Appropriate Assessment Screening Report

Aquaculture and foreshore licence application T32-028A. Arklow Bay, Co. Wicklow.

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	Prepared by Environmental Facilitation Ltd on behalf of the Department of Agriculture, Food and the Marine Date: 09/07/2026

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Part A: AA Screening Report

1. Preface

The Habitats Directive (Council Directive 92/43/EEC)[1] establishes legal provisions for conserving natural habitats and species of community interest and within this, Articles 3 to 16 provide the legislative means to create a network of protected sites across the European Union known as Natura 2000 sites. Sites in Ireland that form part of this Natura 2000 network include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). SACs are designated due to their significant ecological importance for habitats and/or species protected under Annex I and Annex II respectively of the Habitats Directive. SPAs are designated for the protection of populations and habitats of bird species protected under the EU Birds Directive (Council Directive 2009/147/EC)[2] on the conservation of wild birds). The features for which SACs and SPAs are designated are respectively called Qualifying Interests (QIs) and Special Conservation Interests (SCIs)(also collectively referred to as conservation features). However, in practice, the common terminology of QIs applies also to SCIs, and is used throughout this report.

The Habitats Directive was implemented into national law under Regulation 31 of the Habitats Regulations SI 94/1997 and subsequently amended and consolidated in the European Communities (Birds and Natural Habitats) Regulations 2011. Article 6(3) of the Directive mandates an Appropriate Assessment (AA) when a plan or project is likely to have a significant effect on the features for which the site is designated, either individually or in combination with other plans or projects, and it is not connected with or necessary for the management of a protected site. The "Stage 2" AA evaluates whether the plan or project will have any adverse effect on the integrity of Natura 2000 sites in view of the Conservation Objectives set for the features (habitats and/or species) for which the site(s) is designated.

There is a long history of aquaculture operations within Irish coastal waters, predating the designation of sites as SACs and SPAs under the relevant Directives. An incremental process of AA is underway for existing and proposed aquaculture activities within these designated Natura 2000 sites. This process, agreed upon with the EU Commission in 2009, aims to eventually cover all aquaculture operations across Natura 2000 sites in Ireland. The AA assesses aquaculture operations against the Conservation Objectives defined by the NPWS for the conservation features of each Natura 2000 site. Aquaculture activities are licenced by the Department of Agriculture, Food and Marine (DAFM). When receiving applications for such activities, DAFM submits those applications and existing licences for

[1] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A01992L0043-20130701
[2] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02009L0147-20190626

AA consideration. If the AA process identifies the possibility of significant effects or potential negative consequences for designated conservation features, Stage 2 assessment is required. While assessment reports may not always specify explicit mitigation methods, they indicate whether mitigation is necessary and the desired outcomes.

This screening report, supporting the AA, considers a new aquaculture and foreshore licence (under licence application T32-028A) for the culture of seaweed using longlines, to determine whether they, individually or in combination with other plans and projects, are likely to have a significant effect on any European site (i.e. Natura 2000 sites), in view of the site's conservation objectives.

2. Introduction

2.1. Overview of this Screening Assessment

This document assesses the potential effects of the proposed extensive aquaculture activities in Arklow Bay, Co. Wicklow, in combination with existing aquaculture activities on the Qualifying Interests (QIs) of Natura 2000 sites. Extensive aquaculture is defined in Regulation 3(iii) of the Aquaculture (Licence Applications) (Amendment) Regulations 2018 as "aquaculture activities where there is no external supply of feed and the culture depends entirely on natural processes for production and supply of feed". Shellfish (molluscs, echinoderms and crustaceans) and seaweed aquaculture fall within this definition; finfish aquaculture does not.

The aim of this report is to consider if the proposed aquaculture activities are likely to significantly affect the conservation features of Natura 2000 sites, with respect to their Conservation Objectives (COs), through undertaking an Appropriate Assessment (AA) screening process. If it is deemed that there is the potential for a likely significant effect on the conservation features as a consequence of the activity taking place, these activities will be carried forward for full assessment and considered on a cumulative basis with other aquaculture activities and other potentially disturbing activities (e.g. fisheries).

This AA screening report considers the potential ecological interactions between the proposed aquaculture activities and the Conservation Objectives of the Natura 2000 sites.

2.2. Legislative context

Articles 3 – 16 of the European Community (EC) Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna (the Habitats Directive) provide the legislative means to protect habitats and species of Community interest through the conservation of an EU-wide network of protected sites, known as Natura 2000 sites.

The Habitats Directive was originally transposed into Irish law by the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94 of 1997). The 1997 Regulations were subsequently replaced by the European Communities (Birds and Natural Habitats) Regulations 2011, as amended (referred to as the 2011 Birds and Natural Habitats Regulations). Natura 2000 sites are referred to as European sites in these Regulations. The terms Natura 2000 sites and European sites are synonymous - the term Natura 2000 sites is used in this report. Natura 2000 sites include SACs which are designated under the Habitats Directive, and SPAs which are designated under EC Directive 79/409/EEC (the Birds Directive).

SACs are designated due to their significant ecological importance for habitats and for species protected under Annex I and Annex II respectively of the Habitats Directive. SPAs are designated for the protection of populations and habitats of bird species protected under the Birds Directive. The specific named habitats and/or (non-bird) species for which an SAC or SPA is selected are called the Qualifying Interests (QI), of the site.

Under Article 6(3) of the Habitats Directive, any plan or project not directly connected with or necessary to the management of a European site must be subject to Appropriate Assessment (AA) where it cannot be excluded, on the basis of objective scientific information, that it is likely to have a significant effect on that site of a plan or project on a Natura 2000 site and considers the implications for the site in view of its Conservation Objectives (COs). Every Natura 2000 site has COs which are set out by the National Parks and Wildlife Service (NPWS) - the competent authority for the management of Natura 2000 sites in Ireland. The AA process must also consider any plan or proposal in combination with other activities that have the potential to significantly affect the integrity of the Natura 2000 site.

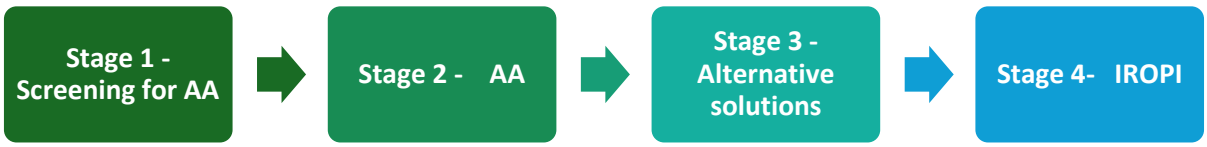
DAFM has responsibility for foreshore licensing functions in respect of activities wholly or primarily for the use, development or support of aquaculture under the Foreshore Act 1933, as amended [3]. DAFM is also the aquaculture licensing authority under the Fisheries (Amendment) Act 1997[4] and determines applications for new aquaculture licences and for the review or renewal of existing licences. As part of the licensing process DAFM must determine if the proposed aquaculture activities, individually or in-combination with other activities, will have likely significant effects on a European site in view of its conservation objectives.

2.3. Appropriate Assessment (AA) process

The requirement for an AA derives directly from Article 6(3) of the Habitats Directive, which outlines the decision-making tests for considering plans and projects that may have a significant effect on a Natura 2000 site. No definition of the content or scope of AA is

[3] https://revisedacts.lawreform.ie/eli/1933/act/12/front/revised/en/html
[4] https://revisedacts.lawreform.ie/eli/1997/act/23/revised/en/html

given in the Habitats Directive, but the concept and approach are set out in EC guidance[5]. The Guidance on Appropriate Assessment of Plans and Projects in Ireland[6], published by the Department of Environment, Heritage and Local Government (DEHLG) in 2009, sets out how an AA of plans or proposals in Natura 2000 sites in Ireland should be carried out in alignment with EC guidance. In 2021, the Office of the Planning Regulator (OPR) published a practice note on AA Screening[7], which provides guidance on how a planning authority should screen an application for planning permission for AA.
The Guidance on Appropriate Assessment of Plans and Projects in Ireland document promotes a four-stage process to complete the AA. The four stages are:



The key procedures involved in completing the first two stages of the AA process are described below. Stage 3 and Stage 4 (Imperative Reasoning of Overriding Public Interest - IROPI) are not applicable here.

2.3.1. Stage 1: Appropriate Assessment Screening

Stage 1 AA Screening is the process that addresses and records the reasoning and conclusions in relation to whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a Natura 2000 site in view of the site's COs. If the effects, on the basis of objective information, are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 Appropriate Assessment. Screening should be undertaken without the inclusion of mitigation. The greatest level of evidence and justification will be needed in circumstances when the process ends at screening stage on grounds of no effect.

2.3.2. Stage 2: Appropriate Assessment

This stage considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a Natura 2000 site, and includes any mitigation measures necessary to avoid, reduce adverse effects. This stage requires a targeted scientific examination of the plan or project and the relevant Natura 2000 sites, to identify and characterise any possible implications for the site in view of the site's QIs and COs, taking account of in combination effects.
The sensitivity of identified QIs in relation to the proposed activities is assessed and the significance of any identified adverse effects is then determined. If adverse effects are determined to be likely, then their scale, magnitude, intensity, and duration are

[5] https://environment.ec.europa.eu/topics/nature-and-biodiversity/natura-2000/managing-and-protecting-natura-2000-sites_en
[6] https://www.npws.ie/protected-sites/guidance-appropriate-assessment-planning-authorities
[7] https://www.opr.ie/wp-content/uploads/2021/03/9729-Office-of-the-Planning-Regulator-Appropriate-Assessment-Screening-booklet-15.pdf

considered in light of the COs and relevant guidance documents. If the assessment is negative, then recommendations on mitigation measures or specific management actions on licensing decisions will be made.

2.4.Structure of AA Screening Report

This screening report provides:

1. **Introduction** - an outline of the legislative context and the processes.
2. **Appropriate Assessment Screening** - providing details of the AA screening undertaken.
3. **Conclusion** - a summary of the findings from the screening process.

2.5. Data sources

Reference documents and sources of information used to inform this process may include:

- The Applications
- DAFM Aquaculture & Foreshore Management website
- DAFM - Aquaculture viewer – AquaMIS
- National Parks & Wildlife (NPWS) protected site, marine habitats and community type information
- NPWS Guidance documents
- Aquaculture profiling reports (if prepared)
- Targeted scientific studies & peer-reviewed literature
- Grey literature, reviews and report documents
- Peer reviewed & published literature
- Expert opinion
- Direct queries to applicants through DAFM
- Fisheries (Amendment) Act 1997
- Aquaculture (Licence Application) Regulations, 1998, as amended.
- Aquaculture (Licence Application) (Amendment) Regulations 2018
- Ireland's Marine Atlas
- MI/BIM Commissioned Reports
- DHLGH Foreshore Licensing database
- EPA GeoHive
- EPA Maps Appropriate Assessment Tool: https://gis.epa.ie/EPAMaps/AAGeoTool
- NPWS Status of EU Protected Habitats and Species in Ireland – Article 17 (Habitats & species
- EU Commission assessments of bird's population status and trends web tool
- Marine Life Information Network: https://www.marlin.ac.uk/
- EPA Catchments.ie dashboard: https://www.catchments.ie/data/
- Ordnance Survey of Ireland (OSI)

- National Biodiversity Data Centre: https://maps.biodiversityireland.ie/
- European Environmental agency
- OPR, 2021. Appropriate Assessment Screening for Development Management. March 2021; Office of Planning Regulator.
- DEHLG, 2009. Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities. NPWS, 2009 – updated in 2010 with reference to Natura Impact Statement.
- Möckel, S., 2017. The European ecological network "Natura 2000" and the appropriate assessment for projects and plans under Article 6 (3) of the Habitats Directive. Nature Conservation, 23.
- NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Unpublished NPWS report. Edited by: Deirdre Lynn and Fionnuala O'Neill.
- EC Article 6 - Managing and protecting Natura 2000 sites
- EC Management of Natura 2000 sites: Best Practice
- EC 2000. Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Office for Official Publications of the European Communities, Luxembourg.
- EC 2002. Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Luxembourg.
- EC 2006. Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg.
- EC 2018. Guidance on Aquaculture and Natura 2000 Sustainable aquaculture activities in the context of the Natura 2000 Network.
- EC 2012. Common methodology for assessing the impact of fisheries on marine Natura 2000. Service Contract No. 070307/2010/578174/SER/B. DGEnv Brussels.
- Poelman *et al*., 2022. Study on state-of-the-art scientific information on the impacts of aquaculture activities in Europe.
- ABPMer, 2013a – h. Tools for Appropriate Assessment of Fishing and Aquaculture Activities in Marine and Coastal Natura 2000 Sites. Marine Institute.
- Marine Institute (2013). A risk assessment framework for fisheries in Natura 2000 sites in Ireland: with case study assessments. Version 1.3., Galway, 31pp.
- Google Earth.

2.6. Assumptions made for Appropriate Assessment reports

Certain assumptions are made for this screening report to ensure that it follows a precautionary approach when considering the extent, magnitude, intensity, and duration of the potential significant effects of the proposed activities. These are:

- All aquaculture sites considered in this assessment report are assumed to be fully operational and that the operations (as well as environmental impacts) are occurring across the entire area of the sites, at a minimum.

- All aquaculture applications which were submitted prior to those being considered here, but may still be pending decisions (e.g., appealed to Aquaculture Licences Appeals Board- ALAB), are also assumed to be fully operational across the entire area of the relevant sites. This ensures a conservative approach in that it assumes these activities will be operational to the maximum extent possible.

- Where multiple species might be proposed to be cultured at a site, the assessment assumes that the species most likely to result in the greatest likely ecological effects on the surrounding environment will be the culture species considered. Furthermore, it will be assessed on the basis that it is cultured throughout the entire area of the proposed site. This ensures that the report considers the highest potential impact in relation to the prospective culture species' interaction with the surrounding environment.
- Other assumptions may be identified on a case-by-case basis and clearly communicated in the AA report.

3. Description of the project and local site characteristics

This Appropriate Assessment screening considers an aquaculture and foreshore licence (under new licence application T32-028A) for the culture of seaweed using longlines (hereafter referred to as 'the project') (see Figure 1).

Figure 1: Location of project.

3.1. Brief description of the project:

Seaweed mariculture

Species cultivation proposed	Irish Wakame (*Alaria esculenta*), Northern European kelp (Digitata) (*Laminaria digitata*), Dulse (*Palmaria palmata*), Sugar kelp (*Saccharina latissima*), Sea thong (*Himanthalia elongata*), Nori (*Porphyra umbilicalis*), Harpoon weed (*Asparagopsis armata*).
Method	Proposed total number of lines/ropes: 248, on a phased basis. The development will consist of 180.25 m long seaweed longlines constructed from 20 mm nylon rope, fitted with A2 grey buoy units at 15 m intervals, or closer where production requirements dictate. A minimum spacing of 20 m will be maintained between individual lines and 89 m between each set of lines.
Source of stock	Seaweed Hatchery developed by the applicant company, or alternatively, Tralee Bay Hatchery or Ocean Algae (or another Irish-based hatchery, as stated in the application).

Annual Production Estimates (wet)	Year 1	Year 2	Year 3	Year 4	Year 5
(tonnes)	881	2391	2391	3901	3901

3.2. Location of project:

File Reference No.	T32-028A
Size of site	146.79 hectares
Location	Arklow Bay, Co. Wicklow
Approximate centroid (lat/long) – see Fig. 1	52.83632°N, 6.09238°W

3.3. Local site characteristics:

Arklow is a County Wicklow town located on the coast of the Irish Sea. The project itself is located ~220m from the shore, surrounded by open sea.

Access points	Boat access to the aquaculture project will be from Arklow Harbour ca. 4.5km south of the project (see Figure 2 below).
WFD EPA water body name and quality	The proposed aquaculture project lies within the Southwestern Irish Sea - Brittas Bay (HA 10) coastal waterbody, in high ecological status and not at risk[8]
Hydrological regime (exposure (wave) and tidal currents)	Modelled datasets for kinetic energy at the seabed due to waves[9] and kinetic energy at the seabed due to currents[10], developed as part of the EUSeaMap project (Populus *et al.,* 2017), indicate that the project is within an area of relative high kinetic energy at the seabed due to waves (636.74–5978.75 Nm^{-2-1}) but a relative low kinetic energy at the seabed due to currents (184.54 Nm^{-2}) (see Figure 4).
Water depth range	The project area is subtidal with the seabed ranging from 14m to 20m[11] (EMODnet Map Viewer).
Adjacent marine habitats	Seabed habitats modelled by EUSeaMap (Populus *et al.,* 2017) (see Figure 3) are dominated by circalittoral fine sand/muddy sand, with small areas of circalittoral sandy mud, deep circalittoral sand and deep circalittoral mud. The closest adjacent shoreline to the aquaculture project is ~220m.

[8] https://www.catchments.ie/data/#/waterbody/IE_EA_140_0000?_k=t99vwc
[9] https://emodnet.ec.europa.eu/geonetwork/srv/eng/catalog.search#/metadata/2a2659c4-ce1b-4feb-81cf-a2bcbc362a3f
[10] https://emodnet.ec.europa.eu/geonetwork/srv/eng/catalog.search#/metadata/d72bfeca-ceb5-4faa-b7b0-e95db8c6310b
[11] https://emodnet.ec.europa.eu/geoviewer/

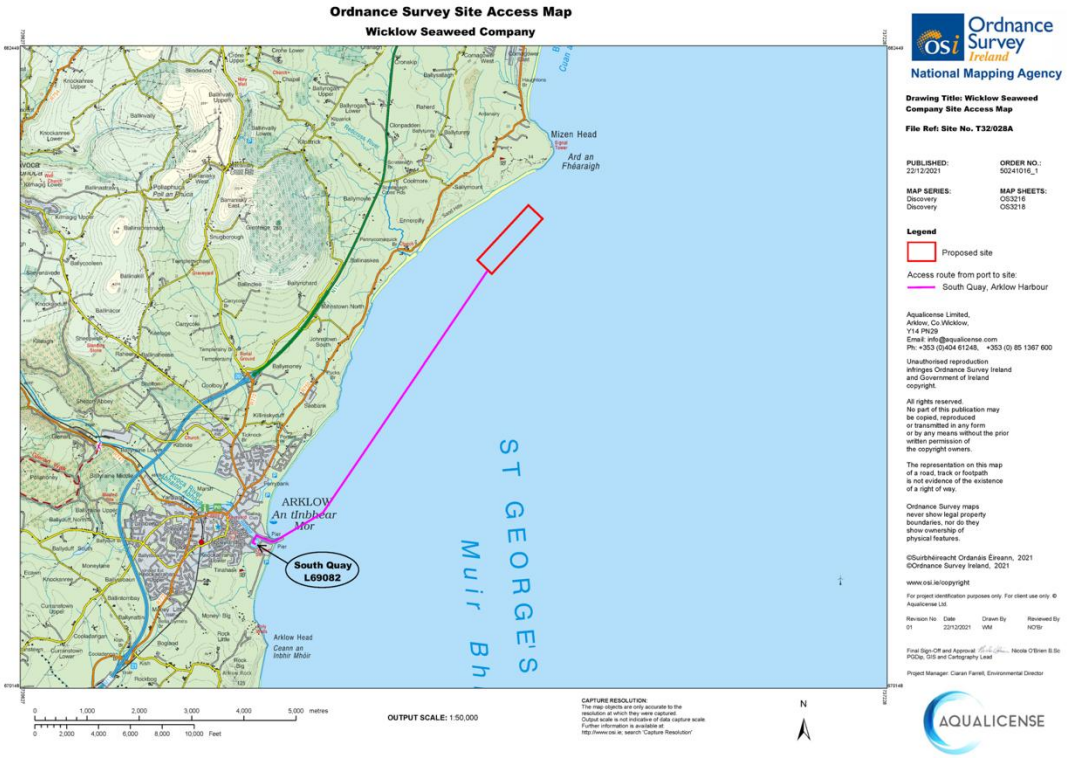


Figure 2: Access Map from Arklow Harbour ca. 4.5km south of the project.

Figure 3: EMODNET EUSeaMap (2023) seabed habitat types in the vicinity of the project. https://emodnet.ec.europa.eu/geoviewer/

Figure 4: *Kinetic energy at the seabed due to waves* (Populus *et al.,* 2017) overlapping with the project ranging from 636.74–5978.75 Nm^{-2-1} in the project area.

4. Overview of existing aquaculture activities

The project is located off the coast of Arklow, Co. Wicklow. The application is for a seaweed rope culture licence.

There is currently one other existing foreshore aquaculture site licenced within 15km of the project area, and two foreshore aquaculture licences pending within 15km of the project area, in the vicinity of the project. These three aquaculture sites are listed in Table 1 and illustrated in Figure 5 below.

Table 1: List of existing aquaculture sites within Arklow Bay.

Licence No.	Species	Distance from project
T32-1012 (licence pending)	Blue Mussel (*Mytilus edulis*)	Ca. 6.2km south
T32-1013 (licence pending)	Blue Mussel (*Mytilus edulis*)	Ca. 6.6km southeast
T32-027A (licenced)	Blue Mussel (*Mytilus edulis*)	Ca. 8.2km south

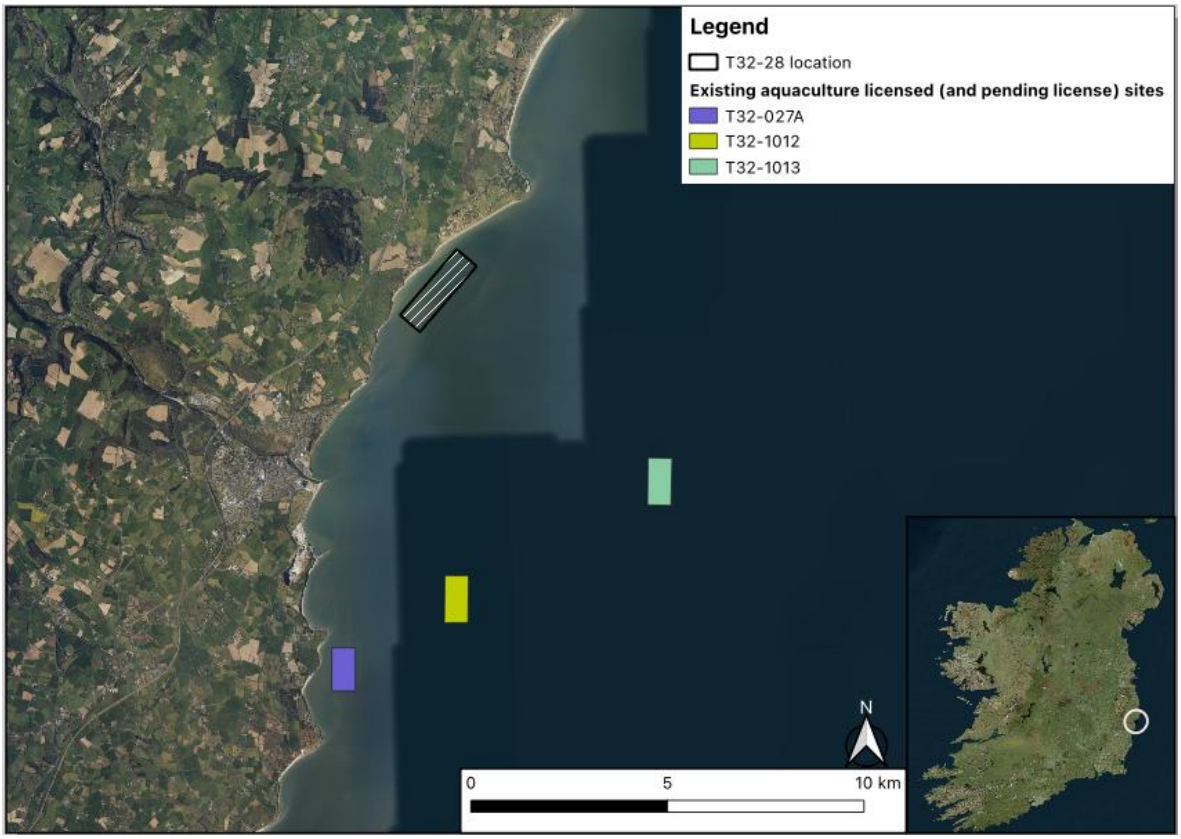


Figure 5: Existing aquaculture sites licenced (and pending licence) within the vicinity of T32-028A.

5. Identification and screening of Natura 2000 sites

5.1. Identification of all European sites within 15km

Six SACs and one SPA were identified within 15km of the project. These are listed below in Table 2 and illustrated in Figure 6 and Figure 7 below, for SACs and SPA respectively. All of the above European sites will be taken forward to the AA screening phase, set out in Section 5.3 and Section 5.4 below.

Table 2: European sites located within 15km of the project

European Site (code)	Distance from proposed project (km)
Buckroney-Brittas Dunes and Fen SAC (000729)	Ca. 0.2km
Magherabeg Dunes SAC (001766)	Ca. 8.2km
Kilpatrick Sandhills SAC (001742)	Ca. 10.4km
Deputy's Pass Nature Reserve SAC (000717)	Ca. 12.5km
Wicklow Reef SAC (002274)	Ca. 14.1km
Vale of Clara (Rathdrum Wood) SAC (000733)	Ca. 14.4km
Wicklow Head SPA (004127)	Ca. 13.4km

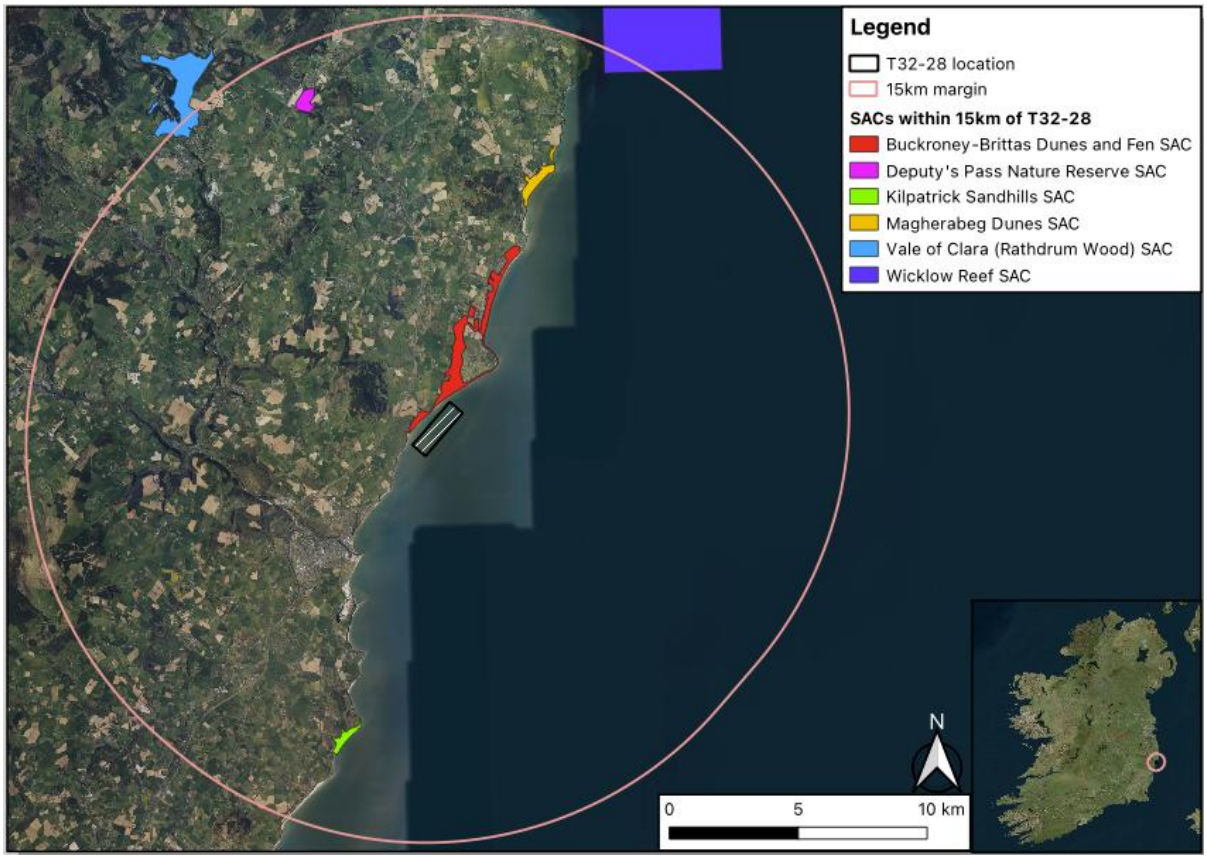


Figure 6: Special Areas of Conservation (SACs) located within 15km of the project.

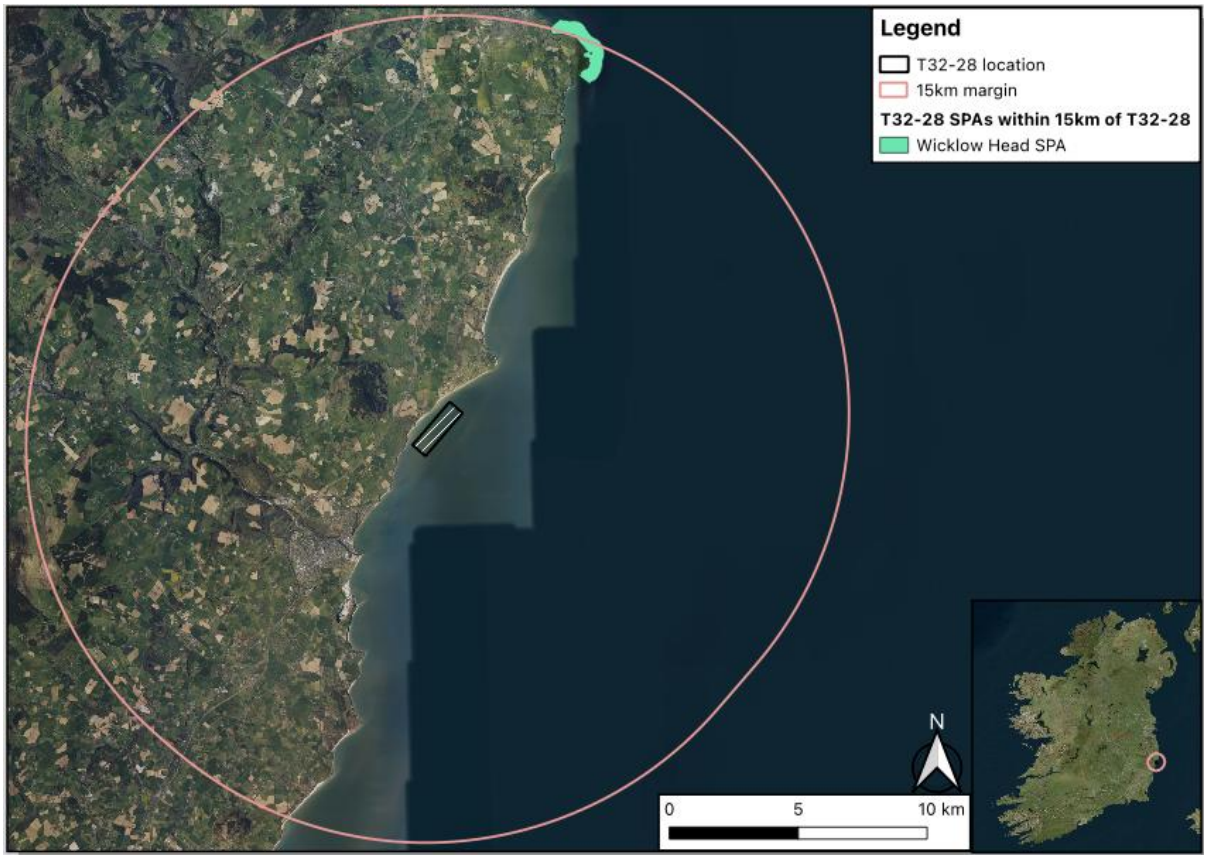


Figure 7: Special Protection Areas (SPAs) located within 15km of the project.

5.2. Identification of SPAs within 50km

Identification of European sites within a 15km zone is commonplace in Appropriate Assessment screening, this is an arbitrary distance and not necessarily based on Source-Pathway-Receptor models. Where there are migratory species, or species with a large foraging range (such as bird species), the proposed aquaculture activities may result in structures along their migratory routes or impact foraging behaviour. Therefore, in addition to the one Special Protection Area (SPA) located within 15km of the project, a further seven SPAs were identified as occurring within 50km of the project and are listed below in Table 3 and illustrated in Figure 8.

Table 3: European sites located 15km-50km from the project

European Site (code)	Distance from proposed project (km)
The Murrough SPA (004186)	Ca. 16.5km
Wicklow Mountains SPA (004040)	Ca. 22.3km
Cahore Marshes SPA (004143)	Ca. 31.7km
Poulaphouca Reservoir SPA (004063)	Ca. 40.6km
The Raven SPA (004019)	Ca. 47.4km
Dalkey Islands SPA (004172)	Ca. 48km
Wexford Harbour and Slobs SPA (004076)	Ca. 49km

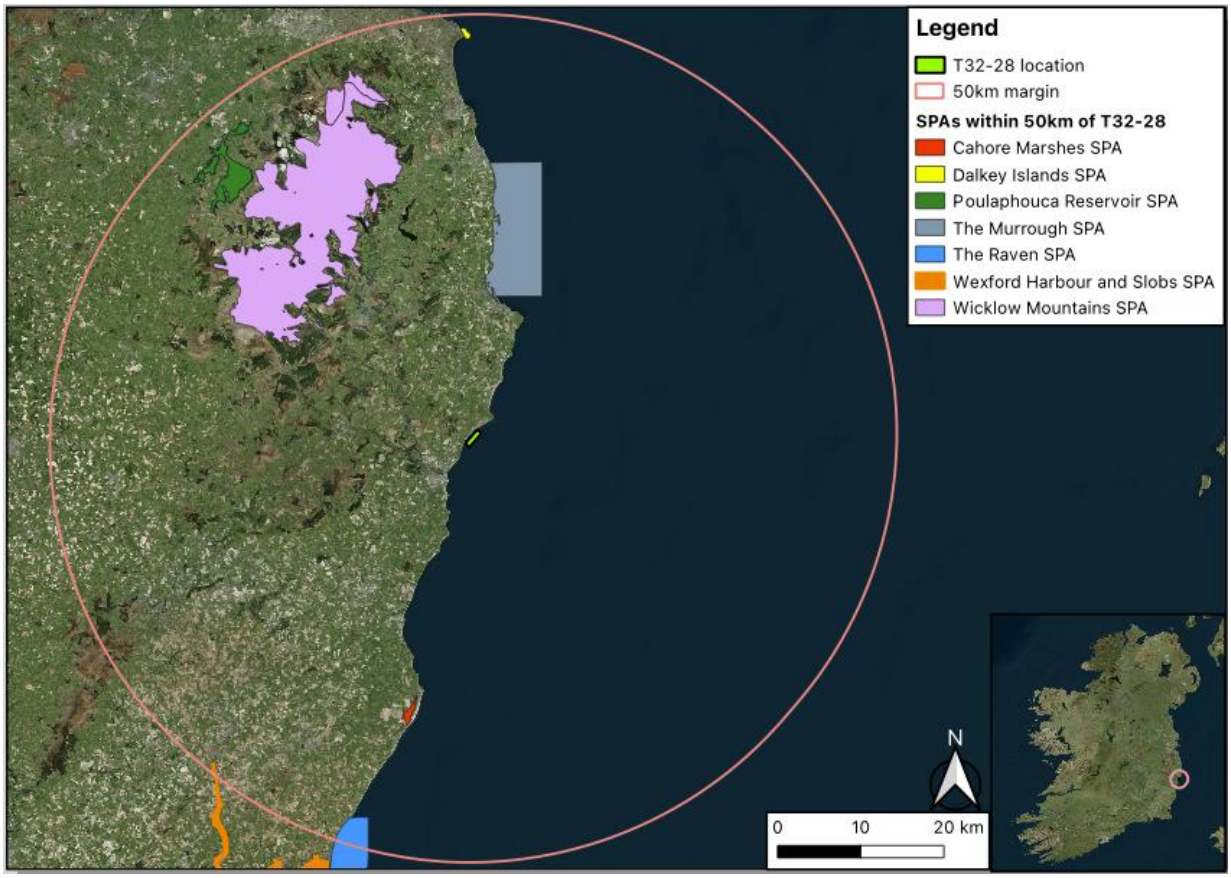


Figure 8: Special Protection Areas (SPAs) located between 15km-50km of the project.

For the SCIs of the seven SPAs located between 15-50km (Table 3) from the aquaculture licence area (and which were not considered as part of the assessment of likely significant effects (using Source-Pathway-Receptor model) in Section 5.4), an assessment was undertaken, set out in Table 4 below.

Table 4: Assessment of likely significant effects for SCIs of European sites 15-50km from the project.

SCI	Relevant SPAs	Assessment of likely significant effects from projects
Red-throated Diver (*Gavia stellata*) [A001]	The Murrough SPA (004186) The Raven SPA (004019)	They typically feed along the coasts of tidal estuaries and over mudflats in streams, rivers or larger lakes. It is also reported that they are rarely seen off rocky shorelines (Rizzolo et al., 2020). Prefers breeding in low elevation wetlands. Considering its foraging behaviour and the intervening distance between this aquaculture project and the SPA (ca. 16.5km away), Red-throated Diver is not reasonably expected to utilise habitats within or adjacent to the project area within any levels of concern.
Greylag Goose (*Anser anser*) [A043]	The Murrough SPA (004186) Poulaphouca Reservoir SPA (004063)	Usually found wintering on "farmland in open country or in swamps, lakes and coastal lagoons". Foraging mostly on vegetation, "grass, roots, leaves, stems, seed heads, fruits and sprouts of wide variety of plants," and forages mainly on land by grazing, but sometimes on water by submerging head and probing in mud for plant matter (Carboneras et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 16.5km away), Greylag Goose is not reasonably expected to utilise habitats within or adjacent to the project area within levels of any concern. No potential for significant effects concluded.
Light-bellied Brent Goose (*Branta bernicla hrota*) [A046]	The Murrough SPA (004186)	In western Europe, Brent goose use eelgrass meadows (eelgrass is a strong indicator of the abundance of brent goose) and green algae beds, and salt marshes, but they have used grasslands in spring also and now regularly use agricultural grasslands and winter cereals in fall and winter too. However, research has shown that agricultural areas are second choice behind salt marshes (Inger et al., 2008). Therefore, considering habitat preference and the intervening distance between this aquaculture project and these SPAs (closest is ca. 16.5km away), Light-bellied Brent Goose is not reasonably expected to utilise habitats within or adjacent to the project area within levels of any concern. No potential for significant effects concluded.
Teal (*Anas crecca*) [A052]	The Murrough SPA (004186) Wexford Harbour and Slobs SPA (004076)	Usually winters in brackish wetlands, saltmarshes and large estuaries, mainly shallow, sheltered waters of high productivity. Opportunistic feeder on "aquatic vegetation; aquatic insects and larvae, molluscs, crustaceans" (Johnson et al., 2020).

SCI	Relevant SPAs	Assessment of likely significant effects from projects
		Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 16.5km away), Teal is not reasonably expected to utilise habitats within or adjacent to the project area within levels of any concern. No potential for significant effects concluded.
Black-headed Gull (*Chroicocephalus ridibundus*) [A179]	The Murrough SPA (004186) Wexford Harbour and Slobs SPA (004076)	Black-headed Gull is reported to have a global mean foraging distance of 7km (Woodward et al., 2024) Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 16.5km away), Black-headed Gull is not reasonably expected to utilise habitats within or adjacent to the project area within levels of any concern. No potential for significant effects concluded.
Herring Gull (*Larus argentatus*) [A184]	The Murrough SPA (004186)	Herring Gull is reported to have a global mean foraging distance of 21km (Weseloh et al., 2024). Prefers coastal and near coastal habitats, also inland lakes, reservoirs and rubbish dumps. Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 16.5km away), Herring Gull is not reasonably expected to utilise habitats within or adjacent to the project area within levels of any concern. No potential for significant effects concluded.
Wigeon (*Mareca penelope*) [A855]	The Murrough SPA (004186) Cahore Marshes SPA (004143) Wexford Harbour and Slobs SPA (004076)	"Shallow, freshwater marshes, lakes and lagoons surrounded by scattered trees or open forest during breeding season, but in winter moves to coastal marshes, freshwater and brackish lagoons, estuaries, bays and other sheltered marine localities." (Carboneras et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA located ca. 16.5km to the southwest of the project area, Wigeon is not anticipated to be found in significant numbers adjacent to/within this project area and based on current understanding of threats and risks in this context, the potential for significant effects is concluded as unlikely.
Little Tern (*Sternula albifrons*) [A885]	The Murrough SPA (004186) Wexford Harbour and Slobs SPA (004076)	Little Tern is reported to forage locally with respect to the breeding site (within 3km of the colony) (Gochfeld et al., 2020).

SCI	Relevant SPAs	Assessment of likely significant effects from projects
		Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 16.5km away), Little Tern is not reasonably expected to utilise habitats within or adjacent to the project area within levels of any concern. No potential for significant effects concluded.
Wetland and Waterbirds [A999]	The Murrough SPA (004186) The Raven SPA (004019) Wexford Harbour and Slobs SPA (004076)	There is no spatial overlap or hydrological pathway between the project area and this Special Conservation Interest. Considering this, the potential for significant effects are extremely unlikely.
Merlin (*Falco columbarius*) [A098]	Wicklow Mountains SPA (004040)	Merlin are typically associated with coniferous boreal forest to deciduous parkland, shrub steppe, moorland and open prairies and steppes (Warkentin et al., 2020). Considering its typical breeding habitat and also noting that the SPA is located ca. 22.3km to the southwest of the project area, Merlin is not anticipated to be found in significant numbers adjacent to/within this project area and based on current understanding of threats and risks in this context, the potential for significant effects is concluded as unlikely.
Peregrine (*Falco peregrinus*) [A103]	Wicklow Mountains SPA (004040)	This species is typically a cliffs and crags nester White et al., 2024). Coastal breeding in Ireland usually occurs on the south, west and north coasts, coastal breeding on the east coast is limited by the availability of suitable nesting cliffs. Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA located ca. 22.3km to the southwest of the project area, Peregrine is not anticipated to be found in significant numbers adjacent to/within this project area and based on current understanding of threats and risks in this context, the potential for significant effects is concluded as unlikely.
Golden Plover (*Pluvialis apricaria*) [A140]	Cahore Marshes SPA (004143) Wexford Harbour and Slobs SPA (004076)	Usually found on pastures, open agricultural land, and regularly feeds on intertidal flats. Foraging mostly on invertebrates, polychaetes on intertidal flats, and sometimes berries, seeds and grass. (Wiersma et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 31.7km away), Golden Plover is not anticipated to be found in significant numbers adjacent or within this licence area and

SCI	Relevant SPAs	Assessment of likely significant effects from projects
		based on current understanding of threats and risks in this context, likely significant effects are excluded.
Lapwing (*Vanellus vanellus*) [A142]	Cahore Marshes SPA (004143) Wexford Harbour and Slobs SPA (004076)	Lapwing when wintering are typically associated with major wetlands, pasture and rough land adjacent to bogs. "Outside breeding season also appears on harvested stubble and ploughed fields, and is increasingly using arable fields in winter as opposed to pastureland, at least in parts of NW Europe. Roosting flocks prefer spacious, old pastures and sometimes appear on mudflats, as well as (recently) on large open roof spaces." (Wiersma, 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 31.7km away), Lapwing is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]	Cahore Marshes SPA (004143) The Raven SPA (004019) Wexford Harbour and Slobs SPA (004076)	Prefers to winter on peatlands and improved grasslands and forages mostly on plant matter (Ely et al., 2024). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 31.7km away), Greenland White-fronted Goose is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Lesser Black-backed Gull (*Larus fuscus*) [A183]	Poulaphouca Reservoir SPA (004063) Wexford Harbour and Slobs SPA (004076)	Frequents coastal and inland habitats, likes to feed or roost on estuaries, harbours, lakes, reservoirs and sandy beaches, (Burger et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 40.6km away), Lesser Black-backed Gull is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Cormorant (*Phalacrocorax carbo*) [A017]	The Raven SPA (004019) Wexford Harbour and Slobs SPA (004076)	Known to frequent open waters, both inland and marine, *carbo* markedly marine. Prefers sheltered areas and estuaries. Sometimes, lakes, lagoons, reservoirs, wide rivers, and flood

SCI	Relevant SPAs	Assessment of likely significant effects from projects
		waters. (Hatch et al., 2020). Normally feeds in shallow water. Breeds on inshore islands, cliffs, stacks, amongst boulders. Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 47.4km away), Cormorant is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Common Scoter (*Melanitta nigra*) [A065]	The Raven SPA (004019)	Usually found breeding on freshwater pools, small lakes or slow-flowing rivers, foraging on plants, invertebrates, and freshwater crustaceans. Winters usually at sea in shallow waters (<20m) and dives several metres (1-3.7m) to feed, predominantly of benthic bivalve molluscs. (Carboneras & Kirwan, 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 47.4km away), Common Scoter is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Grey Plover (*Pluvialis squatarola*) [A141]	The Raven SPA (004019)	It typically roosts in dense flocks but spreads out over sandy and muddy flats to forage as the tide recedes. It forages almost always on substrate, but may pick prey off low vegetation as well (Poole et al., 2020). Usually found on intertidal mudflats, saltmarshes and beaches when not breeding. Foraging mostly on invertebrates, bivalves and crustaceans. Considering its foraging behaviour, preferred habitat and the intervening distance between this aquaculture project and the SPA (ca. 47.4km away), Grey Plover is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Sanderling (*Calidris alba*) [A144]	The Raven SPA (004019) Wexford Harbour and Slobs SPA (004076)	Nests on well vegetated areas, and often on stony, well drained ridge tops, often <60m above sea level. Forages on coastal beaches on small invertebrates and bivalve molluscs. (Macwhirter et al., 2020).

SCI	Relevant SPAs	Assessment of likely significant effects from projects
		Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and these SPAs (closest is ca. 47.4km away), Sanderling is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Roseate Tern (*Sterna dougallii*) [A192]	Dalkey Islands SPA (004172)	Exclusively marine. Nests on nearshore islands composed of rocks and glacial till, rarely on saltmarshes. Feeds almost exclusively on small marine fish. Forages over shallow sandbars and inlets (Gochfeld et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and these SPAs (closest is ca. 48km away), Roseate Tern is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Common Tern (*Sterna hirundo*) [A193]	Dalkey Islands SPA (004172)	On the Atlantic Coast, Common Tern usually forage within 1 km of the shore; they often feed over predatory fish in open water (Arnold et al., 2020), and they have a global mean foraging distance of 6.4km (Woodward et al., 2024). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 48km away), Common Tern is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Arctic Tern (*Sterna paradisaea*) [A194]	Dalkey Islands SPA (004172)	Most foraging occurs within 20km of the colony, where prey availability is 50cm from the surface (Hatch et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 48km away), Arctic Tern is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.

SCI	Relevant SPAs	Assessment of likely significant effects from projects
Little Grebe (*Tachybaptus ruficollis*) [A004]	Wexford Harbour and Slobs SPA (004076)	Most wintering occurs on wetlands, sheltered coasts, estuaries and coastal habitats, feeding mainly on invertebrates (Llimona et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Little Grebe is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Great Crested Grebe (*Podiceps cristatus*) [A005]	Wexford Harbour and Slobs SPA (004076)	Outside breeding season, usually found on "coasts, estuaries and large, exposed lakes and reservoirs". Foraging mostly by diving and picking insects from vegetation (Llimona et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Great Crested Grebe is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Grey Heron (*Ardea cinerea*) [A028]	Wexford Harbour and Slobs SPA (004076)	Usually found on "any kind of shallow water, fresh, brackish, or salt, standing or flowing… generally prefers areas with some trees but can occupy very open areas." Highly opportunistic forager, mostly on fish, but also insects, molluscs, amphibians, reptiles, and terrestrial mammals. (Martínez-Vilalta et al., 2020). It's Conservation Status is not globally threatened (Least Concern). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Grey Heron is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Bewick's Swan (*Cygnus columbianus bewickii*) [A037]	Wexford Harbour and Slobs SPA (004076)	Usually found wintering on low-lying wet pasture, lakes and ponds, feeding on plant material. (Limpert et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Bewick's Swan is not

SCI	Relevant SPAs	Assessment of likely significant effects from projects
		anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Whooper Swan (*Cygnus cygnus*) [A038]	Wexford Harbour and Slobs SPA (004076)	Usually found in "wetlands that are rich in emergent vegetation. However, when grain or root crops are available, agricultural lands may be heavily used". Foraging mostly in marine and aquatic habitats with vegetation no more than 100cm below the surface. Sometimes grain fields and meadows also. (Mlodinow et al., 2025). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Whooper Swan is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Shelduck (*Tadorna tadorna*) [A048]	Wexford Harbour and Slobs SPA (004076)	Usually found in "coastal mudflats and estuaries, generally occurring in salt or brackish water". Foraging mostly on aquatic invertebrates (Carboneras et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Shelduck is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Mallard (*Anas platyrhynchos*) [A053]	Wexford Harbour and Slobs SPA (004076)	Mallard breed mostly in ground where hidden in vegetation. Occurs on variety of wetlands within range; "large or small, seasonal or permanent, in fresh, brackish or salt waters, provided they are relatively shallow (typically just meters) and provide some cover, preferably with submerged, floating, emergent and riparian vegetation." Found on "mudflats, ornamental ponds, reservoirs, canals, irrigation networks and sewage farms" (Drilling et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Mallard is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.

SCI	Relevant SPAs	Assessment of likely significant effects from projects
Pintail (*Anas acuta*) [A054]	Wexford Harbour and Slobs SPA (004076)	Usually found in shallow, freshwater marshes, small lakes and rivers, preferably with dense vegetation cover. In winter, also on coastal lagoons with brackish or saline waters. (Clark et al., 2020). Foraging areas consist of different types of fresh, brackish, and marine wetlands. Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and these SPAs (closest is ca. 49km away), Pintail is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Scaup (*Aythya marila*) [A062]	Wexford Harbour and Slobs SPA (004076)	Usually found wintering on "almost exclusively marine habitats, usually on extensive, shallow, salt-water bays and brackish river inlets that provide protection from cold winds." Forages on animal and plant matter dependent on availability. (Kessel et al., 2020). The conservation status is not globally threatened (Least Concern). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and these SPAs (closest is ca. 49km away), Scaup is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Goldeneye (*Bucephala clangula*) [A067]	Wexford Harbour and Slobs SPA (004076)	Outside breeding season, usually found on "coastal lagoons, estuaries, harbours and inshore marine waters, and also inland lakes, reservoirs and rivers that remain ice-free". Foraging mostly in winter on "molluscs and crustaceans, prefers foraging over sandy, gravel, rocky, or boulder substrates in relatively shallow waters where such prey are concentrated" (Eadie et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Goldeneye is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Red-breasted Merganser (*Mergus serrator*) [A069]	Wexford Harbour and Slobs SPA (004076)	Usually wintering "at sea, frequenting both inshore and offshore waters, sandy estuaries, sheltered bays and brackish lagoons." Feeds mostly on "Small fish (10-15 cm) and

SCI	Relevant SPAs	Assessment of likely significant effects from projects
		crustaceans; also worms, insects, amphibians, and some plant material." Forages mostly by diving to various depths (Craik et al., 2020). The conservation status is not globally threatened (Least Concern). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Red-breasted Merganser is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Hen Harrier (*Circus cyaneus*) [A082]	Wexford Harbour and Slobs SPA (004076)	Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Hen Harrier are not anticipated to be found in significant numbers within/adjacent to this licence area and based on current understanding of threats and risks in this context, the potential for significant effects is concluded as unlikely. No likely significant effects on European sites are identified.
Coot (*Fulica atra*) [A125]	Wexford Harbour and Slobs SPA (004076)	Outside breeding season, usually found on "quiet estuarine or inshore sea waters, and often occurs on open water of lakes and reservoirs". Omnivorous, but primarily vegetarian (Taylor et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Coot is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Oystercatcher (*Haematopus ostralegus*) [A130]	Wexford Harbour and Slobs SPA (004076)	Breeds on saltmarshes, sand and shingle beaches, less often on rocky coasts; sometimes alongside agricultural land. Non-breeding season, mostly found on estuarine mudflats, saltmarshes and sandy and rocky shores. Forages on soft coastal substrates and feeds on bivalve molluscs and other invertebrates (Hockey et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and these SPAs (closest is ca. 49km away), Oystercatcher is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.

SCI	Relevant SPAs	Assessment of likely significant effects from projects
Knot (*Calidris canutus*) [A143]	Wexford Harbour and Slobs SPA (004076)	Usually found wintering "on sandy beaches to intertidal feeding areas on sandy mud, where they may feed on bivalves". Foraging mostly by pecking at bivalve molluscs when away from breeding grounds (Baker et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Knot is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Dunlin (*Calidris alpina*) [A149]	Wexford Harbour and Slobs SPA (004076)	Whilst overwintering, Dunlin prefer habitat such as estuaries, bays, seasonal wetlands, flooded fields, and other agricultural lands (Warnock & Gill, 2023). Forages on a variety of invertebrates, and sometimes plant material and small fish. Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Dunlin is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Black-tailed Godwit (*Limosa limosa*) [A156]	Wexford Harbour and Slobs SPA (004076)	This species typically winters in sheltered estuaries, lagoons with large intertidal mudflats, sandy beaches, saltmarshes, salt-flats, and inland wetlands (Van Gils et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Black-tailed Godwit is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Bar-tailed Godwit (*Limosa lapponica*) [A157]	Wexford Harbour and Slobs SPA (004076)	Usually found on intertidal areas, sandy estuaries, and sheltered bays. Foraging usually on molluscs, crustaceans and insects. (McCaffery & Gill, 2020). Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and these SPAs (closest is ca. 49km away), Bar-tailed Godwit is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.

SCI	Relevant SPAs	Assessment of likely significant effects from projects
Curlew (*Numenius arquata*) [A160]	Wexford Harbour and Slobs SPA (004076)	During non-breeding periods, Curlew is typically found on muddy coasts, bays and estuaries (Van Gils et al., 2020). Forages on a wide variety, mainly on invertebrates, sometimes small vertebrates, and plant material. Considering its habitat preference, foraging behaviour and the intervening distance between this aquaculture project and this SPA (ca. 49km away), Curlew is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.
Redshank (*Tringa totanus*) [A162]	Wexford Harbour and Slobs SPA (004076)	Usually found on coastal and inland wetlands, grassy marshes and swampy heathlands. Foraging usually on "wide range of soil, surface-active and aquatic prey, as well as some estuarine invertebrates" such as molluscs, crustaceans and insects (Van Gils et al., 2020). Considering its habitat preference, foraging behaviour and the intervening distance this aquaculture project and these SPAs (closest is ca. 49km away), Redshank is not anticipated to be found in significant numbers adjacent or within this licence area and based on current understanding of threats and risks in this context, likely significant effects are excluded.

Having examined, analysed, and evaluated, in the light of the best scientific knowledge in the field, the following aspects of the projects:

- the nature of the proposed aquaculture project (including associated operations and ancillary works) and location;
- the above European sites together with their SCIs and conservation objectives;
- potential sources and pathways relevant to these European sites

it can be ruled out, based on objective scientific information, that the projects themselves (i.e., individually) will have a significant effect on these European Sites located between 15-50km from the aquaculture licence area(s) (listed in Table 3 and Table 4 in Section 5.2), in light of the above information and the following rationale:

- Due to the separation distance between each Natura site and the project and the absence of important foraging areas for the feature SCIs in the vicinity of the project.

5.3. Assessment of Likely Significant Effects for Qualifying Interests of Special Areas of Conservation

Buckroney-Brittas Dunes and Fen SAC (000729)

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
Annual vegetation of drift lines [1210]	Maintain the favourable conservation condition	Some mapped features are <300m from the project. Hydrodynamics In hydrodynamic terms, this configuration does not represent a continuous shore-parallel obstruction capable of materially interrupting longshore sediment transport processes or significantly altering wave transformation patterns along the adjacent shoreline. Suspended macroalgal aquaculture systems are highly permeable structures consisting primarily of ropes, droppers, floats and discrete mooring points, allowing substantial transmission of wave and current energy through the farm footprint. Measurable wave attenuation effects are generally associated with dense, large-scale suspended canopies specifically designed or modelled for coastal protection functions. The proposed lines will have a minimum spacing of 20m. Experimental and modelling studies further indicate that wave attenuation associated with suspended seaweed cultivation is highly localised and decreases rapidly outside the farm footprint (Bodycomb et al., 2023, Miranda et al., 2024). No evidence has been identified to indicate that a conventional inshore longline seaweed aquaculture development of the scale and configuration proposed here, located approximately 350 m offshore would materially alter coastal sediment budgets, shoreline morphology, beach accretion/erosion processes, or aeolian sediment supply to dune habitats. Additional consultation with DAFM Marine Engineering Division (Crowley, *pers. comm*., 2026) reached a conclusion of no significant changes to existing attenuation, erosion or sediment transport due to this development and with significant negative hydromorphological impacts unlikely.	Screened out

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
		<u>Litter</u> Given the footprint and proximity, a potential aquaculture litter pathway to the feature was considered. The current evidence base indicates that the project type is typically a comparatively low source of aquaculture-related litter. It has been concluded that no significant source-pathway-receptor linkage has been identified.	Screened out
Perennial vegetation of stony banks [1220]	Restore the favourable conservation condition	Some mapped features are <1000m from the proposed project. <u>Hydrodynamics</u> In hydrodynamic terms, this configuration does not represent a continuous shore-parallel obstruction capable of materially interrupting longshore sediment transport processes or significantly altering wave transformation patterns along the adjacent shoreline. Suspended macroalgal aquaculture systems are highly permeable structures consisting primarily of ropes, droppers, floats and discrete mooring points, allowing substantial transmission of wave and current energy through the farm footprint. Measurable wave attenuation effects are generally associated with dense, large-scale suspended canopies specifically designed or modelled for coastal protection functions. The proposed lines will have a minimum spacing of 20m. Experimental and modelling studies further indicate that wave attenuation associated with suspended seaweed cultivation is highly localised and decreases rapidly outside the farm footprint (Bodycomb et al., 2023, Miranda et al., 2024). No evidence has been identified to indicate that a conventional inshore longline seaweed aquaculture development of the scale and configuration proposed here, located approximately 350 m offshore would materially alter coastal sediment budgets, shoreline morphology, beach accretion/erosion processes, or aeolian sediment supply to dune habitats. Additional consultation with DAFM Marine Engineering Division (Crowley, *pers. comm* 2026) reached a conclusion of no significant changes to existing attenuation, erosion or sediment transport due to this development and with significant negative hydromorphological impacts unlikely.	

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
		<u>Litter</u> Given the footprint and proximity, a potential aquaculture litter pathway to the feature was considered. The current evidence base indicates that the project type is typically a comparatively low source of aquaculture-related litter. It has been concluded that no significant source-pathway-receptor linkage has been identified.	
Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	Maintain the favourable conservation condition	The feature is not mapped in conservation objectives report and while mapping information is available there are likely unmapped features with an assumed proximity of concern. <u>Hydrodynamics</u> In hydrodynamic terms, this configuration does not represent a continuous shore-parallel obstruction capable of materially interrupting longshore sediment transport processes or significantly altering wave transformation patterns along the adjacent shoreline. Suspended macroalgal aquaculture systems are highly permeable structures consisting primarily of ropes, droppers, floats and discrete mooring points, allowing substantial transmission of wave and current energy through the farm footprint. Measurable wave attenuation effects are generally associated with dense, large-scale suspended canopies specifically designed or modelled for coastal protection functions. The proposed lines will have a minimum spacing of 20m. Experimental and modelling studies further indicate that wave attenuation associated with suspended seaweed cultivation is highly localised and decreases rapidly outside the farm footprint (Bodycomb et al., 2023, Miranda et al., 2024). No evidence has been identified to indicate that a conventional inshore longline seaweed aquaculture development of the scale and configuration proposed here, located approximately 350 m offshore would materially alter coastal sediment budgets, shoreline morphology, beach accretion/erosion processes, or aeolian sediment supply to dune habitats. Additional consultation with DAFM Marine Engineering Division (Crowley, *pers. comm* 2026) reached a conclusion of no significant changes to existing attenuation, erosion or sediment transport due to this development and with significant negative hydromorphological impacts unlikely.	Screened out

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
		<u>Litter</u> Given the footprint and proximity, a potential aquaculture litter pathway to the feature was considered. The current evidence base indicates that the project type is typically a comparatively low source of aquaculture-related litter. It has been concluded that no significant source-pathway-receptor linkage has been identified.	
Embryonic shifting dunes [2110]	Restore the favourable conservation condition	Some mapped features are <420m from the project. <u>Hydrodynamics</u> In hydrodynamic terms, this configuration does not represent a continuous shore-parallel obstruction capable of materially interrupting longshore sediment transport processes or significantly altering wave transformation patterns along the adjacent shoreline. Suspended macroalgal aquaculture systems are highly permeable structures consisting primarily of ropes, droppers, floats and discrete mooring points, allowing substantial transmission of wave and current energy through the farm footprint. Measurable wave attenuation effects are generally associated with dense, large-scale suspended canopies specifically designed or modelled for coastal protection functions. The proposed lines will have a minimum spacing of 20m. Experimental and modelling studies further indicate that wave attenuation associated with suspended seaweed cultivation is highly localised and decreases rapidly outside the farm footprint (Bodycomb et al., 2023, Miranda et al., 2024). No evidence has been identified to indicate that a conventional inshore longline seaweed aquaculture development of the scale and configuration proposed here, located approximately 350 m offshore would materially alter coastal sediment budgets, shoreline morphology, beach accretion/erosion processes, or aeolian sediment supply to dune habitats. Additional consultation with DAFM Marine Engineering Division (Crowley, *pers. comm* 2026) reached a conclusion of no significant changes to existing attenuation, erosion or sediment transport due to this development and with significant negative hydromorphological impacts unlikely. <u>Litter</u>	Screened out

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
		Given the footprint and proximity, a potential aquaculture litter pathway to the feature was considered. The current evidence base indicates that the project type is typically a comparatively low source of aquaculture-related litter. It has been concluded that no significant source-pathway-receptor linkage has been identified.	
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	Restore the favourable conservation condition	Mapped features are potentially <300m from the project. <u>Hydrodynamics</u> In hydrodynamic terms, this configuration does not represent a continuous shore-parallel obstruction capable of materially interrupting longshore sediment transport processes or significantly altering wave transformation patterns along the adjacent shoreline. Suspended macroalgal aquaculture systems are highly permeable structures consisting primarily of ropes, droppers, floats and discrete mooring points, allowing substantial transmission of wave and current energy through the farm footprint. Measurable wave attenuation effects are generally associated with dense, large-scale suspended canopies specifically designed or modelled for coastal protection functions. The proposed lines will have a minimum spacing of 20m. Experimental and modelling studies further indicate that wave attenuation associated with suspended seaweed cultivation is highly localised and decreases rapidly outside the farm footprint (Bodycomb et al., 2023, Miranda et al., 2024). No evidence has been identified to indicate that a conventional inshore longline seaweed aquaculture development of the scale and configuration proposed here, located approximately 350 m offshore would materially alter coastal sediment budgets, shoreline morphology, beach accretion/erosion processes, or aeolian sediment supply to dune habitats. Additional consultation with DAFM Marine Engineering Division (Crowley, *pers. comm* 2026) reached a conclusion of no significant changes to existing attenuation, erosion or sediment transport due to this development and with significant negative hydromorphological impacts unlikely. <u>Litter</u> Given the footprint and proximity, a potential aquaculture litter pathway to the feature was considered. The current evidence base indicates that the project type is typically a comparatively low source of	Screened out

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
		aquaculture-related litter. It has been concluded that no significant source-pathway-receptor linkage has been identified.	
Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Maintain the favourable conservation condition	Mapped features are potentially <400m from the project. <u>Hydrodynamics</u> In hydrodynamic terms, this configuration does not represent a continuous shore-parallel obstruction capable of materially interrupting longshore sediment transport processes or significantly altering wave transformation patterns along the adjacent shoreline. Suspended macroalgal aquaculture systems are highly permeable structures consisting primarily of ropes, droppers, floats and discrete mooring points, allowing substantial transmission of wave and current energy through the farm footprint. Measurable wave attenuation effects are generally associated with dense, large-scale suspended canopies specifically designed or modelled for coastal protection functions. The proposed lines will have a minimum spacing of 20m. Experimental and modelling studies further indicate that wave attenuation associated with suspended seaweed cultivation is highly localised and decreases rapidly outside the farm footprint (Bodycomb et al., 2023, Miranda et al., 2024). No evidence has been identified to indicate that a conventional inshore longline seaweed aquaculture development of the scale and configuration proposed here, located approximately 350 m offshore would materially alter coastal sediment budgets, shoreline morphology, beach accretion/erosion processes, or aeolian sediment supply to dune habitats. Additional consultation with DAFM Marine Engineering Division (Crowley, *pers. comm* 2026) reached a conclusion of no significant changes to existing attenuation, erosion or sediment transport due to this development and with significant negative hydromorphological impacts unlikely. <u>Litter</u> Given the footprint and proximity, a potential aquaculture litter pathway to the feature was considered. The current evidence base indicates that the project type is typically a comparatively low source of aquaculture-related litter. It has been concluded that no significant source-pathway-receptor linkage has been identified.	Screened out

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150]	Restore the favourable conservation condition	Mapped features are not in close proximity (>2000m). <u>Hydrodynamics</u> In hydrodynamic terms, this configuration does not represent a continuous shore-parallel obstruction capable of materially interrupting longshore sediment transport processes or significantly altering wave transformation patterns along the adjacent shoreline. Suspended macroalgal aquaculture systems are highly permeable structures consisting primarily of ropes, droppers, floats and discrete mooring points, allowing substantial transmission of wave and current energy through the farm footprint. Measurable wave attenuation effects are generally associated with dense, large-scale suspended canopies specifically designed or modelled for coastal protection functions. The proposed lines will have a minimum spacing of 20m. Experimental and modelling studies further indicate that wave attenuation associated with suspended seaweed cultivation is highly localised and decreases rapidly outside the farm footprint (Bodycomb et al., 2023, Miranda et al., 2024). No evidence has been identified to indicate that a conventional inshore longline seaweed aquaculture development of the scale and configuration proposed here, located approximately 350 m offshore would materially alter coastal sediment budgets, shoreline morphology, beach accretion/erosion processes, or aeolian sediment supply to dune habitats. Additional consultation with DAFM Marine Engineering Division (Crowley, *pers. comm* 2026) reached a conclusion of no significant changes to existing attenuation, erosion or sediment transport due to this development and with significant negative hydromorphological impacts unlikely. <u>Litter</u> Given the footprint and proximity, a potential aquaculture litter pathway to the feature was considered. The current evidence base indicates that the project type is typically a comparatively low source of aquaculture-related litter. It has been concluded that no significant source-pathway-receptor linkage has been identified.	Screened out

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
Dunes with Salix repens ssp. argentea (Salicion arenariae) [2170]	Maintain the favourable conservation condition	These features are not in close proximity (>2000m). <u>Hydrodynamics</u> In hydrodynamic terms, this configuration does not represent a continuous shore-parallel obstruction capable of materially interrupting longshore sediment transport processes or significantly altering wave transformation patterns along the adjacent shoreline. Suspended macroalgal aquaculture systems are highly permeable structures consisting primarily of ropes, droppers, floats and discrete mooring points, allowing substantial transmission of wave and current energy through the farm footprint. Measurable wave attenuation effects are generally associated with dense, large-scale suspended canopies specifically designed or modelled for coastal protection functions. The proposed lines will have a minimum spacing of 20m. Experimental and modelling studies further indicate that wave attenuation associated with suspended seaweed cultivation is highly localised and decreases rapidly outside the farm footprint (Bodycomb et al., 2023, Miranda et al., 2024). No evidence has been identified to indicate that a conventional inshore longline seaweed aquaculture development of the scale and configuration proposed here, located approximately 350 m offshore would materially alter coastal sediment budgets, shoreline morphology, beach accretion/erosion processes, or aeolian sediment supply to dune habitats. Additional consultation with DAFM Marine Engineering Division (Crowley, *pers. comm* 2026) reached a conclusion of no significant changes to existing attenuation, erosion or sediment transport due to this development and with significant negative hydromorphological impacts unlikely. <u>Litter</u> Given the footprint and proximity, a potential aquaculture litter pathway to the feature was considered. The current evidence base indicates that the project type is typically a comparatively low source of aquaculture-related litter. It has been concluded that no significant source-pathway-receptor linkage has been identified.	Screened out

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
		Given the footprint and proximity, a potential aquaculture litter pathway to the feature was considered. The current evidence base indicates that the project type is typically a comparatively low source of aquaculture-related litter. It has been concluded that no significant source-pathway-receptor linkage has been identified.	
Humid dune slacks [2190]	Restore the favourable conservation condition	Mapped features are potentially <400m from the project. <u>Hydrodynamics</u> In hydrodynamic terms, this configuration does not represent a continuous shore-parallel obstruction capable of materially interrupting longshore sediment transport processes or significantly altering wave transformation patterns along the adjacent shoreline. Suspended macroalgal aquaculture systems are highly permeable structures consisting primarily of ropes, droppers, floats and discrete mooring points, allowing substantial transmission of wave and current energy through the farm footprint. Measurable wave attenuation effects are generally associated with dense, large-scale suspended canopies specifically designed or modelled for coastal protection functions. The proposed lines will have a minimum spacing of 20m. Experimental and modelling studies further indicate that wave attenuation associated with suspended seaweed cultivation is highly localised and decreases rapidly outside the farm footprint (Bodycomb et al., 2023, Miranda et al., 2024). No evidence has been identified to indicate that a conventional inshore longline seaweed aquaculture development of the scale and configuration proposed here, located approximately 350 m offshore would materially alter coastal sediment budgets, shoreline morphology, beach accretion/erosion processes, or aeolian sediment supply to dune habitats. Additional consultation with DAFM Marine Engineering Division (Crowley, *pers. comm* 2026) reached a conclusion of no significant changes to existing attenuation, erosion or sediment transport due to this development and with significant negative hydromorphological impacts unlikely.	Screened out

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
		<u>Litter</u> Given the footprint and proximity, a potential aquaculture litter pathway to the feature was considered. The current evidence base indicates that the project type is typically a comparatively low source of aquaculture-related litter. It has been concluded that no significant source-pathway-receptor linkage has been identified.	
Alkaline fens [7230]	Maintain the favourable conservation condition	While not mapped, the habitat occurs mainly within the centre of a fen complex in a shallow basin whose exit to the sea is partially blocked by a gravel and sand ridge south of Mizen Head and which is backed by a dense swamp of common reed (Phragmites australis). <u>Hydrodynamics</u> In hydrodynamic terms, this configuration does not represent a continuous shore-parallel obstruction capable of materially interrupting longshore sediment transport processes or significantly altering wave transformation patterns along the adjacent shoreline. Suspended macroalgal aquaculture systems are highly permeable structures consisting primarily of ropes, droppers, floats and discrete mooring points, allowing substantial transmission of wave and current energy through the farm footprint. Measurable wave attenuation effects are generally associated with dense, large-scale suspended canopies specifically designed or modelled for coastal protection functions. The proposed lines will have a minimum spacing of 20m. Experimental and modelling studies further indicate that wave attenuation associated with suspended seaweed cultivation is highly localised and decreases rapidly outside the farm footprint (Bodycomb et al., 2023, Miranda et al., 2024). No evidence has been identified to indicate that a conventional inshore longline seaweed aquaculture development of the scale and configuration proposed here, located approximately 350 m offshore would materially alter coastal sediment budgets, shoreline morphology, beach accretion/erosion processes, or aeolian sediment supply to dune habitats. Additional consultation with DAFM Marine Engineering Division (Crowley, *pers. comm* 2026) reached a conclusion of no significant changes to existing attenuation, erosion or sediment transport due to this development and with significant negative hydromorphological impacts unlikely.	Screened out

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
		Litter Given the footprint and proximity, a potential aquaculture litter pathway to the feature was considered. The current evidence base indicates that the project type is typically a comparatively low source of aquaculture-related litter. It has been concluded that no significant source-pathway-receptor linkage has been identified.	Screened out

Magherabeg Dunes SAC (001766)

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
Annual vegetation of drift lines [1210]	Maintain the favourable conservation condition	There is no spatial overlap between this terrestrial QI and the proposed project. Considering the type of activity (seaweed mariculture) being proposed and the intervening distance between the project and the boundary of this SAC (8.2km). No significant source-pathway-receptor linkage identified.	Screened out
Embryonic shifting dunes [2110]	Maintain the favourable conservation condition	There is no spatial overlap between this QI and the proposed project. Considering the large intervening distance between the latter and the boundary of this SAC (8.2km). No significant source-pathway-receptor linkage identified.	
Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	Maintain the favourable conservation condition	There is no spatial overlap between this QI and the proposed project. Considering the large intervening distance between the latter and the boundary of this SAC (8.2km). No significant source-pathway-receptor linkage identified.	
Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Restore the favourable conservation condition	There is no spatial overlap between this QI and the proposed project. Considering the large intervening distance between the latter and the boundary of this SAC (8.2km). No significant source-pathway-receptor linkage identified.	
Petrifying springs with tufa formation (Cratoneurion) [7220]	Restore the favourable conservation condition	There is no spatial overlap between this QI and the proposed project. Considering the type of activity (seaweed mariculture) being proposed and the intervening distance between the project and the boundary of this SAC (8.2km). No significant source-pathway-receptor linkage identified.	

Kilpatrick Sandhills SAC (001742)

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
Annual vegetation of drift lines [1210]	Maintain the favourable conservation condition	There is no spatial overlap between this terrestrial QI and the proposed project. Considering the type of activity (seaweed mariculture) being proposed and the intervening distance between the project and the boundary of this SAC (10.4km). No significant source-pathway-receptor linkage identified.	Screened out
Embryonic shifting dunes [2110]	Restore the favourable conservation condition	There is no spatial overlap between this terrestrial QI and the proposed project. Considering the type of activity (seaweed mariculture) being proposed and the intervening distance between the project and the boundary of this SAC (10.4km). No significant source-pathway-receptor linkage identified.	
Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120]	Restore the favourable conservation condition	There is no spatial overlap between this terrestrial QI and the proposed project. Considering the type of activity (seaweed mariculture) being proposed and the intervening distance between the project and the boundary of this SAC (10.4km). No significant source-pathway-receptor linkage identified.	
Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Restore the favourable conservation condition	There is no spatial overlap between this terrestrial QI and the proposed project. Considering the type of activity (seaweed mariculture) being proposed and the intervening distance between the project and the boundary of this SAC (10.4km). No significant source-pathway-receptor linkage identified.	
Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150]	Restore the favourable conservation condition	There is no spatial overlap between this terrestrial QI and the proposed project. Considering the type of activity (seaweed mariculture) being proposed and the intervening distance between the project and the boundary of this SAC (10.4km). No significant source-pathway-receptor linkage identified.	

Deputy's Pass Nature Reserve SAC (000717)

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	Maintain the favourable conservation condition	There is no spatial overlap between this terrestrial QI and the proposed project. Considering the large intervening distance between the latter and the boundary of this SAC (12.5km). No significant source-pathway-receptor linkage identified.	Screened out

Wicklow Reef SAC (002274)

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
1170 Reefs	Maintain the favourable conservation condition	There is no spatial overlap between this QI and the proposed project. While it is noted that one of the macroalgal species proposed for cultivation, *Asparagopsis armata* (*Asparagopsis* as stated in the application), is recorded as a non-native[12] invasive, and that Silva *et al* (2021) reported that the invasive seaweed *A. armata* is known to impact the macroalgal species richness of intertidal communities. Considering the large intervening distance between the project and the boundary of this SAC (14.1km). No significant source-pathway-receptor linkage identified.	Screened out

Vale of Clara (Rathdrum Wood) SAC (000733)

Qualifying Interest (QI)	Conservation Objectives	Assessment of Likely Significant Effect	Screening outcome
Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	Restore the favourable conservation condition	There is no spatial overlap between this terrestrial QI and the proposed project. Considering the large intervening distance between the latter and the boundary of this SAC (14.4km). No significant source-pathway-receptor linkage identified.	Screened out

[12] https://www.sciencedirect.com/science/article/pii/S1470160X2100128X

5.4. Assessment of Likely Significant Effects for Special Conservation Interests of Special Protection Areas.

Wicklow Head SPA (004127)

Special Conservation Interest (SCI)	Target	Assessment of Likely Significant Effect	Screening outcome
A188 Kittiwake *Rissa tridactyla*	Restore the favourable conservation condition	A survey in 2002 recorded a nationally important population of breeding Kittiwake (956 pairs) (NPWS, 2012). Kittiwake foraging is wide-ranging and not tied to localized inshore waters, where this project is situated; literature shows that it often forages at upwellings or oceanic fronts where prey concentrate (Hunt et al., 1981, Schneider et al., 1990). Given the distance of the proposed project from the SPA supporting this SCI and considering the highly specific nesting habitat requirements and broad foraging range of the species, there is no likely S-P-R link between the SCI and the proposed project. Therefore, the scale and nature of the activity are such that no significant impact—alone or in combination—is reasonably foreseeable.	Screened out

5.5.Screening of potential effects of introduction of non-native species.

It is noted that one of the macroalgal species proposed for cultivation, *Asparagopsis armata* (*Asparagopsis* is stated in the application), is recorded as a non-native[13] invasive. Silva *et al* (2021) reported that the invasive seaweed *A. armata* is known to impact the macroalgal species richness of intertidal communities. Meanwhile, studies by Kraan & Barrington (2005) showed that seaweed farms can act as a source pool for populations of this non-native invasive and that sea surface temperatures (SSTs) in Irish waters are suitable for the growth, survival and asexual reproduction of the tetrasporophyte and gametophyte. They also note that while SSTs may not be warm enough for the sexual reproduction of this species in Ireland, any increase in SST due to climate change could increase the number of gametophyte populations encountered in Ireland.

A potential source and marine dispersal pathway is therefore identified for *A. armata*. However, there is no spatial overlap between the project and any European site. Buckroney-Brittas Dunes and Fen SAC (000729), approximately 0.2 km from the project, supports terrestrial and wetland QIs that would not be affected by the introduction or spread of a marine macroalga. Wicklow Reef SAC (002274), the only European site within 15 km supporting a marine QI, is approximately 14.1 km from the project. The evidence reviewed relates to effects on local intertidal macroalgal communities and does not indicate that cultivation at the scale and configuration proposed would alter the area, distribution or biological composition of Reef [1170] over this separation distance. Accordingly, likely significant effects on the QIs of Buckroney-Brittas Dunes and Fen SAC and Wicklow Reef SAC can be excluded.

5.6.Aids to Navigation

5.6.1. Assessment for Aids to Navigation

All aquaculture sites with structures are required to have Aids to Navigation. Aquaculture applications, such as this one in Arklow Bay, will use special marks to indicate the boundaries of the aquaculture activities. Aids to navigation (AtoN) are devices or systems designed to enhance the safe and efficient navigation of vessels. An aid to navigation station may be defined as a point described by geographic coordinates and categorised as: land (a fixed station accessible by land); offshore (a fixed station only accessible by boat or helicopter); and floating (buoys etc).

Special Marks are used to indicate a special area or feature whose nature may be apparent from reference to a chart or other nautical publication. They may be utilised as a Mobile Aid to Navigation (MatoN) where a mark is attached to a floating object which may constitute a collision hazard. Special marks are yellow, may carry a top mark (single yellow 'X' shape/ St. Andrew's Cross), are preferably three-dimensional to be visible from all directions and any light used is also yellow. Special marks do not have any of the rhythms used for white lights (associated with Cardinal marks, Isolated Danger, and Safe Water marks). Special marks for aquaculture sites are typically floating buoys and/or ground marks.

[13] https://www.sciencedirect.com/science/article/pii/S1470160X2100128X

5.6.2. Descriptions of markers

The location of the aquaculture project (and the subject of this AAS) is shown in Figure 10, along with the location of twelve special marks along the outer lines and in the four corners of project area shown in Figure 11. Each special mark has a self-contained lantern at the top and a mooring eye for the screw in anchor technology, as stated in the application.

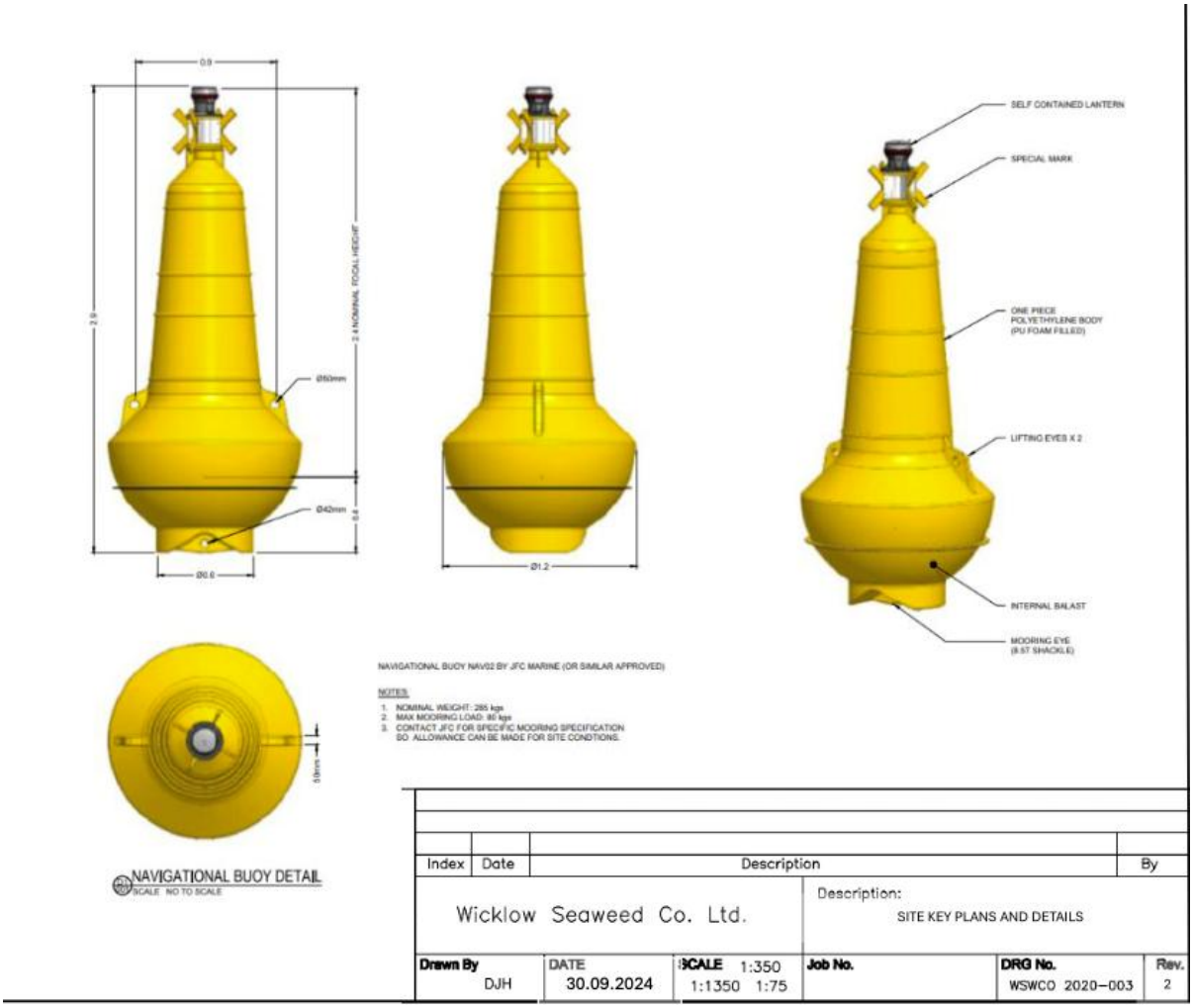


Figure 9: details of Aids to Navigation (AtoN) set out in the project licence application.

5.6.3. Assessment of pressures

5.6.3.1. Habitats

The anchoring of all types of moorings can cause physical loss and change of habitat in the direct footprint of the moorings (i.e. smothering). This pressure will continue for the entire length of time the structure is in place. For this assessment, we assume that time is the entire length of the aquaculture licence. Abrasion could also occur from the subtidal markers where the chain, shackle or rope may make contact with the seabed.

The subtidal aquaculture project area with special marks is located more than 200m from the boundary of the closest European site (Buckroney-Brittas Dunes and Fen SAC (000729), a European site with terrestrial Qualifying Interest features. Therefore, anchors will not be located on any marine community types / Qualifying Interest (QI) features and thus **likely significant effects from physical loss, change of habitat or seabed abrasion, on QIs or MCTs can be ruled out.**

5.6.3.2. SAC species

Subtidal markers have chains and ropes both of which could pose a collision or entanglement risk to cetacean QIs. The 2:1 ratio of rope and the mid-line buoy ensures a tight mooring system. **Likely significant effects of entanglement on SAC species for subtidal markers can therefore be ruled out.**

The twelve special marks have a lighting system to aid navigation which can pose a visual disturbance to species foraging at night-time. However, fully marine species such as cetaceans are unlikely to be affected. **Likely significant effects of AToNs and their lights on cetacean species can therefore be ruled out.**

5.6.3.3. SPA species

No SPAs were screened-in as part of this AA screening process. While lights on the AToN may present a visual disturbance which can affect nesting birds, the closest SPA (Wicklow Head SPA) is located >13km from the project area (and the AToNs), and so is outside the anticipated visible range of the lanterns used on these AToNs and not within distances of concern to known local nesting areas. **Likely significant effects of the lights used on AToNs on seabirds can be ruled out.**

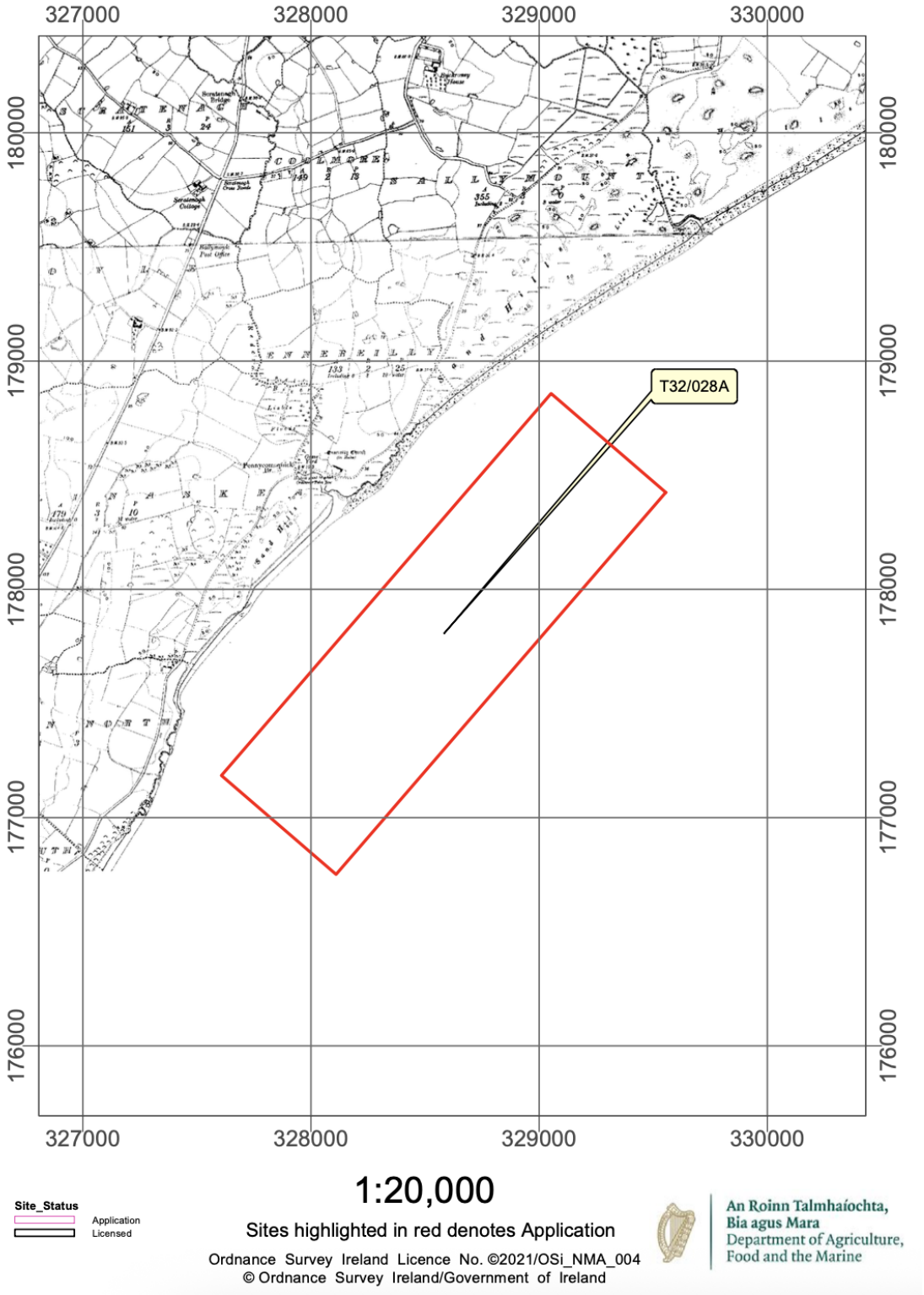


Figure 10: Location of the aquaculture project

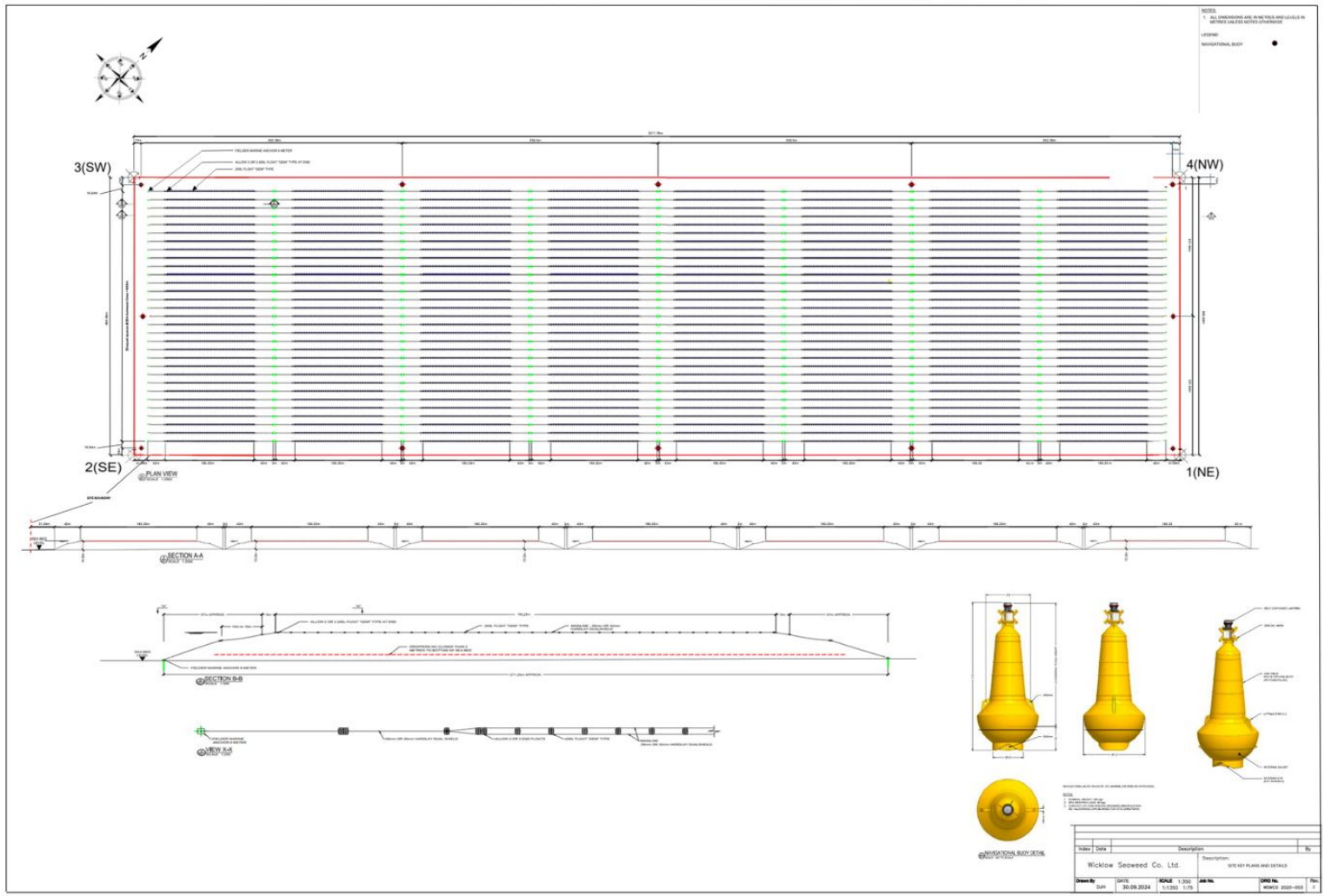


Figure 11: Overview showing the longline structure and the special mark yellow buoys (marked by black dots with red crosses). 12 of which will be positioned on the outer lines of the aquaculture project.

5.7. Consideration of in-combination effects on Natura 2000 site Qualifying Interest / Special Conservation Interest features.

The QIs that may screen out during the initial Appropriate Assessment screening exercise have been considered from an in-combination perspective. If the impact pathways from the proposed aquaculture operations act in-combination with other activities (including non-aquaculture) to the point where QIs are potentially affected, this should trigger a full assessment. In-combination impacts by their nature have the potential to be greater than the sum of individual impacts. This is a challenging aspect to the assessment with a number of technical challenges to derive conclusive observations. A number of sources were considered in the assessment of the potential for in combination impacts:

- *Water Framework Directive Hydromorphological and Biological Element classifications: https://gis.epa.ie/GetData/Download (Accessed 27/01/2026)*
- *DHLGH Foreshore Licensing (https://www.gov.ie/en/foreshore-notices/ - Accessed: 27/01/2026)*
- *EIA Portal: https://experience.arcgis.com/experience/a1a85d92623147b191dd25a14b2571da (Accessed 27/01/2026)*
- *Wicklow County Council planning https://www.wicklow.ie/Living/Services/Planning/Planning-Applications/Online-Planning : https://www.wicklow.ie (Accessed 27/01/2026)*
- *EPA Pressures & Activities (www. https://gis.epa.ie/EPAMaps/Water : Accessed: 27/01/2026)*
- *Inshore Fishing Maps (Ireland's Marine Atlas https://atlas.marine.ie/#?c=52.7140:-6.1386:11 : Accessed: 27/01/2026)*

The proposed project has been considered in combination with other relevant plans and projects, including aquaculture activities, foreshore applications, fisheries, marine/coastal developments and other activities with potential to affect the receiving environment. For the European sites and features screened out in this report, no credible in-combination source-pathway-receptor linkage has been identified. Having regard to the scale and nature of the proposal, the absence of direct overlap with the relevant QIs/SCIs, the absence of significant disturbance, water quality, benthic or supporting habitat pathways, and the separation from the relevant European site features, it is concluded, on the basis of objective scientific information, that the proposed project, either alone or in combination with other plans or projects, is not likely to have a significant effect on those European sites in view of their conservation objectives.

Part B: AA Screening Conclusions and Recommendations

European Sites for which Likely Significant Effects Can Be Excluded

Following AA screening, and pursuant to Article 6(3) of the Habitats Directive, the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011), as amended, the Foreshore Act 1933, as amended, and the Fisheries (Amendment) Act 1997, the screening assessment has found that there is no likelihood of the project proposed under aquaculture and foreshore licence application T32-028A having any significant effect, either individually or in combination with other plans or projects, on the European sites within 15 km considered in Sections 5.3 and 5.4, or on the SPAs located between 15 km and 50 km considered in Section 5.2 and Tables 3 and 4.

The European sites within 15 km are:

- Buckroney-Brittas Dunes and Fen SAC (000729)
- Magherabeg Dunes SAC (001766)
- Kilpatrick Sandhills SAC (001742)
- Deputy's Pass Nature Reserve SAC (000717)
- Wicklow Reef SAC (002274)
- Vale of Clara (Rathdrum Wood) SAC (000733)
- Wicklow Head SPA (004127)

As such, the project does not advance to the Appropriate Assessment stage in relation to any of the European sites considered in this report.

AA Screening Report and Determination prepared by:	Niall Phelan, Environmental Facilitation Ltd, on behalf of the Department of Agriculture, Food and the Marine Date: 09/07/2026

Part C: References

Arnold, J. M., S. A. Oswald, I. C. T. Nisbet, P. Pyle, and M. A. Patten (2020). Common Tern (Sterna hirundo), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.comter.01.

Atkins 2016. Report on monitoring sanderling populations within Wicklow Bay SPA (004151), 2014/15. Marine Institute Bird Studies. https://alab.ie/media/alab/content/boarddeterminations/2019/ap4x2f19scheduleofdocuments/10.%20Subsequent%20monitoring%20report%20on%20Sanderling%20population.pdf.

Atkins 2019. Updated assessment of aquaculture impacts in Inner Galway Bay on the Special Conservation Interests of the Inner Galway Bay SPA and other SPAs. Marine Institute Bird Studies. https://alab.ie/media/alab/Annex1220719.pdf.

Baker, A., P. Gonzalez, R. I. G. Morrison, and B. A. Harrington (2020). Red Knot (Calidris canutus), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.redkno.01.

Bodycomb, R., Pomeroy, A.W. & Morris, R.L., 2023. Kelp aquaculture as a nature-based solution for coastal protection: Wave attenuation by suspended canopies. *Journal of Marine Science and Engineering*, 11(9), 1822.

Broekhuizen, N., Zeldis, J., Stephens, S.A., Oldman, J.W., Ross, A.H., Ren, J. and James, M.R. 2002. Factors related to the sustainability of shellfish aquaculture operations in the Firth of Thames: a preliminary analysis. Unpublished NIWA Client Report EVW02243 for Environment Waikato & Auckland Regional Council.

Burger, J., M. Gochfeld, G. M. Kirwan, D. A. Christie, and E. de Juana (2020). Lesser Black-backed Gull (Larus fuscus), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, and E. de Juana, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.lbbgul.01.

Carboneras, C. and G. M. Kirwan (2020). Common Scoter (Melanitta nigra), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, and E. de Juana, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.blksco1.01.

Carboneras, C. and G. M. Kirwan (2020). Common Shelduck (Tadorna tadorna), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, and E. de Juana, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.comshe.01.

Carboneras, C., D. A. Christie, and G. M. Kirwan (2020). Eurasian Wigeon (Mareca penelope), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, and E. de Juana, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.eurwig.01.

Clark, R. G., J. P. Fleskes, K. L. Guyn, D. A. Haukos, J. E. Austin, and M. R. Miller (2020). Northern Pintail (Anas acuta), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.norpin.01.

Craik, S. R., J. Pearce, and R. D. Titman (2020). Red-breasted Merganser (Mergus serrator), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.rebmer.01.

Cranford, P.J. (2019). Magnitude and Extent of Water Clarification Services Provided by Bivalve Suspension Feeding. In: Smaal, A., Ferreira, J., Grant, J., Petersen, J., Strand, Ø. (eds) Goods and Services of Marine Bivalves. Springer, Cham. https://doi.org/10.1007/978-3-319-96776-9_8.

Davenport, J., Smith, R.J.J.W., Packer, M., 2000. Mussels *Mytilus edulis*: significant consumers and destroyers of mesozooplankton. Mar. Ecol. Prog. Ser. 198, 131– 137.

Drilling, N., R. D. Titman, and F. McKinney (2020). Mallard (Anas platyrhynchos), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.mallar3.01.

Eadie, J. M., M. L. Mallory, and H. G. Lumsden (2020). Common Goldeneye (Bucephala clangula), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.comgol.01.

Ely, C. R., A. X. Dzubin, S. G. Mlodinow, G. M. Kirwan, C. Carboneras, and E. Garcia (2024). Greater White-fronted Goose (Anser albifrons), version 1.1. In Birds of the World (N. D. Sly and B. K. Keeney, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.gwfgoo.01.1

Gittings. T, Peppiatt. C, & Troake. P. 2015. Disturbance response of Great Northern Divers *Gavia immer* to boat traffic in Inner Galway Bay. Irish Birds 10: 163–166 (2015).

Gochfeld, M., J. Burger, and E. F. J. Garcia (2020). Little Tern (Sternula albifrons), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, and E. de Juana, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA.

Hockey, P., G. M. Kirwan, and P. F. D. Boesman (2020). Eurasian Oystercatcher (Haematopus ostralegus), version 1.0. In Birds of the World (S. M. Billerman, B. K. Keeney, P. G. Rodewald, and T. S. Schulenberg, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.euroys1.01.

Hunt, G. L., Jr., Eppley, Z. A., & Squibb, R. (1981). *Reproductive ecology, foods and foraging areas of seabirds nesting on the Pribilof Islands, 1975–1979*. Environmental Assessment of the Alaskan Continental Shelf, Final Reports of Principal Investigators, Biological Studies Vol. 12, pp. 1–258. NOAA/Outer Continental Shelf Environmental Assessment Program (OCSEAP).

Johnson, K., C. Carboneras, D. A. Christie, and G. M. Kirwan (2020). Green-winged Teal (Anas crecca), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.gnwtea.01.

Kaiser, M.J., Galanidi, M., Showler, D.A., Elliot, A.J., Caldow, R.W.G., Rees, E.I.S., Stillman, R.A. and Sutherland, W.J. (2006), Distribution and behaviour of Common Scoter Melanitta nigra relative to prey resources and environmental parameters. Ibis, 148: 110-128. https://doi.org/10.1111/j.1474-919X.2006.00517.x.

Kessel, B., D. A. Rocque, and J. S. Barclay (2020). Greater Scaup (Aythya marila), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.gresca.01.

Kraan, S. & Barrington, K.A. 2005. Commercial farming of *Asparagopsis armata* (Bonnemaisoniceae, Rhodophyta) in Ireland, maintenance of an introduced species? J Appl Phycol 17, 103–110. https://doi.org/10.1007/s10811-005-2799-5.

Llimona, F., J. del Hoyo, D. A. Christie, F. Jutglar, E. Garcia, and G. M. Kirwan (2020). Little Grebe (Tachybaptus ruficollis), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, and E. de Juana, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.litgre1.01.

Llimona, F., J. del Hoyo, D. A. Christie, F. Jutglar, and G. M. Kirwan (2020). Great Crested Grebe (Podiceps cristatus), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, and E. de Juana, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.grcgre1.01.

Limpert, R. J., S. L. Earnst, C. Carboneras, and G. M. Kirwan (2020). Tundra Swan (Cygnus columbianus), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.tunswa.01.

Macwhirter, R. B., P. Austin-Smith Jr., and D. E. Kroodsma (2020). Sanderling (Calidris alba), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.sander.01.

Martínez-Vilalta, A., A. Motis, G. M. Kirwan, and G. Hancocks (2026). Gray Heron (Ardea cinerea), version 1.1. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, E. de Juana, M. G. Smith, and B. K. Keeney, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.graher1.01.1.

Miranda, F., Proença, B., Fonseca, D., Mendes, D., Arenas, F., Haerens, P., Siriwardane, S., Pavlou, D., Rosa Santos, P., Pinto, F.T. & Ferradosa, T.F., 2024. Experimental study on wave damping potential of seaweed aquaculture systems on the Portuguese coast. *CoastLab24 Conference Proceedings*.

Mlodinow, S. G., P. Pyle, P. F. D. Boesman, and K. C. Boland (2025). Whooper Swan (Cygnus cygnus), version 2.0. In Birds of the World (B. K. Keeney, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.whoswa.02.

Poole, A. F., P. Pyle, M. A. Patten, and D. R. Paulson (2020). Black-bellied Plover (Pluvialis squatarola), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.bkbplo.01.

Lewis, T. L., D. H. Ward, J. S. Sedinger, A. Reed, D. V. Derksen, C. Carboneras, D. A. Christie, and G. M. Kirwan (2020). Brant (Branta bernicla), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.brant.01.

Limpert, R. J., S. L. Earnst, C. Carboneras, and G. M. Kirwan (2020). Tundra Swan (Cygnus columbianus), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.tunswa.01.

Llimona, F., J. del Hoyo, D. A. Christie, F. Jutglar, and G. M. Kirwan (2020). Great Crested Grebe (Podiceps cristatus), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, and E. de Juana, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.grcgre1.01.

McKindsey, C.W., Landry, T., O'Beirn, F.X. and Davies, I.M. 2007. Bivalve aquaculture and exotic species: a review of ecological considerations and management issues. Journal of Shellfish Research, 26(2), pp. 281-294.

Mlodinow, S. G. and P. F. D. Boesman (2023). Barnacle Goose (Branta leucopsis), version 2.0. In Birds of the World (N. D. Sly, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.bargoo.02.

NPWS (2012) Conservation Objectives: The Raven SPA 004019. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2012) Conservation Objectives: Wexford Harbour and Slobs SPA 004076. Version 1.0. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2013) Conservation Objectives: Wicklow Reef SAC 002274. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

NPWS (2017) Conservation Objectives: Buckroney-Brittas Dunes and Fen SAC 000729. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2017) Conservation Objectives: Magherabeg Dunes SAC 001766. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2017) Conservation Objectives: Kilpatrick Sandhills SAC 001742. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs.

NPWS (2021) Conservation Objectives: Deputy's Pass Nature Reserve SAC 000717. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NPWS (2021) Conservation Objectives: Vale of Clara (Rathdrum Wood) SAC 000733. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NPWS (2024) Conservation Objectives: The Murrough SPA 004186. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

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

NPWS (2024) Conservation Objectives: Poulaphouca Reservoir SPA 004063. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NPWS (2024) Conservation Objectives: Wicklow Mountains SPA 004040. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

NPWS (2025) Conservation Objectives: Cahore Marshes SPA 004143. Version 1. National Parks and Wildlife Service, Department of Housing, Local Government and Heritage.

Populus J., Vasquez M., Albrecht J., Manca E., Agnesi S., Al Hamdani Z., Andersen J., Annunziatellis A., Bekkby T., Bruschi A., Doncheva V., Drakopoulou V., Duncan G., Inghilesi R., Kyriakidou C., Lalli F., Lillis H., Mo G., Muresan M., Salomidi M., Sakellariou D., Simboura M., Teaca A., Tezcan D., Todorova V. and Tunesi L., 2017. EUSeaMap, a European broad-scale seabed habitat map. 174p. http://doi.org/10.13155/49975.

Poole, A. F., P. Pyle, M. A. Patten, and D. R. Paulson (2020). Black-bellied Plover (Pluvialis squatarola), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.bkbplo.01.

Rizzolo, D. J., C. E. Gray, J. A. Schmutz, J. F. Barr, C. Eberl, and J. W. McIntyre (2020). Red-throated Loon (Gavia stellata), version 2.0. In Birds of the World (P. G. Rodewald and B. K. Keeney, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.retloo.02.

Robinson, J., Colhoun, K., Guðmundsson, G., Boertmann, D., Merne, O., O'Briain, M., Portig, A Mackie, K., Boyd, H. 2004. Light-bellied Brent Goose *Branta bernicla hrota* (East Canadian High Arctic population) in Canada, Ireland, Iceland, France, Greenland, Scotland, Wales, England,

the Channel Islands and Spain, 1960/61-1999/2000. Waterbird Review Series. The Wildfowl and Wetlands Trust/Joint Nature Conservation Committee, Slimbridge.

Schneider, D. C., Harrison, N. M., & Hunt, G. L., Jr. (1990). Seabird diet at a front near the Pribilof Islands, Alaska. *Studies in Avian Biology*, *14*, 61–66.

Shackleton. S. 2015. Night rafting behaviour in Great Northern Divers *Gavia immer* and its potential use in monitoring wintering numbers, Seabird 25: 39-46.

Silva. C.O., Lemos. M.F.L., Gaspar. R, Gonçalves. C & Neto. J.M. 2021. The effects of the invasive seaweed *Asparagopsis armata* on native rock pool communities: Evidences from experimental exclusion. Ecological Indicators, Volume 125, 107463, ISSN 1470-160X, https://doi.org/10.1016/j.ecolind.2021.107463.

Taylor, B. and G. M. Kirwan (2020). Eurasian Coot (Fulica atra), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, and E. de Juana, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.eurcoo.01.

Taylor, D., Larsen, J., Buer, A-L,. Friedland, R., Holbach, A., Petersen, J.K., Nielsen, P., Ritzenhofen, L., Saurel, C., Maar. M., 2021. Mechanisms influencing particle depletion in and around mussel farms in different environments. Ecological Indicators. Volume 122. 107304. ISSN 1470-160X. https://doi.org/10.1016/j.ecolind.2020.107304.

Van Gils, J., P. Wiersma, and G. M. Kirwan (2020). Common Redshank (Tringa totanus), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie, and E. de Juana, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.comred1.01.

Warnock, N. D. and R. E. Gill (2023). Dunlin (Calidris alpina), version 2.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.dunlin.02.

Warkentin, I. G., N. S. Sodhi, R. H. M. Espie, A. F. Poole, L. W. Oliphant, and P. C. James (2020). Merlin (Falco columbarius), version 1.0. In Birds of the World (S. M. Billerman, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.merlin.01.

Weseloh, D. V., C. E. Hebert, A. F. Poole, J. C. Ellis, P. Pyle, and M. A. Patten (2024). European Herring Gull (Larus argentatus), version 1.0. In Birds of the World (B. K. Keeney and S. M. Billerman, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.euhgul1.01.

White, C. M., N. J. Clum, T. J. Cade, and W. G. Hunt (2024). Peregrine Falcon (Falco peregrinus), version 1.1. In Birds of the World (S. M. Billerman and M. G. Smith, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.perfal.01.1.

Wiersma, P., G. M. Kirwan, and P. F. D. Boesman (2020). European Golden-Plover (Pluvialis apricaria), version 1.0. In Birds of the World (J. del Hoyo, A. Elliott, J. Sargatal, D. A. Christie,

and E. de Juana, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. https://doi.org/10.2173/bow.eugplo.01.

Woodward, I.D., Thaxter, C.B., Owen, E., Bolton, M., Ward, R.M. and Cook, A.S.C.P., 2024. *The value of seabird foraging ranges as a tool to investigate potential interactions with offshore wind farms*. Ocean & Coastal Management, 254, 107192. https://doi.org/10.1016/j.ocecoaman.2024.107192