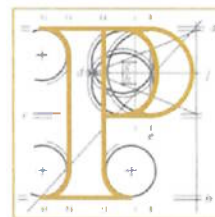


Our Case Number: ABP-319866-24



An
Bord
Pleanála

Foras na Mara Marine Institute
Rinville
Oranmore
Co. Galway
H91R673

Date: 15 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,

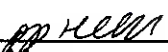
An Bord Pleanála has received your submission in relation to the above-mentioned proposed development and will take it into consideration in its determination of the matter.

The Board will revert to you in due course in respect of this 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 the costal planning authority 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

OA15

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Ellen Moss

From: Caitriona Nic Aonghusa <caitriona.nicaonghusa@marine.ie>
Sent: 09 August 2024 13:05
To: Marine; Marine Observations
Cc: Alan Berry; oremg
Subject: North Irish Sea Array Offshore Wind Farm - Reference ABP OA29N.319866
Attachments: MI response NISA Wind farm proposal.pdf

Caution: This is an **External Email** and may have malicious content. Please take care when clicking links or opening attachments. When in doubt, contact the ICT Helpdesk.

To whom it may concern,

Please find attached the Marine Institute's submission in relation to the recent planning application for the North Irish Sea Array Offshore Wind Farm - Reference ABP OA29N.319866. I would appreciate it if you could reply, confirming that you have received this successfully.

Yours sincerely,
 Caitriona Nic Aonghusa

Caitriona Nic Aonghusa

Marine Environment | Marine Institute | Rinnville | Oranmore | Co. Galway | H91 R673
 Seirbhísí Muirthimpeallachta | Foras na Mara | Rinn Mhíl | Órán Mór | Contae na Gaillimhe | H91 R673

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Foras na Mara

Tá an t-eolas sa ríomhphost seo, agus in aon cheangaltáin leis, faoi rún agus tá sé dírithe ar an bhfaighteoir/na faighteoirí beartaithe amháin agus níor cheart ach dóibh siúd é a úsáid. D'fhéadfadh an t-eolas seo a bheith faoi réir pribhléid dhlíthiúil agus ghairmiúil. Mura tusa faighteoir beartaithe an ríomhphost seo, níor cheart duit an teachtaireacht seo, nó aon chuid di, a úsáid, a nochtadh, a chóipeáil, a dháileadh nó a choinneáil. Má fuair tú an ríomhphost seo go hearráideach, cuir an seoltóir ar an eolas láithreach agus scríos gach cóip den ríomhphost seo ó chóra(i)s do ríomhaire, le do thoil. [Ár bPolasaí Príobháideachta](#).

08th August 2024

Marine/Climate Section
An Bord Pleanála
64 Marlborough Street
Dublin 1

e-mail: marine@pleanala.ie
marineobs@pleanala.ie

Re: North Irish Sea Array Offshore Wind Farm - Reference ABP OA29N.319866

A Chara,

The Marine Institute was notified on the 6th June 2024, about the North Irish Sea Array Windfarm Limited application for development permission to An Bord Pleanála under Section 291 of the Planning and Development Act 2000 (as amended). Please accept this submission in response.

The Marine Institute is the State agency responsible for marine research, technology development and innovation in Ireland. Our role is to carry out environmental, fisheries, and aquaculture surveys, and monitoring to meet Ireland's national and international legal requirements. We provide scientific and technical advice to Government to help inform policy and to support the sustainable development of Ireland's marine resource. We aim to safeguard Ireland's unique marine heritage through research and environmental monitoring. Our research, strategic funding programmes, and national marine research platforms support the development of Ireland's maritime economy.

The Marine Institute was set up under the Marine Institute Act 1991: *"to undertake, to coordinate, to promote and to assist in marine research and development and to provide such services related to research and development, that in the opinion of the Institute, will promote economic development and create employment and protect the marine environment."*

As mandated under Article 5 of the Planning and Development Act (Marine Development) Regulations 2023 the Marine Institute's submission refers to:

- (i) the implications of the proposed development for maritime spatial planning, and
- (ii) the implications of the proposed development for proper planning and sustainable development, and
- (iii) the likely effects on the environment or any European site of the proposed development (if applicable), if carried out.

North Irish Sea Array Windfarm Limited has submitted a planning application for the development of an offshore windfarm in the Irish Sea off the coast of located off the coast of counties Dublin, Meath and Louth. The export capacity will generate sufficient renewable energy for 500,000-700,000 homes and will consist of max 49 offshore wind turbines. The area encompasses 126.5km² and is approximately 12km offshore at the closest point. The applicants submitted a large number of documents including, inter alia:

- Environmental Impact Assessment Report and related documents;
- Natura Impact Statement;
- Planning drawings, particulars and report; and
- Supporting information for screening of Appropriate Assessment.

Due to the extensive size of North Irish Sea Array Windfarm Limited's planning application, the Marine Institute has only reviewed the documentation to the extent possible within the time and resources available. We have assessed the footprint of fishing activity and the impact on the benthos within the area of the proposed development based on the information provided in the EIAR. We have also provided general commentary that may be of use for marine developments of this nature.

1. Implications of the proposed development for maritime spatial planning

The Marine Institute supports the process towards the sustainable development of offshore windfarms in Irish waters, through providing independent scientific advice. They are critical infrastructure that will enable Ireland meets our national climate change and renewable energy targets. The Institute is actively contributing to the delivery of 2030 ambitions by providing Government with evidence and data to make informed decisions across a wide range of marine activities. Notwithstanding this, offshore windfarm development must be considered in the context of all other marine activities and must comply with proper marine planning and environmental legislation.

The National Marine Planning Framework (NMPF) and the Maritime Area Planning Act 2021 (as amended) define the context of the proposed development for marine spatial planning. The NMPF sets a clear direction for managing our seas. It clarifies national objectives and priorities and gives direction to decision makers, users and stakeholders towards strategic, plan-led efficient use of our marine resources. The NMPF is structured around Overarching Marine Planning Policies (OMPP), that apply to all marine activities or developments. The OMPPs of direct relevance to the Marine Institute's competencies, relate to ocean health, thriving marine economy and engagement with the sea, (e.g. biodiversity, water quality climate change, co-existence, employment, and infrastructure). Offshore windfarm development contributes to the delivery of the OMPPS.

The Marine Institute contributes to the delivery of the Sectoral Marine Planning Policies (SMPP). Our data and advice specifically guides decision makers in assessing development relating to commercial fisheries, aquaculture, offshore renewable energy (ORE), port development, etc. The surveys, monitoring and data collection undertaken by the Marine Institute can help to understand whether offshore windfarms, such as the North Irish Sea Array Offshore Wind Farm, are complying with the NMPF and potential consenting conditions, while also promoting economic development, creating employment and protecting the marine environment.



Marine planning in Ireland requires that an ecosystem-based approach (EBA) is applied throughout the process. EBA considers environmental, economic and social data, evidence and information to support sustainable development and promotion of the co-existence of relevant activities and uses. To apply an ecosystem-based approach, the Marine Institute advises that An Bord Pleanála apply an evidence-led and cooperative approach. Decision should be based on the dynamics of the marine ecosystems alongside the potential ecosystem effects and socio-economic considerations.

2. Implications of the proposed development for proper planning and sustainable development

The NMPF encourages co-existence and seeks to manage and allocate space in a way that minimises conflicts among human activities, as well as conflicts between human activities and nature. The North Irish Sea Array Offshore Wind Farm must be considered in the context of the existing marine activities in this area, particularly in relation to seafood.

Fisheries

The Marine Institute is the national body with competence in assessing fish stocks and provides advice to government on sustainable exploitation levels for these. An assessment of the impact of the project on fisheries is included in [Annex 1](#).

Vessel Monitoring System (VMS) data indicates that the array development area is entirely inside the western Irish Sea *Nephrops* (Dublin Bay prawn) grounds, which is the most intensively trawled area in Irish waters (Gerritsen, 2024). In the cable corridor, some bottom trawling targeting *Nephrops* also occurs and vessels under 12m target razor shells. Additionally, there is likely to be potting and netting activity by vessels under 12m in both the cable corridor and the array areas. The developer identifies imperceptible or slightly adverse impacts on the fishing activity both before and after mitigation (outlined in the Fisheries Management and Mitigation Strategy, Volume 2A 05-06). The Marine Institute is not in a position to confirm that the residual effects are not significant.

The construction, operation and decommissioning of the wind farm could have significant impacts on the operation of these fisheries. These impacts should be considered in a cumulative way, taking into account other ORE projects, marine protected areas, and other competing ocean uses (see section below on Cumulative Effects).

The array and subsidiary areas overlap with trawl, dredge, netting and potting activities. If these activities can, in reality, continue when the windfarm is established, the impact on fisheries may be mitigated. However, it is difficult to predict whether fishing activities could indeed continue within the windfarm, or the cable corridor, even if such activities are permitted. Operational or other considerations could preclude fishers from being active in the proposal areas. Given these uncertainties about co-existence of fisheries and ORE, it is difficult to predict the impact on the fisheries in the area.

Restrictions to access by fishing vessels are likely to result in a displacement of fishing effort. It is not possible to predict where this effort will be displaced to. However, this displacement would potentially displace into neighbouring areas, increasing local fishing pressure and competition. Also, there may be smaller vessels which cannot travel beyond their main area of activity.

Given the level of fishing effort in the array and cable corridor areas, uncertainties around co-existence and lack of a holistic cumulative effects assessment (see relevant section below), the Marine Institute cannot rule out significant impacts on fisheries (including displacement of effort) from this project.

Aquaculture

There are no licenced aquaculture sites within the proposed windfarm lease area. The closest licenced aquaculture site is approximately, 29km to the north of the proposed lease area between in Carlingford Lough, Co Louth. The site is licenced for the intertidal culture of oysters using bag and trestle systems. Furthermore, the proposed OWF lease area does not overlap any shellfish growing water and bivalve production area.

Given the distance to the proposed development, and the energetic nature of the environment generally, impacts on aquaculture activities during construction and subsequent operation are not considered likely, however, the impact of construction and maintenance activities on water quality and sedimentation in aquaculture sites should be fully considered.

Ports and shipping

The Irish Maritime Development Office (IMDO) provides government and industry with a range of information and reporting across the sector and works with international businesses to help them set-up or expand in Ireland. They advise on the development and co-ordination of policy and to carry out policy relating to ports and the ports services sector. This includes ports that will service future offshore windfarms. The North Irish Sea Array should be considered in the context of the available port facilities for construction and maintenance, including any necessary upgrades to local ports and transport networks.

3. Likely effects on the environment or any European site of the proposed development (if applicable)

There is significant scientific literature available about the marine environmental effects of offshore wind farms during the construction, operation and decommission phases of projects. It is important that ABP consider carefully suitable mitigation measures as they relate to inter alia:

- Collision risk
- Risk to marine animals for UW noise generated the devices
- Risk to animals from electromagnetic fields emitted by electric cables
- Changes in benthic and pelagic habitats
- Seafloor disturbance
- Barriers from foundations
- Changes in oceanographic systems
- Risk of chemical contamination

In this submission, Marine Institute provides observations on the main areas of competence, which are fisheries, benthic and essential fish habitats, and cumulative effects. Ornithology is an area where the main competence lies with National Parks and Wildlife Service. However, MI shares some



competency for birds with NPWS, specifically on Natura impacts, and hence provides some observations.

Fish habitat

The EIAR is where most of the relevant issues regarding fisheries and essential fish habitat are discussed. Although the Marine Institute does not provide a review of the methods used, we identified no obvious omissions in the analyses regarding fisheries or fish habitat. However, the evidence base for adverse effects on fish populations or essential fish habitat is weak. Therefore, the Marine Institute is not in a position to state whether there are adverse effects on fish and fish habitats.

Benthic impacts

An assessment of the benthic impacts is contained in Annex 2 of this submission, where the Marine Institute compared the footprint of the array and the subsidiary areas to the benthic broad habitats present. The proposed planning area is already impacted to varying degrees by fishing activity, mostly to a moderate degree. For habitats that are disturbed, if bottom trawling is excluded from the areas between the turbines, then a reduction in areas with high disturbance could be expected, this could potentially be beneficial to the habitats in question. However, if fishing is both permitted and actually takes place, the base case assumption must be that there will be little reduction in disturbance to the habitats. Hence it is not possible to predict any benefit in terms of reduced disturbance due to bottom trawling, on these habitats. The degree of loss of habitat is considered to be negligible, based on Marine Institute analyses based on the 2020 MSFD assessment for benthic habitats (Government of Ireland, 2020).

In terms of benthic impact assessment, the use of the Marine Evidence based Sensitivity Assessment (MarESA) is an appropriate tool to assess the likely effect of the pressures deriving from the proposed actions on the benthic habitats in the works area. It is clear there are no specific habitats of great sensitivity (biogenic) in the areas subject to works. While the majority of existing habitats are sedimentary in nature, it is unlikely that the insertion of hard substrate habitats as a result of the installation of pilings and armouring (for scour protection) will result in measurable change or quality of these sedimentary communities. Any disturbance during construction will likely be short lived or broadly similar to natural disturbance likely to occur as a result of weather events in the region.

European Sites

The project considers all relevant Natura 2000 sites including SPAs distant from the project area to account for foraging ranges of bird species from these distant colonies (*ex situ* effects). There is minimal disturbance of Habitats in Special Areas of Conservation (SACs). Population level effects on marine mammals are considered to be highly unlikely given the number of individual animals in the project zone and the impact zone of the project. Mitigations regarding underwater noise (soft start procedure) are nevertheless included. Comments on seabirds and wading birds are included separately.

Ornithology

While the competent authority for assessing and conservation of bird populations is the National Parks and Wildlife Service, the Marine Institute is also responsible for assessment of the effects of fisheries and, in-combination effects with fisheries, on shore bird and seabird populations,

particularly in the context of the EU Birds Directive. The Institute makes the following observations on the proposed development on shore birds and seabirds with comments on the in-combination effects with fisheries, where relevant.

Further mitigation measures would be recommended (see Croll et al., 2022), such details on any anti-perching infrastructure plans or other possible designed-in efforts (e.g., increasing turbine visibility to reduce collisions using patterns/colours of paint on blades, e.g., May et al., 2020).

When the array is within 10 km of an SPA designated for red-throated diver in the non-breeding season (e.g., North Sea SPA), the *Joint SNCB Interim Advice On The Treatment Of Displacement For Red-Throated Diver* (2022) recommends a displacement buffer of 10 km for red-throated diver, rather than the generic 4 km for divers and sea-ducks utilised in the report. Further, the use of Individual Based Models for displacement and disturbance effects (e.g., Searle et al. 2018; Layton-Matthews et al. 2023) would be recommended alongside the displacement matrix approach used. Distribution modelling and analysis of overlap between seabird populations, prey species/fisheries, and ORE developments would produce stronger evidence for non-significant effects, especially for indirect and cumulative effects.

Comparing two model options using both genetic and site-specific flight parameters (e.g., from DAS surveys, GPS tracking data shown in Appendix 15.1) would be recommended over a single Band model option using generic flight parameters. While noted in Appendix 15.3 that data inconsistencies between boat-based and DAS data prevented this, additional data collection and/or selecting flight parameters from only one data source while acknowledging relevant uncertainty would be preferable to only one model option. GPS data (Appendix 15.1) can also provide flight parameter data for select species.

Graphical representation of the PVA results would be beneficial for interpretation (i.e., plots of population trajectories for baseline and impacted from the Project with confidence intervals).

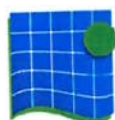
We recommend monitoring during the operational phase to validate the results of collision risk models, such as the use of autonomous monitoring (e.g., imaging, radar, acoustic) and/or direct observation of the array area. If mortality is found to be higher than estimated, mitigation (e.g., collision deterrents) and/or compensatory measures (e.g., funding of conservation measures by the Project outside of the Project area) would need to be considered.

While research may be limited on the specific impact of pollutant release in relation to ORE developments and seabirds, consultation with groups such as BirdWatch Ireland and Oiled Wildlife Response Network may provide more detailed information, e.g., risk associated with different oil types and receptors to allow for a matrix approach to risk assessment.

Vulnerable species

The proposed development has significant overlap with certain species/habitats of conservation concern. See Annex 3 for analysis of Species and habitats of conservation concern.

For seapens and burrowing megafauna habitat, disturbance at the construction phase will have an impact, but this may be expected to be temporary. It is not possible to predict any positive benefits for these, from potential reduction in fishing activities which may be able to continue within the array and cable areas. These considerations would probably also apply to quahog and to marine fishes with



restricted movements or local distributions such as *S. maximus*, *G. cynoglossus*, *H. platessoides* and *R. clavata*.

For widely distributed/highly migratory sea fish the overlap may not be very significant at a population level. This would apply to *R. montagui*, *L. naevus*, *M. asterias*, *G. galeus* and *C. maximus*. For the catadromous *A. anguilla*, the mouth of the river Bracken has been identified as important estuarine habitat.

Noise from construction phase

An important concern is the impact of noise on marine biota, during the construction phase. In the absence of adequate scientific studies on these impacts, the Marine Institute neither supports nor rejects claims that such activities are detrimental.

The Marine Institute recommends that monitoring programmes be established to measure the effects of noise from the construction phase. These should establish baselines before the construction phase, and then monitor the relevant ecosystem components during and after construction has been completed. Monitoring should be at appropriate spatial and temporal scales. The Institute is available to assist with the design of these monitoring schemes. The fishing industry should be involved, in a consultative capacity, in the design and operation of monitoring programmes.

Risk of Chemical Contamination

Construction and operation of turbines, substation and associated infrastructure involves the use of various chemicals, for example, drilling fluids and additives, cements, adhesives, lubricants, corrosion inhibitors, transformer oils, etc. Some of these substances may contain constituents harmful to the marine environment. While many of the operational chemicals will be used in closed systems, and planned discharge quantities are likely to be low, some systems may require top-ups, and there is also potential for accidental spills.

There is currently no specific guidance for chemical use in offshore energy industry, however, OSPAR has guidance on chemical use and discharge for offshore oil and gas industry through its Harmonised Mandatory Control System. Some of the chemicals used in windfarm construction are common to both (see references provided).

Sulphur hexafluoride (SF₆) is an effective insulating material for medium and high voltage electrical installations, however it is also the most potent greenhouse gas known. SF₆ should be subject to correct and approved storage procedures to prevent any accidental release. [Guidance from EPA](#) for Operators of Equipment Containing SF₆ and Equipment Containing PFCs should be followed.

Cumulative effects

The application incorporates some aspects of a Cumulative Effects Assessment (CEA). The Marine Institute does not provide an evaluation of this work. The NISA application incorporates a Cumulative Effects Assessment (CEA) approach to assessing interactions and impacts. The methodology is not easy to follow, with outputs and processes and methods spread across multiple different documents making the process quite difficult to track. While a substantial number of components are assessed, overall it is not integrated fully for a holistic assessment of cumulative impacts. The effects of the windfarm on each of the receptors are assessed individually. Cumulative impacts from multiple

'projects' (after exclusion criteria were applied) are assessed for each EIA topic. The projects were identified largely from licencing and planning documents, and do not account for land-based activities which may contribute to cumulative marine impacts (land-based industry, agriculture, waste water, etc.). The Marine Institute does not provide a full evaluation of this work. Cumulative Effects Assessment (CEA) is a developing field. There is insufficient evidence to state whether cumulative effects due to this proposed development are significant or not. This impacts our ability to assess any existing or proposed pressure in Irish waters.

Holistic integrated assessments are required to build knowledge on cumulative impacts arising from ORE at a site, regional, and ecosystem level, and to take into account the suite of pressures arising from all marine and land-based sectors/activities and their direct and indirect effects when set against a set of conservation and management objectives and targets for different ecosystem components. Multiple knowledge and data gaps exist which present substantial impediments to meeting the challenges of cumulative effects assessment. Also, data from ongoing monitoring for realised impacts must be iteratively incorporated into future CEAs to assess these impacts.

The Marine Institute recommends that, before consideration of a grant application, this and other such applications be evaluated in the wider context of proper marine planning for Irish waters on the one hand and the wider Irish Sea basin on the other. Such planning must be supported by an overall State-led cumulative effects assessment (CEA) drawing in all relevant pressures and ecosystem components (sea and land-based) in both the UK and Irish sectors of the Irish Sea. The Marine Institute does not provide an outline here of how this should be done, but is available for further consultation on design of such a programme of work.

4. On-going monitoring

In advance of the construction phase, a clear description of baseline data collection efforts including key parameters to be monitored (e.g., water and sediment quality, benthic habitats, fish populations etc) is advised. It is stressed that these pre-construction conditions are established, against which future changes can be subject to on-going monitored during construction, operation, and decommissioning phases.

Because there is insufficient evidence to support definitive conclusions on impacts and cumulative effects, caution must be urged. This and other such developments should be closely monitored and assessed during all development stages to safeguard the environment and avoid unintended impacts and/or consequences. Definition of thresholds or trigger points for key indicators that would prompt management actions or mitigation measures is advised. It is also advised that the project's monitoring activities align with existing national monitoring programmes to ensure consistency and avoid duplication.

Any development such as this will require a programme of ongoing monitoring to assess the pressures arising from it. Apart from some observations above, the Marine Institute does not provide advice on the design or operation of such a scheme. Rather, the Institute advises that a national scheme be established, following a uniform design and international best practice. The Institute is available to support efforts to design and operationalise such monitoring.

The parameters to be monitored should be defined in consultation with existing national monitoring programmes and based on international best practice. It is the advice of the Marine Institute to ABP, that the scale of effects of the proposed development be considered beyond the footprint of the turbines and the licenced area.

The International Council for the Exploration of the Sea (ICES) has established a number of expert groups whose function is to assist with planning of marine renewables ([WGMRE](#), [WGMPCZM](#), [WGMRED](#), [WGOWDF](#)) and to assess the interactions between marine renewables and marine features and industries (e.g., benthos and fisheries). Outputs and reports from these groups will be a useful source of information.

In addition, we refer ABP to the ongoing monitoring studies of offshore wind parks in Belgium coordinated by the Royal Belgian Institute of Natural Sciences as commissioned by the Belgian federal government¹. These comprehensive studies (ongoing since 2005) will provide much information on the likely interactions with a range of marine features including mammals and birds and should guide the selection of useful and relevant metrics.

Finally, Tethys², supporting the U.S. Department of Energy (DOE) Wind Energy Technologies Office and Water Power Technologies Office is a very useful source of information and data on the environmental effects of marine and wind energy technologies, contributing to a program of research and development focused on unravelling the complexity of environmental issues associated with marine and wind energy technologies.

Based on a holistic view of the Irish sea, not just specifically for one development site, it is expected that considerable amounts of new data will need to be acquired. Data management processes that comply with recognised international standards will be required,

5. Availability of marine data and evidence to ABP

The Marine Institute recommends being designated as the centralised database centre for storing and managing offshore energy monitoring data, ensuring accessibility for researchers, regulators, policymakers, and the public. With respect to an evidence base for the impact of offshore wind, Ireland is not starting from scratch. There are significant historical and ongoing programmes, data resources and expertise available to support the monitoring of future development of OW. Ensuring that relevant outputs derived from Government marine research funding are available and accessible to support future development and monitoring of offshore wind farms will require some changes in culture, process, and approaches to collaboration (see [Annex 4](#)).

Marine data are collated and managed centrally by the Marine Institute. They can be readily used as part of the national offshore windfarm management process. The Marine Institute has international accreditation for its Data Management Quality Management Framework by the UNESCO International Oceanographic Commission's IODE (International Oceanographic Data and Information Exchange) programme.

¹ <https://odnature.naturalsciences.be/mumm/en/windfarms/> (accessed 29th July 2024)

² <https://tethys.pnnl.gov/> (accessed 29th July 2024)

6. Summary of Recommendations

- There is a need for a significant new and ongoing monitoring programme to assess the impact of OWF. This must extend beyond the footprint of the windfarm and consider a holistic view of all OWF developments in the Irish Sea. It should start now in the pre-development phase;
- The coordinates for the cable corridor and array area were not available with the planning application. It would be convenient if ABP would oblige applicants to provide the coordinates of the proposed development in an easily accessible format;
- The Marine Institute recommends that a national coordinated reporting process is established for all offshore wind farms. This should be in an agreed format that complies with international best practice. It will provide the necessary evidence to assess the socio-economic and environmental impact of OW in Irish waters;
- Integrated data collection, collation and management procedures for all OWF should be established nationally. These should comply with international standards and best practice. As the national oceanographic data centre, we recommend that the Marine Institute is designated as the centralised agency for storing and managing offshore energy monitoring data, ensuring accessibility for all stakeholders;
- Socio-economic data for all marine activities is required at local and regional levels to inform trade-offs and impacts in marine spatial planning;
- In the absence of an assessment framework for chemical use and discharge for offshore energy industry, MI proposes that the OSPAR Harmonised Pre-screening Scheme for Offshore Chemicals could be utilised for evaluating risk for assessment of construction and operation chemicals associated with chemical use in construction and operation of offshore wind farms. MI also recommends the use of chemicals already registered under the OSPAR Harmonised Mandatory Control System for the offshore oil and gas industry). Where possible, chemicals should be selected from the OSPAR PLONOR³ list or those of lowest risk. This would ensure that the risk of chemical contamination through accidental release is minimised;
- The cumulative effects assessment of multiple offshore wind farms and other activities is of particular relevance and will require new approaches to effects assessment, research and monitoring;
- Adequate allocation of resources and funding will be required to plan, implement, manage, monitor, and review the impacts of OWF. It is recommended that Irish marine scientists are represented at international fora to learn from best practice and colleagues (e.g. ICES, OSPAR, GNSBI);
- The Institute recognises that there are significant knowledge gaps for the relating to networks of Offshore Wind Farms in Irish waters. These must be considered holistically, ensuring the coexistence with other marine activities and the seafood sector;
- Possible mitigation measures for reduction of impact of OWF developments where they arise should be scoped more fully for OWF.

³ PLONOR = list of offshore industry chemicals that “Pose Little Or No Risk” to the marine environment.



Foras na Mara
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- There is a need for new and on-going research, surveying and mapping to ensure that sufficient evidence is available to determine the impact of OW developments on Ireland's marine environment and economy. This will also inform future decisions about DMAP locations, monitoring, impacts, climate change and MPA implementation.

Yours sincerely,

Joe Silke
Director Marine Environment and Food Safety Services,
Marine Institute
oremg@marine.ie

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Annex 1. Impact on Fisheries from North Irish Sea Array Offshore Wind Farm Proposal

The Marine Institute is the national body with competence in assessing fish stocks and provides advice to government on sustainable exploitation levels for these. Having access to fisheries logbooks and vessel monitoring systems (VMS) data, the Marine Institute also assesses the extent and impact of proposed developments on commercial fisheries. Methods used to process VMS and logbook data are described in the Atlas of Commercial Fisheries around Ireland (Gerritsen, 2024). The information base used in these analyses is subject to certain caveats:

- Assumptions need to be made on whether a vessel is fishing or not; this is not recorded in the VMS database and is inferred from the vessel speed. There may be cases where vessels are travelling at speeds consistent with fishing but not actually engaged in fishing.
- The link between VMS and other databases is not perfect and in some cases information on the fishing gear or catches is unknown or may be incorrect.
- Data products on the spatial distribution of fishing activities for vessels over 12m in length is available from:
<https://data.marine.ie/geonetwork/srv/eng/catalog.search#/metadata/ie.marine.data:datas et.5136>
- Vessels under 12m in length are not routinely fitted with VMS. Information on the fishing activity by inshore vessels was compiled to support the 2013 Natura 2000 assessment and is available from <https://atlas.marine.ie> (THEMES > Fishing Activity > Inshore Fishing).

The coordinates for the array area were obtained from Appendix 17.1 of the EIA report (Navigational Risk Assessment). The Marine Institute was not able to locate the coordinates of the cable corridor in any part of the application. Therefore, the Marine Institute is not able to quantify the potential impact on commercial fisheries.

Significance of impact

The developer identifies significant or very significant effects of various impacts of the construction, operation and decommissioning on Irish demersal trawlers and moderate or slight impacts on other fisheries (chapter 16 of the EIA). After mitigation (outlined in the Fisheries Management and Mitigation Strategy, Appendix 16.2), the residual effects are all assumed to be reduced to slight or moderate. The Marine Institute is not in a position to confirm that the residual effects are not significant.

The developer states that *“the assessment assumes that fishing will be possible within the array area [...] with the exception of an assumed 50m safe operating distance from infrastructure at the surface, the locations where areas of cable protection prevent fishing, and implementation of advisory safety zones around infrastructure undergoing major maintenance or replacement.”* However, the understanding of whether commercial fisheries can productively operate within the vicinity of offshore wind farms is still developing. In the absence of a detailed understanding of co-existence, it is not possible to rule out significant residual effects on fisheries.

The array development area is located on the western Irish Sea *Nephrops* grounds. This is the most intensively trawled area in Irish Waters (Gerritsen, 2024). While the proposed array area is relatively small (approx. 88km²), which represents around 3.3% of the total area used by Irish bottom trawlers targeting *Nephrops* in the western Irish Sea (2700km²), VMS data indicate that 6.6% of their fishing effort currently takes place inside the proposed array area. There are 60 vessels (49 Irish and 11 UK) that have registered fishing activity in proposed array development area during the years 2019-23. In total, almost 12 thousand fishing hours were spent inside the array area during that period, the vast majority of this was by Irish vessels.

The cable corridor also crosses fishing grounds used by inshore vessels engaged in dredging, potting and gillnetting (Figure 2). The impact on fishing activities will be minimised if they can continue once the windfarm is established. However operational or other considerations could preclude fishers from being active in the proposal areas. Therefore, it is difficult to predict the impact on the fisheries in the area.

Restrictions to access by fishing vessels are likely to result in a displacement of fishing effort. It is not possible to predict where this effort will be displaced to, but this displacement will increase fishing pressure and competition in some of the remaining accessible areas

Selection of the development area

The proposed development area is a subset of the Marine Area Consent (MAC) area. Chapter 16 of the EIA report states that *"The offshore development area represents only 36% of the full MAC boundary area and was reduced as a commitment by the Developer to ensure optimal seabed usage where possible, whilst ensuring the key other marine users are impacted as minimally as possible"*. While the MAC area only partially overlaps with the Irish Sea *Nephrops* grounds, the proposed array development area almost fully overlaps with these grounds (see Figure 1). If the array were to be situated in the southern part of the MAC area, this would have reduced the interaction with the bottom trawl fisheries substantially, without additional impact to other types of fisheries.

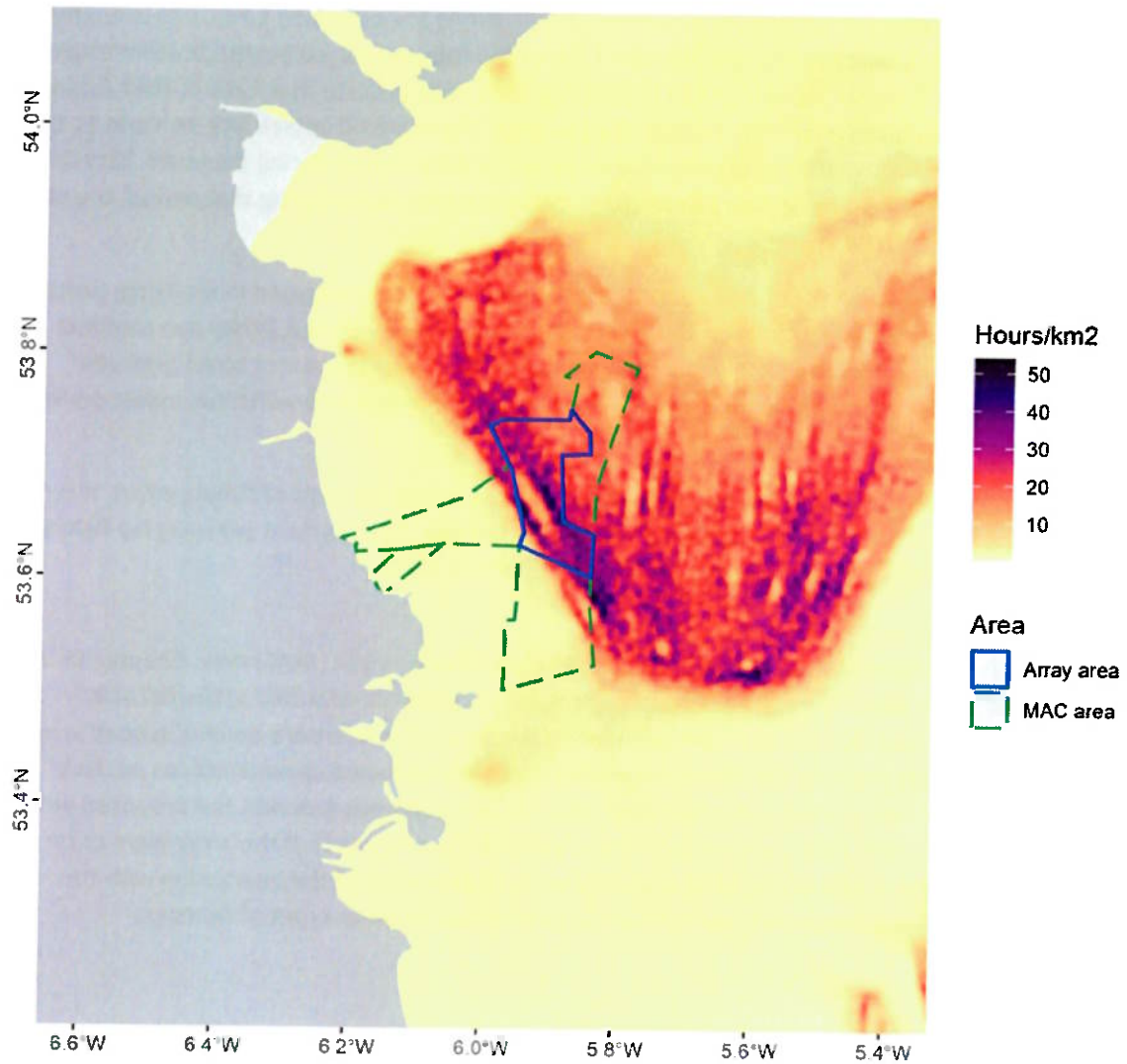


Figure 1. Irish bottom trawl fishing effort by vessels >12m over the period 2019-23 (fishing hours per km² per year). The MAC area partially overlaps with the Nephrops fishing grounds, while the array development area almost fully overlaps with these grounds.

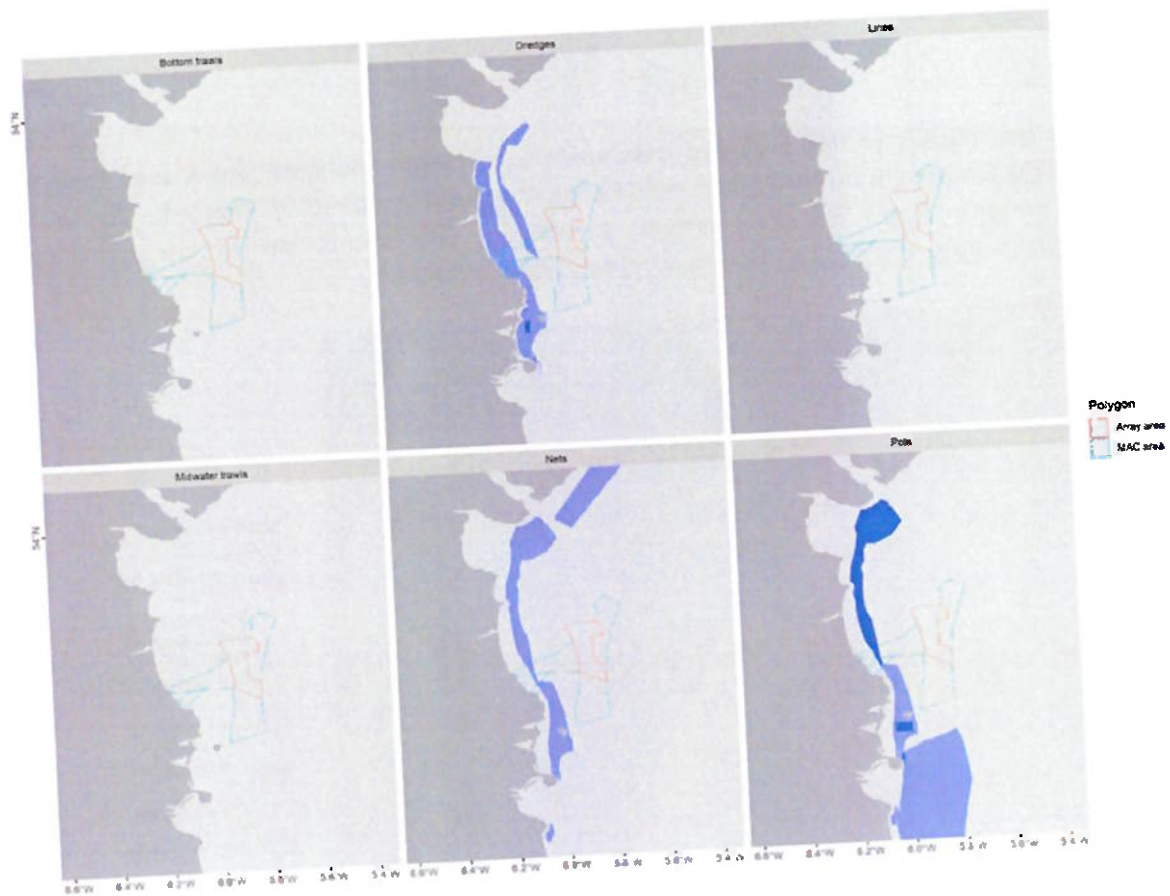


Figure 2. The array area (outlined in red) does not appear to overlap with major fishing grounds used by inshore vessels (i.e. vessels <12m). However, the cable corridor is likely to cross areas used for dredge, gillnetting and potting activities by these vessels. Information on the fishing activity by inshore vessels was compiled to support the 2013 Natura 2000 assessment (<https://atlas.marine.ie>).

Annex 2. Analysis of Benthic Impacts in North Irish Sea Array Offshore Wind Farm Proposal

To assess the impacts of this proposed development on benthic habitats, the Marine Institute compared the footprint of the MAC which includes the array and the subsidiary areas to benthic broad habitats present. Based on our current knowledge, the distribution of these habitats (<https://atlas.marine.ie/#?c=52.4192;-9.4153;7>) are shown in Figure 3.

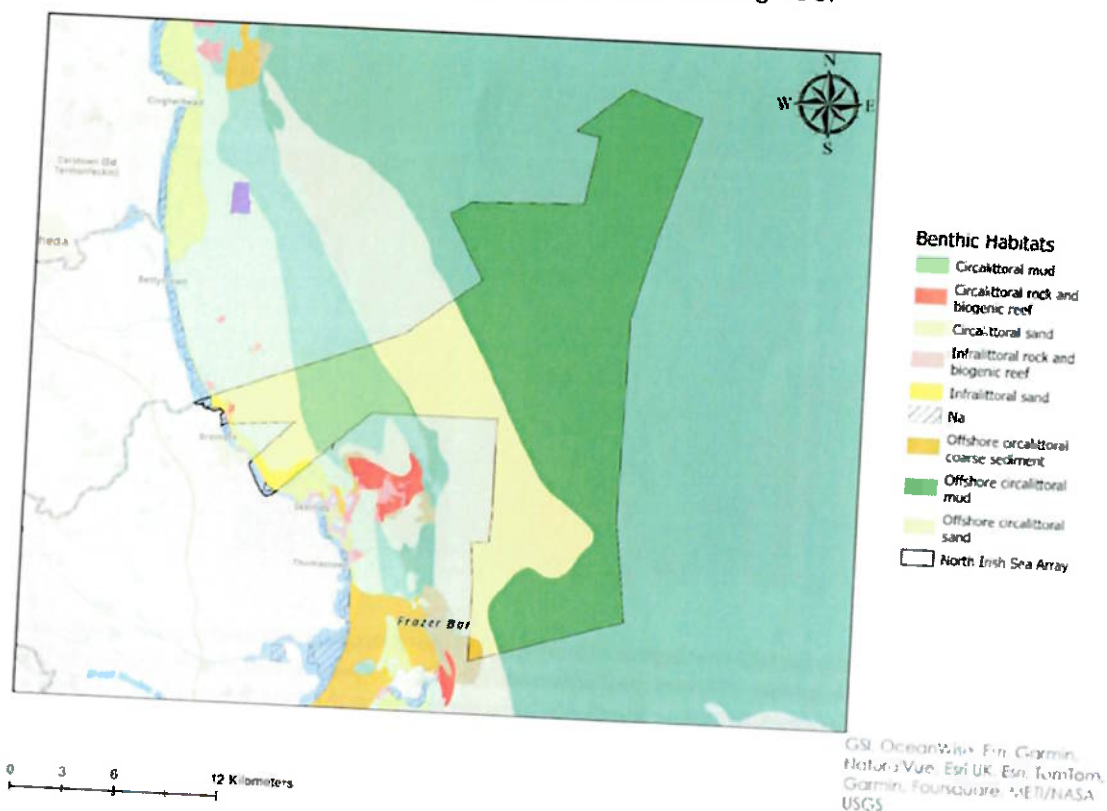


Figure 3. Distribution of Benthic Broad Habitats in the NISA Planning Area.

A summary of the extent and proportion of habitats is given in Table 1. Offshore circalittoral mud and offshore circalittoral sand are the predominant habitats present in the array planning area, with offshore circalittoral sand and circalittoral mud habitats predominant in the subsidiary planning area.

Table 1. Extent (km² and %) of benthic broad habitat types (BBHT) within the array and subsidiary areas, showing the extent (km² and %).

Benthic Habitat	Array Area		Subsidiary Area	
	Extent (km ² and %)		Extent (km ² and %)	
Circalittoral mud			24.303	28.99
Circalittoral rock and biogenic reef			0.173	0.21

Physical Disturbance

The proposed planning area is impacted to varying degrees by fishing activity. Results from OSPAR's Extent of Physical Disturbance to Benthic Habitats: Fisheries with mobile bottom-contacting gears (BH3) assessment (Matear et al. 2023). Figure 5 illustrates the level of disturbance with a ranking between 1 (low) to 9 (High).

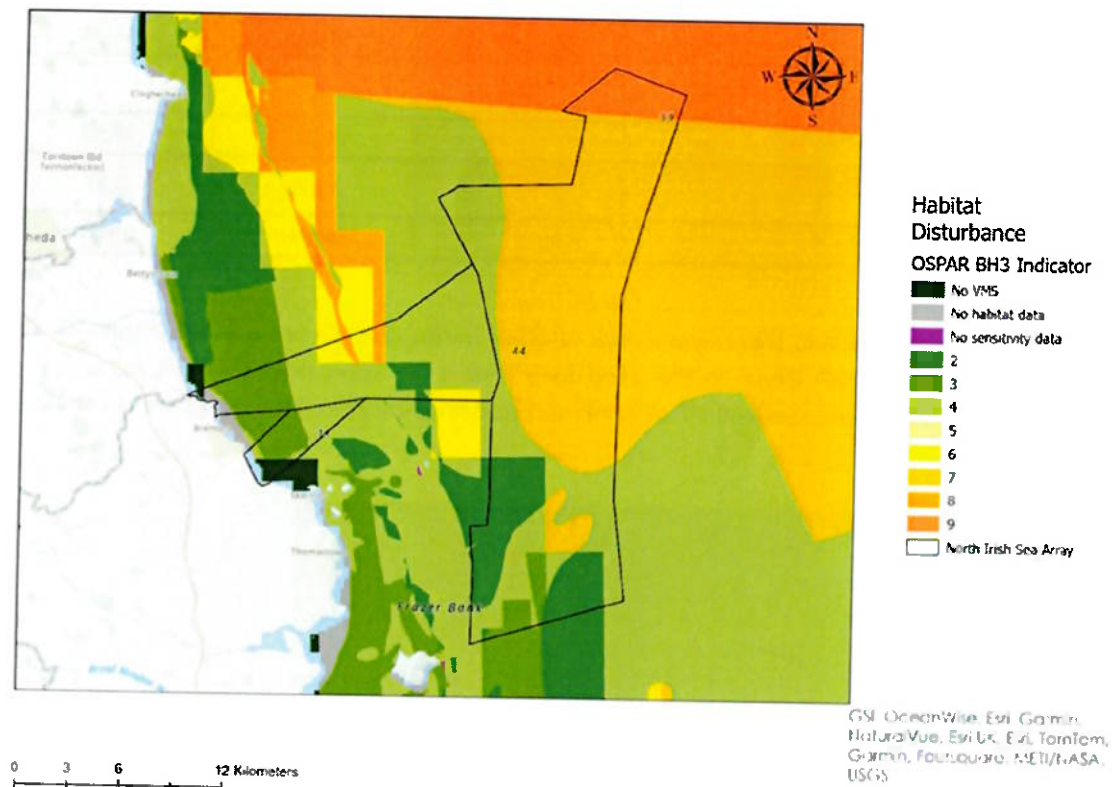


Figure 5. Spatial distribution of disturbance present in the planning area.

For ease of reporting OSPAR groups the disturbance as follows: Low 1-3, Moderate 4-7, and High 8-9. The intensity and proportion of disturbance affecting habitats in the array and subsidiary areas can be seen in Table 2.

Table 2. Proportion of habitat effected by disturbance from fishing activity.

Disturbance %						
Benthic Habitat	Array Area			Subsidiary Area		
	Disturbance Grouping % (Low, Moderate, High)					
Circalittoral mud				0.78	94.96	4.26
Circalittoral rock and biogenic reef				85.21	1.21	
Circalittoral sand				90.29	6.93	1.45
Infralittoral sand				5.61	25.57	
Offshore circalittoral mud	8.84	84.91	6.25	1.32	98.68	
Offshore circalittoral sand	50.71	49.29		12.09	85.08	2.83

Offshore circalittoral coarse sediment	8.93	91.07				
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If bottom trawling is excluded from the areas between the turbines, then a reduction in disturbance could be expected. This could potentially be beneficial to the habitats in question.

Annex 3. Species and Habitats of Conservation Concern

To assess the overlap of this proposed development with conservation listed species and habitats, the Marine Institute compared the footprint of the array with spatial data collated and assessed by the [Irish Sea Ecological Sensitivity Analysis](#) (2023)

The sensitivity analysis included species and habitats listed under OSPAR or IUCN Global, European or Irish Red lists. The list is non-exhaustive and the following selection criteria were used to choose features based on the requirements of the project:

- Species/habitat conservation listed (Vulnerable, Threatened, Endangered, or Critically Endangered categories);
- Amenable to spatial protection;
- Irish Sea a significant part of species/habitat distribution;
- Not individually managed under Common Fisheries Policy (CFP);
- Sufficient spatial data available in Irish Sea;
- Birds and Habitats Directive features excluded (i.e. birds and marine mammals).

Figures 6-16 show those species/habitats with which the proposed development overlaps. Note: in most cases point data was converted to presence/absence and gridded to 1kmX1km planning units. The individual case reports in the appendices of the Ecological Sensitivity Analysis detail the exact data used and the assessment of sensitivity against a range of pressures

<https://www.gov.ie/en/publication/dcfba-ecological-sensitivity-analysis-of-irish-sea-appendices/> .

All data layers available at: https://github.com/IrishMarineInstitute/irish_sea_sensitivity_analysis. Some features did not have any appropriate data available but should be considered if new data is recorded.

The proposed development has significant overlap with OSPAR listed seapen and burrowing megafauna habitat, IUCN red-listed elasmobranchs such as smooth-hound and thornback ray, and IUCN red-listed teleost fish such as turbot and long rough dab (although see case reports of both species for discussion of their conservation status in the Irish Sea). Smaller overlaps are seen with many other elasmobranch species, the Icelandic cyprine or ocean quahog, and the mouth of the river Bracken that was identified as important estuarine habitat for the critically endangered European eel. There is also overlap with the distribution of tope shark (*Galeorhinus galeus*) that is not depicted here (see appendix 10, case report 16 of the Irish Sea Ecological Sensitivity Analysis for further details of data used and sensitivity assessment).

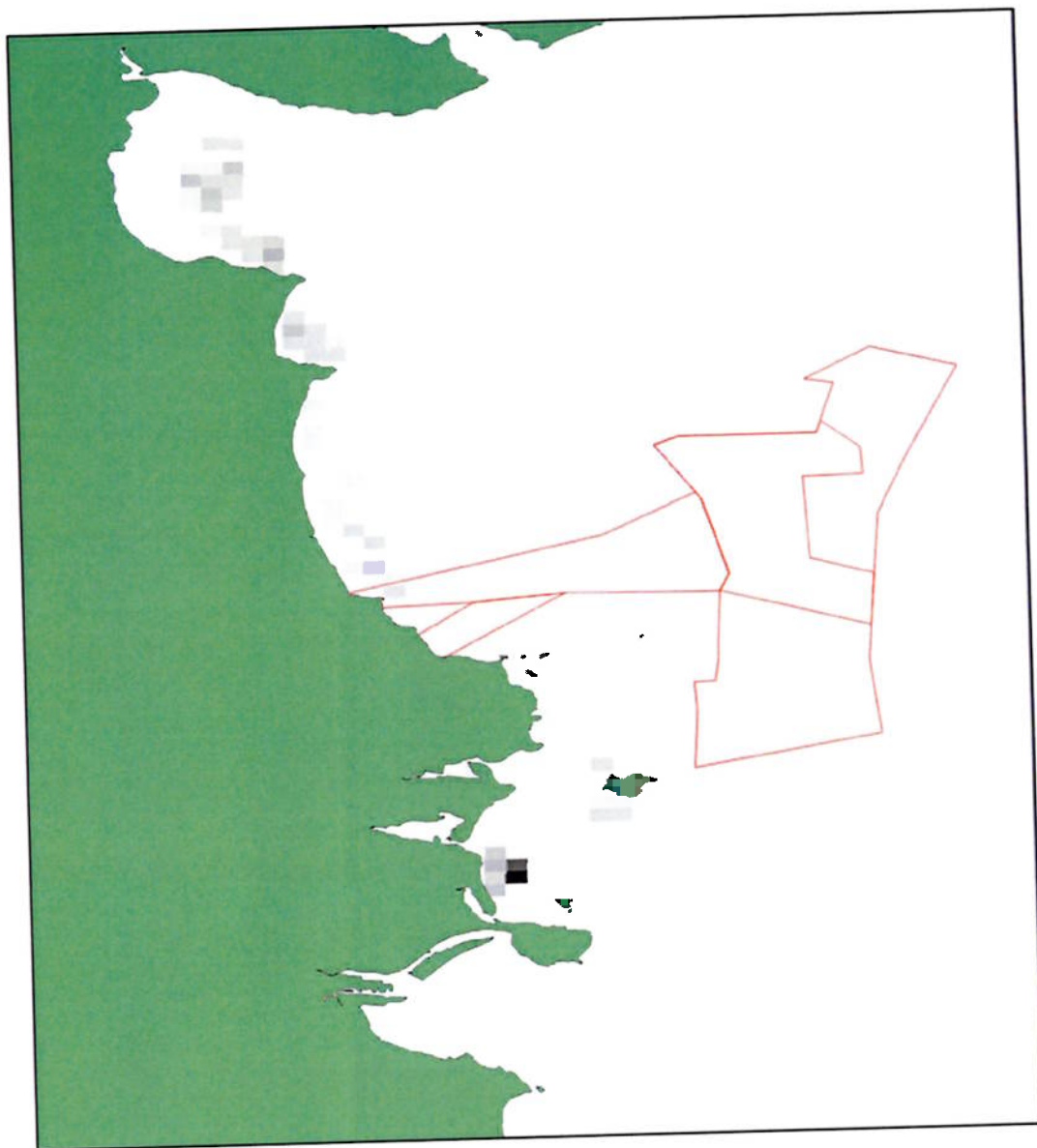


Figure 6. Distribution of Icelandic cyprine or ocean quahog (*Arctica islandica*) in and around the array and subsidiary areas (red outline) as identified by the Irish Sea Ecological Sensitivity Analysis (see Appendix 10, Case Report 10 for further details of data used and sensitivity assessment).

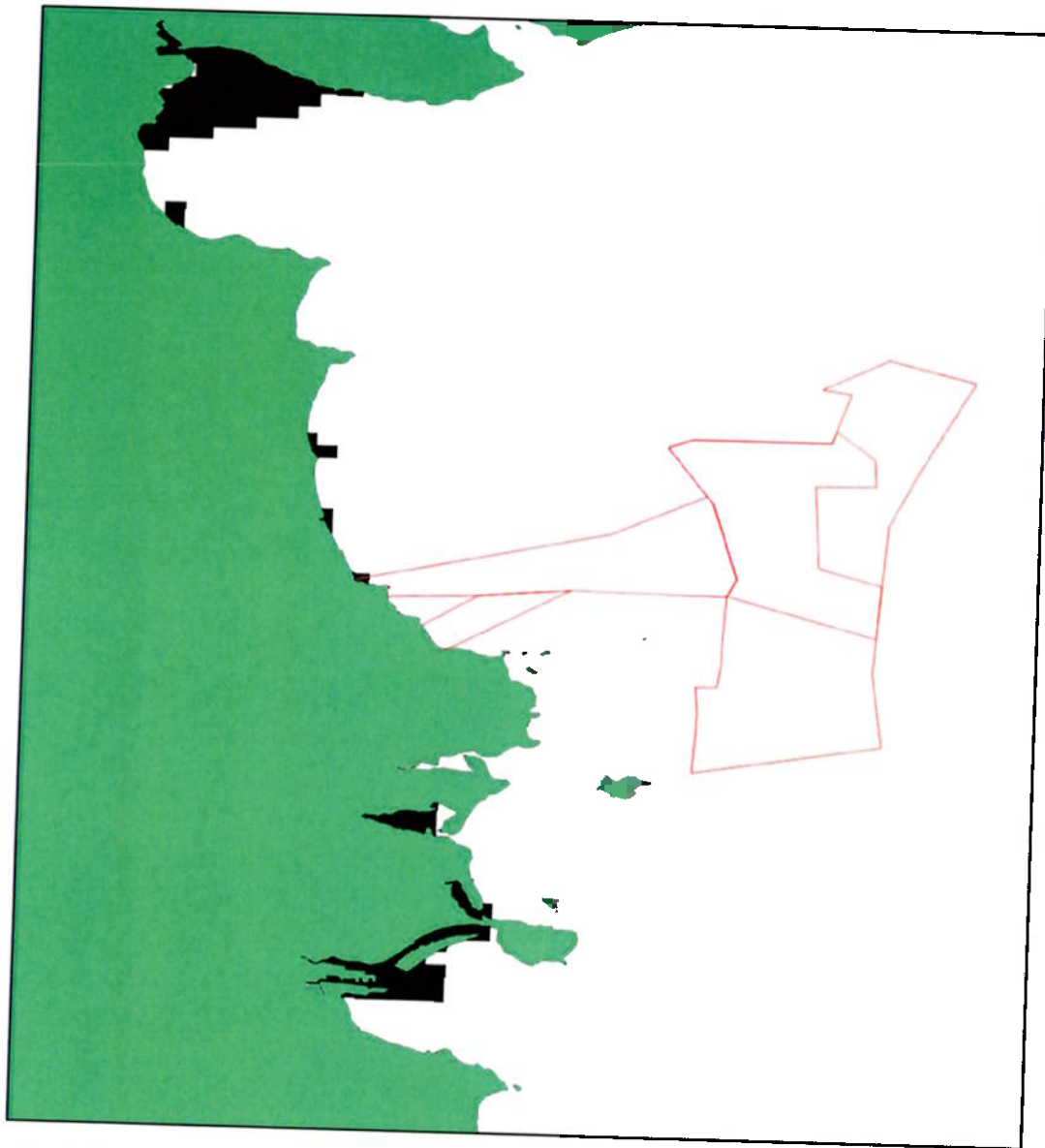


Figure 7. European eels (*Anguilla anguilla*) use the Irish sea as a migration route, incoming as juvenile glass eel and outgoing as mature silver eel heading for spawning grounds. The exact routes taken by eels in the Irish Sea are not known and distributional data for the marine portion of their life-cycle is very sparse. Estuaries are an essential habitat for the species, therefore estuaries associated with known eel rivers were included in the ESA. The black polygons show river mouths buffered and gridded to 1km² planning units (see Appendix 10, Case Report 9 of the Irish Sea ESA for further details and sensitivity assessment).

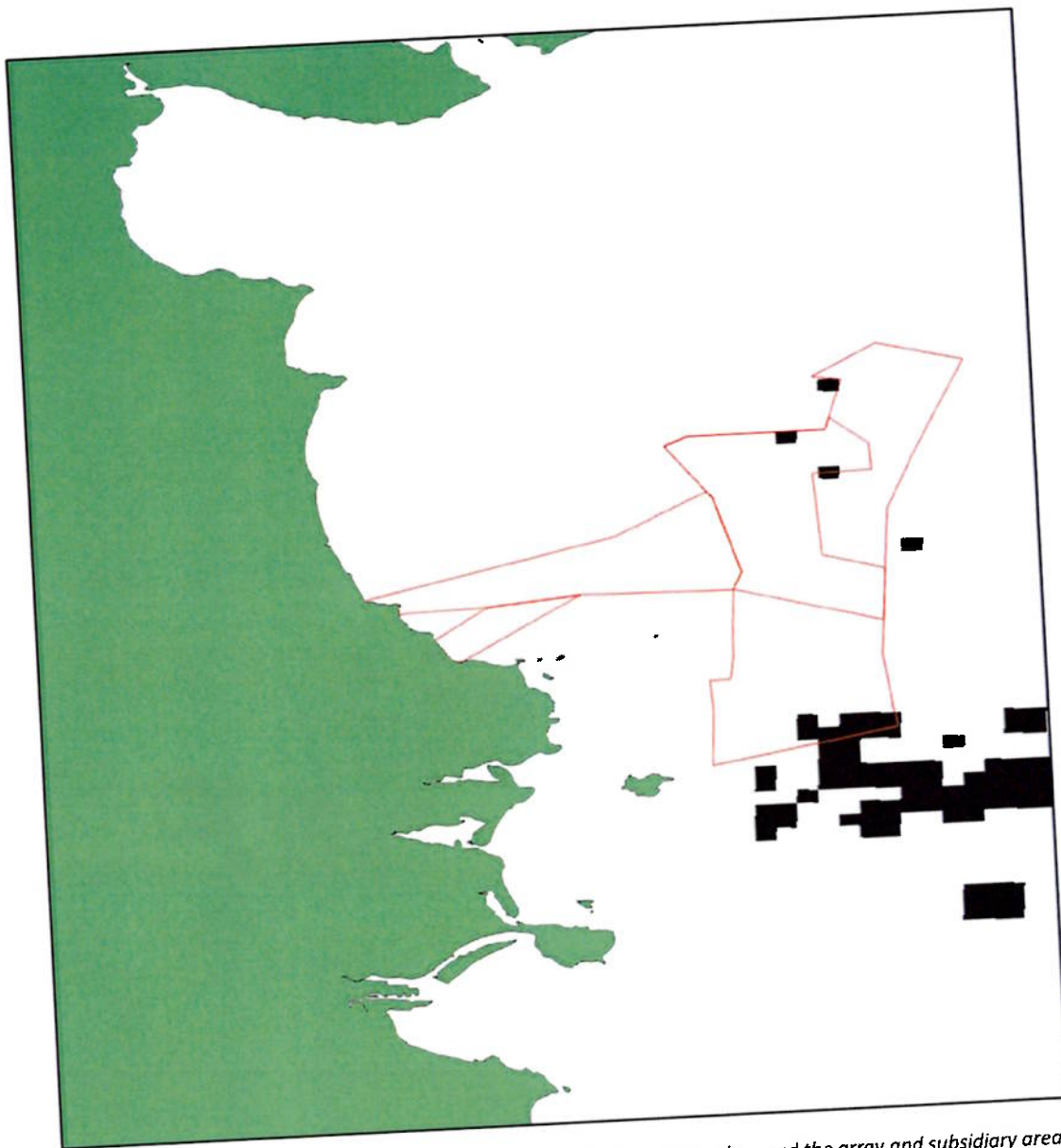


Figure 8. Distribution of witch flounder (*Glyptocephalus cynoglossus*) in and around the array and subsidiary areas (red outline) as identified by the Irish Sea Ecological Sensitivity Analysis (see Appendix 10, Case Report 18 for further details of data used and sensitivity assessment).



Figure 9. Distribution of turbot (*Scophthalmus maximus*) in and around the array and subsidiary areas (red outline) as identified by the Irish Sea Ecological Sensitivity Analysis (see Appendix 10, Case Report 17 for further details of data used and sensitivity assessment).

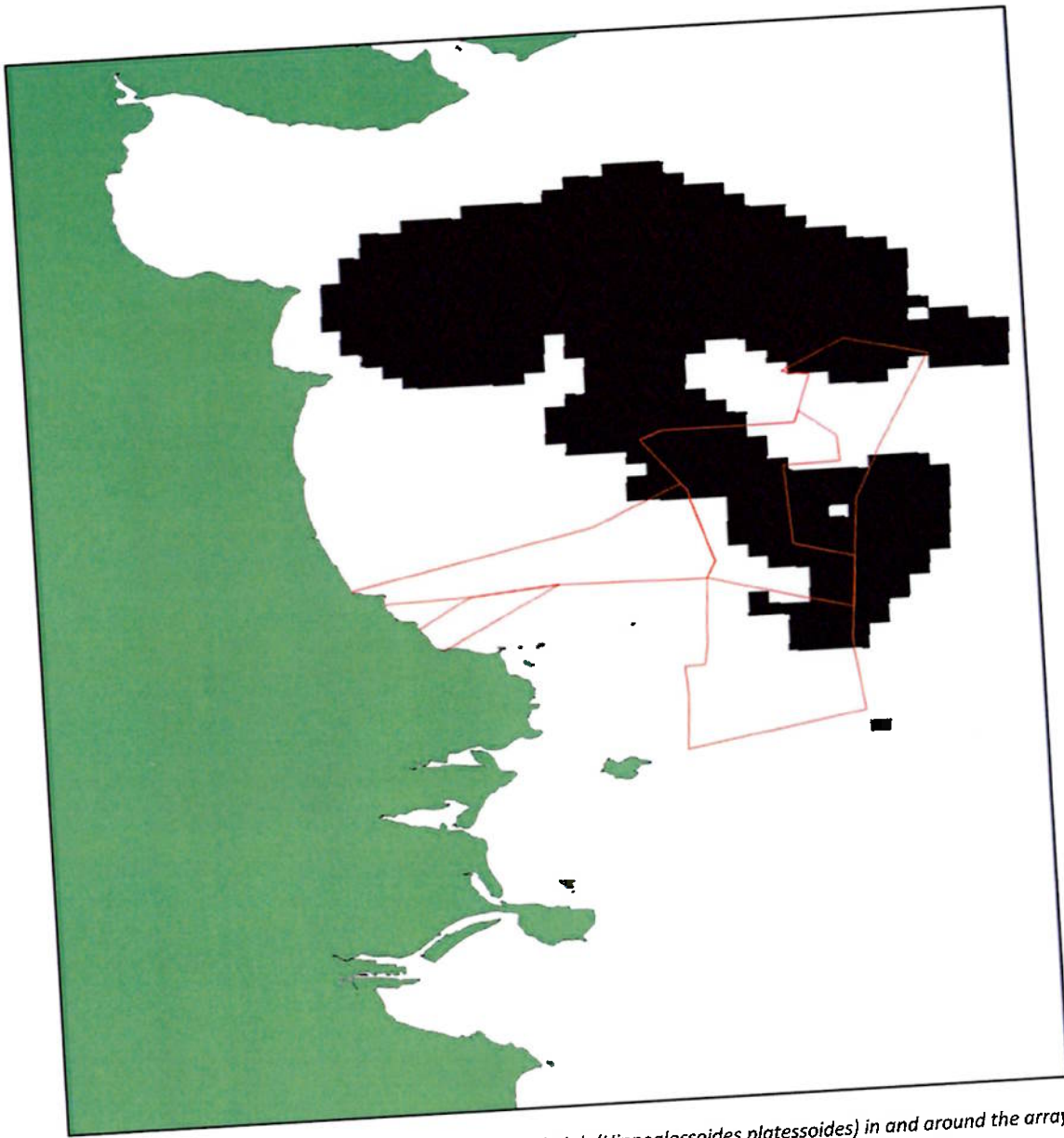


Figure 10. Distribution of American plaice or long rough dab (*Hippoglossoides platessoides*) in and around the array and subsidiary areas (red outline) as identified by the Irish Sea Ecological Sensitivity Analysis (see Appendix 10, Case Report 1 for further details of data used and sensitivity assessment).



Figure 11. Distribution of seapen and burrowing megafauna habitat in and around the array and subsidiary areas (red outline) as identified by the Irish Sea Ecological Sensitivity Analysis (see Appendix 10, Case Report 20 for further details of data used and sensitivity assessment).

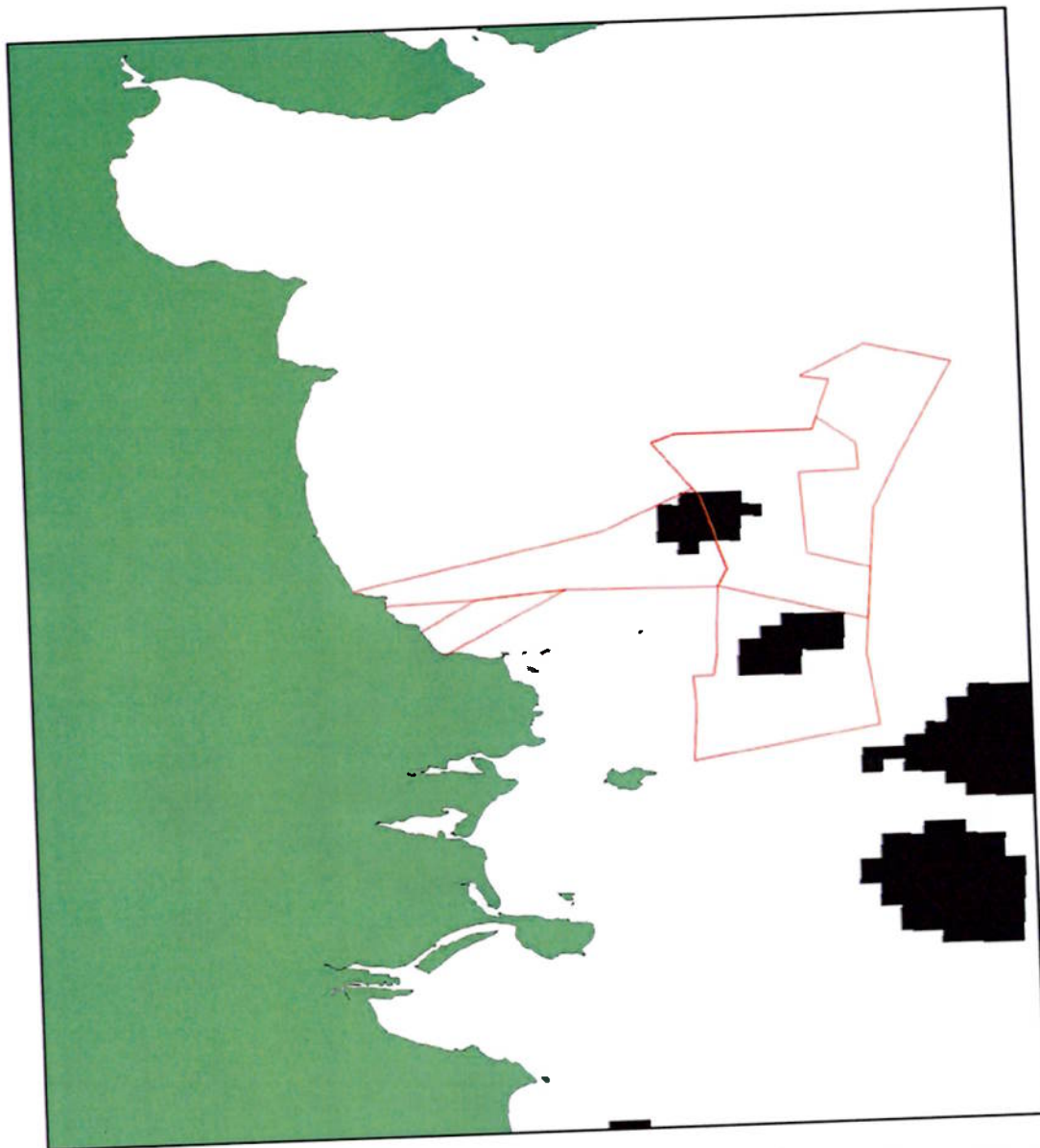


Figure 12. Distribution of starry smooth-hound (*Mustelus asterias*) in and around the array and subsidiary areas (red outline) as identified by the Irish Sea Ecological Sensitivity Analysis (see Appendix 10, Case Report 14 for further details of data used and sensitivity assessment).



Figure 13. Distribution of thornback Ray (*Raja clavata*) in and around the array and subsidiary areas (red outline) as identified by the Irish Sea Ecological Sensitivity Analysis (see Appendix 10, Case Report 15 for further details of data used and sensitivity assessment).



Figure 14. Distribution of spotted ray (*Raja montagui*) in and around the array and subsidiary areas (red outline) as identified by the Irish Sea Ecological Sensitivity Analysis (see Appendix 10, Case Report 13 for further details of data used and sensitivity assessment).

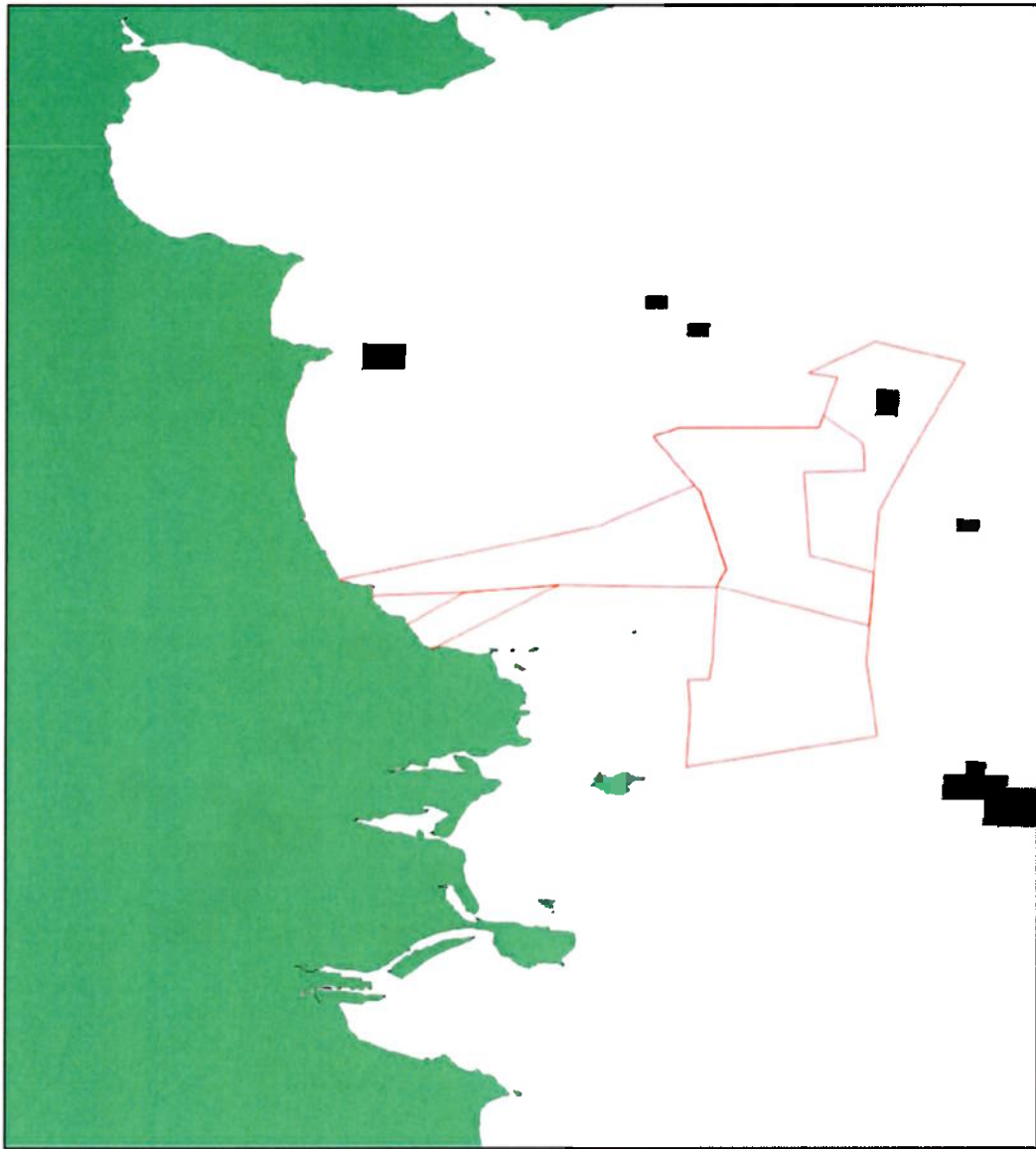


Figure 15. Distribution of Cuckoo ray (*Leucoraja naevus*) in and around the array and subsidiary areas (red outline) as identified by the Irish Sea Ecological Sensitivity Analysis (see Appendix 10, Case Report 6 for further details of data used and sensitivity assessment).

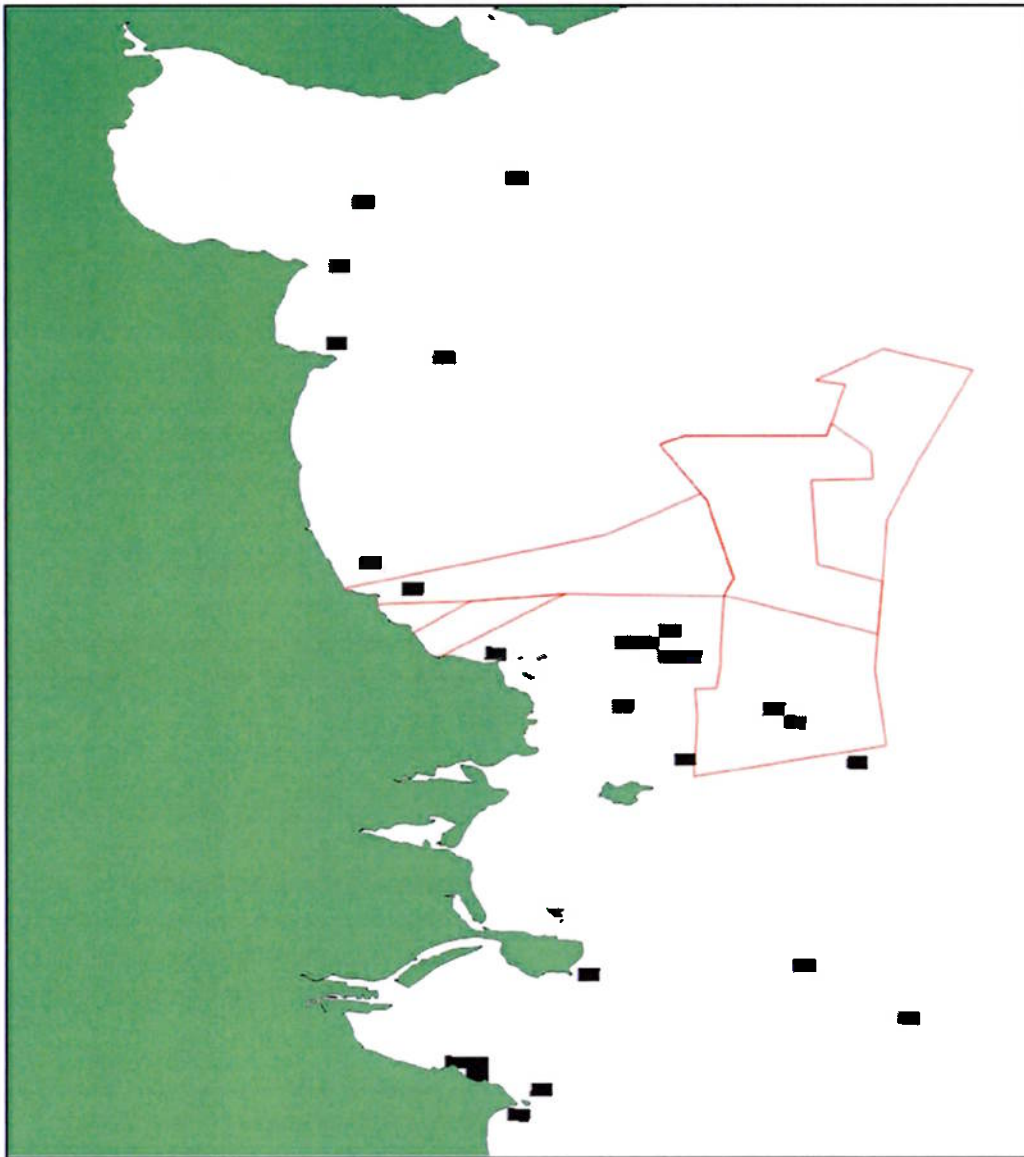


Figure 16. Distribution of basking shark (*Cetorhinus maximus*) in and around the array and subsidiary areas (red outline) as identified by the Irish Sea Ecological Sensitivity Analysis (see Appendix 10, Case Report 3 for further details of data used and sensitivity assessment).

Annex 4. Marine Planning Evidence Base

Examples of existing national monitoring, data and evidence programmes that could inform future OW monitoring.

Fisheries Surveys

Offshore fish stocks are managed by the EU under the Common Fisheries Programme (CFP). Data collection is essential for the implementation of the CFP and, Ireland's Data Collection Programme is supported by the EMFF. Fish stocks inside 12nm are managed nationally and the Marine Institute works closely with Department of Agriculture, Food and the Marine (DAFM) through the inshore fishery management group. Robust scientific data is required to evaluate the state of fish stocks. These data are a time series of spatial distribution and abundance of a wide range of fish species and the fishing pressures that result from their exploitation. These spatial data can also help to inform future OWF impacts.

Existing MI fisheries surveys also provide reliable baseline data for a range of features integral to Ireland's marine ecosystem and allow before and after comparisons once wind farms are constructed and operational. The Western European Shelf Pelagic Acoustic Survey (WESPAS) for example is building a time-series of seabird, mammal, plankton and pelagic fish species observations over a large proportion of our Exclusive Economic Zone (EEZ).

Benthic Monitoring

The organisms living on and in the seafloor are an indicator of stresses on the marine environment deriving from certain pressures and therefore, can act as an early warning system. A benthic assessment of relevant OWFs will be invaluable for baseline and on-going monitoring of the impact. The MI has data available as part of its benthic monitoring programme, currently used in the nearshore for WFD and Natura assessments and from specific studies that evaluate the impacts of fishing activities on benthic communities and from other habitat mapping projects funded by the EMFF.

Chemistry data

Access to data about marine pollutants data will be necessary for OW development. There is an existing marine chemistry programme in Irish waters. Through monitoring and research, it generates relevant datasets on marine pollutants, contaminants in seafood, seawater and sediment chemistry. The monitoring programme ensures that Ireland is meeting legislative environmental obligations under the Water Framework Directive and the Marine Strategy Framework Directive.⁴

Seabed Mapping

The Government of Ireland's long-term commitment to baseline seabed mapping includes EEZ boundary extent determination through Petroleum Affairs Division surveys ('96-'98), the Irish National Seabed Survey ('99-'05), and the INFOMAR² programme (Integrated Mapping for the Sustainable Development of Ireland's Marine Resource, '06-'26). The latter is Department of the Environment, Climate and Communications (DECC) funded, and jointly managed by the Marine

⁴ <https://www.marine.ie/site-area/areas-activity/marine-environment/marine-chemistry>

Institute and the Geological Survey of Ireland. Collectively, these mapping endeavours have provided valuable baseline acoustic and geophysical datasets, from which essential information and products are derived for sustainable management of Ireland's marine resources. They facilitate broad-scale habitat mapping assessments and infrastructural planning and enable the effective focussed design of sector specific research investigations, whether for development or for conservation.

In parallel with INFOMAR mapping activities, the survey infrastructure and knowledge has been applied in support of multiple major initiatives, including Strategic Environmental Assessments for offshore oil and gas, and for marine renewable energy development.⁵

EMFAF

The EMFAF Marine Biodiversity and Marine Knowledge Schemes are co-funded by the Irish Government and the European Maritime Fisheries & Aquaculture Fund 2021-2027. Projects funded through EMFAF will be a useful source of knowledge, that can help to inform the sustainable development of offshore wind farms. The Marine Biodiversity Scheme provides the science and evidence to support a sustainable seafood production programme and to protect and restore marine biodiversity. The Marine Knowledge Scheme enables the collection, management, analysis, processing and use of marine data to improve the knowledge on the state of the marine environment and inform a sustainable blue economy. The scheme is improving our understanding of impacts of climate change on marine activities and on the environment.

Oceanographic and Climate Data

The Marine Institute collects a variety of climate data sets that are quality assured and archived for future analysis by climate researchers. These data sets include physical oceanography in the shelf seas and open ocean, phytoplankton, marine chemistry and fisheries data. Data and model outputs will be valuable for a baseline assessment of future designated sites.

Data are available from the existing marine observation network, i.e. the Data Buoy Network and the wave buoys etc. These continuously transmit relevant meteorological and wave data in real time. There are long time-series datasets available for download or through the MI Data Requests service, more information is available at 'marine observations' section at the link below.⁶

Oceanographic Modelling datasets can inform the development of OW as well. These include:

- NEATL ROMS model going back to 2012 (kilometre-scale hydrodynamics)
- Connemara/Bantry ROMS also back to 2012 (~200m scale)
- CROCO 30 year hindcast (1993-2021) for the Celtic Sea (kilometre-scale hydrodynamics)
- A new SWAN 30-year wave model hindcast (will be completed soon)

Socio-economic data

Marine socio-economic data will be vital to analysis and monitor how developments, such as OWF, contribute to increase in marine related employment in Ireland, in line with NMPF Planning Policies (Employment Policy 1). The MI's socio-economic data and evidence programme can provide economic and social-demographic data, analysis and trends on Ireland's ocean and coastal economy.

⁵ <https://www.infomar.ie/>

⁶ <https://www.marine.ie/site-area/data-services/marine-data-centre>

Data on Ireland's ocean economy can be viewed at the [Ocean Economy dashboard](#) and here is the [link](#) to the most recent report. Latest data from the CSO report 3.2m people as living in 'coastal areas', which accounts for approx. 62% of the population. Unemployment rates in coastal ED's is just over 8.13%, compared to 6.7% in non-coastal areas. The social-economic impact on coastal communities adjacent to such developments as the OWF, should be considered. As outlined in the NMPF, (Social benefits Policies), data on how the proposal will enhance or promote social benefits should be outlined. This includes minimising or mitigating against significant adverse impacts resulting in displacement of other exiting activities that generate social benefits. Socio-economic characteristics of adjacent coastal regions, as well as data on the direct and indirect economic contribution of existing marine activities, before and after offshore renewable energy developments, will assist with measuring economic and social costs and benefits in line with the NMPF.

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OSPAR Agreement 2013/06 on the List of Substances Used and Discharged Offshore which are Considered to Pose Little or No Risk to the Environment (PLONOR) – Update 2024

OSPAR Recommendation 2019/04 amending OSPAR Recommendation 2017/01 on a Harmonised Pre-screening Scheme for Offshore Chemicals

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