagen Infrastructure Partners (CIP), secured an Irish government backed 500 MW project contract and not a 700 MW government backed project contract which is what their planning application is based on.

This is very significant as it means that the number of wind turbines in this development proposal could be reduced by 40% and still fulfil Statkraft's 500 MW project contract with the Irish government. This reduction would lead to a large buffer around Rockabill SPA as it would eliminate the most southerly wind array.

We are, therefore, proposing a 40% reduction in the number of wind turbine generators for Option 1 and Option 2 as follows:

NISA Offshore Wind Farm - Viewpoint Selection



OPTION 1: 29 WIND TURBINE GENERATORS

A REDUCTION OF 20 WIND TURBINE GENERATORS FROM THE CURRENT FIGURE OF 49

OPTION 2: 21 WIND TURBINE GENERATORS

A REDUCTION OF 14 WIND TURBINE GENERATORS FROM THE CURRENT FIGURE OF 35

6 CONCLUDING STATEMENT

Firstly, we would like to request an oral hearing and hope that we will be granted one.

Ireland's maritime area is colossal - seven times the size of our landmass. When the seabed is included we have 7,500 km of coastline. There is ample space to site offshore wind farms that work in harmony with nature and not against it. As in many situations one of the biggest considerations when it comes to siting offshore wind turbines is LOCATION, LOCATION, LOCATION.

With 7,500 km of coastline to work with, it beggars belief that pile driving one of the tallest wind turbines in the world a mere 200 metres from one of the the most important breeding colonies of roseate tern in Europe is being proposed. This cannot be allowed to happen.

We acknowledge that tackling the climate crisis while simultaneously tackling the biodiversity crisis is challenging. However, if there was ever a case of putting the cart in front of the horse - this is it. Relevant projects should never have been green lighted without the proper legislation in place.

The long promised Marine Protected Areas Bill (MPA) which requires that Ireland protect 30% of its seas by 2030 has not yet been enacted. This legislation would go a long way to ensure that offshore wind farms are sited in appropriate locations.

The expression 'Prevention is better than cure' comes to mind when considering the recently passed EU Nature Restoration Law. This legislation aims to repair 80% of Europe's wetlands, rivers, forests, grasslands, marine ecosystems, and the species they host by 2030.

We do not want to see a situation at any point in the future where Rockbill or any of the other European sites that lie off the Fingal coast fall under the remit of The EU Nature Restoration Law due to the inappropriate siting of NISA's wind turbine generators.

Trust is the foundation stone for which community confidence is built. In our opinion, Norwegian state-owned Statkraft and Danish fund management company CIP are more interested in profit and the bottom line and much less interested in vulnerable species that depend on designated protected areas for their very survival.

Yes, we have climate targets that we must reach, but we cannot allow the advancement towards addressing climate concerns lead to even greater biodiversity loss. What will happen in ten years time if, for example, we no longer have nesting roseate terns at Rockabill? Who will be accountable?

Deputy Ryan has said that he will not contest the next General Election. He is the main person pushing for planning permission for Relevant Projects and when he leaves government so too will his accountability.

This submission, which we are happy to share, is our way of giving voice to the birds, marine life and habitats that have no voice. Should the development proposal go ahead in its

current format, we genuinely fear that catastrophic consequences will occur. We want to avert that crisis. And for biodiversity and nature's sake, we hope we will be listened to.

Sandra O'Sullivan, 28 Shenick Park, Skerries, County Dublin (087-417 1809)

Shane Holland, Maypark, 46 Church Street, Skerries, County Dublin (086-815 6601)

Teddy Otto, 41 South Strand, Skerries, County Dublin (086-811 9863)

Partnered with: Balbriggan Community Council, 14 Hampton Street, Balbriggan, County Dublin (087-943 8603)

7 APPENDICES:

7.1 ECOLOGICAL SENSITIVITY ANALYSIS OF THE WESTERN IRISH SEA TO INFORM FUTURE DESIGNATION OF MARINE PROTECTED AREAS (MPAS) ⁵⁰

Executive summary

Ireland has a legal obligation to protect the marine environment, ensuring that our seas and ocean are clean, healthy, diverse, productive and resilient to the effects of climate change, and that sectoral activities dependent on them are carried out sustainably.

Ireland is currently undergoing several significant changes in relation to maritime activity, its regulation and its planning. This includes provisions for siting and managing the development of Offshore Renewable Energy (ORE) while also taking account of other sectors and other considerations. In this context, the western Irish Sea (i.e., off the eastern seaboard of Ireland) has been identified as suitable for potential ORE development between now and 2030. This includes Phase 1 wind energy projects referred to in the draft Offshore renewable Energy Development Plan II (OREDPII).

In parallel with this activity, the forthcoming Marine Protected Areas Bill is at an advanced stage of development. The MPA Bill will enable Ireland to meet its national and international commitments for area-based protection in our seas and ocean, aiming for 30% MPA coverage nationally by 2030.

Given that the MPA legislative process is ongoing, and in order to safeguard areas of environmental sensitivity to the potential effects of ORE development in the near term, a detailed scientific analysis and report on the western Irish Sea was undertaken between December 2022 and April 2023. The aims of this ecological sensitivity and conservation prioritization project were to:

- 1) identify areas of comparatively higher and lower ecological sensitivity within the western Irish Sea based on the best available evidence;
- 2) inform planning decisions to be taken about the potential siting of ORE infrastructure, taking account of stakeholder views, conservation requirements and other sectoral activity;
- 3) establish methods and collate and characterise the evidence base that could be applied to the process of identifying, designating and managing MPAs under the forthcoming legislation.

The project team comprised members of the MPA Advisory Group which provided advice on the expansion of Ireland's MPA network in 2020, working with additional experts and

⁵⁰ <https://www.gov.ie/en/publication/03ccc-ecological-sensitivity-analysis-of-the-celtic-sea/>

researchers. The team sought to adhere as closely as possible to the principles likely to underpin the forthcoming MPA legislation.

Forty biological and environmental features were identified that could be recommended for spatial protection in the western Irish Sea under the forthcoming MPA legislation, based on criteria aligned with international approaches and the provisions of the General Scheme of the MPA Bill. Selected features included species and habitats classified as threatened or declining on national and/or international lists, species and habitats of recognised ecological importance, areas of high biodiversity and a feature with high potential for restoration.

It should be noted that species or habitats already listed in the EU Birds and Habitats Directives or individually managed under the EU Common Fisheries Policy (CFP) were not included in the project, since legal provisions for their conservation and sustainability are already in place.

For each selected feature, all the data was collated into a single data resource and the evidence was analysed to determine the sensitivity of that feature to the sectoral activities most relevant to the project objectives, i.e., ORE development, shipping, and fishing. Stakeholder engagement was also undertaken by the project team to inform the process and enable information exchange within the project's time constraints.

Based on the available data and evidence, conservation prioritization analysis was carried out to identify areas of high and low priority for protection, considering current and proposed future sectoral activities. Constraints and caveats are outlined in the report's discussion. It is important to remember that the project had highly specific terms of reference and a particular geographical focus. The scientific and analytical work undertaken was nevertheless rigorous and systematic, and the project's recommendations are based transparently on the best available evidence and the precautionary principle.

7.2 NPWS: SKERRIES ISLANDS SPA – SITE CODE 004122 ⁵¹

The Skerries Islands are a group of three small uninhabited islands, Shenick's Island, St Patrick's island and Colt Island, situated between 0.5 km and 1.5 km off the north Co. Dublin coast. Skerries Islands SPA comprises the three islands and the seas surrounding them, to a distance of 200 m from the shore. The three islands are all low-lying with maximum heights ranging from 8 m to 13 m above sea level. St Patrick's Island and Colt Island have low cliffs, while Shenick's Island has more extensive expanses of intertidal rocky shore and sand flats. Shenick's Island also has a shingle bar and is connected to the mainland at low tides; it became a BirdWatch Ireland Reserve in 1987. The vegetation of the islands is dominated by rank grasses, with Brambles (*Rubus* spp.) and other species such as Hogweed (*Heracleum sphondylium*) occurring commonly.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Cormorant, Shag, Light-bellied Brent Goose, Purple Sandpiper, Turnstone and Herring Gull. The E.U. Birds Directive pays particular attention to wetlands and, as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The islands are of importance for both breeding seabirds and wintering waterfowl. In 1999 a survey recorded an internationally important population of breeding Cormorant (558 pairs) and a nationally important population of Shag (100 pairs) on St Patrick's Island. The Cormorant population, which was only established in the early 1990s, when taken together with the nearby associated colonies on Lambay Island and Ireland's Eye, comprises about 30% of the total Irish population. A nationally important population of Herring Gull (300 pairs) occurs on St Patrick's Island and Shenick's Island.

Other breeding seabirds recorded during the 1999 survey include: Fulmar (35 pairs), Lesser Black-backed Gull (1 pair) and Great Black-backed Gull (95 pairs). Large gulls also breed on Colt Island but there has been no census in recent years. Other breeding birds present include Shelduck, Ringed Plover and Oystercatcher (several pairs of each).

In winter the islands regularly support a range of waterfowl species, including an internationally important population of Light-bellied Brent Goose (242) and nationally important populations of Cormorant (391), Purple Sandpiper (46), Turnstone (242) and Herring Gull (560) – all counts are mean peaks for the five year period 1995/1996 - 1999/2000. Other species utilising the site during winter include Wigeon (205), Mallard (240), Oystercatcher (463), Ringed Plover (66), Golden Plover (240), Grey Plover (15), Lapwing (238), Dunlin (42), Snipe (27), Curlew (327), Black-headed Gull (110) and Great Black-backed Gull (250). The islands are also a regular wintering site for Short-eared Owl, with several birds recorded in most winters.

The Skerries Islands SPA is of high ornithological importance for both breeding seabirds and wintering waterfowl. Internationally important populations of breeding Cormorant and nationally important populations of two other breeding seabirds occur on the islands. The wintering population of Light-bellied Brent Goose is of international importance and four

⁵¹ <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004122.pdf>

other species occur in nationally important numbers during the winter. The presence of Golden Plover and Short-eared Owl, two species that are listed on Annex I of the E.U Birds Directive, is of note.

11.9.2009

7.3 NPWS: ROCKABILL SPA – SITE CODE: 004014 ⁵²

Rockabill consists of two small, low-lying, granitic islets situated c. 7 km off the Co. Dublin coast. The islands are separated by a narrow channel, though are connected at low spring tides. The main island, known as the Lighthouse Island, is vegetated by a scrubby sward of Tree Mallow (*Lavatera arborea*), with a range of other maritime species occurring, such as Sea Mayweed (*Matricaria maritima*), Sea Campion (*Silene maritima*), Sorrel (*Rumex* spp.), Common Scurvy-grass (*Cochlearia officinalis*), Orache (*Atriplex* spp.) and Rock Sea-spurrey (*Spergularia rupicola*). The smaller island, known as the Bill, is very exposed and is sparsely vegetated. A lighthouse, manned until 1989, is situated on the main island. The site includes the two islands and the surrounding seas to a distance of 3.5 km from the islands.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Purple Sandpiper, roseate tern, Common Tern and Arctic Tern.

Rockabill has a long history of nesting by terns and it is now the most important roseate tern colony in Europe. The All-Ireland Tern Survey in 1995 recorded an internationally important population of roseate tern (554 pairs) and nationally important populations of Common Tern (351 pairs) and Arctic Tern (49 pairs) on Rockabill. Intensive wardening, management and monitoring since the 1980s has seen the colony grow significantly. In 2010 the roseate population had increased to 1,093 pairs, which represents approximately 65% of the entire European biogeographic population. The Common Tern population is the largest in Ireland with 1,940 pairs recorded in 2010. The Arctic Tern population has also increased with 250 pairs recorded in 2010. Sandwich Tern nested up to the 1930s but apparently not since. Surveys of the foraging behaviour of the roseate tern population on Rockabill have recorded up to 73% of roseate terns foraging within 3.5 km of the islands. The seas surrounding the islands, to a distance of 3.5 km, are therefore included within the SPA to protect the foraging resource of this internationally important roseate tern population.

NOTE: THIS INFORMATION IS OUT-OF-DATE AND UNRELIABLE - SEE FOLLOWING PAGE

The terns nest amongst the scrubby vegetation and increasingly so in the nest boxes which are provided as part of the BirdWatch Ireland/National Parks and Wildlife Service conservation programme. Large gull species are discouraged from nesting on the islands, for the benefit of the terns, and visitors to the islands are strictly controlled. Detailed research is carried out each year, including studies on breeding behaviour, productivity and feeding. A ringing programme has been in operation since the 1980s and this has produced important information on the movement of the birds in an international context.

Other breeding seabirds while utilise the site include Black Guillemot (82 pairs in 2010) and a small colony of Kittiwake (163 pairs in 2010). Both of these species are monitored annually and most of the chicks produced are ringed.

⁵² <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004014.pdf>

In winter the site supports a nationally important population of Purple Sandpiper (48). Other species recorded include Cormorant (18), Oystercatcher (14) and Turnstone (38) – all figures are 3 year mean peaks for the period 1997/98 to 1999/2000. Rockabill SPA is of ornithological importance as it supports the most important roseate tern colony in Europe. The site also supports nationally important breeding populations of Common Tern and Arctic Tern, and a nationally important wintering population of Purple Sandpiper. All three species of tern which occur are listed on Annex I of the E.U. Birds Directive. Owing to its international and national importance, Rockabill is a designated Refuge for Fauna.

30.5.2015

7.4 NPWS: NORTH-WEST IRISH SEA CSPA – SITE CODE: 004236 ⁵³

The North-west Irish Sea cSPA constitutes an important resource for marine birds. The estuaries and bays that open into it along with connecting coastal stretches of intertidal and shallow subtidal habitats, provide safe feeding and roosting habitats for waterbirds throughout the winter and migration periods. These areas, along with more pelagic marine waters further offshore, provide additional supporting habitats (for foraging and other maintenance behaviours) for those seabirds that breed at colonies on the north-west Irish Sea's islands and coastal headlands. These marine areas are also important for seabirds outside the breeding period.

This SPA extends offshore along the coasts of counties Louth, Meath and Dublin, and is approximately 2,333km² in area.

This SPA is ecologically connected to several existing SPAs in this area. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Common Scoter, Red-throated Diver, Great Northern Diver, Fulmar, Manx Shearwater, Shag, Cormorant, Little Gull, Kittiwake, Black-headed Gull, Common Gull, Lesser Black-backed Gull, Herring Gull, Great Black-backed Gull, Little Tern, roseate tern, Common Tern, Arctic Tern, Puffin, Razorbill and Guillemot.

The breeding seabird species listed for those SPAs, which abut the North-West Irish Sea SPA are:

Fulmar (Lambay Island SPA); Cormorant (Skerries Island SPA; Ireland's Eye SPA; Lambay Island SPA); Shag (Skerries Island SPA; Lambay Island SPA); Lesser Black-backed Gull (Lambay Island SPA); Herring Gull (Skerries Island SPA; Ireland's Eye SPA; Lambay Island SPA); Kittiwake (Lambay Island SPA; Ireland's Eye SPA; Howth Head SPA); roseate tern (Rockabill SPA); Common Tern (Rockabill SPA); Arctic Tern (Rockabill SPA); Little Tern (Boyne Estuary SPA); Guillemot (Lambay Island SPA, Ireland's Eye SPA); Razorbill (Lambay Island SPA, Ireland's Eye SPA); and Puffin (Lambay Island SPA). The Common Tern population that is listed for the nearby South Dublin Bay and River Tolka Estuary SPA is also likely to use this SPA as a foraging resource.

Informed by two surveys of the western Irish Sea region in 2016 an estimated 120,232 and 34,626 individual marine birds occurred in this SPA during autumn and winter respectively. Those marine bird species whose estimated abundances equalled or exceeded 1% of the total estimated size of the winter assemblage are: Red-throated Diver (538), Fulmar (506), Little Gull (391), Kittiwake (944), Black-headed Gull (508), Common Gull (2,866), Herring Gull (6,893), Great Black-backed Gull (2,096), Razorbill (4,638) and Guillemot (13,914).

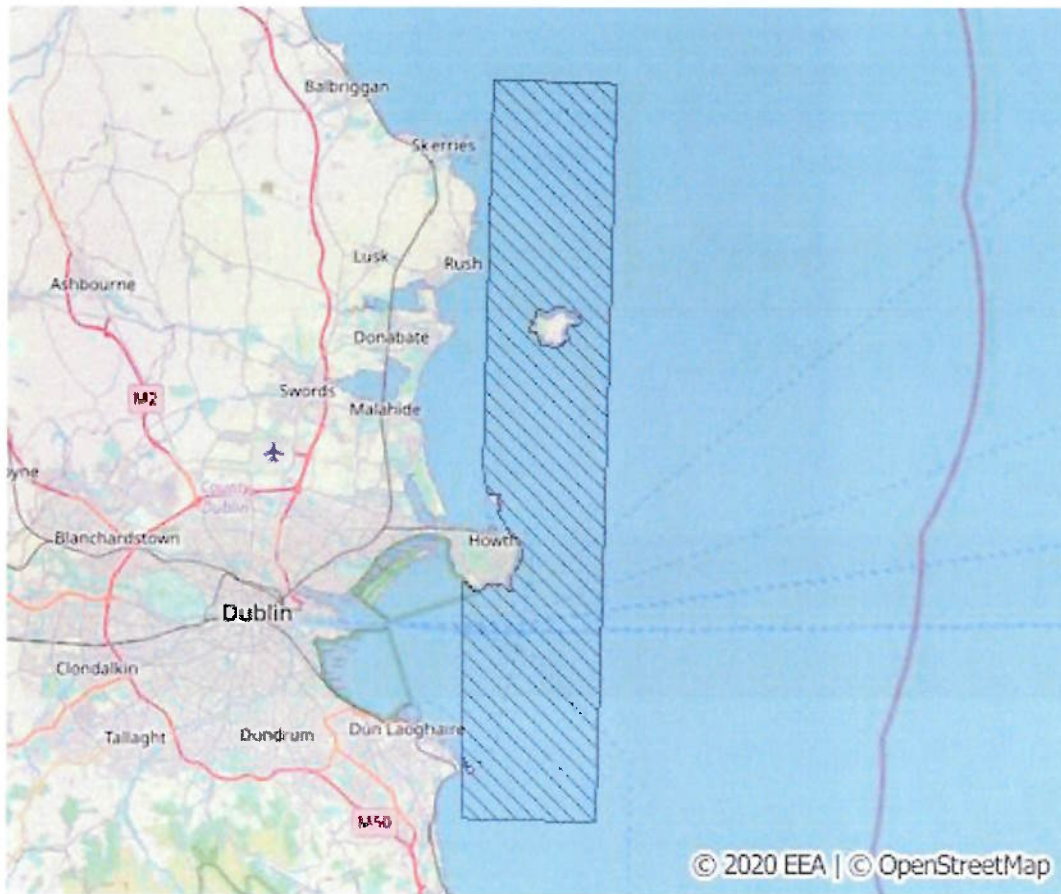
The estimated 2016 summer abundance of Manx Shearwater in the North West Irish Sea SPA is 13,010 and is of international importance. The estimated 2016 autumn and winter abundances of Great Northern Diver in the North West Irish Sea SPA is 248 and 230 respectively and are of international importance. The estimated abundances of Common

⁵³ <https://www.npws.ie/protected-sites/spa/004236>

Scoter over parts of this SPA can reach significant numbers (e.g. 14,567 in December 2018) which is also of international importance.

QUALIFYING INTERESTS	
Red-throated Diver (<i>Gavia stellata</i>) [A001]	Herring Gull (<i>Larus argentatus</i>) [A184]
Great Northern Diver (<i>Gavia immer</i>) [A003]	Great Black-backed Gull (<i>Larus marinus</i>) [A187]
Fulmar (<i>Fulmarus glacialis</i>) [A009]	Kittiwake (<i>Rissa tridactyla</i>) [A188]
Manx Shearwater (<i>Puffinus puffinus</i>) [A013]	roseate tern (<i>Sterna dougallii</i>) [A192]
Cormorant (<i>Phalacrocorax carbo</i>) [A017]	Common Tern (<i>Sterna hirundo</i>) [A193]
Shag (<i>Phalacrocorax aristotelis</i>) [A018]	Arctic Tern (<i>Sterna paradisaea</i>) [A194]
Common Scoter (<i>Melanitta nigra</i>) [A065]	Little Tern (<i>Sterna albifrons</i>) [A195]
Little Gull (<i>Larus minutus</i>) [A177]	Guillemot (<i>Uria aalge</i>) [A199]
Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]	Razorbill (<i>Alca torda</i>) [A200]
Common Gull (<i>Larus canus</i>) [A182]	Puffin (<i>Fratercula arctica</i>) [A204]
Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]	

7.5 NPWS: ROCKABILL TO DALKEY (SAC) – SITE CODE - 03000⁵⁴



- [Natura 2000 site](#) (code IE0003000)
- Under [Habitats Directive](#)
- Since [September 2011](#)
- Country: **Ireland**
- Administrative region: **Not available**
- Surface area: **273 km²** (27285.88 ha)
- Marine area: **100%**
- Located in **Atlantic** biogeographical region
- It protects [4](#) species of the Nature Directives
- It protects [1](#) habitat types of the Habitats Directive

⁵⁴ <https://www.npws.ie/protected-sites/sac/003000>

Natura 2000	Species scientific name	English common name	Species group
1364	Halichoerus grypus	Grey seal	Mammals
1365	Phoca vitulina	Common seal	Mammals
1351	Phocoena phocoena	Common Porpoise	Mammals
1349	Tursiops truncatus	Bottle-nosed Dolphin	Mammals

Habitat types

Habitat type code	Habitat type english name
1170	Reefs

Site Details

Site code

004236

Designation

Special Protection Area (SPA)

7.6 IMPROVING THE CONSERVATION PROSPECTS OF THE PRIORITY SPECIES ROSEATE TERN THROUGHOUT ITS RANGE IN THE UK AND IRELAND

Reference: LIFE14 NAT/UK/000394 | Acronym: LIFE14 roseate tern

PROJECT DESCRIPTION SUMMARY: BACKGROUND; OBJECTIVES; RESULTS ⁵⁵

Background

Listed in Annex I of the Birds Directive, the roseate tern (*Sterna dougallii*) is classed as 'Rare in Europe' by BirdLife International and is a Species of European Conservation Concern. Due to its status, the species is considered as a priority for LIFE funding.

The roseate tern breeds in just two areas of Europe, namely the Azores and the far northwest. The northwest metapopulation is spread across a small number of sites in France, Ireland and the UK; the French sites have been targeted by a previous LIFE project (LIFE05 NAT/F/137), and this project was designed to build on the previous one.

In the UK, the roseate tern has been in decline since a high point in the 1960s. The cause of this decline is not fully understood, but contributing factors are thought to include predation and disturbance at breeding colonies, loss of nesting sites, and trapping and/or overfishing on the wintering grounds in West Africa. Five UK SPAs host roseate tern, but only one of these, Coquet Island, currently supports an established population.

In Ireland, three SPAs host roseate tern: two as breeding sites (Rockabill and Lady's Island Lake) and one mainly as a post-breeding site (Dalkey Islands). Rockabill is the principal site in the northwest Europe metapopulation, holding 79% of this metapopulation in 2014. The safeguarding of these sites is therefore of critical importance.

Objectives

The overall goal of the LIFE14 roseate tern project was to improve the conservation prospects of roseate tern (*Sterna dougallii*) in the UK and Ireland. This aim would contribute to a long-term goal of improving the conservation status of roseate tern across Europe.

Specific objectives were to:

- Increase the population of roseate tern in the UK and Ireland by enhancing habitat management and reducing threats at the three principal colonies (Rockabill and Lady's Island Lake in Ireland and Coquet Island in the UK).
- Provide the conditions needed for a re-expansion of roseate tern in the UK and Ireland through enhanced management and restoration of all SPAs designated for this species.

⁵⁵ <https://webgate.ec.europa.eu/life/publicWebsite/project/LIFE14-NAT-UK-000394/improving-the-conservation-prospects-of-the-priority-species-roseate-tern-throughout-its-range-in-the-uk-and-ireland>

- Identify long-term options for the management and establishment of tern colonies across northwest Europe, in view of predicted changes to the climate and coastlines.
- Improve understanding of key issues affecting roseate terns in northwest Europe and in wintering areas in West Africa.
- Develop and disseminate guidance and plans for the management of roseate tern breeding sites; and
- Develop the conservation strategy covering the whole northwest European metapopulation of roseate tern.

Results

The LIFE14 roseate tern project achieved its objectives of improving the conservation prospects of the roseate tern (*Sterna dougallii*) in the UK and the Republic of Ireland, as a step towards improving the conservation status of this priority species across Europe. This was achieved by conducting a series of conservation actions in 8 sites, using an enhanced approach to management within both the current roseate tern colonies and potential future recolonisation sites. The actions included wardening, predator control, creating and improving nesting sites, and replacing equipment and infrastructure.

The management was underpinned by the existing knowledge and knowledge gained from the project's studies on tern diet, tern demography, spatial utilisation of foraging areas, migration routes and staging areas outside of the breeding season, as well as impacts in overwintering areas in West Africa.

During the project, the population of roseate tern in the UK and Ireland grew 7% between 2016 and 2020. When comparing the 5-year means at the three colonies that provide the best indication of the population performance, the Rockabill population grew 29%, Lady's Island Lake by 37%, and Coquet by 36%, compared to the 2011-2015 mean.

In addition to the above three sites, the project also enhanced conditions for breeding roseate terns at five other sites (so-called 'expansion sites'): Forth Islands, Solent and Southampton Water, Ynys Feurig, Cemlyn Bay and The Skerries SPA, Larne Lough and Dalkey Islands.

The lessons learnt from the practical management, networking and research actions during the project were used for the development of the International (East Atlantic) Action Plan, developed within the EU framework.

The best practice guidance for tern colony management developed by the project was widely disseminated among site managers, and during networking activities, workshops and seminars. [The EU East Atlantic roseate tern Action Plan](https://www.unep-aewa.org/sites/default/files/document/aewa_mop8_inf_7_issao_roseate_tern.pdf)⁵⁶ was updated as part of the project setting future direction for full recovery.

⁵⁶ https://www.unep-aewa.org/sites/default/files/document/aewa_mop8_inf_7_issao_roseate_tern.pdf

APPENDIX

Improving the conservation prospects of the priority species roseate tern throughout its range in the UK and Ireland

LIFE14 NAT/UK/000394

After-LIFE Conservation Plan

July 2021



Roseate terns on Coquet Island © Paul Morrison



giving
nature
a home



Project details

Project location: Ireland and United Kingdom

Project start date: 01/10/2015

Project end date: 31/12/2020

Total budget: 3,229,020 €

EC contribution: 2,421,765 €

Coordinating Beneficiary: The Royal Society for the Protection of Birds (RSPB)

Associated Beneficiaries: BirdWatch Ireland (BWI)

North Wales Wildlife Trust (NWWT)

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Table of Contents

<i>Project details.....</i>	<i>2</i>
<i>Glossary of acronyms</i>	<i>4</i>
<i>Introduction</i>	<i>5</i>
<i>Overview of the project</i>	<i>7</i>
<i>Objectives</i>	<i>7</i>
<i>Main actions and outcomes</i>	<i>8</i>
Habitat creation	8
Predator management	11
Biosecurity	12
Research	12
Networking	13
Promotion and public engagement.....	14
<i>SWAT Analyses</i>	<i>15</i>
<i>Current population performance</i>	<i>17</i>
<i>After-LIFE objectives and methodology</i>	<i>19</i>
<i>Framework for Action.....</i>	<i>21</i>
<i>References.....</i>	<i>33</i>

Glossary of acronyms

Associated Beneficiaries or Partners – BWI and NWWT

BWI – BirdWatch Ireland (associated beneficiary)

BTO – British Trust for Ornithology

CAW – Centre for African Wetlands (contractor for the tern trapping study in Ghana)

DEFRA – Department for Environment, Food and Rural Affairs (UK)

EASME - The Executive Agency for Small and Medium-sized Enterprises, now CINEA

EC or Commission – European Commission

FR - France

HCC – Hampshire County Council (key stakeholder)

HIOWT – Hampshire and Isle of Wight Wildlife Trust (key stakeholder)

IE – Republic of Ireland

JNCC – Joint Nature Conservation Committee

LOTE – Life on the Edge Project (LIFE19 NAT/UK/000964)

NADEG - EU Expert Group on the Birds and Habitats Directive

NE – Natural England (statutory body in England)

NEEMO - LIFE Monitoring Team UK/IE

NIEA – Northern Ireland Environment Agency

NPWS – National Parks and Wildlife Service (statutory body for IE, key stakeholder)

NRW – Natural Resources Wales (statutory body in Wales)

NWWT – the North Wales Wildlife Trust (associated beneficiary)

Project Beneficiaries - RSPB HQ, BWI, NWWT and all the RSPB regions involved in the project (SE England, NE England, Scotland, Northern Ireland and Northern Wales)

RSPB – Royal Society for the Protection of Birds (main beneficiary)

SNH – Scottish Natural Heritage (statutory body in Scotland), now NatureScot

SPA – Special Protection Area as defined in the European Union Birds Directive

Introduction

The roseate tern *Sterna dougallii* is “probably” the most beautiful tern species in Europe with very pale plumage, long tail streamers and a delicate pink “blush” on the underparts, from which the species takes its name. Historically, throughout the 1970s and 1980s, the roseate tern suffered catastrophic declines and shrinking distribution across all its colonies in Western Europe from a peak of over 3300 pairs (14 colonies) in 1968 to just 467 pairs (11 colonies) in 1989 (Cabot & Nisbet 2013). Because the declines occurred simultaneously across the whole breeding range, it was thought that the limiting factors acted in coastal areas of West Africa (Cabot 1996), first trapping and, more recently, concerns about human overexploitation of forage fish. It had been established that a relatively high proportion of ring recoveries (around 82%) from roseate terns came from Ghana, the majority from trapped birds (Mead 1978, Dunn & Mead 1982, Avery et al. 1995). The decline prompted intensive conservation and education programmes, both at the breeding and wintering grounds (Avery et al. 1995), which has halted and reversed the downward population trend since the early 1990s. However, the distribution of active colonies has shrunk, and the species is still confined to only four colonies supporting >10 pairs in Western Europe and sensitive to potential stochastic events, predation and predicted shortages of food caused by climate change.

The Roseate Tern LIFE Project (www.roseatetern.org) was a partnership between the RSPB, BirdWatch Ireland and North Wales Wildlife Trust. The project focused on enhancing breeding conditions at the core colonies in Ireland (Rockabill) and the UK (Coquet Island), while also improving five former roseate tern SPAs in preparation for a potential expansion (Solent and Southampton, Forth Islands, Ynys Feurig, Cemlyn Bay and the Skerries, Larne Lough and Dalkey Islands). The project also formed a close working collaboration with the two other main roseate tern colonies in Western Europe, namely Lady's Island Lake (IE) and Ile aux Moutons in Brittany (FR).

The funds from the LIFE project have enabled partners to increase wardening hours, clear vegetation, create more terraces and increase the number of nest boxes. Wardens have also been able to discourage large gulls from occupying and predating nesting sites through trialling new techniques including gull scarers and Agrilasers (laser technology to deter birds). Biosecurity measures and exclusion fencing were also implemented across certain colonies to deter mammalian predators. The project was also restoring tern nesting habitats that have been degraded by erosion and subsequent flooding to support common tern colonies and consequently increase probability of roseate tern recolonisation. This included island restoration, shingle recharge, creating nesting bunds on breakwaters and deploying rafts.

The LIFE project has also led on several key areas of research including a demography study which revealed that the population growth at Coquet Island (UK) had been driven by immigration from Rockabill (IE), whereas the growth of Irish colonies was driven more by productivity and the survival of juveniles/adults (Seward et al. 2019). Visual tracking of roseate terns from Rockabill revealed the effective foraging range and patterns (Perrow et al. 2019). Sandeel and alternative prey species reviews led to the development of prey hotspot areas for future management (Green 2017). Additionally, the wintering hotspots in Ghana were surveyed and illegal tern trapping is confirmed to still be ongoing in places (Quartey et al. 2018). Geolocators have also been deployed to understand roseate tern migration patterns (Redfern et al. 2021).

The insights from this project, both in terms of practical experience and research, were used to prepare the International (East Atlantic) Roseate Tern Species Action Plan 2021-2030 (Piec & Dunn 2021), which has been accepted for implementation by the EU and welcomed by AEWA. This plan was extensively consulted with competent authorities, agencies and experts from the UK, Ireland, France and Portugal (the Azores), and provides an overarching framework for action for the whole East Atlantic population.

The chief aim of the After-LIFE Conservation Plan is to identify priority actions required for further improvement of the conservation status of the roseate tern in NW Europe following the achievements of the project.

Overview of the project

Objectives

The overall strategy for the roseate tern recovery was formulated around five complementary objectives, two of them were directly aiming at improving the breeding success:

- **Improving breeding conditions at the current roseate tern colonies in the Republic of Ireland (Rockabill) and the UK (Coquet Island)**
- **Prepare suitable nesting conditions at former colonies in preparation for the recolonisation** in the following roseate tern SPAs: Dalkey Islands (IRL), Forth Islands (SCO), The Skerries, Cemlyn Bay and Ynys Feurig (WAL), Larne Lough (N. IRL) and Solent and Southampton (EN)

These two objectives supported the restoration of nesting habitat, additional wardens (predator protection and monitoring), infrastructure (accommodation and equipment) and biosecurity measures.



Roseate Tern LIFE Project SPAs

The recovery strategy was underpinned by the third aim **to improve our scientific knowledge to enhance metapopulation management**. We have published four scientific papers in peer-review journals and undertook two major reviews, including on tern trapping issue in Ghana.

Armed with the practical experience in site management and new scientific knowledge, the fourth objective **was to develop and share best practice to extend**

the impact of the project to other colonies. This objective was important because terns use different sites within large geographical areas forming metapopulations. We formed a close collaboration with managers of Lady's Island Lake (IE) and colonies in Brittany (FR). We have facilitated several regional tern conservation forums aimed at the exchange of knowledge, fostering partnership working and sharing data, including with the Azores and the US/ Canada. Moreover, we have developed the most comprehensive best practice guidance for tern colony management and monitoring.

The last objective was **to develop the International Roseate Tern Conservation Strategy**, as part of the exit strategy for the project. We have taken this task a bit further and got an approval from NADEG (Bird and Habitat Advisory Group at the EC) to update the old International (East Atlantic) Roseate Tern Action Plan from 1999 within the EU adopting framework. The SAP was accepted for implementation by NADEG in May 2021.

Main actions and outcomes

Habitat creation

Blue Circle Island

The largest habitat restoration subproject was to restore the outer rock armour of Blue Circle Island at Larne Lough (NI). The rock armour eroded causing flooding of up to 1/3 of the island. Tarmac contributed £75k and transferred the ownership of the island to the RSPB.



Solent and Southampton

We have trialled cheniers (shingle edge of saltmarsh) recharge and built nesting bunds on top of the Lymington breakwater. Although this provided new nesting habitat, in both cases the habitat was taken over by breeding Peregrine falcons and subsequently the recharge area had been washed out. This latter issue will only become worse with the sea level rise.



The exit strategy for this site is therefore to explore large scale recharge projects using dredged materials and/ or build the habitat behind the seawall. In spring 2020, we have rejuvenated the islands and restored the fox fence at Normandy lagoon, near Lymington, and finally little and common terns responded with 15 and 20 pairs respectively this year.



Cemlyn Bay

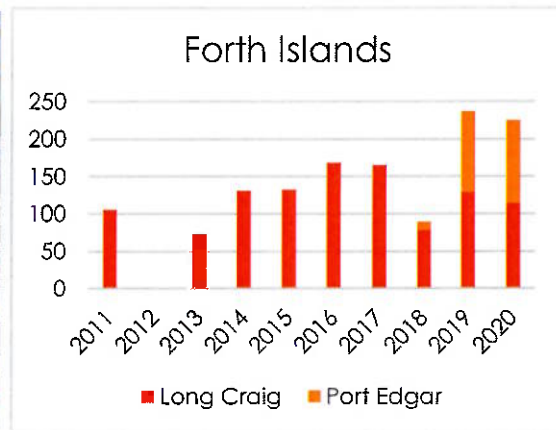
Our partner North Wales Wildlife Trust have also tackled erosion on the main tern island within Cemlyn Bay by depositing shingle in the eroded part of the island – home to almost 2000 pairs of Sandwich terns. This resulted in the increase of the nesting area on this already busy site.



Forth Islands

In response to the flooding issue of Long Craig Island, we have created a back-up, artificial site in Port Edgar Marina in Edinburgh (just 1.5 km from Long Craig), which resulted in a significant increase of the local population.





Predator management

We have installed otter fences on Coquet, Cemlyn Bay and Blue Circle Island, which practically eliminated the mammalian predation on these sites. We have tested innovative methods for gull management using laser hazing and bamboo canes, which are now becoming standard tools in tern colony management and are being used on several tern colonies in the UK.



Biosecurity

All island-based sites developed biosecurity plans and acquired rapid incursion response kits. Rat monitoring is in place. This early detection approach paid off in the case of rat incursion on Coquet in 2017, which was controlled before the breeding season. We also undertook a 3-year rat control project at Dalkey Islands (IE), which seems to be successful with no rat sightings in 2020 and 2021.



Research

The following studies have been published as part of the project:

- Roseate Tern demography study based on ringing and resighting of roseate tern chicks over the period of 1996-2016. The study revealed that Rockabill (IRL) has been producing a surplus of birds to disperse to other colonies and that the Coquet's population growth relied on immigration from Ireland (Seward et al. 2019).
- GPS/ visual (boat) tracking study of Arctic terns from the Skerries in preparation for a similar foraging range study on roseate terns. The study revealed very similar distribution patterns of the foraging birds using both methods and some potentially adverse effects of GPS tags (Seward et al. 2021).
- Based on these results, we decided to use only visual (boat) tracking for the roseate tern foraging study from Rockabill, which confirmed that the birds can forage up to 30 km from the colony (making the current protected area box inadequate) and that roseate terns actively search for bird aggregations

initiated by auks or marine mammals driving the fish to the surface (Perrow et al. 2020).

- Migration study using geolocators from Rockabill and Coquet confirming Ghana as the most important country for wintering roseate terns, along with Liberia and Sierra Leone. It also pointed out that roseate terns are probably cold water upwellings specialists utilising Guinea and Canary Currents Large Marine Ecosystems during wintering and migration (Redfern et al. 2021).

Major reviews:

- Evaluation of tern trapping in Ghana was undertaken by the Centre for African Wetlands in two winter seasons to reveal that although trapping is still going on, it is carried out at a much smaller scale thanks to the economic development and consequently higher school enrolment rates in Ghana (Quartey et al. 2018).
- Review of tern prey species (sandeel, sprat and juv. herring) ecology/ climate impact/fisheries threats informed our fishery advocacy in the post-Brexit scenario (Green 2017).

Networking

From the metapopulation management point of view our main external partners were National Parks and Wildlife Service in Ireland for Lady's Island Lake and Bretagne Vivante – a Brittany based NGO managing roseate tern colonies in France. We have been working intensively with these two partners throughout the project timescale resulting in the introduction of better management and monitoring methods at these sites, based on shared experience.

In the context of the potential recolonisation, we have expanded networking activities to common tern colony managers through regional forums such as the Irish Sea and Norfolk Tern Forums (photos below), South Coast, Forth Islands, Cumbria and Northumberland groups.



We also produce the annual Roseate Tern Newsletter summarising the field season from all the temperate colonies spanning from the US/ Canada, Caribbean, the Azores, continental Europe and recently also Japan. As a result, we have established a close working relationship with the US/Canada practitioners, including setting up the North Atlantic Roseate Tern Webinar in February 2020.

Further afield, we also visited the Azores and the Netherlands, including working closely with the Portuguese colleagues on the East Atlantic Action Plan.

Promotion and public engagement



We have organised or participated in approx. 300 different events with almost 13,000 attendees.

Approx. 400 social media and blog entries, press/ magazine articles, TV and radio spots

Coquet LIVE cameras have been hugely popular with 375,000 views in 2020.

We also have our own project beer where some of the proceeds go to managing the Coquet site.

SWAT Analyses

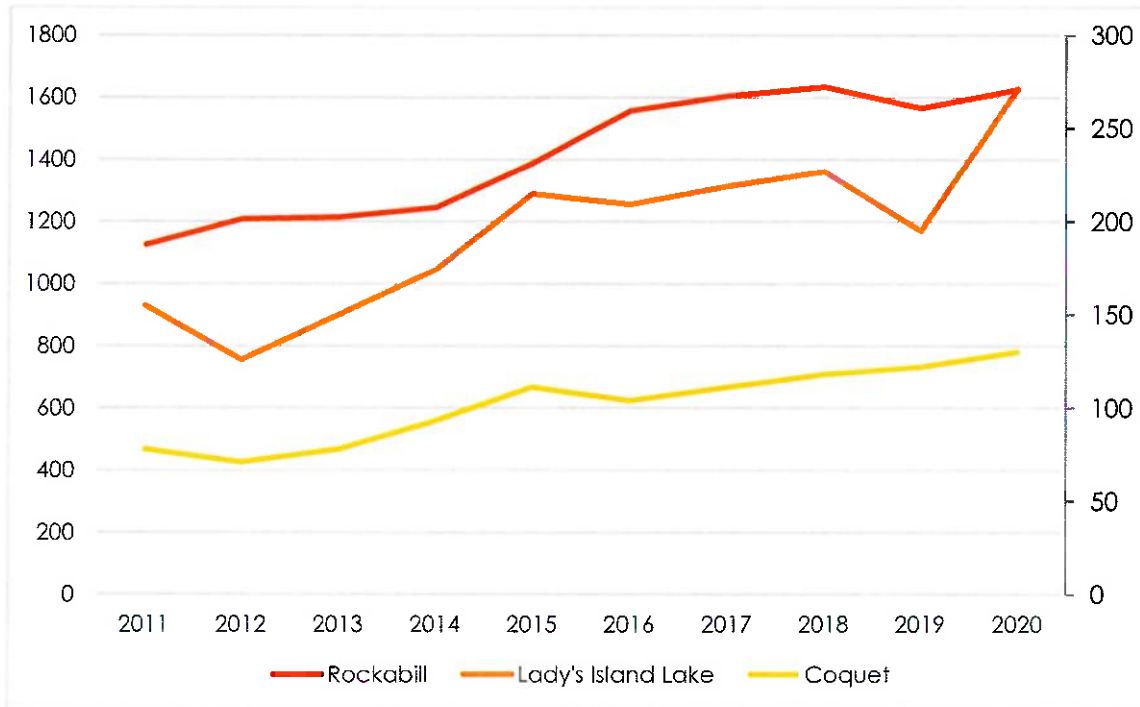
SWAT analyses of the factors impacting the continuation of the species recovery at the end of the LIFE project.

Internal	Strengths - Most of the sites enjoy at least some institutional financial support and operate as nature reserves with wardening (ROC, LIL, COQ, YFG, CEM, LAR) - Infrastructure and equipment have been improved – sites set up for long term management - Habitat restoration successful at LAR, CEM and some at SOL as case studies - ALL the sites apart from SOL have biosecurity plans, monitoring and rapid response kit - Successful rat control at DAL - Most of the research needs have been satisfied through the project - There is an active network of site managers, experts, statutory agencies - Networking and exchange of knowledge expanded internationally to the US, Canada, the Azores - Best practice guidance has been developed - The International Action Plan has been developed	Weaknesses - Lack of direct control of the project sites by the project beneficiaries at SOL and FOR requiring partnership working - Limited capacity and regular or sufficient funding of external partners at SOL, FOR - Limited capacity of BWI and NWWT to deal with policy work and casework - Lack of expertise retention in seasonal wardening positions
	Opportunities - The roseate tern remains a priority species for LIFE funding - International Species Action Plan can leverage funding including from LIFE - Increasing interest amongst statutory agencies in climate change mitigation projects with opportunities to create tern habitats in coastal habitats - Opportunity to influence the complete closure of sandeel fisheries on the UK waters after Brexit - Opportunities for strategic coastal management, with habitat creation for terns around the UK and Ireland	Threats - Tern colonies are conservation dependent and require annual allocation of funding - Limited access to EU funding for the UK after Brexit - Uncertainty of regular or sufficient funding for DAL and CEM - Sea level rise threatening many coastal colonies - Increased development pressure for offshore renewable energy projects

Rockabill (ROC), Lady's Island Lake (LIL), Coquet Island (COQ), Ynys Feruig (YFG),
Skerries (SKE), Cemlyn Bay (CEM), Forth Islands (FOR), Solent (SOL), Larne Lough (LAR),
Dalkey Islands (DAL), All sites (ALL).

Current population performance

In direct terms, the UK/ Ireland metapopulation has grown during the project 7% from 1869 pairs in 2016 to 2025 pairs in 2020 (see the graph below).



Number of roseate tern breeding pairs at Rockabill (IE) (primary axis), Lady's Island Lake (IE) and Coquet (UK) (secondary axis) in 2011-2020

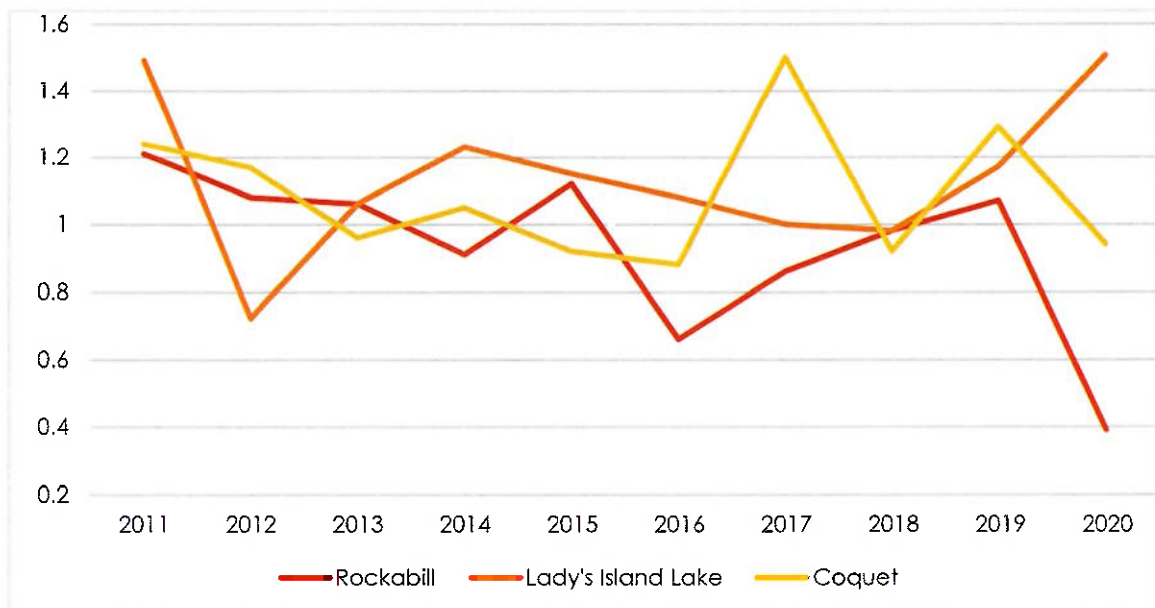
However, a comparison of the 5-year means provide a much better picture of the population performance as it flattens sometimes large year-to-year fluctuations. **During the project (2016-2020) Rockabill population grew 29%, Lady's Island Lake 37% and Coquet 36%, compared to the 2011-15 baseline mean** (see the table below).

Percentage change between project 5-year mean baseline (2011-15) and the project 5-year mean (2016-2020)

Site	Baseline mean (2011-15)	Project mean (2016-20)	% change between means
Rockabill (IE)	1235	1598	29%
Lady's Island Lake (IE)	164	224	37%
Coquet Island (UK)	86	117	36%

The long-term positive trend has continued since the project started; however, we are worried by the decreasing productivity, especially on Rockabill (see graph below). This can be a sign of density dependent effects as birds need to aggregate in limited space and compete for resources (nesting space and prey fish), or some issues with

the food availability, increased predation pressure or the weather impact in recent years.



Productivity (average number of chicks per pair) of roseate tern at Rockabill (IE), Lady's Island Lake (IE) and Coquet (UK) in 2011-2020

Population expansion: It is too early to speak about new viable colonies, but there has been one pair of roseate terns nesting at Blue Circle Island throughout the whole project and two pairs bred successfully in 2019 at the Skerries. Mixed pairs with common terns have bred during the project on the Isle of May, Leith Docks and Long Craig Island (Forth Islands). However, we are confident that Blue Circle Island, the Skerries, Ynys Feurig and Cemlyn Bay are now safe to receive roseate terns.

After-LIFE objectives and methodology

As presented above, the population of the target species, the roseate tern, has been increasing (including another record 2021 season), however there are two major risks associated with the concentration of the majority (ca. 80% in 2020) of the UK and Irish population in just one colony at Rockabill Island (IE):

- a. there are signs of density dependent effects on Rockabill (the largest colony) with lower-than-average productivity in the last five years, meaning that the site is producing fewer individuals to sustain the recent growth rate of the metapopulation. We can expect that the growth will therefore slow down or plateau.
- b. in the case of a stochastic event affecting Rockabill, the colony may disperse to less suitable sink sites where productivity might be below the population maintenance level (so-called buffer effect).

The following threats have been linked to reduced productivity on the breeding grounds:

- Predation by large gulls and other avian predators, native and invasive non-native mammals
- Disturbance through uncontrolled human access and egg collecting
- Climate change related threats
 - Extreme weather events
 - Loss of nesting sites to coastal change
 - Long-term impacts of climate-driven environmental change
- Shortages of food
- Development of offshore windfarms
- Lack of sufficient protection of foraging areas
- The impact of commercial fishing

The following threats have been linked to reduced survival of adults and fledged juveniles at wintering grounds and during migration:

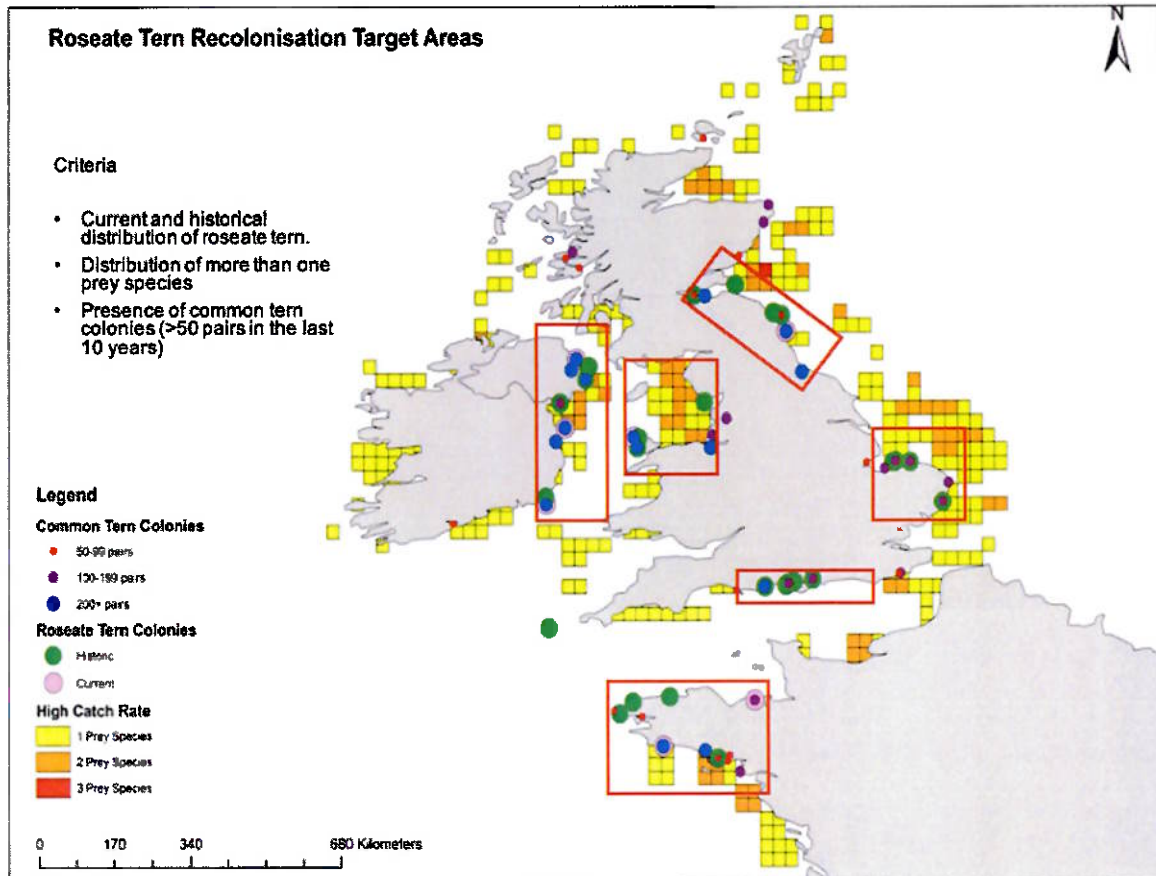
- Tern trapping
- Overfishing and climate change impacts on cold water upwelling systems

The above threats cannot be completely eliminated, meaning that the roseate tern will always be conservation dependent even in the context of threats we can control.

The International Species Action Plan (2021-2030) provides a good overview of priority work areas (objectives) required to maintain the population growth with the main aim to maintain the growth of the East Atlantic roseate tern population, while securing suitable sites for colonisation within a coherent network of European colonies.

While it is necessary to maintain or introduce intensive management of the key roseate tern SPAs (Objective 1), it is also important to provide safe nesting conditions at other large common tern colonies in preparation for roseate tern expansion (Objective 2). Target areas have been selected for potential colonisation in NW Europe, based on the distribution of multiple prey species, and historic and current key roseate and common tern colonies. Furthermore, protection of key coastal sites and forage fish stocks along the migration routes and on the wintering grounds will be

secured through research, policy and advocacy work (Objective 3). Awareness raising, further scientific advances and improvement of monitoring methods (Objective 4) will be based on regional cooperation via knowledge and best practice sharing (Objective 5).



Roseate Tern Recolonisation Target Areas

Framework for Action

The actions have been adapted from the International (East Atlantic) Roseate Tern Action Plan and tailored for the West European metapopulation. The relevance of each action to the project sites have been made, together with the current perspectives for funding.

Goal (2021-2030):

To maintain the growth of the West European roseate tern population, while securing suitable sites for colonisation within a coherent network of colonies.

Long-term high level objective (2031-2040):

Western Europe: To increase the roseate tern population to at least 2500 pairs distributed across at least 4 key colonies (min. 5-year mean 50 pairs) and 2-3 smaller, but stable colonies.

Threat level assessment	Action priority	Cost
Critical - causing or likely to cause very rapid declines and/or extinction	Essential	€ - <5,000 €
High - causing or likely to cause rapid decline leading to depletion	High	€€ - 5,000 – 10,000 €
Medium - causing or likely to cause relatively slow, but significant, declines	Medium	€€€ - 10,000 – 50,000 €
Low - causing or likely to cause fluctuations or minimal change	Low	€€€€ - 50,000 – 100,000 €
Local - causing or likely to cause negligible declines in small parts of the population		€€€€€ - >100,000 €
Unknown - likely to affect the species, but extent unknown		
Limitation - knowledge deficiency which, while not posing a threat to populations, calls for better understanding in order to implement more effective conservation strategies		

Applicability of actions to sites: Rockabill (ROC), Lady's Island Lake (LIL), Coquet Island (COQ), Ynys Feruig (YFG), Skerries (SKE), Cemlyn Bay (CEM), Forth Islands (FOR), Solent (SOL), Lame Lough (LAR), Dalkey Islands (DAL), All project sites (ALL).

Corresponding threats	Result	Action, approach for project sites	Priority	Cost	Responsibility
Objective 1: Maintain or improve productivity of roseate tern and key associated species through intensive management of all project sites					
A. Predation and displacement by large gulls (high)	1.1 Average 5-year mean productivity maintained at a level sufficient to compensate for or exceed losses from the population due to natural mortality at all key colonies through management of predation, biosecurity, disturbance, nesting habitats and species competition	Action 1.1.1 Develop and update management strategies for key roseate tern colonies - ROC – formal plan required - LIL – formal plan required - COQ – plan in place, updated annually and refreshed every 5 years - YFG – plan in place, updated annually and refreshed every 5 years - SKE – plan in place, updated annually and refreshed every 5 years - CEM – part of NT vision - FOR – formal strategy - SOL – strategy under development as part of Life on the Edge LOTE project - LAR – plan in place, updated annually and refreshed every 5 years - DAL – formal plan required	High	€ per site/year	• National and regional statutory agencies • Project partners • Landowners
B. Predation by mammals (high)					
C. Predation by invasive non-native species (high)					
D. Predation by other bird species (medium)					
E. Human disturbance, including egg collecting (medium)					
F. Loss of nesting habitat (medium)					
G. Extreme weather events (medium)		Action 1.1.2 Maintain and, if possible, introduce seasonal wardening (ALL) Wardening is essential to enable habitat protection, predation control, biosecurity, disturbance management and monitoring. Emphasis should be put on employing experienced wardens and developing a training programme for beginners. Further investments in wardening infrastructure and equipment should be made. - Residential wardening - This action requires at least two full-time seasonal wardens per colony with additional wardening support depending on management requirements needed to effectively deliver conservation targets outlined in management strategies (see 1.1.1). - ROC – wardening at required level, managed by BWI and supported financially by NPWS - COQ – wardening at required level, managed and financed by RSPB - YFG – wardening at required level, managed and financed by RSPB - SKE – wardening at required level, managed and financed by RSPB - CEM – wardening at required level managed by NWWT and financed by external funders (unsecured). Long-term funding security required. - Regular wardening - For colonies where residential wardening is not possible due to the lack of infrastructure, a team of dedicated tern wardens should be available to attend the colonies on a regular basis during the season. These	Essential	€€€ - €€€€ per site/year	• National and regional statutory agencies • Project partners • Landowners

		colonies often suffer from human disturbance, avian predation and rat <i>Rattus</i> incursions. - LIL - wardening at required level, managed and financed by NPWS - SOL - wardening currently managed by HCC and financed by HIOWT, with some support of the local RSPB team. Increased capacity required. - FOR - Wardening at Long Craig managed and financed by SWT. Port Edgar tern raft managed by local RSPB staff and monitored by Forth Seabird Group. More capacity required for multiple small colony management. - LAR - half-time warden managed and financed by RSPB - DAL - part-time warden managed by BWI and financially supported by Dun Laoghaire Rathdown CC (unsecured). Long-term funding security required.	Essential	Mostly, part of wardening cost. €€ for control, fencing and basic equipment where required	• National competent authorities • Statutory agencies • Project partners • Landowners • Local communities/ boat users
		Action 1.1.3 Manage predation 1.1.3.1 Native avian predators Where necessary, follow best practice guidance to implement and maintain: - Gull Larus-free zones through removal of nests (under licence) to discourage nesting in the vicinity of the colony. This measure can also be applicable to oystercatchers <i>Haematopus ostralegus</i>, where necessary. - Laser hazing, audio scarers and warden presence to discourage large gull roosts near the colony. - Licensed humane lethal control of individual 'rogue' gulls (i.e. those specializing in predation of roseate or other terns). - Removal of nests and individuals of crows <i>Corvus</i> predating colonies. - ROC - in place as part of wardening. Build a zip-line between Rock and Bill to facilitate gull management - LIL - in place as part of wardening - COQ - in place as part of wardening - YFG - in place as part of wardening - SKE - in place as part of wardening - CEM - in place as part of wardening, low level of predation - SOL - no residential wardening, low level of predation - FOR - no residential wardening, low level of predation - LAR - no residential wardening, low level of predation - DAL - no residential wardening, some measures in place, and might require removing some gull nests on Lamb Island as numbers are increasing and they are encroaching on the tern nesting 'space'.			

				1.1.3.2 Native mammalian predators Where necessary, follow best practice guidance to implement and maintain: - Installation of other <i>Lutra lutra</i> fences - Monitoring and prompt humane lethal control of other mammals such as stoats <i>Mustela erminea</i> or foxes <i>Vulpes vulpes</i> during the breeding season. - ROC – not required - LIL – as part of wardening, fences and control in place - COQ – as part of wardening, fences in place - YFG – fox patrolling in place, control if necessary - SKE – not required - CEM – as part of wardening, fences in place - SOL – fox control in place - FOR – not required - LAR – as part of wardening, fences in place - DAL – as part of wardening, other fence if required 1.1.3.3 Non-native mammalian predators All roseate tern colonies require biosecurity surveillance to detect non-native mammalian predators. Depending on results of biosecurity monitoring, colonies located near the mainland may require periodic control of non-native rodents (especially rats and house mouse <i>Mus musculus</i>) to protect terns during the breeding season. - Develop predator management/ biosecurity plans for all the key roseate tern colonies, following biosecurity best practice guidance and including site-specific plans for routine surveillance, intensive monitoring in response to suspected sign of non-native mammals, and plans for dealing with incursions. Each site's plan should include all non-native mammalian species at risk of reaching the site. Sites are likely to be at risk of being reached by rats and house mice (either by stowing away, or by swimming) and multiple sites are likely to be at risk of being reached by American mink (by swimming). - Provide training of key site managers in biosecurity methods, in particular the necessary surveillance techniques for the risk species at their site(s) and safe and effective use of traps (for mink) and as part of incursion response measures rodenticides (note that anyone buying or handling products sold for professional use has to undertake an accredited training course). - For each site, purchase and make available the necessary surveillance equipment for all risk species as well as 'rapid response kit' necessary for responding to incursions. Refer to the above-mentioned biosecurity best practice guidance for a list of equipment.
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		- LIL – in place as part of wardening. Note that black-headed gulls have caused some predation issues in recent years, and it can be controlled in IE. - COQ - in place as part of wardening. Note that black-headed gulls have caused some predation issues in recent years. - YFG – in place as part of wardening - SKE – in place as part of wardening - CEM – in place as part of wardening - SOL – seek opportunities for large scale shingle recharge and habitat creation behind the seawall - FOR – seek opportunities for management of common tern colonies - LAR - in place as part of wardening - DAL – in place as part of wardening	Medium	Mostly, part of wardening cost. € for signage and fences where required	• Statutory agencies • Island • Project partners • Landowners • Local authorities • Local communities/ boat users
		Action 1.1.5 Manage disturbance Most colonies are on islands/ islets, however some are located near the mainland and those further offshore might be landed from boats. Apart from more regular wardening (Action 1.1.2), further actions should be taken to minimise impact of human disturbance: - Where possible, restrict landing through national nature protection legislation during the breeding season. - Install interpretation signage and prevent access to the colony with fencing. - Continue to keep in place the Species Protection (night watch) Warden on Coquet Island (UK) to combat egg collectors. - Provide monitoring hides and ensure the minimum regime required to deliver effective colony surveillance. - Carry out educational/ information campaigns amongst local communities and particularly boat users. - ROC – signage in place, remote island - LIL – private land, no access - COQ – run as sanctuary, CCTV cameras, signage, and night watch warden in place - YFG – managed by wardens, signage in place - SKE – signage in place, remote island - CEM – managed by wardens, signage and fencing in place - SOL – public engagement recommended - FOR – monitor industrial disturbance and Leith Docks and Long Craig - LAR – signage and part-time wardening in place - DAL – access management plan under development by Dun Laoghaire Rathdown CC, fences, part-time wardening and public engagement in place			

H.	Inadequate protection of foraging areas around colonies (Medium)	1.2 Protection of foraging areas around the breeding colonies secured	Action 1.2.1 Ensure adequate protection of foraging areas around colonies using established methods such as kernel density estimation and maximum curvature of either empirical or modelled distribution a. Collect spatial utilisation distribution data at all key colonies where insufficient data exist, across the breeding season, and preferably over several years. b. Where not already considered sufficient to protect the foraging areas of roseate tern colonies (see 1.2.1 and 1.2.1a), revise existing SPA/MPA boundaries or ensure other forms of effective protection through planning process or other local orders. - ROC – tracking projects completed on roseate tern and common terns tracking underway in 2021; results suggest that the current protected area box might be too small. Review recommended. - LL – foraging areas not protected; no imminent threats identified; not priority - COQ – the Northumberland Marine SPA was designated based on modelled foraging distribution and adequately protects foraging areas - YFG, SKE, CEM – Anglesey Terns / Morwenollaid Ynys Môn SPA adequately protects foraging area - SOL – Solent and Dorset Coast SPA adequately protects foraging area - FOR – The Outer Firth of Forth and St Andrews Bay Complex SPA adequately protects foraging area - LAR – proposed East Coast (NI) SPA would adequately protect foraging areas - DAL – no proposals for extending the current SPA, which does not offer protection of foraging areas. Tracking and protection extension not recommended.	Medium	€€-€€€ for site protection staff where required	• National competent authorities • Statutory agencies • Project partners • Environmental consultancies and independent experts • NGOs
I.	Potential impacts of offshore renewable energy and other coastal/marine developments (Medium)	1.3 Spatial planning and coastal/ marine development projects fully consider offsite-direct and indirect impact pathways on roseate tern food resources and foraging areas	Action 1.3.1 Require impact assessments which adequately evaluate and monitor direct and indirect ecosystem impacts of windfarms, nuclear power plants and other large-scale coastal/marine developments near roseate tern colonies, especially those potentially affecting forage fish and roseate tern foraging area use a. Ensure that the assessment guidance of competent authorities includes the need to assess offsite impact pathways, and indirect impact pathways – especially through direct effects on food resources and foraging area use of roseate terns (IE, UK). b. Ensure applicants for coastal and offshore developments undertake to provide the information on forage fish and roseate tern foraging areas necessary to carry out the analysis for informing the impact assessment.	Medium	€€€-€€€€ for casework staff if NISA project continues	• National competent authorities • Statutory agencies • Applicants seeking development consent • Environmental consultancies and academic institutions • Project partners • NGOs

		- ROC – North Irish Sea Array Offshore Wind Farm (NISA) planned and to be adjacent to Rockabill requiring resources for major casework urgently - LIL – no developments identified - COQ – no developments identified - YFG, SKE, CEM – monitor development plans for Horizon's Wylfa Newydd nuclear power station - SOL – no developments identified - FOR – no developments identified - LAR – no developments identified - DAL – monitor Dublin Array Kish Bank development				• National competent authorities • Statutory agencies • Applicants seeking development consent • Environmental consultancies and academic institutions • Project partners • NGOs
		Action 1.3.2 Undertake strategic impact assessments for long-term offshore wind energy development plans for onsite and indirect impact pathways on key current and potential roseate tern colonies to be used by spatial planning authorities early in the development application process (IE, UK) a. Review and identify gaps in data on spawning/nursery grounds, dispersal capabilities and stocks of forage fish utilised by roseate terns for early consideration in the planning process.	Medium	€€€ per country		• National competent authorities • Statutory agencies • ICES • Fisheries organisations • Environmental consultancies and academic institutions • Project partners • NGOs
J.	Reduction in abundance and availability of forage fish due to climate change and local overfishing (Medium)	1.4 Protection of forage fish stocks implemented through ecosystem-based fisheries management a. Advocate that the process of advising on setting annual fishery catch limits for sandeel <i>Ammodytes</i> and other forage fish is amended such that a greater biomass is 'set aside', sufficient to support the productivity of the population of roseate terns (and other seabird species dependent on these forage fish) required to compensate for or exceed losses in the tern population due to natural mortality.	Medium	€-€€ for policy staff per year		• National competent authorities • Statutory agencies • ICES • Fisheries organisations • Environmental consultancies and academic institutions • Project partners • NGOs
Objective 2: Maintain, create or restore safe alternative sites for eventual expansion within target areas						
K.	Vulnerability to stochastic events due to limited range in NW Europe (High)	2.1 Population and productivity of key current common tern colonies increased	High/ongoing	€€ per year for species recovery staff		• Statutory agencies • Project partners • NGOs • Landowners
L.	Loss of nesting habitats due	Action 2.1.1 Identify and improve management of those colonies of common tern <i>Sterna hirundo</i> (a 'carrier' or 'associated' species) which have high productivity, provisioning rates and diets that would indicate suitability for colonisation within the expected roseate tern range a. Review and undertake management of the key coastal common tern colonies within the target recolonisation areas. b. Develop and deploy a training programme of colony management and monitoring for site managers, wardens and volunteers.				

to sea level rise (Medium)		c. Share best practice through a programme of local exchange visits and regional tern conservation forums (see Objective 5 in support of this action).			
	2.2 New sites established through restoration or creation	Action 2.2.1 Eradicate invasive non-native species (INNS) and ensure habitat and predation management on islands supporting former common and roseate tern colonies in order to encourage recolonisation a. Carry out opportunity scanning for the eradication of INNS from former large colonies and where: • eradication is feasible • it is feasible to manage native predators • good foraging resources exist • suitable habitat can be provided • long-term commitment and funding for colony management and biosecurity is secured b. Carry out eradication projects and create suitable habitat following best practice guidance.	Low	€€€€-€€€€€ per an externally funded project	• Statutory agencies • Project partners • NGOs • Landowners
		Action 2.2.2 Create new potential breeding sites where opportunities arise as part of the larger managed realignment projects and habitat- or flood-prevention compensation schemes a. Develop regional opportunity maps for potential large-scale habitat creation/ restoration projects. b. Ensure tern habitats are incorporated into existing or planned large-scale habitat creation schemes.	Medium	€-€€ per year for species recovery staff	• Statutory agencies • Project partners • NGOs • Local authorities • Landowners
		Action 2.2.3 Advocate wider uptake of beneficial use of dredgings and other soft engineering techniques to increase resilience of existing coastal sites against sea level rise and storm surges a. Develop best practice guidance and case studies. b. Advocate for reduction of procedural complexity in obtaining disposal licences, for the benefit of nature conservation.	Medium	€-€€ per year for species recovery staff	• Statutory agencies • Project partners • NGOs • Local authorities • Harbour authorities • Industry
Objective 3: Maintain and improve survival rates through identification, protection and management of key staging, stopover and wintering sites					
M. Lack of knowledge on the current conditions of staging sites and impact of disturbance leading to	3.1 Key staging sites and threats within the Irish, Celtic and North Seas assessed	Action 3.1.1. Identify and assess potential threats to key post-breeding migratory roosting sites within the Irish, Celtic and North Seas a. Initiate a regional review and study of key tern roosting sites around the Irish and Celtic Seas and along the North Sea route to identify important sites vulnerable to disturbance, coastal change and other potential threats.	Low	€€-€€€ for species recovery staff	• Statutory agencies • Project partners • NGOs • Birdwatching community • Project partners

spatially deficient action (Limitation)					
N. Lack of knowledge on the current pressures on coastal wintering sites and their impact on roseate terns in W Africa and NE South America (Limitation)	3.2 Improved protection and management of key wintering sites along the coasts of West Africa and NE South America	Action 3.2.1 Collaborate with East Atlantic Flyway Initiative and BirdLife International Marine Programme partners a. Identify and assess the condition and conservation status of wintering sites in Ghana, Liberia and Sierra Leone (see action 4.1.2 in support of this action). b. Support the Centre for African Wetlands (CAW) with the annual monitoring of terns on key coastal sites in Ghana. c. Support increased deployment of Wildlife Division staff (GH) at wintering areas outside the Ramsar sites (high trapping areas)	Medium	€-€€ per year for species recovery staff	- BirdLife International partners - Wetlands International - Centre for African Wetlands (CAW) - Wildlife Division of Ghana - Government - NGOs
O. Tern trapping in Ghana (Medium)	3.3 Tern trapping in Ghana eradicated	Action 3.3.1 Restore the education and outreach programme in Ghana to further reducing tern trapping a. Select important sites with a high rate of tern trapping based on the available data as a focus for launching an educational campaign. b. Carry out monitoring of tern trapping at a maximum interval of 5 years, using an effective, standardised methodology. c. Appoint and inaugurate community tern conservation volunteers at sites with high trapping rates.	Medium	€€€ every 5 years	- Ministry of Education (Ghana) - Ghana Education Service (GES) - Wildlife Division of Ghana - Government - Ghana Wildlife Society - International NGOs
P. Depletion of forage fish due to overfishing in Ghana and along the migration route in W Africa (Medium)	3.4 Safe biological limits for forage fish stocks in Ghana and the Large Marine Ecosystems off West Africa assessed and sustainable use of forage fish achieved	Action 3.4.1 Advocate sustainable use of forage fish resources in the Canary Current- and Guinea Current Large Marine Ecosystems a. Collaborate in advocacy efforts for sustainable use of forage fish associated with the highly productive Canary Current- and Guinea Current Large Marine Ecosystems, with urgent priority given to the effective regulation of Ghana's fisheries in order to restore sardinella (<i>S. aurita</i> and <i>S. maderensis</i>) and other forage fish to within safe biological limits.	High	€€€ for policy and advocacy staff	- Wildlife Division of Ghana - Government - Statutory enforcement agencies - International NGOs - Ghana Wildlife Society - Other BirdLife - International Partners (Mauritania, Liberia, Sierra Leone, Ivory Coast)
Objective 4: Fill knowledge gaps and improve monitoring practices					
Q. Deficiency of data for adequate determination of roseate tern	4.1 Phylogeny and migration routes analysed to inform the global and European	Action 4.1.1 Undertake genetic studies of the NW European, Azorean and NE American populations to define phylogeny and rates of gene flow between these metapopulations	Low	€€€ for scientists	- Statutory agencies - Academic institutions - NGOs - Island Natural Parks (Azores Autonomous Region)

conservation status in Europe (Limitation)	conservation status	a. Initiate international academic cooperation to undertake comprehensive genetic study of the North Atlantic roseate tern phylogeny, further informed by Action 4.1.2. Action 4.1.2 Develop a programme in NW Europe to monitor winter distribution a. Develop a methodology for applying telemetry technology to monitor migration and wintering patterns of NW European population. Action 4.1.3 Review the IUCN/BirdLife International conservation status assessment of roseate tern for Europe a. Review the conservation (threat) status of roseate tern in 2025 based on the insights obtained from actions in Objectives 3 and 4.	Medium	€€-€€€ every 3 years for scientists and sites staff	• Statutory agencies • Academic institutions • NGOs • Project partners
R. Lack of standardisation and sufficient quality of monitoring data to inform metapopulation management (Limitation)	4.2 Standardised monitoring of demography parameters to inform management of the metapopulation in place	Action 4.2.1 Continue ringing chicks and resighting adults at the four main colonies in NW Europe to repeat demography analysis in 2025 a. Allocate more resources to ringing and ring reading to include the whole NW European metapopulation in the next series of demography analyses. b. Ensure that repeated sightings of marked individuals are recorded throughout the season. c. Record breeding status of marked individuals where possible Action 4.2.2 Refine monitoring methodologies to include basic demographic parameters, especially in Azores and, where possible, introduce monitoring of provisioning and chick growth rates a. Monitor nest box occupancy to determine population, clutch size and productivity annually. b. Assess feasibility of introducing a low-disturbance method of assessing chick condition, carried out on a small sample of chicks as part of the ringing effort. c. Develop a monitoring protocol for predation rates by large gulls on terns. d. Employ camera technology to develop a protocol for monitoring diet and provisioning rates.	High	Covered under wardening	• Statutory agencies • Academic institutions • Project partners • NGOs • Ringers and wardens
			Medium	Covered under wardening	• Statutory agencies • Island Natural Parks (Azores Autonomous Region) • Academic institutions • NGOs • Project partners • Ringers and wardens
Objective 5: Communication and partnership working towards metapopulation management					
S. Lack of awareness of the threats to	5.1 Raised awareness amongst the	Action 5.1.1 Use roseate tern as a flagship species to design and promote awareness raising and educational programmes, especially in relation to coastal squeeze and disturbance pressures (BR)	Medium	€€-€€€ per year	• Statutory agencies • Project partners • NGOs

coastal and marine environments induced by climate change and human disturbance (Limitation)	general public of coastal and marine issues caused by environmental and human pressures.	a. Develop annual communication plans. b. Maintain online presence via websites, social media, live streaming. c. Engage online and traditional media. d. Organise local events/ talks/ walks. e. Provide interpretation signage to raise awareness of seabird- and marine environment conservation. f. Carry out educational outreach programmes for schools.			• Volunteer groups
T. Limited exchange of knowledge and cooperation at the regional and international level with regards to best practice, data standardisation and sharing (Limitation)	5.2 Best practice and data shared and standardised.	Action 5.2.1 Maintain regional tern conservation forums, develop shared regional databases and collaboration with statutory agencies	Medium	€€ per year for species recovery staff	• Statutory agencies • Project partners • NGOs • Volunteer groups
		a. Facilitate/participate in annual meetings of regional tern conservation groups. b. Standardise monitoring protocols and collate data at the regional level, especially for common tern colonies within the target areas for roseate tern colonisation. c. Continue to produce International Roseate Tern Newsletter.	Medium	€ per year for species recovery staff	• Project partners • Bretagne Vivante • Local authorities • Natural Parks • Landowners
		Action 5.2.2 Maintain close collaboration with Bretagne Vivante to improve nesting conditions and monitoring at key roseate tern colonies in Brittany and Normandy (FR)	Low	€ per year for species recovery staff	• Project partners • NGOs • Academic institutions • Independent experts
		Action 5.2.3 Maintain cooperation with NE American colleagues			
		a. Facilitate international participation in the annual roseate tern recovery meetings for the West- and East Atlantic populations (BR). b. Organise biannual North Atlantic Webinar (BR).			