

Inland Fisheries Ireland

Appropriate Assessment Screening and Natura Impact Statement for Native Oyster (*Ostrea edulis*) Dredging in Lough Swilly, County Donegal

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List of Acronyms/ Glossary

Abbreviation	Full term
AA	Appropriate Assessment
AIS	Automatic Identification System
AQUAMIS	Aquaculture Information Management System
BIM	Bord Iascaigh Mhara
BTO	British Trust for Ornithology
CDP	County Development Plan
CIEEM	Chartered Institute of Ecology and Environmental Management
DAFM	Department of Agriculture, Food and the Marine
DAHG	Department of Arts, Heritage and the Gaeltacht
DaS	Dumping at Sea
DEHLG	Department of the Environment, Heritage and Local Government
DHLGH	Department of Housing, Local Government and Heritage
DHPLG	Department of Housing, Planning and Local Government
DNA	Deoxyribonucleic acid
EC	European Community
EEC	European Economic Community
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
EU	European Union
GIS	Geographical Information System
HD	Habitats Directive
IFI	Inland Fisheries Ireland
INFOMAR	Integrated Mapping for the Sustainable Development of Ireland's Marine Resource
IROPI	Imperative Reasons for Overriding Public Interest
I-WeBS	Irish Wetland Bird Survey
IWDG	Irish Whale and Dolphin Group
JNCC	Joint Nature Conservation Committee
LSE	Likely Significant Effect
MAC	Maritime Area Consent
MARA	Maritime Area Regulatory Authority
MI	Marine Institute
MLWS	Mean Low Water Springs
MRCM	Marine Resource, Coastal Management and the Islands
MSFD	Marine Strategy Framework Directive
MUL	Maritime Usage Licence
N/A	Not applicable
NBDC	National Biodiversity Data Centre
NIS	Natura Impact Statement
NMPF	National Marine Planning Framework
NPWS	National Parks and Wildlife Service
OPR	Office of the Planning Regulator

Abbreviation	Full term
QI	Qualifying Interest
QGIS	QGIS geographic information system software
RNLI	Royal National Lifeboat Institution
SAC	Special Area of Conservation
SCI	Special Conservation Interest
S-P-R	Source-Pathway-Receptor
SPA	Special Protection Area
TEN-T	Trans-European Transport Network
WFD	Water Framework Directive
Zol	Zone of Influence

1. Executive summary

This Appropriate Assessment (AA) Screening and Natura Impact Statement (NIS) has been prepared by AQUAFACT on behalf of Inland Fisheries Ireland (IFI) in support of the licensing of native oyster (*Ostrea edulis*) dredging in Lough Swilly, Co. Donegal (“the Project”). The report has been prepared to provide the information necessary to inform IFI, as the competent authority, in carrying out its Appropriate Assessment of the Project under Article 6(3) of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitat Directive).

The Stage 1 AA Screening has been prepared to assess the potential for the Project, either alone or in combination with other plans or projects, to have likely significant effects (LSE) on European sites in view of their conservation objectives. The Stage 2 AA provides the information required to assess whether the Project, taking account of appropriate mitigation and Fisheries Management Measures, would adversely affect the integrity of any European site. The assessment is informed by the Native Oyster Dredging Impact Study (Appendix 1), together with available ecological, fisheries and conservation information, including NPWS conservation objectives and supporting documentation, Marine Institute and BIM shellfish stock information, previous fisheries management information, available habitat mapping and relevant scientific literature.

1.1. Statement of Authority

This report was prepared by B. Dickerson (B.Sc., M.Sc., LL.M., Qualifying CIEEM) who is a senior consultant with AQUAFACT – APEM Group, specialising in environmental and ecological assessment for marine projects in Ireland. He holds a B.Sc. (Hons) in Marine Science from the University of Galway, an M.Sc. in Marine Biology, and an LL.M. in Environmental Law from University College Cork. He has extensive expertise in EU and Irish environmental legislation, including the Habitats Directive, Birds Directive, the Marine Strategy Framework Directive, and Ireland’s National Marine Planning Framework. His experience includes Environmental Impact Assessment Reports (EIARs), leading Appropriate Assessment (AA) and Natura Impact Statement (NIS) evaluations for Irish marine SACs and SPAs, addressing conservation objectives, habitat connectivity, and significant effects. He is also knowledgeable in marine survey design, habitat and species assessments, and the analysis and reporting required to support robust environmental regulatory submissions.

This report was co-authored by A. Mitchell (B.Sc., M.Sc.) who is a senior consultant with AQUAFACT – APEM Group. She holds a First-Class honours degree in Marine Science (B.Sc.) with National University of Ireland, Galway, where she studied and surveyed intertidal shores in Galway to develop baseline information for future monitoring, including investigating species assemblages, richness, and biotopes (JNCC). She holds a First-Class

honours degree in Marine Biology (M.Sc.) from University College Cork, where she participated in a project sponsored by the Marine Institute investigating the reproduction, health, and immunology of native oysters in artificial conditions. She is specialised in intertidal monitoring around Irish coasts and Geographical Information Systems (GIS) programmes. She has worked on a range of projects including sanitary surveys, benthic audits, EIAR, NIS, and environmental assessments associated with Maritime Usage Licensing and Dumping at Sea applications.

This report has been reviewed by Dr A. Long, Principal Consultant and Consultancy Team Lead with AQUAFAC – APEM Group. He has over a decade of experience in marine ecology, fisheries science and environmental assessment across consultancy, government and academia. His experience includes Appropriate Assessment, Environmental Impact Assessment, WFD assessment, MSFD assessment, fisheries science, fish/shellfish ecology and marine ecological data analysis. He has authored more than 75 technical reports and several peer-reviewed scientific publications in environmental assessment and fisheries science.

2. Background to the Appropriate Assessment

2.1. Overview

This Appropriate Assessment (AA) Screening and Natura Impact Statement (NIS) has been prepared by AQUAFACT on behalf of Inland Fisheries Ireland (IFI) in support of the licensing of native oyster (*Ostrea edulis*) dredging in Lough Swilly, Co. Donegal (“the Project”). The report has been prepared to provide the information necessary to inform IFI, as the competent authority, in carrying out its Appropriate Assessment of the Project under Article 6(3) of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitat Directive).

Inland Fisheries Ireland (IFI) is the State agency responsible for the protection, management, conservation and development of Ireland’s inland fisheries resources and fish habitats. IFI also undertakes applied fisheries research, including monitoring fish stocks and assessing environmental pressures affecting fish and their habitats. As part of its statutory functions, IFI administers licences that permit certain fishers to undertake dredging for native oysters (*Ostrea edulis*) within designated fishing areas.

The Project comprises the licensed dredging of native oysters within defined areas of Lough Swilly by licensed fishers. Native oyster dredging takes place between September and April inclusive and is undertaken using a four-foot dredge, which is fished from the rear or side of a vessel and towed across the seabed to collect oysters. The purpose of the Project is to facilitate the continued licensed harvesting of native oysters in Lough Swilly, subject to the requirements necessary to protect the ecological integrity and conservation objectives of relevant European sites.

The Stage 1 AA Screening has been prepared to assess the potential for the Project, either alone or in combination with other plans or projects, to have likely significant effects (LSE) on European sites in view of their conservation objectives. The Stage 2 AA provides the information required to assess whether the Project, taking account of appropriate mitigation and Fisheries Management Measures, would adversely affect the integrity of any European site. The assessment is informed by the Native Oyster Dredging Impact Study, together with available ecological, fisheries and conservation information, including NPWS conservation objectives and supporting documentation, Marine Institute and BIM shellfish stock information, previous fisheries management information, available habitat mapping and relevant scientific literature.

Particular consideration is given to the potential for physical disturbance of oyster beds and associated benthic habitats, removal of native oysters from the population, changes to oyster-bed structure and habitat complexity, disturbance or displacement of associated benthic fauna, sediment resuspension and localised

seabed disturbance, effects on recruitment, spawning stock and longer-term population resilience, and repeated or cumulative disturbance over successive fishing seasons. The assessment also considers potential interactions with other protected habitats and species and whether effects could arise in combination with other existing, permitted or proposed plans and projects.

2.2. Guidance/Legislation

This report has been prepared in accordance with the following guidance:

- European Commission (2018) Managing Natura 2000 sites. The provisions of Article 6 of the HD 92/43/EEC Commission notice.
- Office of Planning Regulator (2021) Practice Note PN01 AA screening for development management.
- Department of Environment, Housing and Local Government (2009) AA of plans and projects in Ireland guidance for planning authorities (Revised 2010).
- European Commission (2021) Assessment of plans and projects in relation to Natura 2000 sites – methodological guidance on Article 6(3) and (4) of the HD 92/43/EEC Commission notice.
- Habitats Directive (Council Directive 92/43/EEC) 1992.
- Birds Directive (Directive 79/409/EEC) 1979, amended Directive 2009/147/EC.
- European Communities (Birds and Natural Habitats) Regulations 2011-2021
- Department of Arts, Heritage and the Gaeltacht – National Parks and Wildlife Service (DAHG - NPWS) (2012) Marine NIS in Ireland Special Areas of Conservation, a working document.
- Inland Fisheries Ireland (IFI) Guidance Notes for AA Screenings in the Vicinity of Watercourses. •
- Inland Fisheries Ireland (IFI) (2021) Guidance Notes for Natura Impact Statements (NIS) in the Vicinity of Watercourses.
- Environmental Protection Agency (2025) Water Abstractions and Associated Impoundments – Methodology to Assess and Identify Significant Abstractions in Ireland (Version 1.1, July 2025)
- Water Environment (Abstractions and Associated Impoundments) Act 2022
- Water Environment (Abstractions and Associated Impoundments) Regulations 2024 (S.I. No. 419 of 2024)

This assessment includes a desk-based review of available records of protected QIs and SCIs including the following sources:

-
- Conservation status assessment reports, backing documents and maps prepared to inform national reporting required under Article 17 of the HD.
 - Site synopsis, conservation objective reports and Natura 2000 forms available from NPWS.
 - Published and unpublished NPWS reports on protected habitats and species including Irish Wildlife Manual reports, species action plans and conservation management plans.
 - Existing relevant mapping and databases *e.g.* water body status, species and habitat distribution, *etc.* (sourced from the Environmental Protection Agency (EPA) - <http://gis.epa.ie/>, the National Biodiversity Data Centre (NBDC) - <http://maps.biodiversityireland.ie> and the NPWS - <http://www.npws.ie/mapsanddata/>).
 - Birdwatch Irelands website was accessed for information about SCIs in the relevant SPAs.
 - Previous AA of Review and Renewal of the Finfish Aquaculture Licence at Pettigo Smolt Unit, Co. Donegal Site Ref: T12/116.

3. Stages of the Appropriate Assessment

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (commonly known as the Habitats Directive) is the European Community legislation based on nature conservation established to ensure biodiversity is conserved through the conservation of natural habitats, wild fauna and flora in Europe. A network of sites of conservation importance hosting habitats and species as needing to be either maintained at or, where appropriate, restored to favourable conservation status have been selected as a Special Area of Conservation (SAC) and Special Protection Area (SPA), which are collectively referred to in Ireland as European sites. Together these comprise the Natura 2000 network of protected sites (OPR, 2021). The specific named habitat and/or non-bird species for which an SAC is selected are called 'Qualifying Interests' (QI) of the site while specific named bird species for which an SPA is selected are called 'Special Conservation Interest' (SCIs) of the site (OPR, 2021). In this report, QIs and SCIs are collectively referred to as 'conservation features'.

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 revoked and replaced by the European Communities (Birds and Natural Habitats) Regulations 2011, as amended (herein referred to as the 2011 Birds and Natural Habitats Regulations). The Habitats (92/43/EEC) and Birds (2009/147/EC) Directives were transposed into the Irish legislation by Part XAB of the 2000 Act and the Birds and Natural Habitats Regulations 2011. The legislative provisions for AA Screening for planning applications are set out in Section 177U of the 2000 Act. Articles 6(3) and Article 6(4) of the Habitats Directive outlines the decision-making procedures for considering plans and projects that may have a significant effect on a Natura 2000 site. The Department of the Environment Heritage and Local Government guidelines (DEHLG, 2009, reviewed in 2010) promotes a four-stage process (**Figure 3-1**) to complete the AA and outlines the issues and tests at each stage. Stage 1 and Stage 2 encompass the main requirements for assessment under Article 6(3) of the Habitats Directive. Stage 3 may be part of the Article 6(3) Assessment or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4)).



Figure 3-1: Four stages of the AA Process.

An important aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

3.1. Stage 1: Screening for Appropriate Assessment

Stage I AA Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

- i. whether a plan or project is directly connected to or necessary for the management of European site, and
- ii. whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a European site in view of its conservation objectives.

If LSEs cannot be excluded on the basis of objective information, including cases where effects are significant, uncertain, or where the screening process becomes overly complex, the assessment must proceed to Stage 2 AA. A Stage 1 Screening must be carried out without reliance on mitigation measures. Where potential impacts can clearly be avoided through modification or redesign of the plan or project, the screening process should be repeated on the revised proposal. The highest level of evidence and justification is required where a conclusion is reached at screening stage that no LSEs will occur.

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 European site, and includes any mitigation measures necessary to avoid, reduce, or offset negative effects. The proponent of the plan or project will be required to submit a Natura Impact Statement (NIS), that examines the plan or project and the relevant European sites, to identify and characterise any potential implications for the site in view of the site's conservation objectives, taking account of in-combination effects. This should provide information to enable the competent authority to carry out the appropriate assessment. If the assessment is negative *i.e.*, adverse effects on the integrity of a site cannot be excluded, then the process must proceed to Stage 3, or the plan or project should be abandoned.

The AA is carried out by the Competent Authority and is supported by the NIS with input from the National Parks and Wildlife Service (NPWS) who are a statutory consultee.

3.3. Stage 3: Alternative Solutions

This stage examines any alternative solutions or options that could enable the plan or project to proceed without adverse effects on the integrity of a European site. The process must return to Stage 2, as any alternative proposal must be subject to a Stage 2 AA before it can be subject to the Article 6(4) test. If it can

be demonstrated that all reasonable alternatives have been considered and addressed, the AA progresses to Stage 4.

3.4. Stage 4: Imperative Reasons for Overriding Public Interest/Derogation

Stage 4 is the main derogation process of Article 6(4) which examines whether there are imperative reasons for overriding public interest (IROPI) for allowing a plan or project that will have adverse effects on the integrity of a European site. The extra protection measures for Annex I priority habitats comes into effect when making the IROPI case. Compensatory measures must be proposed and assessed. The European Commission must be informed of the compensatory measures. Compensatory measures must be practical, implementable, likely to succeed, proportionate, and enforceable.

4. Screening Stage

4.1. Description of the Project

4.1.1. Overview

The Project relates to the licensing by Inland Fisheries Ireland (IFI) of native oyster (*Ostrea edulis*) dredging within defined fishing areas in Lough Swilly, Co. Donegal. As part of its statutory functions, IFI issues licences to certain native oyster fishers permitting the harvesting of native oysters by dredging within specified fishing areas. Lough Swilly is one of the areas in Ireland included within the wider IFI native oyster dredging licensing programme.

IFI is reviewing and reissuing licences for native oyster dredging and has identified a requirement for a specific Native Oyster Dredging Impact Study to provide the technical evidence necessary to inform the Appropriate Assessment process. The purpose of the assessment is to determine whether the licensed dredging activity could result in significant effects on relevant European sites and their protected habitats and species, and to identify Fisheries Management Measures, where required, to ensure that relevant conservation objectives are not compromised.

The Project is supported by a separate Native Oyster Dredging Impact Study, which provides the technical evidence base for the assessment of potential effects associated with the activity. The study considers the nature, scale, frequency, duration, persistence and reversibility of dredging-related effects, including physical disturbance of oyster beds and associated benthic habitats, removal of oysters, changes to oyster-bed structure and habitat complexity, disturbance of associated benthic fauna, sediment resuspension, and potential effects on recruitment, spawning stock and longer-term population resilience.

Available information on the Lough Swilly native oyster fishery, including oyster-bed extent, biomass, density, size structure, recruitment, landings and stock trends, will also be considered in characterising the licensed activity and its interaction with the receiving environment. Existing fisheries management arrangements will be identified where relevant. Where the assessment identifies that additional controls are necessary to avoid or reduce adverse effects on European-site conservation objectives, appropriate Fisheries Management Measures will be considered as part of the Stage 2 AA.

4.1.2. General Location

Lough Swilly is located in Co. Donegal in the northwest of Ireland. The lough extends northeast from the River Swilly estuary at its southern end before turning northwest between Rathmullan and Buncrana and opening to the Atlantic Ocean between Fanad Head and Dunaff Head.

Lough Swilly has a long history of native oyster (*Ostrea edulis*) exploitation, with native oysters having been fished in the lough since the 19th century and the distribution of oyster beds mapped from the early 1900s. Pacific oyster (*Magallana gigas*) cultivation has also taken place in Lough Swilly since the 1980s, and the species has subsequently become naturalised within the lough. A commercial fishery for Pacific oysters has operated since 2014.

Lough Swilly is a former river valley that has been inundated by the sea and is generally described as a ria, although it has also been classified as a fjord (Hennessy *et al.*, 2019). The lough is bounded by the Fanad Peninsula to the west and the Inishowen Peninsula to the east. It has a surface area of approximately 150 km², extends for approximately 38 km and reaches approximately 7 km in width. The lough is relatively shallow, with a mean depth of approximately 11.4 m at mean low water springs (MLWS) and a maximum depth of approximately 24 m at MLWS near its mouth. The tidal range varies between approximately 1.4 m during neap tides and 3.7 m during spring tides (INFOMAR, 2025).

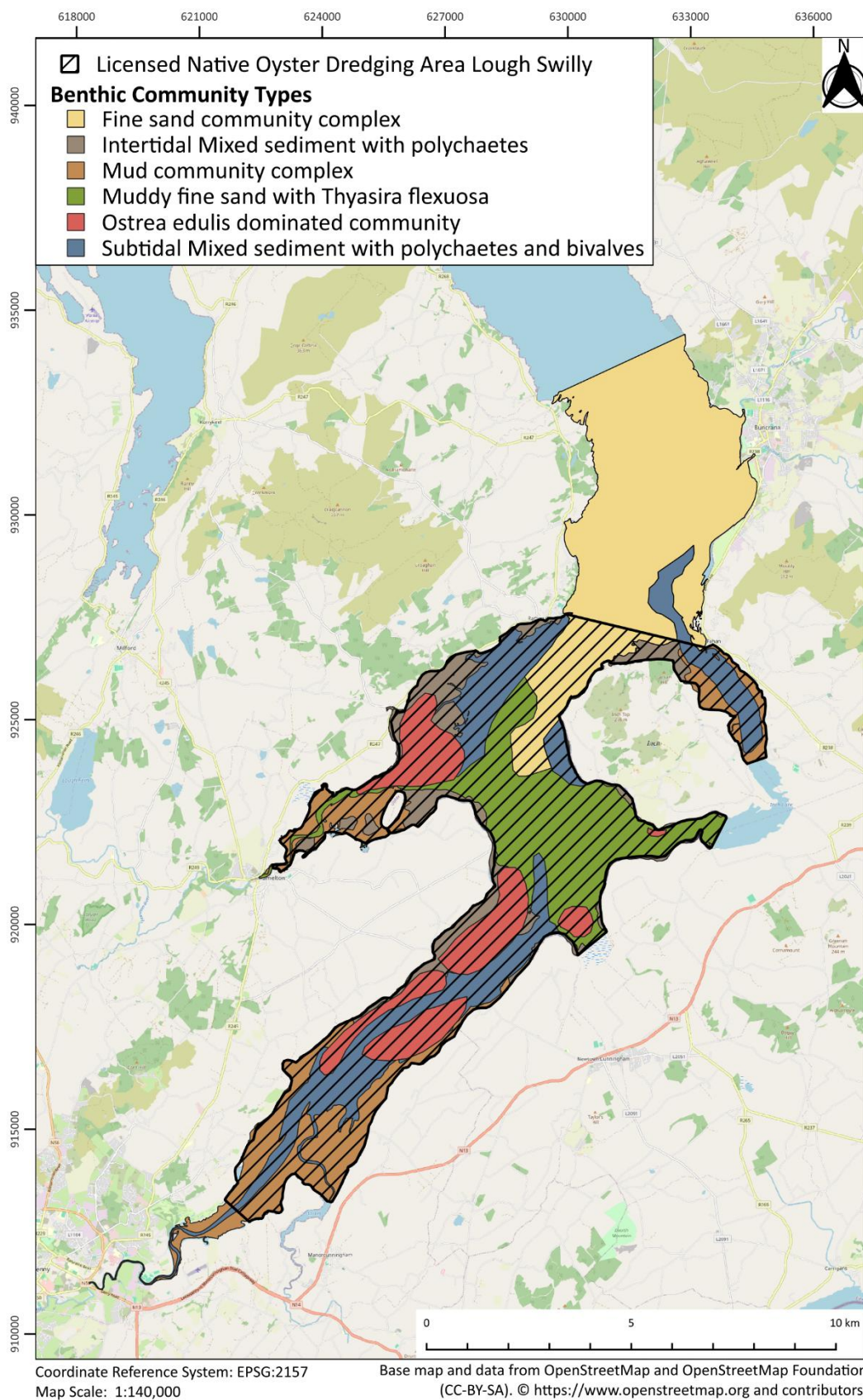


Figure 4-1: Licensed native oyster dredging area and distribution of benthic community types in Lough Swilly.

Table 4-1 shows the area and percentage cover of mapped benthic community types within the licensed native oyster dredging area in Lough Swilly. Areas were calculated from the spatial intersection of the licensed native oyster dredging area with mapped benthic community polygons. Percentage cover represents the proportion of the total licensed dredging area occupied by each mapped community type. The total licensed dredging area is approximately 55,412,665 m² (55.413 km²).

Table 4-1: Area and percentage of the licensed native oyster dredging area in Lough Swilly occupied by each mapped benthic community type.

Benthic Community Type	Area (m ²)	Percentage covered (%)
Intertidal Mixed sediment with polychaetes	5646535.3	10.2
<i>Ostrea edulis</i> dominated community	9061121.5	16.4
Mud community complex	9962519.0	18.0
Subtidal Mixed sediment with polychaetes and bivalves	12641014.7	22.8
Fine sand community complex	4737912.2	8.6
Muddy fine sand with <i>Thyasira flexuosa</i>	13135155.3	23.7

The licensed native oyster dredging area in Lough Swilly overlaps a range of sedimentary benthic communities. The largest proportion is occupied by the Muddy fine sand with *Thyasira flexuosa* community, which accounts for approximately 23.7% of the licensed dredging area, followed by the Subtidal Mixed sediment with polychaetes and bivalves community at approximately 22.8%. The Mud community complex represents approximately 18.0%, while the *Ostrea edulis* dominated community accounts for approximately 16.4% of the licensed dredging area. The Intertidal Mixed sediment with polychaetes and Fine sand community complexes account for approximately 10.2% and 8.6%, respectively.

4.1.3. Site Access

The dredging activity is undertaken from fishing vessels operating within Lough Swilly. A number of piers and boat access points are located along the shoreline of the lough, including at Rathmullan, Ramelton, Buncrana and Fahan, from which fishing vessels may access Lough Swilly. The Project involves the continuation of an established fishery and does not require the construction of new access routes, vessel launching facilities or land-based infrastructure.

4.1.4. Works Duration

Native oyster dredging may take place between 1 September and 30 April inclusive. The activity is seasonal and is not considered persistent, as it does not take place year-round.

4.1.5. Works Description

Native oyster dredging in Lough Swilly is undertaken from fishing vessels using a four-foot dredge, which is operated from the rear or side of the vessel and towed across the seabed within the licensed dredging area. The activity therefore involves direct interaction with the seabed and the removal of native oysters from the dredged area.

4.2. Assessment Methodology: Source-Pathway-Receptor

The assessment of impact mechanisms considers all relevant aspects of the Project that have potential direct or indirect effects on conservation features. In order to establish the Zone of Influence (Zol) of the Project, the assessment of likely significant effects will be based on the Source-Pathway-Receptor (S-P-R) Model (OPR, 2021):

- **Source** - Identification of the characteristics of the Project based on the nature, size, location and type of impacts.
- **Pathway** – Identification of pathways that could link European sites and their conservation features to the Project.
- **Receptor** – Identification of the location, nature and sensitivities of the conservation features and the ecological conditions supporting their survival and the conservation objectives specified to maintain or restore favourable conservation status.

To establish the Zol of the project, the assessment of connectivity between impact mechanisms (sources) and conservation features (*i.e.* the QIs of SACs and SCIs of SPAs) considers the location of the project relative to designated habitats and non-mobile species, species' foraging ranges and migration routes, proximity to foraging and breeding areas, potential behavioural responses to disturbance, hydrological connectivity with conservation features, and indirect effects on prey species that could alter ecological interactions.

To inform the screening exercise, available data on protected habitats and species were mapped and interrogated in a Geographic Information System (GIS) to identify potential S–P–R connections. Sources (impact mechanisms), pathways (hydrological, physical or ecological connectivity), and receptors (conservation features) were identified with reference to ecological surveys undertaken in the area. Where no ecological pathway or functional link exists between the project and the conservation features of a European site, there is no potential for likely significant effects, and those features can be screened out.

Section 4.5 considers the likely significant effects from the impact mechanisms from the Project alone, while **Section 4.6** considers potential in-combination effects with other plans or projects.

The source comprises the activities associated with commercial native oyster dredging that could generate environmental pressures. These include vessel operation, the deployment and towing of oyster dredges, direct contact between the dredge and the seabed, the capture and removal of oysters and associated fauna, and the handling and movement of catch, vessels or fishing equipment. The nature, scale, location, timing,

duration and frequency of these activities were considered in accordance with the approach set out in the OPR (2021) and IFI (2021) guidance.

The assessment used the proposed dredging areas as the maximum area within which direct interaction could occur. Spatial overlap was treated as evidence of a credible source pathway receptor relationship. Where the available information was insufficient to exclude a significant effect on the basis of objective scientific information, the relevant receptor was retained for Stage 2 Appropriate Assessment.

The pathways considered included direct spatial overlap and physical contact with seabed habitats, the waterborne transport and subsequent deposition of suspended sediment, underwater noise and vessel presence and changes in prey availability or supporting habitat. Potential effects associated with these pathways included physical disturbance of benthic habitats and communities, sediment resuspension and smothering, removal or injury of associated fauna, and disturbance or displacement of species using the dredging area for foraging, resting or movement.

The receptors were the qualifying interests and special conservation interests for which the European sites under consideration are designated. These included relevant Annex I marine habitats and designated bird and mammal species.

4.3. Identification of Potential Impact Mechanisms

4.3.1. Physical habitat disturbance

Native oyster dredging causes a direct physical pressure on the seabed through contact and movement of the dredge across the oyster grounds. Commercial dredging in Lough Swilly is undertaken using a four foot toothless dredge, equivalent to approximately 1.22 m in width. Passage of the gear may result in abrasion and penetration of the surface sediment (~ 2 cm deep), the formation of dredge tracks, displacement of shell and other seabed material, and overturning or damage to living oysters and associated benthic organisms. Physical disturbance may also alter the local structure and complexity of the oyster bed where shell and cultch are broken, displaced or redistributed. The pressure occurs directly along the path of the dredge and may recur where established oyster grounds are fished over successive seasons (Tully & Clarke, 2012; Kennon et al., 2023).

Living oysters and accumulated shell provide hard settlement surfaces and small-scale structural complexity within sedimentary habitats. Dredge contact may damage or displace living oysters, break or redistribute shell and cultch, and disturb associated epifauna and infauna.

The ecological response to physical disturbance is dependent on the sensitivity and recovery potential of the receiving habitat. Evidence from the rotationally managed Loch Ryan oyster fishery identified differences in shell density, shell cover and macrofaunal biodiversity between areas fished one, two and six years previously. Modelling indicated that biodiversity recovery may extend over approximately ten years, although this was not a directly measured recovery trajectory and is not considered a site-specific estimate for Lough Swilly. The findings indicate that effects on oyster-bed structure and associated biodiversity may persist for several years where physical recovery remains incomplete between fishing events (Kennon et al., 2023).

The magnitude of physical disturbance is influenced by dredge width and weight, the presence and spacing of teeth or blades, tow speed, vessel power, the number of passes over an area and the proportion of the seabed swept. The response of the receiving habitat is influenced by sediment type, hydrodynamic exposure, existing shell density, seabed complexity and the presence of sensitive or habitat forming species. Experimental evidence indicated that the physical structure of clean sand could be restored within days to a few months, while restoration of muddy sand could take several months or more than one year. Following experimental intertidal dredging, recovery of annelid and mollusc abundance was projected to occur after approximately 98 to 109 days in sand. Equivalent recovery estimates for fauna in muddy sand ranged from approximately 870 to 1,210 days, although these longer estimates were extrapolated beyond the 540 day monitoring period and were therefore uncertain. A meta-analysis predicted that benthic community abundance following towed

dredging could take three years or longer to recover and that species richness in biogenic habitats would not recover within three years, irrespective of gear penetration depth (Sciberras et al., 2018). The same dredging intensity may therefore produce materially different effects in different receiving environments.

4.3.2. Increased suspended sediments and smothering

Dredging across the seabed may disturb and resuspend unconsolidated sediment. Suspended material may be dispersed by tidal currents and subsequently deposited within or beyond the dredge track. A hydrological pathway therefore exists between the area disturbed and connected oyster grounds, other sensitive organisms (seagrass, maerl, *Sabellaria* sp.) and benthic habitats elsewhere in Lough Swilly.

Deposited sediment may cover living organisms, bury oyster shell or other suitable settlement surface, smother recently settled spat (less resilient) or other associated sensitive benthic fauna. Temporary increases in suspended sediment and turbidity may interfere with feeding, respiration, or light availability. The consequence depends on the quantity and particle size of the sediment, the thickness and duration of deposition and the life stage and sensitivity of the receptor. Native oyster is sensitive to sustained deposition, while burial of shell may reduce the availability of clean, stable substrate for larval settlement (Berghahn & Ruth, 2005; Bromley et al., 2016).

The licensed area includes mixed sediment, fine sand, muddy fine sand and mud communities. Sand and coarser material disturbed within the oyster grounds would generally be expected to settle within or close to the dredge track, while finer sediment may remain in suspension for longer and be transported over a greater distance. The naturally tidal character of Lough Swilly influences dispersion and recovery but does not remove the potential for localised pulses of suspended sediment and redeposition caused by dredging.

Tides are expected to rapidly redistribute suspended material, however localised resuspension and smothering are retained as potential impact pathways against relevant receptors.

4.3.3. Impacts on benthic community structure

Commercial native oyster dredging may affect the native oyster population and benthic community structure through several related biological and ecological pathways. These pathways are considered separately within the Native Oyster Dredging Impact Study because their mechanisms, sensitivity and recovery characteristics differ. For the purposes of this Appropriate Assessment Screening, they are considered collectively under this impact mechanism because they converge on the condition and ecological functioning of the *Ostrea edulis* dominated community and other constituent benthic communities of the relevant Qualifying Interest habitats. The individual pathways comprise the removal of retained native oysters, incidental injury or mortality of

undersized oysters and spat, removal or displacement of associated benthic fauna, changes in shell and cultch availability and consequent effects on native oyster recruitment.

Oyster dredging may alter benthic community structure through the direct removal of native oysters and the incidental capture, injury, mortality or displacement of non-target organisms. Organisms attached to living oysters or shell, together with surface living and shallow burrowing fauna contacted by the dredge, may be removed from or redistributed within the fishing ground. Large, sessile, fragile or long lived organisms may be more sensitive to repeated mechanical disturbance than mobile or rapidly recovering taxa.

Oyster dredging is poorly size selective because oysters occur in aggregations and may be attached to dead shell or to one another. The catch may therefore include oysters below the Minimum Landing Size and recently settled spat. Undersized oysters are returned to the seabed, although individuals may be damaged during dredging, sorting or separation. Spat attached to retained oysters may also be removed when the larger oyster is landed.

Commercial harvesting permanently removes retained oysters from the population and primarily targets the larger component of the stock. Sustained removal may affect living oyster abundance, biomass and population size structure. As larger oysters make an important contribution to spawning stock biomass, removal may also affect reproductive output, the spatial distribution of reproductive individuals and subsequent recruitment. The population level effect depends on whether recruitment and growth replace harvested oysters and maintain the abundance and size structure of the stock between successive fishing seasons (Kennedy and Roberts, 2006; Guy et al., 2019).

Living oysters, dead shell and cultch also provide settlement surfaces and contribute to the structural complexity of native oyster habitat. Removal, breakage or redistribution of shell and cultch may reduce the availability of suitable settlement substrate and alter small scale habitat structure. These changes may influence recruitment and the composition of associated benthic assemblages.

Removal or breakage of shell and cultch may reduce seabed complexity and the amount of exposed settlement substrate, with consequential changes to oyster recruitment and the composition of associated benthic assemblages. The relevant receptors include the *Ostrea edulis* dominated community and the other sedimentary communities that form part of Estuaries [1130]. The potential for change is influenced by the existing condition of the native oyster stock, recruitment, disease, competition from naturalised Pacific oyster and slipper limpet and the frequency and spatial distribution of dredging. These additional pressures affect the capacity of the community to recover, although they are not effects caused by the physical act of dredging itself.

4.3.4. Effects on prey resources and the trophic food chain

Dredging may alter the abundance, distribution and accessibility of prey through the removal, damage, burial, exposure or redistribution of benthic organisms and the temporary displacement of demersal fish and mobile invertebrates. Tube-building polychaetes and epifaunal organisms may be damaged within dredge tracks, while injury, discards and the exposure of buried fauna may temporarily increase food availability for scavengers. Repeated or extensive disturbance could have the opposite effect by reducing prey density or changing the composition of the benthic assemblage.

Changes in benthic prey may affect SCI waterbirds that feed in intertidal or shallow subtidal habitats, including species that depend on polychaetes, bivalves and other benthic invertebrates. Changes in demersal fish distribution or abundance may also affect fish-eating species.

Otter may also be affected where dredging results in localised changes in the availability of fish, crustaceans or other prey within marine foraging habitat. The relevance of this pathway is assessed separately against the site-specific conservation objective for otter, which includes maintenance of available fish biomass. For fish-eating birds and marine mammals, any trophic pathway would be indirect and would require evidence of a consequential effect of oyster dredging on fish prey.

4.3.5. Above water visual and noise disturbance

Fishing vessel movements and the presence and activity of crew during dredging, sorting and landing may cause visual and above-water noise disturbance to mobile fauna. Potential receptors include seabirds and waterbirds using intertidal and subtidal feeding areas, seals and otter using marine foraging or resting habitat.

Behavioural responses may include alertness, interruption of feeding, temporary avoidance or localised displacement from the immediate vicinity of an operating vessel. Repeated disturbance may reduce access to preferred feeding or resting areas and increase the time or energy required to obtain food. The response will depend on species sensitivity, distance from the activity, existing habituation, vessel speed and approach, the number of vessels operating and the duration and recurrence of disturbance.

Dredging may take place between September and April and therefore overlaps the principal period of use of Lough Swilly by non-breeding waterbirds and seals present in the vicinity of the Project. Disturbance from an individual vessel would be spatially restricted and intermittent, but the active number of vessels, fishing days and distribution of effort are not quantified by the number of licences issued. Repeated or concurrent vessel activity could consequently extend the area or duration of displacement. Visual and above-water noise disturbance is retained as a potential pathway for relevant mobile QI and SCI.

4.3.6. Underwater noise disturbance

Underwater sound will be generated by vessel engines and propellers, winches and other on-board machinery, and by mechanical contact between the oyster dredge and the seabed. Where anthropogenic sound overlaps biologically relevant frequencies, it may cause temporary behavioural disturbance, avoidance or acoustic masking. Masking may reduce an animal's ability to detect sounds used for communication, navigation, predator avoidance or prey detection (Richardson et al., 1995; Weilgart, 2007; Wright et al., 2007). Vessel or dredge noise may also temporarily alter the distribution of fish and other mobile prey, creating an indirect pathway to foraging predators. Physical injury due to underwater noise is not identified as the principal plausible pathway; the relevant concern is temporary behavioural disturbance or masking during active dredging and vessel movements.

4.3.7. Biosecurity

A potential disease pathway arises where the movement of stock, seed, biomaterial, water or equipment carry pathogens or parasites are moved between oyster grounds or bays. Dredges, vessels and handling equipment may retain biological material or biofouling after use and may act as vectors if they are subsequently used in another area with a different disease status. Movement of used gear among fishing areas could introduce a pathogen to a previously unaffected population or redistribute pathogens among oyster beds. The likelihood and consequence of transfer depend on the disease status of the source and receiving areas, the material retained on the gear, the survival of the pathogen during transport and the susceptibility and condition of the receiving stock.

Bonamiosis, caused by the protozoan parasite *Bonamia ostreae*, is already present in Lough Swilly and has contributed to mortality of native oyster. In November of 2006, the parasite *Bonamia ostreae* was confirmed in samples of wild native oysters taken from an oyster bed in Lough Swilly. The Marine Institute's Fish Health Unit test annually for the presence of *B. ostreae* in surveillance areas. Disease is not treated as an impact caused directly by dredging unless a credible pathway exists through the movement of oysters, shell or equipment. It is relevant to receptor sensitivity and recovery because disease-related mortality may reduce the capacity of the native oyster population to withstand additional fishing mortality or recover following disturbance (Tully and Clarke, 2012; Pouvreau *et al.*, 2023).

The proposed activity concerns harvesting rather than the introduction or relaying of oyster stock. The principal project-related disease mechanism is therefore the potential transfer of pathogens or parasites on vessels, dredges and associated equipment used between different sites.

Bonamia-like cells have been detected in Pacific oysters and detection of *B. ostreae* DNA in native oysters following cohabitation with exposed Pacific oysters also indicates a potential carrier or reservoir pathway, although successful transmission resulting in established infection was not demonstrated (Lynch *et al.*, 2010).

4.4. European sites in the Zone of Influence (Zol)

The Zol was defined based on the spatial extent over which the commercial native oyster dredging could reasonably result in effects, namely in the immediate footprint and the localised area of seabed disturbance and sediment suspension associated with the dredging activity. These factors informed a precautionary delineation of the Zol, taking into account that all relevant Natura 2000 sites and receptors with a reasonable likelihood of interaction were included in the screening and subsequent impact assessment.

Table 4-2 and **Table 4-4** below shows the conservation features for which the European sites are designated, their conservation objectives and the distance of the SAC(s) and SPA(s) to the Project. All site synopsis and conservation objectives for the European sites can be accessed through the NPWS website.

A map of all SACs and SPAs within the Zol of the Project can be seen below in **Figure 4-2** and **Figure 4-3**.

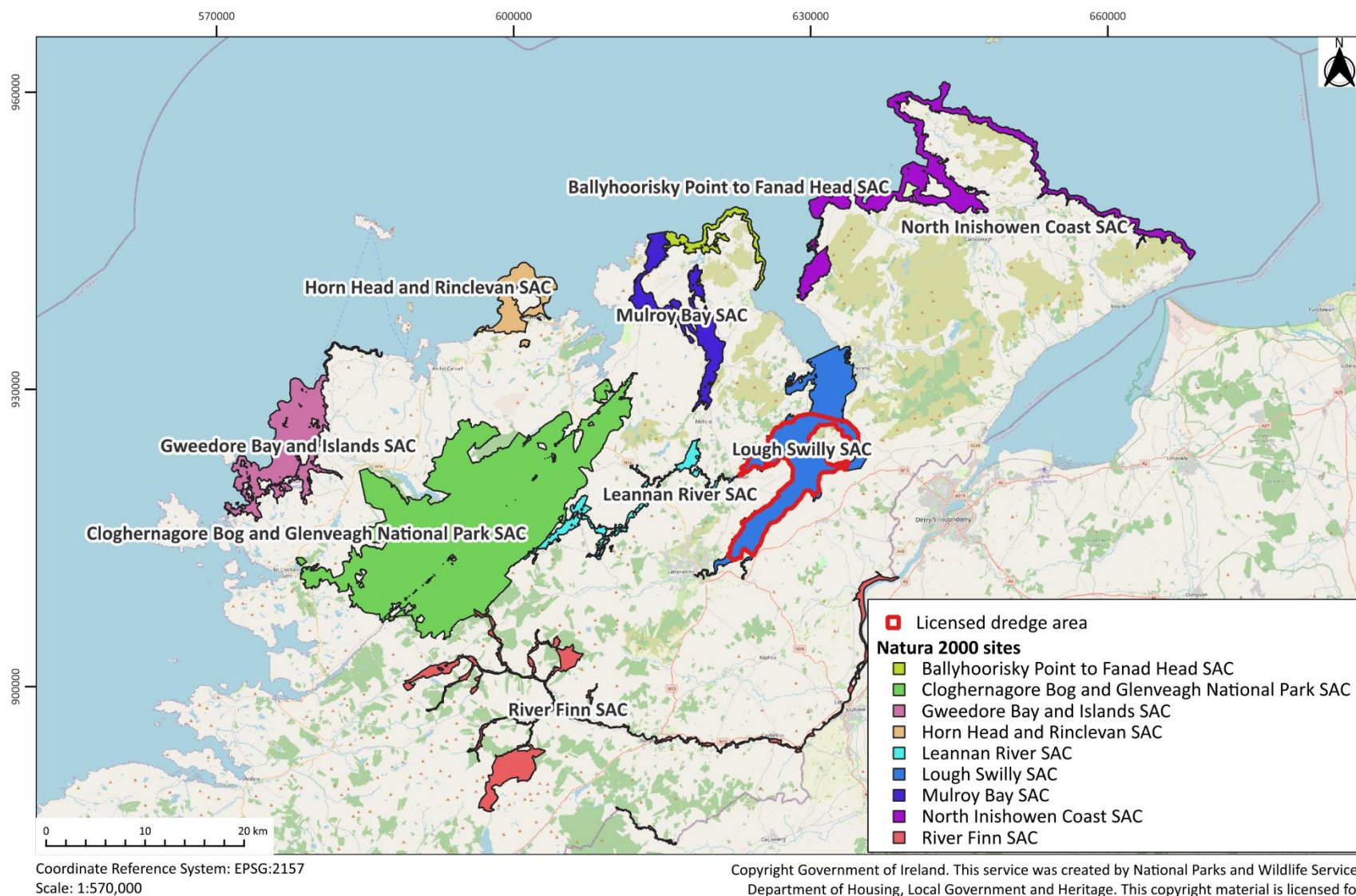


Figure 4-2: SACs in the Zol of the Project.

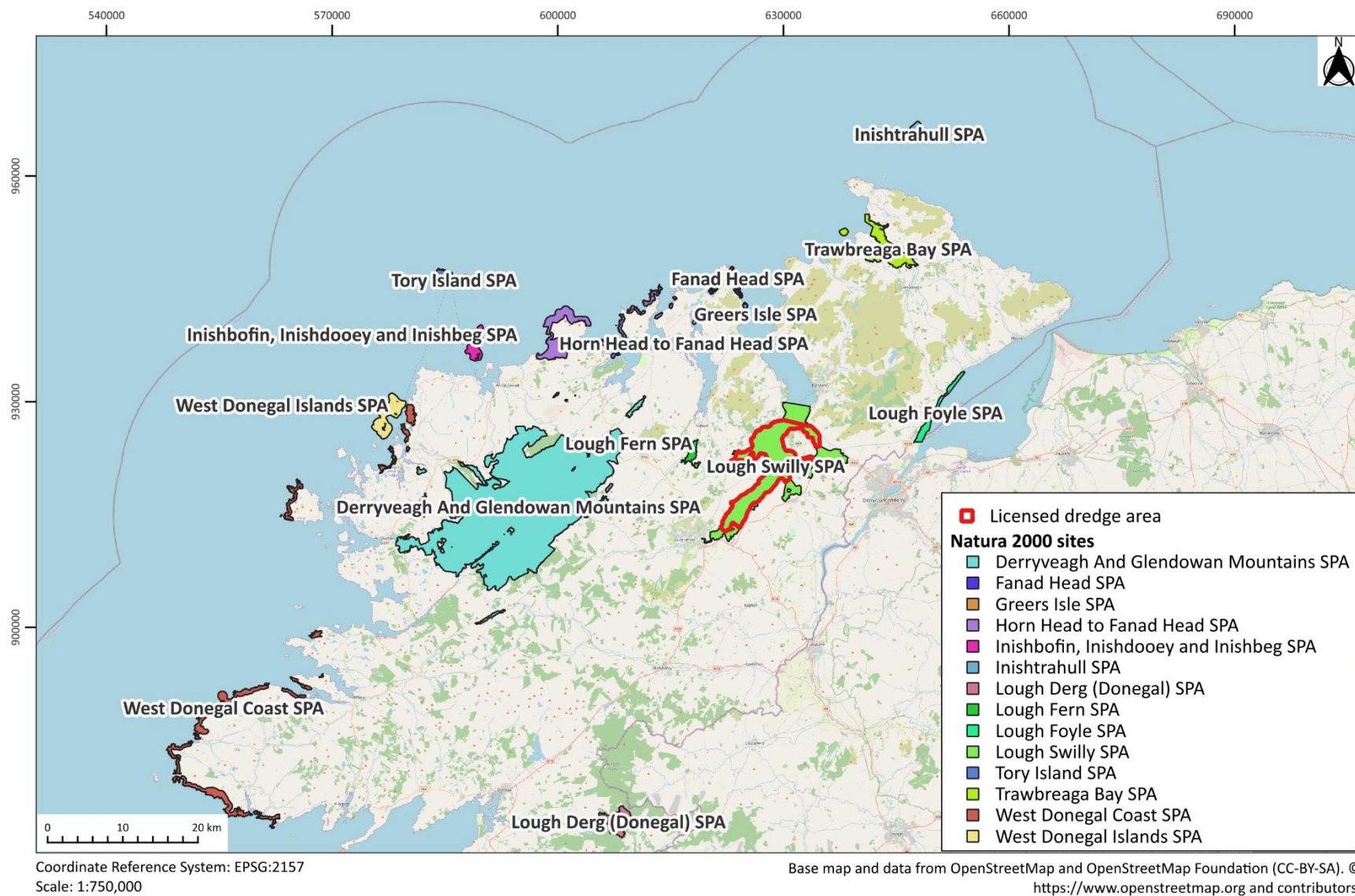


Figure 4-3: SPAs in the Zol of the Project.

4.4.1. Special Areas of Conservation (SACs)

In accordance with Article 6(3) of the Habitats Directive, this assessment considers whether the Project, comprising licensed native oyster dredging within the proposed Lough Swilly dredging areas, either alone or in combination with other plans or projects, is likely to have a significant effect on any Special Area of Conservation within the identified Zone of Influence in view of the site's conservation objectives. The Qualifying Interests and site-specific conservation objectives of each relevant SAC have been reviewed to determine whether a credible source pathway receptor relationship exists and whether likely significant effects can be excluded on the basis of objective scientific information. Where likely significant effects cannot be excluded, the relevant Qualifying Interest is brought forward to Stage 2 Appropriate Assessment.

The proposed dredging area overlaps Lough Swilly SAC [002287], which is the nearest SAC within the ZoI of the proposed works.

Lough Swilly SAC QIs:

- Estuaries [1130]
- Coastal lagoons [1150]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- *Phocoena phocoena* (Harbour Porpoise) [1351]
- *Lutra lutra* (Otter) [1355]
- Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]
- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]

A list of relevant SACs within the immediate vicinity of the Project and their QIs can be found in **Table 4-2**.

Table 4-2: SACs in the ZOI of the Project with their QIs and Conservation Objectives. Distances reported are “as the crow flies” from the boundary of the licensed dredge area to the boundary of the SAC.

Distance from Project (km)	Qualifying Interest	Ecological Group	Conservation objectives
Lough Swilly SAC [002287]			
0	Estuaries [1130]	Marine habitat	To maintain the favourable conservation condition
	Coastal lagoons [1150]	Marine habitat	To restore the favourable conservation condition
	Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>) [1330]	Coastal habitat	To restore the favourable conservation condition
	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]	Grassland habitat	To restore the favourable conservation condition
	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	Woodland habitat	To restore the favourable conservation condition
	<i>Phocoena phocoena</i> (Harbour Porpoise) [1351]	Marine mammal	To maintain the favourable conservation condition
	<i>Lutra lutra</i> (Otter) [1355]	Mammal	To restore the favourable conservation condition
Leannan River SAC [002176]			
0.62	Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]	Freshwater habitat	To restore the favourable conservation condition
	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]	Freshwater habitat	To restore the favourable conservation condition
	<i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]	Freshwater invertebrate	To restore the favourable conservation condition
	<i>Salmo salar</i> (Salmon) [1106]	Diadromous fish	To restore the favourable conservation condition
	<i>Lutra lutra</i> (Otter) [1355]	Mammal	To maintain the favourable conservation condition
	<i>Najas flexilis</i> (Slender Naiad) [1833]	Vascular plant	To restore the favourable conservation condition
Mulroy Bay SAC [002159]			

Distance from Project (km)	Qualifying Interest	Ecological Group	Conservation objectives
6.43	Mudflats and sandflats not covered by seawater at low tide [1140]	Marine habitat	Site-specific objective not published in NPWS CO002159 (2012)
	Large shallow inlets and bays [1160]	Marine habitat	To maintain the favourable conservation condition
	Reefs [1170]	Marine habitat	To maintain the favourable conservation condition
	<i>Lutra lutra</i> (Otter) [1355]	Mammal	To restore the favourable conservation condition
River Finn SAC [002301]			
9.94	Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]	Freshwater habitat	To restore the favourable conservation condition
	Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]	Heathland habitat	To restore the favourable conservation condition
	Blanket bogs (* if active bog) [7130]	Peatland habitat	To restore the favourable conservation condition
	Transition mires and quaking bogs [7140]	Peatland habitat	To restore the favourable conservation condition
	<i>Salmo salar</i> (Salmon) [1106]	Diadromous fish	To maintain the favourable conservation condition
	<i>Lutra lutra</i> (Otter) [1355]	Mammal	To maintain the favourable conservation condition
North Inishowen Coast SAC [002012]			
11.39	Mudflats and sandflats not covered by seawater at low tide [1140]	Marine habitat	To maintain the favourable conservation condition
	Perennial vegetation of stony banks [1220]	Coastal habitat	To maintain the favourable conservation condition
	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	Coastal habitat	To maintain the favourable conservation condition
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Coastal habitat	To restore the favourable conservation condition
	Machairs (* in Ireland) [21A0]	Coastal habitat	To restore the favourable conservation condition
	European dry heaths [4030]	Heathland habitat	To maintain the favourable conservation condition
	<i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]	Invertebrate	To maintain the favourable conservation condition

Distance from Project (km)	Qualifying Interest	Ecological Group	Conservation objectives
	<i>Lutra lutra</i> (Otter) [1355]	Mammal	To maintain the favourable conservation condition
Cloghernagore Bog and Glenveagh National Park SAC [002047]			
12.39	Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]	Freshwater habitat	To maintain the favourable conservation condition
	Water courses of plain to montane levels with the <i>Ranunculus fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation [3260]	Freshwater habitat	To maintain the favourable conservation condition
	Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]	Heathland habitat	To restore the favourable conservation condition
	European dry heaths [4030]	Heathland habitat	To restore the favourable conservation condition
	Alpine and Boreal heaths [4060]	Heathland habitat	To restore the favourable conservation condition
	<i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinia caerulea</i>) [6410]	Grassland habitat	To maintain the favourable conservation condition
	Blanket bogs (* if active bog) [7130]	Peatland habitat	To restore the favourable conservation condition
	Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]	Peatland habitat	To restore the favourable conservation condition
	Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]	Woodland habitat	To restore the favourable conservation condition
	<i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]	Freshwater invertebrate	To restore the favourable conservation condition
	<i>Salmo salar</i> (Salmon) [1106]	Diadromous fish	To maintain the favourable conservation condition
	<i>Lutra lutra</i> (Otter) [1355]	Mammal	To maintain the favourable conservation condition
	<i>Vandenboschia speciosa</i> (Killarney Fern) [6985]	Fern	To maintain the favourable conservation condition
Ballyhoorisky Point to Fanad Head SAC [001975]			

Distance from Project (km)	Qualifying Interest	Ecological Group	Conservation objectives
13.38	Perennial vegetation of stony banks [1220]	Coastal habitat	To restore the favourable conservation condition
	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	Coastal habitat	To maintain the favourable conservation condition
	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]	Freshwater habitat	To maintain the favourable conservation condition
	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. [3140]	Freshwater habitat	To maintain the favourable conservation condition
	<i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]	Invertebrate	To maintain the favourable conservation condition
	<i>Najas flexilis</i> (Slender Naiad) [1833]	Vascular plant	To maintain the favourable conservation condition
Horn Head and Rinclevan SAC [000147]			
24.43	Embryonic shifting dunes [2110]	Coastal habitat	To maintain the favourable conservation condition
	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	Coastal habitat	To maintain the favourable conservation condition
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Coastal habitat	To maintain the favourable conservation condition
	Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (Salicion arenariae) [2170]	Coastal habitat	To restore the favourable conservation condition
	Humid dune slacks [2190]	Coastal habitat	To maintain the favourable conservation condition
	Machairs (* in Ireland) [21A0]	Coastal habitat	To restore the favourable conservation condition
	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]	Freshwater habitat	To maintain the favourable conservation condition
	<i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	Invertebrate	To maintain the favourable conservation condition
	<i>Halichoerus grypus</i> (Grey Seal) [1364]	Marine mammal	To maintain the favourable conservation condition
	<i>Petalophyllum ralfsii</i> (Petalwort) [1395]	Bryophyte	To maintain the favourable conservation condition

Distance from Project (km)	Qualifying Interest	Ecological Group	Conservation objectives
	<i>Najas flexilis</i> (Slender Naiad) [1833]	Vascular plant	To maintain the favourable conservation condition
Gweedore Bay and Islands SAC [001141]			
38.02	Coastal lagoons [1150]	Marine habitat	To restore the favourable conservation condition
	Reefs [1170]	Marine habitat	To maintain the favourable conservation condition
	Perennial vegetation of stony banks [1220]	Coastal habitat	To maintain the favourable conservation condition
	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	Coastal habitat	To restore the favourable conservation condition
	Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>) [1330]	Coastal habitat	To restore the favourable conservation condition
	Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410]	Coastal habitat	To maintain the favourable conservation condition
	Embryonic shifting dunes [2110]	Coastal habitat	To maintain the favourable conservation condition
	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	Coastal habitat	To maintain the favourable conservation condition
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	Coastal habitat	To restore the favourable conservation condition
	Decalcified fixed dunes with <i>Empetrum nigrum</i> [2140]	Coastal habitat	To maintain the favourable conservation condition
	Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>) [2150]	Coastal habitat	To maintain the favourable conservation condition
	Dunes with <i>Salix repens ssp. argentea</i> (<i>Salicion arenariae</i>) [2170]	Coastal habitat	To maintain the favourable conservation condition
	Humid dune slacks [2190]	Coastal habitat	To maintain the favourable conservation condition
	Machairs (* in Ireland) [21A0]	Coastal habitat	To restore the favourable conservation condition
	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or <i>Isoeto-Nanojuncetea</i> [3130]	Freshwater habitat	To restore the favourable conservation condition
	European dry heaths [4030]	Heathland habitat	To maintain the favourable conservation condition

Distance from Project (km)	Qualifying Interest	Ecological Group	Conservation objectives
	Alpine and Boreal heaths [4060]	Heathland habitat	To maintain the favourable conservation condition
	Juniperus communis formations on heaths or calcareous grasslands [5130]	Heathland habitat	To restore the favourable conservation condition
	<i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]	Invertebrate	To maintain the favourable conservation condition
	<i>Phocoena phocoena</i> (Harbour Porpoise) [1351]	Marine mammal	To maintain the favourable conservation condition
	<i>Lutra lutra</i> (Otter) [1355]	Mammal	To maintain the favourable conservation condition
	<i>Petalophyllum ralfsii</i> (Petalwort) [1395]	Bryophyte	To maintain the favourable conservation condition
	<i>Najas flexilis</i> (Slender Naiad) [1833]	Vascular plant	To maintain the favourable conservation condition

4.4.2. Special Protection Areas (SPAs)

In accordance with Article 6(3) of the Habitats Directive, this assessment considers whether the Project, either alone or in combination with other plans or projects, is likely to have a significant effect on any Special Protection Area within the identified Zone of Influence in view of the site's conservation objectives. The Special Conservation Interests and site specific conservation objectives of each relevant SPA have been reviewed with regard to potential disturbance, changes in supporting habitat and prey resources, and other credible ecological pathways associated with the Project. Where likely significant effects cannot be excluded on the basis of objective scientific information, the relevant Special Conservation Interest is brought forward to Stage 2 Appropriate Assessment.

The nearest SPA within the Zol of the licensed dredge area is Lough Swilly SPA (004075), which overlaps the proposed Project area. This SPA is designated for an extensive assemblage of wintering waterbirds and associated wetland habitats. The SCI species of Lough Swilly SPA include:

- Great Crested Grebe (*Podiceps cristatus*) [A005]
- Grey Heron (*Ardea cinerea*) [A028]
- Whooper Swan (*Cygnus cygnus*) [A038]
- Greylag Goose (*Anser anser*) [A043]
- Shelduck (*Tadorna tadorna*) [A048]
- Teal (*Anas crecca*) [A052]
- Mallard (*Anas platyrhynchos*) [A053]
- Scaup (*Aythya marila*) [A062]
- Goldeneye (*Bucephala clangula*) [A067]
- Red-breasted Merganser (*Mergus serrator*) [A069]
- Coot (*Fulica atra*) [A125]
- Oystercatcher (*Haematopus ostralegus*) [A130]
- Knot (*Calidris canutus*) [A143]
- Dunlin (*Calidris alpina*) [A149]
- Curlew (*Numenius arquata*) [A160]
- Redshank (*Tringa totanus*) [A162]
- Greenshank (*Tringa nebularia*) [A164]
- Black-headed Gull (*Chroicocephalus ridibundus*) [A179]
- Common Gull (*Larus canus*) [A182]
- Common Tern (*Sterna hirundo*) [A193]
- Greenland White-fronted Goose (*Anser albifrons flavirostris*) [A395]

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- Wigeon (*Mareca penelope*) [A855]
 - Shoveler (*Spatula clypeata*) [A857]
 - Sandwich Tern (*Thalasseus sandvicensis*) [A863]
 - Wetland and Waterbirds [A999]

Given that the proposed activity will take place within Lough Swilly, SCI bird species from Lough Swilly SPA may utilise habitats within the project area.

The analysis also examined ecological pathways for seabird species *ex-situ*. Seabirds that exhibit oceanic, offshore behaviour were not included in the assessment as they are unlikely to be present in a significant manner in the transitional/estuarine environment. These include fulmar, gannet, guillemot, kittiwake, puffin, razorbill, and storm petrel and have been verified by analysing I-WeBS data for the Lough Swilly area. This element of the screening process was informed by published data on species-specific mean foraging ranges (Thaxter *et al.*, 2012; Jovani *et al.*, 2016; Wakefield *et al.*, 2017; Woodward *et al.*, 2019; Woodward *et al.*, 2024) summaries in **Table 4-3**. Due to the coastal nature of the proposed Project, coastal seabirds, waterbirds and waders are most likely to be present and have potential to be impacted by impact mechanisms. Only seabird SCIs from SPAs with direct or functional connectivity to the proposed survey area are taken forward for assessment of likely significant effects (Stage 2).

Table 4-3: Review of published seabird foraging ranges during the breeding season, summarised from Thaxter et al. (2012), Jovani et al. (2016), Wakefield et al. (2017) and Woodward et al. (2019). Foraging-range values are used as contextual evidence of potential functional connectivity and are not applied as absolute exclusion distances. Mean values provide an indication of typical foraging movements, while mean maximum and maximum values indicate the potential for wider movements. Connectivity is assessed having regard to distance together with the seasonal status of the SCI population, habitat suitability and available evidence of species use of Lough Swilly. Figures in bold indicate mean foraging ranges used to calculate connectivity with the Project.

Species	Thaxter <i>et al.</i> , 2012		Jovani <i>et al.</i> , 2016	Wakefield <i>et al.</i> , 2017		Woodward <i>et al.</i> , 2019		Woodward <i>et al.</i> , 2024
	Maximum foraging range (km)	Mean foraging range (km)	Foraging range (km)	Maximum foraging range (km)	Mean foraging range (km)	Maximum foraging range (km)	Mean foraging range (km)	Mean site maximum (km)
Arctic tern (<i>Sterna paradisaea</i>) [A194]	30	7.1				46	6.1	40.5 (25.7 ± 14.8)
Black-headed Gull (<i>Larus ridibundus</i>) [A179]	40	11.4				18.5	7	18.5
Common Gull (<i>Larus canus</i>) [A182]	50	25				50	N/A	50
Common Tern (<i>Sterna hirundo</i>) [A193]	30	7.1				30	6.4	26.9 (18 ± 8.9)
Cormorant (<i>Phalacrocorax carbo</i>) [A017]	35	5.2				35	7.1	33.9 (25.6 ± 8.3)
Eider (<i>Somateria mollissima</i>) [A063]	80	2.4				22.5	3.2	21.5
Fulmar (<i>Fulmarus glacialis</i>) [A009]	580	47.5				2736	134.6	1200.2 (542.3 ± 657.9)
Gannet (<i>Morus bassanus</i>) [A016]	590	92.5	709			709	120.4	509.4 (315.2 ± 194.2)
Great Black-backed Gull (<i>Larus marinus</i>) [A183]			60			73	16.7	73
Guillemot (<i>Uria aalge</i>) [A199]	135	37.8		340	10.5	338	33.1	153.7 (73.2 ± 80.5)
Herring Gull (<i>Larus argentatus</i>) [A184]	92	10.5				92	14.9	85.6 (58.8 ± 26.8)
Kittiwake (<i>Rissa tridactyla</i>) [A188]	120	24.8	231	300	11.9	770	54.7	300.6 (156.1 ± 144.5)
Leach's Storm Petrel (<i>Oceanodroma leucorhoa</i>) [A191]	< 120					N/A	657	N/A
Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]	181	71.9				533	43.3	236 (127 ± 109)
Little Tern (<i>Sterna albifrons</i>) [A195]	11	2.1				5	3.5	5
Manx Shearwater (<i>Puffinus puffinus</i>) [1351] [A013]	330	2.3				2890	136.1	2365.5 (1346.8 ± 1018.7)
Mediterranean Gull (<i>Larus melanocephalus</i>) [A180]	20	11.5				20	11.5	20

Species	Thaxter <i>et al.</i> , 2012		Jovani <i>et al.</i> , 2016	Wakefield <i>et al.</i> , 2017		Woodward <i>et al.</i> , 2019		Woodward <i>et al.</i> , 2024
	Maximum foraging range (km)	Mean foraging range (km)	Foraging range (km)	Maximum foraging range (km)	Mean foraging range (km)	Maximum foraging range (km)	Mean foraging range (km)	Mean site maximum (km)
Puffin (<i>Fratercula arctica</i>) [A204]	200	4				383	62.4	265.4 (137.1 ± 128.3)
Razorbill (<i>Alca torda</i>) [A200]	95	23.7	312	305	13.2	313	61.3	164.6 (88.7 ± 75.9)
Red-throated Diver (<i>Gavia stellata</i>) [A001]	9	4.5				9	4.5	9
Roseate Tern (<i>Sterna dougallii</i>) [A192]	30	12.2				24	4.1	23.2 (12.6 ± 10.6)
Sandwich Tern (<i>Sterna sandvicensis</i>) [A191]	54	11.5				80	9	57.5 (34.3 ± 23.2)
Shag (<i>Gulosus aristotelis</i>) [A018]	17	5.9		35	3.4	46	9.2	23.7 (13.2 ± 10.5)
Storm-petrel (<i>Hydrobates pelagicus</i>) [A014]	65					336 (468*)	N/A	400.6

A total of 167 SPA are designated in the Republic of Ireland; these have been interrogated using QGIS to calculate the approximate distance from the proposed site to the SPA. This was then assessed against seabird species foraging ranges, identified through a literature review, to identify which SPA are within that SCI's foraging range. For the purpose of this assessment, mean reported foraging ranges have been used, and the values applied are indicated in bold. These represent the mean of the observed distances from all reviewed data and have been selected in line with the principle of proportionality to ensure that the appropriate extent of potential interaction between SPAs and the proposed site are captured in the absence of site-specific tracking data. Breeding colony foraging ranges may vary substantially between colonies, both nationally and internationally. Due to logistical constraints in acquiring colony-specific movement data, assessments often rely on published ranges from literature (Woodward *et al.*, 2024), as is the case in this report. Woodward *et al.* 2024 was reviewed against the 2019 foraging ranges and updated where relevant.

To identify viable impact pathways between SPAs and the proposed site, the shortest linear distance from each SPA to the proposed sites were calculated (as the crow flies). The SCIs for all SPAs within the ZoI can be seen in **Table 4-4** which also contains their site-specific conservation objectives. All site synopsis and conservation objectives for the European sites can be accessed through the NPWS website.

Table 4-4: Special Protection Areas (SPAs) and their Special Conservation Interests (SCIs) within the ZOI of the proposed Project.

Special Protection Area [site code]	Distance (km)	Special Conservation Interest	Broad Ecological Group	Conservation Objective
Lough Swilly SPA [004075]	0 (overlap)	Great Crested Grebe (<i>Podiceps cristatus</i>) [A005]	Waterbird	To maintain favourable conservation condition
		Grey Heron (<i>Ardea cinerea</i>) [A028]	Waterbird	To maintain favourable conservation condition
		Whooper Swan (<i>Cygnus cygnus</i>) [A038]	Waterfowl	To maintain favourable conservation condition
		Greylag Goose (<i>Anser anser</i>) [A043]	Waterfowl	To maintain favourable conservation condition
		Shelduck (<i>Tadorna tadorna</i>) [A048]	Waterfowl	To maintain favourable conservation condition
		Teal (<i>Anas crecca</i>) [A052]	Waterfowl	To maintain favourable conservation condition
		Mallard (<i>Anas platyrhynchos</i>) [A053]	Waterfowl	To maintain favourable conservation condition
		Scaup (<i>Aythya marila</i>) [A062]	Waterfowl	To maintain favourable conservation condition
		Goldeneye (<i>Bucephala clangula</i>) [A067]	Waterfowl	To maintain favourable conservation condition
		Red-breasted Merganser (<i>Mergus serrator</i>) [A069]	Waterfowl	To maintain favourable conservation condition
		Coot (<i>Fulica atra</i>) [A125]	Waterfowl	To maintain favourable conservation condition
		Oystercatcher (<i>Haematopus ostralegus</i>) [A130]	Wader	To maintain favourable conservation condition
		Knot (<i>Calidris canutus</i>) [A143]	Wader	To maintain favourable conservation condition
		Dunlin (<i>Calidris alpina</i>) [A149]	Wader	To maintain favourable conservation condition
		Curlew (<i>Numenius arquata</i>) [A160]	Wader	To maintain favourable conservation condition
		Redshank (<i>Tringa totanus</i>) [A162]	Wader	To maintain favourable conservation condition
		Greenshank (<i>Tringa nebularia</i>) [A164]	Wader	To maintain favourable conservation condition
		Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]	Seabird	To maintain favourable conservation condition
		Common Gull (<i>Larus canus</i>) [A182]	Seabird	To maintain favourable conservation condition
		Common Tern (<i>Sterna hirundo</i>) [A193]	Seabird	To maintain favourable conservation condition
		Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	Waterfowl	To maintain favourable conservation condition
		Wigeon (<i>Mareca penelope</i>) [A855]	Waterfowl	To maintain favourable conservation condition
		Shoveler (<i>Spatula clypeata</i>) [A857]	Waterfowl	To maintain favourable conservation condition
		Sandwich Tern (<i>Thalasseus sandvicensis</i>) [A863]	Seabird	To maintain favourable conservation condition
		Wetland and Waterbirds [A999]	Wetland habitat	To maintain favourable conservation condition
Lough Fern SPA [004060]	3.81	Pochard (<i>Aythya ferina</i>) [A059]	Waterfowl	To restore favourable conservation condition
		Wetland and Waterbirds [A999]	Wetland habitat	To maintain favourable conservation condition
Horn Head to Fanad Head SPA [004194]	9.65	Fulmar (<i>Fulmarus glacialis</i>) [A009]	Seabird	To restore favourable conservation condition
		Cormorant (<i>Phalacrocorax carbo</i>) [A017]	Seabird	To restore favourable conservation condition
		Shag (<i>Phalacrocorax aristotelis</i>) [A018]	Seabird	To restore favourable conservation condition

Special Protection Area [site code]	Distance (km)	Special Conservation Interest	Broad Ecological Group	Conservation Objective
		Barnacle Goose (<i>Branta leucopsis</i>) [A045]	Waterfowl	To maintain favourable conservation condition
		Peregrine (<i>Falco peregrinus</i>) [A103]	Raptor	To maintain favourable conservation condition
		Kittiwake (<i>Rissa tridactyla</i>) [A188]	Seabird	To restore favourable conservation condition
		Guillemot (<i>Uria aalge</i>) [A199]	Seabird	To maintain favourable conservation condition
		Razorbill (<i>Alca torda</i>) [A200]	Seabird	To maintain favourable conservation condition
		Chough (<i>Pyrrhocorax pyrrhocorax</i>) [A346]	Terrestrial	To restore favourable conservation condition
		Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	Waterfowl	To restore favourable conservation condition
Lough Foyle SPA [004087]	12.46	Red-throated Diver (<i>Gavia stellata</i>) [A001]	Waterbird	To maintain favourable conservation condition
		Great Crested Grebe (<i>Podiceps cristatus</i>) [A005]	Waterbird	To maintain favourable conservation condition
		Bewick's Swan (<i>Cygnus columbianus bewickii</i>) [A037]	Waterfowl	To maintain favourable conservation condition
		Whooper Swan (<i>Cygnus cygnus</i>) [A038]	Waterfowl	To maintain favourable conservation condition
		Greylag Goose (<i>Anser anser</i>) [A043]	Waterfowl	To maintain favourable conservation condition
		Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]	Waterfowl	To maintain favourable conservation condition
		Shelduck (<i>Tadorna tadorna</i>) [A048]	Waterfowl	To maintain favourable conservation condition
		Teal (<i>Anas crecca</i>) [A052]	Waterfowl	To maintain favourable conservation condition
		Mallard (<i>Anas platyrhynchos</i>) [A053]	Waterfowl	To maintain favourable conservation condition
		Eider (<i>Somateria mollissima</i>) [A063]	Waterfowl	To maintain favourable conservation condition
		Red-breasted Merganser (<i>Mergus serrator</i>) [A069]	Waterfowl	To maintain favourable conservation condition
		Oystercatcher (<i>Haematopus ostralegus</i>) [A130]	Wader	To maintain favourable conservation condition
		Golden Plover (<i>Pluvialis apricaria</i>) [A140]	Wader	To maintain favourable conservation condition
		Lapwing (<i>Vanellus vanellus</i>) [A142]	Wader	To maintain favourable conservation condition
		Knot (<i>Calidris canutus</i>) [A143]	Wader	To maintain favourable conservation condition
		Dunlin (<i>Calidris alpina</i>) [A149]	Wader	To maintain favourable conservation condition
		Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]	Wader	To maintain favourable conservation condition
		Curlew (<i>Numenius arquata</i>) [A160]	Wader	To maintain favourable conservation condition
		Redshank (<i>Tringa totanus</i>) [A162]	Wader	To maintain favourable conservation condition
		Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]	Seabird	To maintain favourable conservation condition
		Common Gull (<i>Larus canus</i>) [A182]	Seabird	To maintain favourable conservation condition
		Herring Gull (<i>Larus argentatus</i>) [A184]	Seabird	To maintain favourable conservation condition
		Wigeon (<i>Mareca penelope</i>) [A855]	Waterfowl	To maintain favourable conservation condition
		Wetland and Waterbirds [A999]	Wetland habitat	To maintain favourable conservation condition
	13.89	Red-throated Diver (<i>Gavia stellata</i>) [A001]	Waterbird	To maintain favourable conservation condition

Special Protection Area [site code]	Distance (km)	Special Conservation Interest	Broad Ecological Group	Conservation Objective
Derryveagh and Glendowan Mountains SPA [004039]		Merlin (<i>Falco columbarius</i>) [A098]	Raptor	To maintain favourable conservation condition
		Peregrine (<i>Falco peregrinus</i>) [A103]	Raptor	To restore favourable conservation condition
		Golden Plover (<i>Pluvialis apricaria</i>) [A140]	Wader	To maintain favourable conservation condition
		Dunlin (<i>Calidris alpina schinzii</i>) [A466]	Wader	To maintain favourable conservation condition
Greens Isle SPA [004082]	16.39	Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]	Seabird	To restore favourable conservation condition
		Common Gull (<i>Larus canus</i>) [A182]	Seabird	To restore favourable conservation condition
		Sandwich Tern (<i>Thalasseus sandvicensis</i>) [A863]	Seabird	To restore favourable conservation condition
Fanad Head SPA [004148]	17.45	Corncrake (<i>Crex crex</i>) [A122]	Terrestrial	To restore favourable conservation condition
Trawbreaga Bay SPA [004034]	23.16	Barnacle Goose (<i>Branta leucopsis</i>) [A045]	Waterfowl	To maintain favourable conservation condition
		Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]	Waterfowl	To maintain favourable conservation condition
		Chough (<i>Pyrrhocorax pyrrhocorax</i>) [A346]	Terrestrial	To maintain favourable conservation condition
		Wetland and Waterbirds [A999]	Wetland habitat	To maintain favourable conservation condition
Inishbofin, Inishdooley and Inishbeg SPA [004083]	35.85	Barnacle Goose (<i>Branta leucopsis</i>) [A045]	Waterfowl	To maintain favourable conservation condition
		Corncrake (<i>Crex crex</i>) [A122]	Terrestrial	To maintain favourable conservation condition
		Common Gull (<i>Larus canus</i>) [A182]	Seabird	To restore favourable conservation condition
		Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]	Seabird	To restore favourable conservation condition
		Arctic Tern (<i>Sterna paradisaea</i>) [A194]	Seabird	To restore favourable conservation condition
Lough Derg (Donegal) SPA [004057]	38.93	Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]	Seabird	To restore favourable conservation condition
		Herring Gull (<i>Larus argentatus</i>) [A184]	Seabird	To restore favourable conservation condition
Inishtrahull SPA [004100]	40.17	Shag (<i>Phalacrocorax aristotelis</i>) [A018]	Seabird	To maintain favourable conservation condition
		Barnacle Goose (<i>Branta leucopsis</i>) [A045]	Waterfowl	To maintain favourable conservation condition
		Common Gull (<i>Larus canus</i>) [A182]	Seabird	To maintain favourable conservation condition
Tory Island SPA [004073]	41.74	Fulmar (<i>Fulmarus glacialis</i>) [A009]	Seabird	To maintain favourable conservation condition
		Corncrake (<i>Crex crex</i>) [A122]	Terrestrial	To maintain favourable conservation condition
		Razorbill (<i>Alca torda</i>) [A200]	Seabird	To maintain favourable conservation condition
		Puffin (<i>Fratercula arctica</i>) [A204]	Seabird	To restore favourable conservation condition
West Donegal Coast SPA [004150]	42.1	Fulmar (<i>Fulmarus glacialis</i>) [A009]	Seabird	To restore favourable conservation condition
		Cormorant (<i>Phalacrocorax carbo</i>) [A017]	Seabird	To restore favourable conservation condition
		Shag (<i>Phalacrocorax aristotelis</i>) [A018]	Seabird	To maintain favourable conservation condition
		Peregrine (<i>Falco peregrinus</i>) [A103]	Raptor	To maintain favourable conservation condition
		Herring Gull (<i>Larus argentatus</i>) [A184]	Seabird	To restore favourable conservation condition

Special Protection Area [site code]	Distance (km)	Special Conservation Interest	Broad Ecological Group	Conservation Objective
West Donegal Islands SPA [004230]	43.75	Kittiwake (<i>Rissa tridactyla</i>) [A188]	Seabird	To restore favourable conservation condition
		Razorbill (<i>Alca torda</i>) [A200]	Seabird	To restore favourable conservation condition
		Chough (<i>Pyrhocorax pyrrhocorax</i>) [A346]	Terrestrial	To restore favourable conservation condition
		Shag (<i>Phalacrocorax aristotelis</i>) [A018]	Seabird	To maintain favourable conservation condition
		Barnacle Goose (<i>Branta leucopsis</i>) [A045]	Waterfowl	To restore favourable conservation condition
		Corncrake (<i>Crex crex</i>) [A122]	Terrestrial	To restore favourable conservation condition
		Common Gull (<i>Larus canus</i>) [A182]	Seabird	To restore favourable conservation condition
		Herring Gull (<i>Larus argentatus</i>) [A184]	Seabird	To maintain favourable conservation condition

4.4.3. Mobile Annex II Species

Due to the foraging ranges of Annex II marine mammal species occurring in Irish waters, the following species, which are listed as QIs of SACs in Ireland, have been assessed in terms of their potential to occur within the Project area:

- grey seal (*Halichoerus grypus*);
- harbour porpoise (*Phocoena phocoena*);
- otter (*Lutra lutra*).

These species are all listed under Annex II of the EU Habitats Directive (92/43/EEC), which requires the designation of Special Areas of Conservation (SACs), where appropriate, for their protection and conservation. In Ireland, these species are considered to be of high conservation importance due to their ecological roles and sensitivity to anthropogenic pressures in the marine environment.

Two species of pinniped, grey seal (*Halichoerus grypus*) and harbour seal (*Phoca vitulina*), inhabit Irish waters year-round and are recorded around the Irish coast, including the north coast. Both species have established haul-out sites around Ireland, which are used for resting, breeding and social activity (Ó Cadhla et al., 2007). The largest proportion of the grey seal population is hauled out ashore during the annual moult, which begins in November and continues until April. Grey seals also aggregate in large colonies during the breeding season between August and December (Ó Cadhla et al., 2007), with peak pup production occurring during October and November. Grey seals tend to breed on exposed rocky shores, sandbars or in sea caves with ready access to deeper water.

No established haul-out sites or core resting areas for either species have been identified within the proposed dredging areas in Lough Swilly. Any interaction within the proposed dredging areas is therefore expected to involve occasional transient or foraging individuals.

Harbour porpoise is a QI recently designated for protection in Lough Swilly (NPWS, 2026a & b). They are the most widespread and frequently recorded cetacean species in Irish waters and is sighted largely in inshore waters in the Celtic Sea throughout the year (Ó Cadhla et al., 2004; Berrow et al., 2010; Wall et al., 2013; Rogan et al., 2018). Porpoise sightings vary seasonally, with densities peaking during summer (Berrow et al., 2010).

The Project comprises licensed native oyster dredging within licensed dredge area in Lough Swilly. Potential interaction with mobile Annex II species may arise through vessel presence, above water disturbance, underwater noise, temporary displacement and, where relevant, changes in prey availability. Any exposure would occur within or adjacent to the dredging areas and along associated vessel transit routes. For each species, the screening assessment considers whether a credible functional connection exists between

individuals that may occur within Lough Swilly and a population designated as a Qualifying Interest of a European site. Where such connectivity and an associated impact pathway cannot be excluded on the basis of objective scientific information, likely significant effects are considered possible, and the relevant Qualifying Interest is brought forward to Stage 2 Appropriate Assessment.

Table 4-5 presents the SACs in Ireland designated for marine mammals and provides their distances from the licensed dredge area in Lough Swilly.

Harbour seal (*Phoca vitulina*)

Harbour seal (*Phoca vitulina*) [1365] is designated as a QI of Rutland Island and Sound SAC [00283], which is the nearest European site designated for the species and is located approximately 94.18 km from the Project area. Harbour seals use coastal and estuarine environments and generally display fidelity to local haul out areas. However, movement distances vary considerably between regions and individuals, with telemetry studies recording some movements exceeding 100 km (Sharples et al., 2012). For the purpose of this report, a foraging range of 20 km to 40 km has been used as identified in Cronin et al. (2010).

The Project does not overlap any SAC designated for harbour seal and would not affect designated haul out, breeding, moulting or resting sites, or supporting habitat within those European sites. Accordingly, even if an individual associated with a designated SAC population were to enter Lough Swilly, the nature and spatial extent of the Project would not result in effects capable of undermining the conservation objectives for Harbour Seal at that site. On this basis, likely significant effects on Harbour Seal as a Qualifying Interest of a European site can be excluded, and the species can be screened out at Stage 1 Appropriate Assessment.

Grey seal (*Halichoerus grypus*)

Grey seal (*Halichoerus grypus*) [1364] is designated as a Qualifying Interest of Horn Head and Rinclevan SAC [000147], which is the nearest SAC designated for this species and is located approximately 46.3 km from the Project area. Other SACs designated for grey seal occur at greater distances, including Slieve Tooey/Tormore Island/Loughros Beg Bay SAC [000190], approximately 128.53 km from the licensed dredge area.

Grey seals exhibit extensive foraging ranges and are capable of travelling considerable distances from haul-out sites. Habitat-based distribution modelling using telemetry data from the United Kingdom and Ireland identified a maximum recorded foraging range of 448 km for grey seal. The modelling also demonstrated that areas of elevated at-sea density associated with certain SAC populations may occur more than 150 km from the designated site (Carter et al., 2022). Connectivity over comparable distances has also been demonstrated through photographic identification studies undertaken around Wales. The mean at-sea distance between capture and recapture locations was 50 km, while individual grey seals were recorded using sites up to 230 km

apart (Langley et al., 2020). The 50 km value reported by Langley et al. (2020) represents the mean distance between capture and recapture locations and should not be interpreted as a mean foraging distance.

Grey seals utilise estuarine, coastal and offshore waters extensively and may occur intermittently within Lough Swilly while foraging or moving through the wider coastal environment. National Biodiversity Data Centre records include a grey seal record within Lough Swilly associated with the Malin Head to Fanad Head survey area in 2011, with more recent records occurring in coastal waters outside the mouth of Lough Swilly. The underlying 2011 aerial survey recorded three grey seals within the wider Malin Head to Fanad Head survey subregion.

Grey Seal [1364] is a Qualifying Interest of Horn Head and Rinclevan SAC. Given the documented mobility and wide-ranging aquatic habitat use of grey seal, together with the open marine connection between Lough Swilly and the coastal waters associated with Horn Head and Rinclevan SAC, functional connectivity with grey seals associated with the SAC cannot be excluded. Grey seals using Lough Swilly could therefore be exposed to vessel activity and associated underwater noise generated by oyster dredging. On the basis of the available objective information, likely significant effects on Grey Seal as a Qualifying Interest of Horn Head and Rinclevan SAC cannot be excluded in view of the site's conservation objectives. Grey Seal is therefore screened in for further assessment at Stage 2 Appropriate Assessment.

Harbour Porpoise (*Phocoena phocoena*)

Harbour Porpoise (*Phocoena phocoena*) [1351] is designated as a Qualifying Interest of Lough Swilly SAC [002287], which overlaps the licensed dredge area. The next closest SAC designated for Harbour Porpoise is Gweedore Bay and Islands SAC [001141], approximately 75.9 km from the licensed dredge area.

Harbour Porpoise is widely distributed in Irish waters and occurs in estuarine, coastal and offshore waters where it undertakes foraging, breeding, resting and other life-history functions (Ó Cadhla et al., 2004; Berrow et al., 2010; Wall et al., 2013; Rogan et al., 2018; NPWS, 2026). The species is highly mobile and individuals may range over extensive areas. Harbour Porpoise breeds annually in Ireland, predominantly between May and September, with the principal calving period occurring during May and June, although this may extend throughout the summer and into early autumn (NPWS, 2026). The authorised oyster dredging season extends from 1 September to 30 April and therefore falls largely outside the principal calving period, although some temporal overlap with the wider breeding period may occur during September.

National Biodiversity Data Centre records within the dredging area include a Harbour Porpoise stranding recorded in 2007, with more recent sightings recorded in coastal waters towards and outside the mouth of Lough Swilly. These records confirm occurrence of the species within the wider area, although the available occurrence data are insufficient to characterise the frequency or duration of Harbour Porpoise use of the

dredging area. Individuals may therefore occur within Lough Swilly intermittently while foraging or moving through the wider coastal environment.

Potential effects relevant to Harbour Porpoise include underwater sound and disturbance generated by vessel engines, propellers and the deployment, towing and retrieval of oyster dredges. The Project does not involve high-energy impulsive sound sources such as piling or blasting. Temporary behavioural disturbance or localised displacement cannot, however, be excluded where Harbour Porpoise is present in proximity to active dredging operations.

The Project will not create a permanent artificial barrier restricting access to suitable habitat. A source-pathway-receptor relationship is nevertheless present for Harbour Porpoise associated with Lough Swilly SAC through underwater sound and vessel disturbance generated within habitat accessible to the species. Given the direct spatial overlap with Lough Swilly SAC, the confirmed occurrence of Harbour Porpoise within and adjacent to Lough Swilly, and the sensitivity of the species to underwater sound, likely significant effects on Harbour Porpoise as a Qualifying Interest of Lough Swilly SAC cannot be excluded in view of the site's conservation objectives. Harbour Porpoise is therefore screened in for further assessment at Stage 2 Appropriate Assessment.

Gweedore Bay and Islands SAC is approximately 75.9 km from the licensed dredge area. There is no spatial overlap and underwater sound or vessel disturbance generated by the Project would not extend to the SAC. Although Harbour Porpoise is highly mobile, the available information does not demonstrate that Lough Swilly constitutes functionally linked supporting habitat for Harbour Porpoise using Gweedore Bay and Islands SAC. In the absence of an identified source-pathway-receptor relationship between the Project and the Harbour Porpoise Qualifying Interest of Gweedore Bay and Islands SAC, likely significant effects on this Qualifying Interest can be excluded.

Table 4-5: Special Areas of Conservation (SACs) and designated Annex II marine mammal species distance by sea to the proposed Project area. SACs screened in and included in the assessment in section 4.5.1 are in bold.

SAC (Site code)	Distance (km)	Harbour seal (<i>Phoca vitulina</i>) (1365)	Grey seal (<i>Halichoerus grypus</i>) (1364)	Harbour porpoise (<i>Phocoena phocoena</i>) (1351)	Bottlenose dolphin (<i>Tursiops truncatus</i>) (1349)
Lough Swilly SAC [002287]	0			✓	
Horn Head and Rinclevan SAC [000147]	46.3		✓		
Gweedore Bay and Islands SAC [001141]	75.9			✓	
Rutland Island and Sound SAC [002283]	94.18	✓			
West of Ardara/Maas Road SAC [000197]	116.33	✓			
Slieve Tooley/Tormore Island/Loughros Beg Bay SAC [000190]	128.53		✓		
St. John's Point SAC [000191]	164.2				✓
Bunduff Lough and Machair/Trawalua/Mullaghmore SAC [000625]	172.79			✓	
Donegal Bay (Murvagh) SAC [000133]	188.18	✓			
Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC [000627]	189.9	✓			
Ballysadare Bay SAC [000622]	193.85	✓			
Killala Bay/Moy Estuary SAC [000458]	204.23	✓			
West Connacht Coast SAC [002998]	220.22			✓	✓
Inishkea Islands SAC [000507]	248.94		✓		
Duvillaun Islands SAC [000495]	252.68		✓		✓
Clew Bay Complex SAC [001482]	303.69	✓			
Inishbofin and Inishshark SAC [000278]	310.97		✓		

SAC (Site code)	Distance (km)	Harbour seal (<i>Phoca vitulina</i>) (1365)	Grey seal (<i>Halichoerus grypus</i>) (1364)	Harbour porpoise (<i>Phocoena phocoena</i>) (1351)	Bottlenose dolphin (<i>Tursiops truncatus</i>) (1349)
Slyne Head Islands SAC [000328]	331.59		✓		✓
Slyne Head Peninsula SAC [002074]	334.12				✓
Lambay Island SAC [000204]	360.93	✓	✓	✓	
Codling Fault Zone SAC [003015]	364.75			✓	
Rockabill to Dalkey Island SAC [003000]	368.02			✓	
Kilkieran Bay and Islands SAC [002111]	368.42	✓		✓	
Inishmore Island SAC [000213]	380.27			✓	
Galway Bay Complex SAC [000268]	418.55	✓			
Lower River Shannon SAC [002165]	471.59				✓
Blackwater Bank SAC [002953]	489.47			✓	
Blasket Islands SAC [002172]	491.94		✓	✓	
Slaney River Valley SAC [000781]	509.71	✓			
Carnsore Point SAC [002269]	515.63			✓	
Saltee Islands SAC [000707]	536.01		✓		
Kenmare River SAC [002158]	548.79	✓		✓	
Hook Head SAC [000764]	555.58			✓	✓
Roaringwater Bay and Islands SAC [000101]	609.07		✓	✓	
Belgica Mound Province SAC [002327]	609.16			✓	✓
Glengarriff Harbour and Woodland SAC [000090]	609.77	✓			
Porcupine Bank Canyon SAC [003001]	642.73				✓
South-West Porcupine Bank SAC [002329]	663.59				✓

Otter (*Lutra lutra*)

Otter (*Lutra lutra*) is listed under Annex II and Annex IV of the Habitats Directive and is a QI of Lough Swilly SAC [002287], Leannan River SAC [002176], Mulroy Bay SAC [002159], River Finn SAC [002301], North Inishowen Coast SAC [002012], Cloghernagore Bog and Glenveagh National Park SAC [002047], and Gweedore Bay and Islands SAC [001141] within the Project ZOI. The Project is located within Lough Swilly SAC. Leannan River SAC, Mulroy Bay SAC, River Finn SAC, North Inishowen Coast SAC, Cloghernagore Bog and Glenveagh National Park SAC are connected to the wider marine environment through coastal and estuarine waters and have therefore been retained for screening on a precautionary basis. Otters may use rivers, estuaries and coastal margins for foraging, commuting and resting.

National Biodiversity Data Centre records include live and dead records of otter within the licensed dredge area and widely around the Lough. The available data confirm that otter occurs within the Project area and may use Lough Swilly for foraging or movement.

The site specific conservation objective for otter in each of the SACs is to restore its favourable conservation condition. The objectives contain common targets of no significant decline in distribution, terrestrial habitat, marine habitat, freshwater habitat, couching sites and holts, or available fish biomass, together with no significant increase in barriers to connectivity.

Potential sources of effect include vessel presence, underwater noise, physical disturbance of the seabed and localised changes to benthic habitat or prey availability. A pathway exists through the direct overlap between the Project and Lough Swilly SAC, Leannan River SAC, Mulroy Bay SAC, River Finn SAC, North Inishowen Coast SAC through the potential use of the dredging area by foraging or commuting otters.

The Project does not involve disturbance of riparian habitat, removal of bankside vegetation, excavation, interference with potential holts or couching sites, or the creation of barriers to movement. Dredging would take place during daylight hours and has been undertaken in Lough Swilly for several decades. On the information provided, the Project would not introduce a new source of vessel activity or increase vessel movements above those historically associated with the fishery. These characteristics reduce the scale of potential disturbance but do not exclude temporary disturbance or displacement of otters using the dredging areas.

A source pathway receptor relationship has been identified through the potential disturbance or temporary displacement of otters foraging or commuting within Lough Swilly and through possible localised effects on marine foraging habitat and prey availability. Given the direct overlap with several SACs and the confirmed

occurrence of otter within the wider Project area, likely significant effects on otter cannot be excluded on the basis of the available information. Otter is therefore screened in for further assessment.

NPWS conservation-objective information maps potential marine otter habitat principally within 80 m of the shoreline and reports that otters regularly commute across open-water gaps of up to approximately 500 m. General NPWS guidance reports linear territories of approximately 1 - 2 km in food-rich lowland systems and up to approximately 10 - 15 km where food is less abundant.

There is potential for otter (*Lutra lutra*) to be affected by the identified project impact mechanisms. Based on the source-pathway-receptor assessment, the following SACs fall within the species' range:

- Lough Swilly SAC [002287]
- Leannan River SAC [002176]

The following SACs are within the 15 km maximum foraging range but can be excluded from requiring Stage 2 AA due to a lack of functional hydrological connectivity between the QI population and the licensed dredge area in Lough Swilly.

- Mulroy Bay SAC [002159]
- River Finn SAC [002301]
- North Inishowen Coast SAC [002012]
- Cloghernagore Bog and Glenveagh National Park SAC [002047]

Salmon (*Salmo salar*)

Atlantic Salmon (*Salmo salar*) is listed under Annex II and Annex V of the Habitats Directive. The species is anadromous, migrating between freshwater spawning and juvenile habitats and the marine environment. Pressures on Atlantic Salmon populations include barriers to migration, deterioration in water quality, hydromorphological alteration, exploitation and changes affecting freshwater and marine survival. SACs designated for Atlantic Salmon protect river systems supporting important spawning, nursery and migratory habitat.

Within the immediate vicinity of the Project, Atlantic Salmon [1106] is a Qualifying Interest of Leannan River SAC [002176], for which the site-specific conservation objective is to restore its favourable conservation condition. The Leannan River system is hydrologically connected to Lough Swilly and Atlantic Salmon associated with the SAC may pass through Lough Swilly during migration between freshwater and the marine environment. Migrating individuals may therefore occur within or pass through the wider Project area and

may be exposed to underwater sound associated with vessel activity and oyster dredging. A functional source-pathway-receptor relationship is therefore present. Likely significant effects on Atlantic Salmon as a Qualifying Interest of Leannan River SAC cannot be excluded at Stage 1 and the species is carried forward for further assessment at Stage 2 Appropriate Assessment.

4.5. Assessment of Potential Likely Significant Effects

4.5.1. Qualifying Interests

The conservation objectives for Lough Swilly SAC are to maintain or restore the favourable conservation condition of the Annex I habitats and Annex II species for which the site is designated, as specified for each Qualifying Interest by its site-specific conservation objective, attributes and targets. Favourable conservation status for a habitat is achieved where its natural range and the area it covers within that range are stable or increasing, the specific structure and functions necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and the conservation status of its typical species is favourable. Favourable conservation status for a species is achieved where population dynamics data indicate that the species is maintaining itself on a long-term basis as a viable component of its natural habitats, its natural range is neither being reduced nor is likely to be reduced for the foreseeable future, and sufficient habitat exists and is likely to continue to exist to maintain its populations on a long-term basis.

Table 4-6 below assesses the S-P-R screening assessment for each Qualifying Interest in SACs within the Zol of the Project.

Table 4-6: Assessment of potential significant effects from the impact mechanisms to Qualifying Interests.

Site	Qualifying Interest	Impact Mechanisms	S-P-R Assessment	Brought to Stage 2 (Y/N)
Lough Swilly SAC [002287]	Estuaries [1130]	Physical habitat disturbance Increased suspended sediments and smothering Impacts on benthic community structure Biosecurity	The Project is located in Lough Swilly SAC and includes dredging for native oyster operations from vessels. Direct physical disturbance may arise from the interaction of the dredge with the seafloor and suspended sediment due to dredging may impact benthic communities within this habitat.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Coastal lagoons [1150]	Increased suspended sediments and smothering	The Project is located in Lough Swilly SAC and includes dredging for native oyster operations from vessels. This habitat does not overlap the dredge area however suspended sediment due to dredging may impact benthic communities within this habitat.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]	Increased suspended sediments and smothering	The Project is located in Lough Swilly SAC and includes dredging for native oyster operations from vessels. This habitat does not overlap the dredge area however suspended sediment due to dredging may impact coastal communities within this habitat.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) [6410]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Phocoena phocoena</i> (Harbour Porpoise) [1351]	Underwater noise disturbance	The Project is located within Lough Swilly SAC where QI harbour porpoise is designated and may interact with the proposed dredging activities.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	<i>Lutra lutra</i> (Otter) [1355]	Above-water visual and noise disturbance Effects on prey resources and the trophic food chain	The Project is located within Lough Swilly SAC where QI otter is designated and may occur for resting, foraging, or communing activities.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
Leannan River SAC [002176]	Oligotrophic waters containing very few minerals of sandy	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or	No - Likely significant effects can be

Site	Qualifying Interest	Impact Mechanisms	S-P-R Assessment	Brought to Stage 2 (Y/N)
	plains (Littorelletalia uniflorae) [3110]		functional pathway has been identified between the dredge activities and this QI.	excluded. Screened out at Stage 1
	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]	No impact mechanism identified	This QI is a fixed freshwater species upstream of the Project area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Salmo salar</i> (Salmon) [1106]	Underwater noise disturbance	This QI is a migratory fish species with functional connectivity between the Lough Swilly catchment and Leannan River system. Individuals may pass through Lough Swilly during migration.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	<i>Lutra lutra</i> (Otter) [1355]	Above-water visual and noise disturbance Effects on prey resources and the trophic food chain	The Project is located with a functional hydrological connectivity to Leannan River SAC where QI otter is designated and may occur for resting, foraging, or communing activities.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	<i>Najas flexilis</i> (Slender Naiad) [1833]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
North Inishowen Coast SAC [002012]	Mudflats and sandflats not covered by seawater at low tide [1140]	Physical habitat disturbance Increased suspended sediments and smothering Impacts on benthic community structure	This QI is a fixed habitat or non-mobile feature of a remote SAC. The proposed dredge activities are localised to Lough Swilly and there is no direct overlap, sediment pathway, pollution pathway, or functional linkage capable of affecting this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Perennial vegetation of stony banks [1220]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1

Site	Qualifying Interest	Impact Mechanisms	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Machairs (* in Ireland) [21A0]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	European dry heaths [4030]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]	No impact mechanism identified	This QI is a terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Lutra lutra</i> (Otter) [1355]	Above-water visual and noise disturbance Effects on prey resources and the trophic food chain	The Project is located 11.39 km from North Inishowen Coast SAC where QI otter is designated and may occur for resting, foraging, or communing activities. No functional hydrological connectivity exists for this species to be impacted by commercial oyster dredging in the licensed dredge area. Excluded at Stage 1 AA.	No - Likely significant effects can be excluded. Screened out at Stage 1
Ballyhoorisky Point to Fanad Head SAC [001975]	Perennial vegetation of stony banks [1220]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Oligotrophic to mesotrophic standing	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or	No - Likely significant effects can be

Site	Qualifying Interest	Impact Mechanisms	S-P-R Assessment	Brought to Stage 2 (Y/N)
	waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]		functional pathway has been identified between the dredge activities and this QI.	excluded. Screened out at Stage 1
	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp. [3140]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Vertigo angustior</i> (Narrow-mouthed Whorl Snail) [1014]	No impact mechanism identified	This QI is a terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects. Screened out at Stage 1
	<i>Najas flexilis</i> (Slender Naiad) [1833]	No impact mechanism identified	This QI is a terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
Mulroy Bay SAC [002159]	Mudflats and sandflats not covered by seawater at low tide [1140]	Physical habitat disturbance Increased suspended sediments and smothering Impacts on benthic community structure	This QI is a fixed habitat or non-mobile feature of a remote SAC. The proposed dredge activities are localised to Lough Swilly and there is no direct overlap, sediment pathway, pollution pathway, or functional linkage capable of affecting this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Large shallow inlets and bays [1160]	Physical habitat disturbance Increased suspended sediments and smothering Impacts on benthic community structure	This QI is a fixed habitat or non-mobile feature of a remote SAC. The proposed dredge activities are localised to Lough Swilly and there is no direct overlap, sediment pathway, pollution pathway, or functional linkage capable of affecting this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Reefs [1170]	Physical habitat disturbance Increased suspended sediments and smothering Impacts on benthic community structure	This QI is a fixed habitat or non-mobile feature of a remote SAC. The proposed dredge activities are localised to Lough Swilly and there is no direct overlap, sediment pathway, pollution pathway, or functional linkage capable of affecting this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1

Site	Qualifying Interest	Impact Mechanisms	S-P-R Assessment	Brought to Stage 2 (Y/N)
	<i>Lutra lutra</i> (Otter) [1355]	Above-water visual and noise disturbance Effects on prey resources and the trophic food chain	The Project is located 11.39 km from Mulroy Bay SAC where QI otter is designated and may occur for resting, foraging, or communing activities. No functional hydrological connectivity exists for this species to be impacted by commercial oyster dredging in the licensed dredge area. Excluded at Stage 1 AA.	No - Likely significant effects can be excluded. Screened out at Stage 1
River Finn SAC [002301]	Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>) [3110]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Northern Atlantic wet heaths with <i>Erica tetralix</i> [4010]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Blanket bogs (* if active bog) [7130]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Transition mires and quaking bogs [7140]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Salmo salar</i> (Salmon) [1106]	Above-water visual and noise disturbance	This QI is a migratory fish species however there is no functional/hydrological connectivity between the Lough Swilly catchment and River Finn system.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Lutra lutra</i> (Otter) [1355]	Above-water visual and noise disturbance Effects on prey resources and the trophic food chain	The Project is located 9.94 km from River Finn SAC where QI otter is designated and may occur for resting, foraging, or communing activities. No functional hydrological connectivity exists for this species to be impacted by commercial oyster dredging in the licensed dredge area. Excluded at Stage 1 AA.	No - Likely significant effects can be excluded. Screened out at Stage 1
Cloghernagore Bog and Glenveagh	Oligotrophic waters containing very few minerals of sandy	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1

Site	Qualifying Interest	Impact Mechanisms	S-P-R Assessment	Brought to Stage 2 (Y/N)
National Park SAC [002047]	plains (Littorelletalia uniflorae) [3110]			
	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation [3260]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Northern Atlantic wet heaths with Erica tetralix [4010]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	European dry heaths [4030]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Alpine and Boreal heaths [4060]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae) [6410]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Blanket bogs (* if active bog) [7130]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Depressions on peat substrates of the Rhynchosporion [7150]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1

Site	Qualifying Interest	Impact Mechanisms	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Margaritifera margaritifera</i> (Freshwater Pearl Mussel) [1029]	No impact mechanism identified	This QI is a fixed freshwater species with no functional hydrological connectivity to the Project area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Salmo salar</i> (Salmon) [1106]	Underwater noise disturbance	This QI is a migratory fish species however there is no functional/hydrological connectivity between the Lough Swilly catchment and the Cloghernagore Bog and Glenveagh National Park system.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Lutra lutra</i> (Otter) [1355]	Above-water visual and noise disturbance Effects on prey resources and the trophic food chain	The Project is located 12.39 km from Cloghernagore Bog and Glenveagh National Park SAC where QI otter is designated and may occur for resting, foraging, or communing activities. No functional hydrological connectivity exists for this species to be impacted by commercial oyster dredging in the licensed dredge area. Excluded at Stage 1 AA.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Vandenboschia speciosa</i> (Killarney Fern) [6985]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
Horn Head and Rinclevan SAC [000147]	Embryonic shifting dunes [2110]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Dunes with <i>Salix repens ssp. argentea</i>	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or	No - Likely significant effects can be

Site	Qualifying Interest	Impact Mechanisms	S-P-R Assessment	Brought to Stage 2 (Y/N)
	(<i>Salicornia arenariae</i>) [2170]		functional pathway has been identified between the dredge activities and this QI.	excluded. Screened out at Stage 1
	Humid dune slacks [2190]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Machairs (* in Ireland) [21A0]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoetes-Nanojuncetea [3130]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Vertigo geyeri</i> (Geyer's Whorl Snail) [1013]	No impact mechanism identified	This QI is a terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Halichoerus grypus</i> (Grey Seal) [1364]	Above-water visual and noise disturbance	The Project is located foraging range of Horn Head and Rinclevan SAC where QI grey seal is designated and may occur on a transient basis.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	<i>Petalophyllum ralfsii</i> (Petalwort) [1395]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Najas flexilis</i> (Slender Naiad) [1833]	No impact mechanism identified	This QI is a terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1

Site	Qualifying Interest	Impact Mechanisms	S-P-R Assessment	Brought to Stage 2 (Y/N)
Gweedore Bay and Islands SAC [001141]	Coastal lagoons [1150]	Physical habitat disturbance Increased suspended sediments and smothering Impacts on benthic community structure	This QI is a fixed habitat or non-mobile feature of a remote SAC. The proposed dredge activities are localised to Lough Swilly and there is no direct overlap, sediment pathway, pollution pathway, or functional linkage capable of affecting this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Reefs [1170]	Physical habitat disturbance Increased suspended sediments and smothering Impacts on benthic community structure	This QI is a fixed habitat or non-mobile feature of a remote SAC. The proposed dredge activities are localised to Lough Swilly and there is no direct overlap, sediment pathway, pollution pathway, or functional linkage capable of affecting this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Perennial vegetation of stony banks [1220]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Atlantic salt meadows (Glauco-Puccinellietalia maritima) [1330]	Physical habitat disturbance Increased suspended sediments and smothering Impacts on benthic community structure	This QI is a fixed habitat or non-mobile feature of a remote SAC. The proposed dredge activities are localised to Lough Swilly and there is no direct overlap, sediment pathway, pollution pathway, or functional linkage capable of affecting this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Mediterranean salt meadows (Juncetalia maritimi) [1410]	Physical habitat disturbance Increased suspended sediments and smothering Impacts on benthic community structure	This QI is a fixed habitat or non-mobile feature of a remote SAC. The proposed dredge activities are localised to Lough Swilly and there is no direct overlap, sediment pathway, pollution pathway, or functional linkage capable of affecting this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Embryonic shifting dunes [2110]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Shifting dunes along the shoreline with	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or	No - Likely significant effects can be

Site	Qualifying Interest	Impact Mechanisms	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Ammophila arenaria (white dunes) [2120]		functional pathway has been identified between the dredge activities and this QI.	excluded. Screened out at Stage 1
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Decalcified fixed dunes with <i>Empetrum nigrum</i> [2140]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Atlantic decalcified fixed dunes (Calluno-Ulicetea) [2150]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Dunes with <i>Salix repens ssp. argentea</i> (Salicion arenariae) [2170]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Humid dune slacks [2190]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Machairs (* in Ireland) [21A0]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or Isoeto-Nanojuncetea [3130]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1

Site	Qualifying Interest	Impact Mechanisms	S-P-R Assessment	Brought to Stage 2 (Y/N)
	European dry heaths [4030]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Alpine and Boreal heaths [4060]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	Juniperus communis formations on heaths or calcareous grasslands [5130]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Euphydryas aurinia</i> (Marsh Fritillary) [1065]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Phocoena phocoena</i> (Harbour Porpoise) [1351]	Underwater noise disturbance	The Project is located foraging range of Gweedore Bay and Islands SAC where QI harbour porpoise is designated and may occur on a transient basis. No likely significant effects are identified based on the distance. This QI can be excluded at Stage 1.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Lutra lutra</i> (Otter) [1355]	Above-water visual and noise disturbance Effects on prey resources and the trophic food chain	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Petalophyllum ralfsii</i> (Petalwort) [1395]	No impact mechanism identified	This QI is a fixed terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1
	<i>Najas flexilis</i> (Slender Naiad) [1833]	No impact mechanism identified	This QI is a terrestrial, freshwater or inland habitat/species and is not located within or adjacent to the dredge area. No direct, hydrological, or functional pathway has been identified between the dredge activities and this QI.	No - Likely significant effects can be excluded. Screened out at Stage 1

4.5.2. Special Conservation Interests

The screening assessment considers each relevant Special Conservation Interest in view of the applicable site specific conservation objectives and the impact pathways identified for the Project. The assessment determines whether a credible source pathway receptor relationship exists and whether the Project, either alone or in combination with other plans or projects, is likely to have a significant effect on the relevant Special Conservation Interest. Where likely significant effects cannot be excluded on the basis of objective scientific information, the Special Conservation Interest is brought forward to Stage 2 Appropriate Assessment. Where no credible pathway exists, or where likely significant effects can be excluded in view of the conservation objectives, the Special Conservation Interest is screened out at Stage 1. **Table 4-7** below considers the S-P-R for screening assessment of bird species and the Project.

The screening process is informed by SCI foraging ranges. Given the marine nature of the Project, the assessment also considered the potential for connectivity with seabird SCIs from other SPAs beyond the immediate vicinity of the project (*ex-situ*). This element of the screening process was informed by published data on species-specific foraging ranges (Thaxter *et al.*, 2012; Jovani *et al.*, 2016; Wakefield *et al.*, 2017; Woodward *et al.*, 2019; Woodward *et al.*, 2024) summarised in **Table 4-3**.

Table 4-7: Assessment of potential significant effects from the impact mechanisms to Special Conservation Interests.

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
Lough Swilly SPA [004075]	Great Crested Grebe (<i>Podiceps cristatus</i>) [A005]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Grey Heron (<i>Ardea cinerea</i>) [A028]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Whooper Swan (<i>Cygnus cygnus</i>) [A038]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Greylag Goose (<i>Anser anser</i>) [A043]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Shelduck (<i>Tadorna tadorna</i>) [A048]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Teal (<i>Anas crecca</i>) [A052]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Mallard (<i>Anas platyrhynchos</i>) [A053]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Scaup (<i>Aythya marila</i>) [A062]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Goldeneye <i>(Bucephala clangula)</i> [A067]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Red-breasted Merganser <i>(Mergus serrator)</i> [A069]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Coot (<i>Fulica atra</i>) [A125]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Oystercatcher <i>(Haematopus ostralegus)</i> [A130]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Knot (<i>Calidris canutus</i>) [A143]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Dunlin (<i>Calidris alpina</i>) [A149]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Curlew (<i>Numenius arquata</i>) [A160]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Redshank (<i>Tringa totanus</i>) [A162]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Greenshank (<i>Tringa nebularia</i>) [A164]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Common Gull (<i>Larus canus</i>) [A182]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Common Tern (<i>Sterna hirundo</i>) [A193]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Wigeon (<i>Mareca penelope</i>) [A855]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Shoveler (<i>Spatula clypeata</i>) [A857]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Sandwich Tern (<i>Thalasseus sandvicensis</i>) [A863]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	This SPA overlaps the proposed Project. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to SCI species. Wintering waterbirds and seabirds may forage or transit within or adjacent to the licensed area. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Wetland and Waterbirds [A999]	Physical habitat disturbance Increased suspended sediments impacts on benthic community structure	The proposed dredging overlaps wetland habitat within Lough Swilly SPA. Contact with the seabed may disturb sediment and shell, resuspend and redeposit sediment, and alter benthic communities and prey available to waterbirds. Although the Project does not propose reclamation, infilling or permanent conversion of wetland habitat, effects on its condition and ecological function as a resource for the SPA waterbird assemblage cannot be excluded on the basis of objective scientific information. In view of the conservation objective for Wetland and Waterbirds [A999], likely significant effects cannot be excluded at Stage 1. This feature is retained for Stage 2 Appropriate Assessment.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
Lough Fern SPA [004060]	Pochard (<i>Aythya ferina</i>) [A059]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project lies within this species' foraging range. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to foraging SCI species. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Wetland and Waterbirds [A999]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project does not overlap the wetland habitat of this SPA. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
Horn Head to Fanad Head SPA [004194]	Fulmar (<i>Fulmarus glacialis</i>) [A009]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The proposed Project falls within this species' mean foraging range, however this is an offshore/oceanic seabird and the proposed dredge activities are confined to an estuarine, inland environment which does not represent typical habitat for the species. Analysis of available I-WeBS data indicates that the species is either absent or recorded only rarely and in negligible numbers within Lough Swilly, demonstrating a lack of regular or functionally use of the Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Cormorant (<i>Phalacrocorax carbo</i>) [A017]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Shag (<i>Phalacrocorax aristotelis</i>) [A018]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project lies within this species' foraging range. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to foraging SCI species. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Barnacle Goose (<i>Branta leucopsis</i>) [A045]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project lies within this species' foraging range. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to foraging SCI species. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Peregrine (<i>Falco peregrinus</i>) [A103]	Above-water visual and noise disturbance	This is a terrestrial species with no function connectivity to the proposed Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Kittiwake (<i>Rissa tridactyla</i>) [A188]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The proposed Project falls within this species' mean foraging range, however this is an offshore/oceanic seabird and the proposed dredge activities are confined to an estuarine, inland environment which does not represent typical habitat for the species. Analysis of available I-WeBS data indicates that the species is either absent or recorded only rarely and in negligible numbers within Lough Swilly, demonstrating a lack of regular or functionally use of the Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Guillemot (<i>Uria aalge</i>) [A199]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The proposed Project falls within this species' mean foraging range, however this is an offshore/oceanic seabird and the proposed dredge activities are confined to an estuarine, inland environment which does not represent typical habitat for the species. Analysis of available I-WeBS data indicates that the species is either absent or recorded only rarely and in negligible numbers within Lough Swilly, demonstrating a lack of regular or functionally use of the Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Razorbill (<i>Alca torda</i>) [A200]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The proposed Project falls within this species' mean foraging range, however this is an offshore/oceanic seabird and the proposed dredge activities are confined to an estuarine, inland environment which does not represent typical habitat for the species. Analysis of available I-WeBS data indicates that the species is either absent or recorded only rarely and in negligible numbers within Lough Swilly, demonstrating a lack of regular or functionally use of the Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Chough (<i>Pyrhocorax pyrrhocorax</i>) [A346]	Above-water visual and noise disturbance	This is a terrestrial species with no function connectivity to the proposed Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
Lough Foyle SPA [004087]	Red-throated Diver (<i>Gavia stellata</i>) [A001]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Great Crested Grebe (<i>Podiceps cristatus</i>) [A005]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project lies within this species' foraging range. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to foraging SCI species. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Bewick's Swan (<i>Cygnus columbianus bewickii</i>) [A037]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Whooper Swan (<i>Cygnus cygnus</i>) [A038]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Greylag Goose (<i>Anser anser</i>) [A043]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Shelduck (<i>Tadorna tadorna</i>) [A048]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Teal (<i>Anas crecca</i>) [A052]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Mallard (<i>Anas platyrhynchos</i>) [A053]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Eider (<i>Somateria mollissima</i>) [A063]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Red-breasted Merganser (<i>Mergus serrator</i>) [A069]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Oystercatcher (<i>Haematopus ostralegus</i>) [A130]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Golden Plover (<i>Pluvialis apricaria</i>) [A140]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Lapwing (<i>Vanellus vanellus</i>) [A142]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Knot (<i>Calidris canutus</i>) [A143]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Dunlin (<i>Calidris alpina</i>) [A149]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Curlew (<i>Numenius arquata</i>) [A160]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Redshank (<i>Tringa totanus</i>) [A162]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Common Gull (<i>Larus canus</i>) [A182]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project lies within this species' foraging range. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to foraging SCI species. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Herring Gull (<i>Larus argentatus</i>) [A184]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project lies within this species' foraging range. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to foraging SCI species. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Wigeon (<i>Mareca penelope</i>) [A855]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Wetland and Waterbirds [A999]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project does not overlap the wetland habitat of this SPA. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
Derryveagh and Glendowan Mountains SPA [004039]	Red-throated Diver (<i>Gavia stellata</i>) [A001]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Merlin (<i>Falco columbarius</i>) [A098]	Above-water visual and noise disturbance	This is a terrestrial species with no function connectivity to the proposed Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Peregrine (<i>Falco peregrinus</i>) [A103]	Above-water visual and noise disturbance	This is a terrestrial species with no function connectivity to the proposed Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Golden Plover (<i>Pluvialis apricaria</i>) [A140]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Dunlin (<i>Calidris alpina schinzii</i>) [A466]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
Greers Isle SPA [004082]	Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Common Gull (<i>Larus canus</i>) [A182]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project lies within this species' foraging range. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to foraging SCI species. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Sandwich Tern (<i>Thalasseus sandvicensis</i>) [A863]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
Fanad Head SPA [004148]	Corncrake (<i>Crex crex</i>) [A122]	Above-water visual and noise disturbance	This is a terrestrial species with no function connectivity to the proposed Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
Trawbreaga Bay SPA [004034]	Barnacle Goose (<i>Branta leucopsis</i>) [A045]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Chough (<i>Pyrhocorax pyrrhocorax</i>) [A346]	Above-water visual and noise disturbance	This is a terrestrial species with no function connectivity to the proposed Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Wetland and Waterbirds [A999]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project does not overlap the wetland habitat of this SPA. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
Inishbofin, Inishdooney and Inishbeg SPA [004083]	Barnacle Goose (<i>Branta leucopsis</i>) [A045]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Corncrake (<i>Crex crex</i>) [A122]	Above-water visual and noise disturbance	This is a terrestrial species with no function connectivity to the proposed Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Common Gull (<i>Larus canus</i>) [A182]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project lies within this species' foraging range. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to foraging SCI species. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project lies within this species' foraging range. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to foraging SCI species. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Arctic Tern (<i>Sterna paradisaea</i>) [A194]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
Lough Derg (Donegal) SPA [004057]	Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project lies within this species' foraging range. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to foraging SCI species. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Herring Gull (<i>Larus argentatus</i>) [A184]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
Inishtrahull SPA [004100]	Shag (<i>Phalacrocorax aristotelis</i>) [A018]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Barnacle Goose (<i>Branta leucopsis</i>) [A045]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Common Gull (<i>Larus canus</i>) [A182]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project lies within this species' foraging range. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to foraging SCI species. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
Tory Island SPA [004073]	Fulmar (<i>Fulmarus glacialis</i>) [A009]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The proposed Project falls within this species' mean foraging range, however this is an offshore/oceanic seabird and the proposed dredge activities are confined to an estuarine, inland environment which does not represent typical habitat for the species. Analysis of available I-WeBS data indicates that the species is either absent or recorded only rarely and in negligible numbers within Lough Swilly, demonstrating a lack of regular or functionally use of the Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Corncrake (<i>Crex crex</i>) [A122]	Above-water visual and noise disturbance	This is a terrestrial species with no function connectivity to the proposed Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Razorbill (<i>Alca torda</i>) [A200]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The proposed Project falls within this species' mean foraging range, however this is an offshore/oceanic seabird and the proposed dredge activities are confined to an estuarine, inland environment which does not represent typical habitat for the species. Analysis of available I-WeBS data indicates that the species is either absent or recorded only rarely and in negligible numbers within Lough Swilly, demonstrating a lack of regular or functionally use of the Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Puffin (<i>Fratercula arctica</i>) [A204]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The proposed Project falls within this species' mean foraging range, however this is an offshore/oceanic seabird and the proposed dredge activities are confined to an estuarine, inland environment which does not represent typical habitat for the species. Analysis of available I-WeBS data indicates that the species is either absent or recorded only rarely and in negligible numbers within Lough Swilly, demonstrating a lack of regular or functionally use of the Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
West Donegal Coast SPA [004150]	Fulmar (<i>Fulmarus glacialis</i>) [A009]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The proposed Project falls within this species' mean foraging range, however this is an offshore/oceanic seabird and the proposed dredge activities are confined to an estuarine, inland environment which does not represent typical habitat for the species. Analysis of available I-WeBS data indicates that the species is either absent or recorded only rarely and in negligible numbers within Lough Swilly, demonstrating a lack of regular or functionally use of the Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Cormorant (<i>Phalacrocorax carbo</i>) [A017]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Shag (<i>Phalacrocorax aristotelis</i>) [A018]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Peregrine (<i>Falco peregrinus</i>) [A103]	Above-water visual and noise disturbance	This is a terrestrial species with no function connectivity to the proposed Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Herring Gull (<i>Larus argentatus</i>) [A184]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Kittiwake (<i>Rissa tridactyla</i>) [A188]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The proposed Project falls within this species' mean foraging range, however this is an offshore/oceanic seabird and the proposed dredge activities are confined to an estuarine, inland environment which does not represent typical habitat for the species. Analysis of available I-WeBS data indicates that the species is either absent or recorded only rarely and in negligible numbers within Lough Swilly, demonstrating a lack of regular or functionally use of the Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Razorbill (<i>Alca torda</i>) [A200]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The proposed Project falls within this species' mean foraging range, however this is an offshore/oceanic seabird and the proposed dredge activities are confined to an estuarine, inland environment which does not represent typical habitat for the species. Analysis of available I-WeBS data indicates that the species is either absent or recorded only rarely and in negligible numbers within Lough Swilly, demonstrating a lack of regular or functionally use of the Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Chough (<i>Pyrrhocorax pyrrhocorax</i>) [A346]	Above-water visual and noise disturbance	This is a terrestrial species with no function connectivity to the proposed Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
West Donegal Islands SPA [004230]	Shag (<i>Phalacrocorax aristotelis</i>) [A018]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Barnacle Goose (<i>Branta leucopsis</i>) [A045]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1
	Corncrake (<i>Crex crex</i>) [A122]	Above-water visual and noise disturbance	This is a terrestrial species with no function connectivity to the proposed Project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

Site	SCIs	Impact Mechanism	S-P-R Assessment	Brought to Stage 2 (Y/N)
	Common Gull (<i>Larus canus</i>) [A182]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	The proposed Project lies within this species' foraging range. Temporary vessel activity and dredge operations, including personnel presence, have the potential to result in temporary disturbance to foraging SCI species. Although visual and noise disturbance would be localised and temporary, an S-P-R linkage is identified. In view of the conservation objectives of the SCI, likely significant effects cannot be excluded. This SCI is carried forward to Stage 2 AA.	Yes - Likely significant effects cannot be excluded. Brought forward for Stage 2
	Herring Gull (<i>Larus argentatus</i>) [A184]	Effects on prey resources and the trophic food chain Above-water visual and noise disturbance	No likely significant interaction is predicted for this species. The Proposed Project lies outside the species' mean foraging range, indicating no functional connectivity with the project area. In the absence of a viable S-P-R linkage, the potential for likely significant effects on this species can be excluded at Stage 1 AA.	N - No credible pathway, screened out at Stage 1

4.6. Plans or Projects that Might Act In-Combination

As outlined in above the obligation to undertake AA under the 2011 Birds and Natural Habitats Regulations derives from the Habitats Directive. Regulation 42(1) of the 2011 Regulations requires that:

A screening for Appropriate Assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which is not directly connected with or necessary to the management of the site as a European Site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the European site. It is therefore required that the potential impacts of the proposed Project be considered in combination with other relevant plans or projects. Given the nature of the proposed activities associated with the Project, the potential project impact mechanisms (or sources of impact) are:

1. Physical habitat disturbance
2. Increased suspended sediments and smothering
3. Impacts on benthic community structure
4. Effects on prey resources and the trophic food chain
5. Above water visual and noise disturbance
6. Underwater noise disturbance
7. Biosecurity

The assessment of potential in-combination effects considers other plans and projects that may result in significant effects to QIs and SCIs of SACs and SPAs. To inform the assessment of potential in-combination effects a review of consent applications for projects in the vicinity of the proposed Project included on the following websites was completed in September 2026:

- DHPLG – EIA Portal
- Donegal County Council – Planning
- An Comisiún Pleanála
- Aquaculture Information Management System (AQUAMIS) by DAFM
- Irelands Marine Atlas
- MARA Licence Applications (MACs and MULs)

4.6.1. Threats and Pressures

The Lough Swilly SPA supports several bird species which can be impacted by threats and pressures identified in the Natura 2000 Standard Data Form (**Table 4-8**).

Table 4-8: Natura 2000 Standard Data Form for Lough Swilly SPA threats and pressures.

Rank	Threats and Pressures [code]	*Occurrence	Relevance to Lough Swilly
High	Fertilisation [A08]	i	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SPA as a site-level pressure with potential relevance to the SPA.
Medium	Leisure fishing [F02.03]	i	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SPA as a site-level pressure with potential relevance to the SPA.
Medium	Nautical sports [G01.01]	i	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SPA as a site-level pressure with potential relevance to the SPA.
High	Fertilisation [A08]	o	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SPA as a site-level pressure with potential relevance to the SPA.
Medium	Urbanised areas, human habitation [E01]	o	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SPA as a site-level pressure with potential relevance to the SPA.
High	Cultivation [A01]	i	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SPA as a site-level pressure with potential relevance to the SPA.
High	Grazing [A04]	i	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SPA as a site-level pressure with potential relevance to the SPA.
High	Marine and freshwater aquaculture [F01]	i	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SPA as a site-level pressure with potential relevance to the SPA.

Rank	Threats and Pressures [code]	*Occurrence	Relevance to Lough Swilly
High	Grazing [A04]	i	Identified in the positive impacts of the Natura 2000 Standard Data Form for Lough Swilly SPA as a site-level pressure with potential relevance to the SPA.
Medium	Nautical sports [G01.01]	i	Identified in the positive impacts of the Natura 2000 Standard Data Form for Lough Swilly SPA as a site-level pressure with potential relevance to the SPA.
High	Marine and freshwater aquaculture [F01]	i	Identified in the positive impacts of the Natura 2000 Standard Data Form for Lough Swilly SPA as a site-level pressure with potential relevance to the SPA.
High	Fertilisation [A08]	i	Identified in the positive impacts of the Natura 2000 Standard Data Form for Lough Swilly SPA as a site-level pressure with potential relevance to the SPA.
High	Cultivation [A01]	i	Identified in the positive impacts of the Natura 2000 Standard Data Form for Lough Swilly SPA as a site-level pressure with potential relevance to the SPA.
High	Urbanised areas, human habitation [E01]	o	Identified in the positive impacts of the Natura 2000 Standard Data Form for Lough Swilly SPA as a site-level pressure with potential relevance to the SPA.

*Occurrence: **i** = inside, **o** = outside, **b** = both

The Natura 2000 Standard Data Form for the Lough Swilly SAC identifies a variety of pressures affecting the SAC and its QIs as seen below in **Table 4-9**.

Table 4-9: Natura 2000 Standard Data Form for Lough Swilly SAC threats and pressures.

Rank	Threats and Pressures [code]	*Occurrence	Relevance to Lough Swilly
High	Continuous urbanisation [E01.01]	b	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SAC as a site-level pressure with potential relevance to the SAC.
Medium	Fishing and harvesting aquatic resources [F02]	i	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SAC as a site-level pressure with potential relevance to the SAC.

Rank	Threats and Pressures [code]	*Occurrence	Relevance to Lough Swilly
High	Marine and freshwater aquaculture [F01]	i	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SAC as a site-level pressure with potential relevance to the SAC.
Low	Invasive non-native species [I01]	b	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SAC as a site-level pressure with potential relevance to the SAC.
High	Outdoor sports and leisure activities, recreational activities [G01]	i	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SAC as a site-level pressure with potential relevance to the SAC.
High	Human-induced changes in hydraulic conditions [J02]	i	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SAC as a site-level pressure with potential relevance to the SAC.
Medium	Benthic dredging [F02.02.05]	i	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SAC as a site-level pressure with potential relevance to the SAC.
High	Pollution to surface waters (limnic and terrestrial, marine and brackish) [H01]	i	Identified in the negative impacts of the Natura 2000 Standard Data Form for Lough Swilly SAC as a site-level pressure with potential relevance to the SAC.
Low	No threats or pressures [X]	i	Identified in the positive impacts of the Natura 2000 Standard Data Form for Lough Swilly SAC as a site-level pressure with potential relevance to the SAC.

*Occurrence: **i** = inside, **o** = outside, **b** = both

Of particular relevance to this assessment is benthic dredging is identified as being a Medium pressure which must be considered in this Stage 1 Appropriate Assessment.

4.6.2. Plans and Projects

A review of publicly available planning information was undertaken with regard to the portals identified in **section 4.6**, identify permitted, proposed and under-construction developments within the wider Lough Swilly area. Plans and projects have been summarised below in **Table 4-12** including a detailed S-P-R assessment.

The TEN-T Priority Route Improvement Project, Donegal (HA05E.324272) was lodged with An Coimisiún Pleanála in May 2026 and is accompanied by an EIAR and Natura Impact Statement. Section 2 of the project

includes a proposed crossing of the River Swilly that is in the most inner part of the Lough and just outside of the licensed dredge area. This project therefore has a direct hydrological and ecological connection with Lough Swilly SAC and SPA and potential likely significant effects in-combination with commercial oyster dredging and cannot be excluded at Stage 1. Maritime Area Consent MAC20240012 relates to the construction, use, operation and maintenance of the River Swilly bridge and forms part of the same overall project.

Buncrana Pier maintenance dredging (MUL260023) is currently at Applied stage on the MARA website with the application submitted in April 2026. The proposed activity comprises maintenance dredging to retain navigable depth within the harbour navigation channel and RNLI berth just to the north of the licensed dredge area. Potential pathways relevant to commercial oyster dredging include seabed disturbance, sediment resuspension and deposition, vessel activity and associated above-water and underwater disturbance in-combination with commercial oyster dredging. This project therefore has a direct hydrological and ecological connection with Lough Swilly SAC and SPA and potential likely significant effects in-combination with commercial oyster dredging and cannot be excluded at Stage 1.

The County Donegal Development Plan 2024–2030, as varied, provides the statutory development plan framework for County Donegal, including Lough Swilly and its surrounding coastal communities. The Plan contains objectives and policies relating to the marine sector, coastal management, biodiversity, water and wastewater infrastructure and marine and coastal development. Chapter 14, Marine Resource, Coastal Management and the Islands, seeks to sustain and enhance the economic, social, cultural and tourism vitality of Donegal’s marine sector, coastal communities and islands, while safeguarding marine and coastal ecosystems and providing for the sustainable management of the coastal environment. Chapter 11, Natural and Built Heritage, contains complementary biodiversity objectives and policies requiring the protection of European sites and compliance with the requirements of the EU Habitats Directive and EU Birds Directive. The objectives and policies of particular relevance to commercial oyster dredging in Lough Swilly are summarised in **Table 4-10**.

Of particular relevance are MRCM-O-2, MRCM-P-1 and BIO-P-1. MRCM-O-2 seeks to “safeguard and enhance the health of Donegal’s marine and coastal ecosystems” and sustainably manage the coastal environment. MRCM-P-1 requires development proposals to be “consistent with the National Marine Planning Framework”, including its environmental, economic, social and sectoral objectives and policies. BIO-P-1 requires development to comply with the EU Habitats Directive and EU Birds Directive and requires that proposals “do not adversely affect the integrity” of European/Natura 2000 sites, including effects on ex-situ but functionally linked habitats and species. Collectively, these provisions establish a policy framework which supports Donegal’s marine sector while requiring the protection of marine ecosystems and European sites.

Table 4-10: Objectives (O) and Policies (P) identified in the Donegal County Development Plan 2024 – 2030 (As Varied).

Objective (O) / Policy (P)	Description	Relevance to Lough Swilly oyster dredging
MRCM-O-1	Seeks to sustain and enhance the economic, social, cultural and tourism vitality of Donegal's marine sector, coastal communities and islands.	Direct strategic relevance. Commercial oyster fishing forms part of Donegal's marine economy. This provides the broad supportive marine-sector context but does not override environmental protection requirements.
MRCM-O-2	Seeks to safeguard and enhance the health of Donegal's marine and coastal ecosystems and sustainably manage the coastal environment.	Highly relevant. Directly relevant overarching environmental objective for the dredging activity, given seabed disturbance, benthic communities, suspended sediment and marine fauna.
MRCM-P-1	To ensure that development proposals are consistent with the National Marine Planning Framework including the environmental, economic, social and sectoral objectives and policies detailed therein.	Highly relevant strategic context. The NMPF contains policies relating to fisheries, biodiversity, marine protected sites, disturbance, water quality and coexistence of marine activities. For plan and projects this creates a direct policy link between the CDP and national marine planning policy.
BIO-O-1	Seeks to preserve and enhance County Donegal's biodiversity in accordance with relevant EU policies and national legislation.	Highly relevant environmental objective, particularly because the dredging takes place within Lough Swilly SAC and SPA and potentially affects marine habitats/species.
BIO-O-2	To have regard to the objectives of any extant National Biodiversity Action Plan and National Peatlands Strategy in all aspects of the sustainable development of the county.	Highly relevant environmental objective, particularly because the dredging takes place within Lough Swilly SAC and SPA and potentially affects marine habitats/species.
BIO-P-1	Requires developments to comply with the Habitats and Birds Directives, including avoiding adverse effects on European-site integrity and addressing ex-situ functionally linked habitat/species.	Strictly relevant biodiversity policy for AA. It directly concerns SACs, SPAs, their integrity and functionally linked habitats. It is highly relevant to both Lough Swilly SAC and Lough Swilly SPA and to your wider mobile-species assessment.
BIO-P-4	Requires development proposals not to introduce or spread invasive species and allows control/management programmes to be required where invasive species occur.	Potentially relevant, particularly in relation to movement of vessels, fishing gear and biological material.
MRCM-P-10	Requires new marine/coastal development not to cause significant coastal change or significantly adversely affect the marine environment, sensitive coastal environments or coastal geomorphological processes such as tidal currents and sediment budgets.	Less relevant as it involves new developments and the Lough Swilly commercial oyster dredging has been ongoing.

The licensed commercial native oyster fishery is relevant to the objectives of the County Development Plan and the draft Nature Restoration Plan 2027 as an established marine fisheries activity within Lough Swilly. The fishery operates within the licensed dredging area under licences issued by Inland Fisheries Ireland, with vessels accessing the fishing grounds from existing piers and slipways around Lough Swilly, including at Rathmullan, Ramelton, Buncrana and Fahan. The activity is consistent with the Plan objectives supporting the sustainable development of Donegal's marine sector, while also being subject to the Plan's objectives and policies for the protection of marine and coastal ecosystems, water quality and European sites.

Ireland's draft National Nature Restoration Plan has been prepared under Regulation (EU) 2024/1991. The published working draft addresses the restoration of marine habitats, including seagrass beds, shellfish beds and soft sediment habitats. Its assessment of marine habitat condition combines available habitat data with information on pressures, including fishing and seabed disturbance. Measures to restore shellfish beds could improve the extent and condition of native oyster habitat, including *Ostrea edulis* dominated community where such measures are implemented. The draft states that the identification of precise marine restoration areas and associated measures will be phased as habitat mapping, condition assessments and pressure data are refined (DHLGH, 2026).

The Project would authorise native oyster dredging for ten years within the licensed dredge area in Lough Swilly. Dredging would occur between September and April and has the potential to interact with benthic communities through seabed contact and associated disturbance.

The draft Plan therefore concerns habitats and pressures relevant to the Project and could benefit native oyster habitat if restoration measures were subsequently implemented in Lough Swilly. It does not propose an increase in fishing effort or an expansion of the licensed oyster dredging area. It also does not identify a restoration measure in the licensed dredge area, specify an activity elsewhere in Lough Swilly with a pathway to those areas, or establish the location, method and timing of a measure capable of acting with the licensed dredging on a relevant conservation objective. Its national pressure assessment does not itself constitute an additional physical pressure in Lough Swilly. On the information available, likely significant effects arising from the Project in combination with an identifiable measure in the draft Plan can be excluded at Stage 1. The draft Plan is screened out of in-combination effects and is not retained for Stage 2.

Deele-Swilly Burn Arterial Drainage Scheme - Bogay and Greenhill Embankment Rehabilitation Works was identified in a search for projects to be considered in-combination. The OPW proposes rehabilitation works to an existing embankment at Bogay and Greenhill on the western side of Lough Swilly, immediately north-east of Letterkenny. The works comprise maintenance of Embankment E3, Channel C1 between Chainage 300 and 650 and are located within Lough Swilly SAC and Lough Swilly SPA. The embankment works are spatially

confined to an existing shoreline flood-defence structure and are temporary in nature. Potential effects associated with the works are principally related to the localised construction area, including temporary disturbance and potential effects on adjacent habitats and water quality. Commercial native oyster dredging is undertaken from vessels within subtidal oyster grounds and does not involve works at the embankment or shoreline. While both activities occur within the same European sites, no pathway has been identified whereby their localised effects would combine to result in a likely significant effect on a Qualifying Interest or Special Conservation Interest in view of the relevant conservation objectives. Likely significant in-combination effects with the Project can therefore be excluded at Stage 1 and the embankment rehabilitation works are not carried forward for further assessment.

4.6.3. Aquaculture

A number of licensed shellfish aquaculture sites occur within the Lough Swilly licensed dredge area, including sites operated by Lough Swilly Shellfish Growers Co-operative Society Ltd and private operators for the cultivation of Pacific oyster and blue mussel (**Table 4-11**) as seen on the Department of Food and the Marine (DAFM) aquaculture viewer.

Table 4-11: Licensed aquaculture sites within the Lough Swilly licensed dredge area.

Site code	Licensee	Species	Site size (ha)
T12-037A1	Lough Swilly Shellfish Growers Co-op Society Ltd	Blue mussel	145.29
T12-037A2	Lough Swilly Shellfish Growers Co-op Society Ltd	Pacific oyster	2.79
T12-037B1	Lough Swilly Shellfish Growers Co-op Society Ltd	Blue mussel	85
T12-037B2	Lough Swilly Shellfish Growers Co-op Society Ltd	Blue mussel	177.75
T12-037B4	Lough Swilly Shellfish Growers Co-op Society Ltd	Pacific oyster	0.77
T12-343A	Private farmer	Pacific oyster	2.03
T12-251A	Private farmer	Blue mussel	5.94
T12-251B	Private farmer	Pacific oyster and Blue mussel	29.24

Aquaculture activities have spatial and ecological pathways which could act in combination with commercial native oyster dredging, including occupation and disturbance of seabed and intertidal habitat, effects on benthic communities and supporting prey resources, and vessel and human activity with the potential to disturb waterbirds and marine mammals.

The relevance and magnitude of these pathways will vary according to the species cultivated, cultivation method and operation of each licensed site. Given the direct spatial overlap of several aquaculture sites to the licensed dredging area, their occurrence within Lough Swilly SAC and SPA, and the potential for in-combination effects on marine habitats and species, in-combination effects from other licensed aquaculture sites cannot be excluded at Stage 1. **Table 4-11** Licensed aquaculture sites within Lough Swilly are therefore retained for further consideration at Stage 2 Appropriate Assessment.

In addition to the existing licensed aquaculture sites described above, DAFM records identify a number of current aquaculture applications within Lough Swilly. Existing licensed aquaculture sites carried forward for further assessment comprise T12-037A1, T12-037A2, T12-037B1, T12-037B2, T12-037B4, T12-251A, T12-251B and T12-343A. New aquaculture applications carried forward comprise T12-330A, T12-330B, T12-330C, T12-339A, T12-339B, T12-339C, T12-1020, T12-1021, T12-1022, T12-1027 and T12-1028. The review application for existing site T12-343A and the renewal and review application T12-284A are also carried forward. These sites include Pacific oyster and blue mussel cultivation using a range of cultivation methods, including bottom culture, bags and trestles, suspended rope and net systems and flip-farm baskets. Given the direct spatial overlap of several sites with the licensed native oyster dredging area and the potential for common pathways affecting benthic habitats, marine ecological receptors, supporting habitat and vessel-related disturbance within Lough Swilly SAC and SPA, likely significant in-combination effects cannot be excluded at Stage 1. These licensed and proposed aquaculture activities are therefore carried forward for further assessment at Stage 2 Appropriate Assessment.

T12-462A relates to the renewal of an existing aquaculture licence for the cultivation of Pacific oyster (*Magallana gigas*) on bags and trestles within Lough Swilly, approximately 5 km northwest of Buncrana. The aquaculture site is spatially separate from the areas subject to commercial native oyster dredging and no direct interaction between oyster dredging gear and the trestle cultivation area has been identified. Potential effects associated with the aquaculture activity are therefore confined principally to the aquaculture site and associated access and servicing activity. Although both activities occur within Lough Swilly and may generate localised vessel activity, the Project represents the continuation of an established small-vessel fishery within an existing background of aquaculture, fishing and recreational vessel movements. No common source-pathway-receptor relationship has been identified through which the renewal of T12-462A and commercial native oyster dredging could combine to result in a likely significant effect on a QI or SCI in view of the relevant conservation objectives. Likely significant in-combination effects can therefore be excluded at Stage 1 and T12-462A is not carried forward to Stage 2 Appropriate Assessment.

Finfish aquaculture applications T12-085 at Anny Point and T12-495 at Dooanmore relate to the proposed cultivation of Atlantic salmon within Lough Swilly. Both sites are located outside the licensed native oyster

dredging area and there is no direct spatial interaction between the proposed finfish installations and commercial oyster dredging. The principal pressures associated with marine finfish aquaculture, including nutrient and organic inputs, fish escape and salmon-specific disease or parasite pathways, are not generated by commercial native oyster dredging. The Project does not involve the introduction or cultivation of finfish, fish feed, medicinal treatments or the release of organic material associated with finfish production and therefore does not provide an additive pathway for these pressures.

A potential common pathway is limited to vessel activity and associated above-water and underwater disturbance. Lough Swilly already supports an established background of fishing, aquaculture, recreational and service-vessel activity, and the Project represents the continuation of an established seasonal oyster fishery rather than a new or increased source of vessel traffic. Any interaction between vessels associated with the proposed salmon farms and oyster fishing vessels would therefore occur within this existing marine-traffic baseline and would be localised and intermittent. No common pathway has been identified through which the Project and T12-085 or T12-495 could combine to result in a likely significant effect on the relevant QIs or SCIs. Likely significant in-combination effects can therefore be excluded at Stage 1, and these applications are not carried forward to Stage 2 Appropriate Assessment.

4.6.4. Initiatives

A draft *Plan for the Restoration and Management of Native Oysters in Lough Swilly* was prepared by the Lough Swilly Wild Oyster Society Limited in association with the Marine Institute. The draft Plan was developed to support the recovery of native oyster (*Ostrea edulis*) stocks, control the biomass and distribution of naturalised Pacific oyster, and improve management of the Lough Swilly oyster fishery. The Plan identifies an overall objective to reduce Pacific oyster biomass and restore native oyster populations in a manner consistent with the conservation objectives for oyster habitat within Lough Swilly. It is intended to apply across areas where oysters occur, informed by annual survey data and local knowledge.

Proposed measures include relaying juvenile native oysters, development of broodstock or spawning-reserve areas, temporary or longer-term closure of selected areas to dredging, deployment of shell to improve settlement habitat, increased stock and disease monitoring, and targeted removal of Pacific oysters. The draft Plan also proposes adaptive management informed by annual monitoring and review. Native oyster restoration work undertaken since 2018 has included surveys of native and Pacific oyster distribution, localised removal of Pacific oysters, relaying of juvenile native oysters, monitoring of growth and survival, and shell deployment to enhance settlement.

The objectives of the draft Plan are principally restorative and are intended to improve the condition and management of native oyster populations within Lough Swilly. As the Plan remains in draft form and requires

Appropriate Assessment and subsequent review prior to implementation, it is not considered a committed plan or project capable of giving rise to a reasonably foreseeable likely significant in-combination effect at this stage and is not carried forward for further assessment.

4.6.5. Navigational and marine traffic

Lough Swilly supports an established baseline of ferry, recreational, fishing, aquaculture, emergency-service and other small-vessel activity. Ireland's Marine Atlas provides AIS-based vessel traffic information for the area, although AIS data are not considered to represent all local vessel movements, particularly smaller fishing, aquaculture, leisure and service craft.

The seasonal Lough Swilly Ferry operates between Buncrana and Rathmullan, with limited temporal overlap with the commercial oyster dredging season during September. Fahan Marina provides berthing for approximately 200 vessels and supports recreational boating within the lough. Rathmullan is identified as a principal fishing harbour, while Lough Swilly supports established leisure boating and fishing activity. Existing and proposed aquaculture operations also generate vessel movements associated with servicing and harvesting.

Lough Swilly contains established navigational channels, including the Fahan Channel east of Inch Flats and the deeper Rathmullan Channel to the west. Buncrana Harbour supports local vessel and RNLI activity and is subject to periodic maintenance dredging to maintain navigable depths.

Existing marine traffic provides potential common pathways with the Project through vessel presence, above-water visual and noise disturbance and underwater noise. The Project comprises the continuation of established commercial oyster dredging by small fishing vessels within the licensed dredging area and would not introduce a new source or material increase in vessel activity relative to the established fishery. Vessel movements associated with the fishery would occur within the existing background of fishing, aquaculture, recreational, ferry and service-vessel activity within Lough Swilly. Having regard to the nature and scale of the Project, the existing vessel-activity baseline and the limited additional disturbance attributable to the licensing of the established fishery, no credible additive disturbance effect has been identified that could result in likely significant effects on the relevant QIs or SCIs. Likely significant effects arising in combination with existing navigational and marine traffic can therefore be excluded at Stage 1 AA.

4.6.6. Conclusion

For several projects identified in **Table 4-12**, likely significant effects arising in combination with commercial native oyster dredging in Lough Swilly cannot be excluded at Stage 1. These projects have therefore been retained for detailed in-combination assessment at Stage 2 Appropriate Assessment.

Table 4-12: Assessment of potential in-combination effects.

Website	Project Details	File Reference	Date Application Received	Assessment of Potential In-combination Effects	Conclusion
An Coimisiún Pleanála / Donegal County Council – TEN-T Priority Route Improvement Project	TEN-T Priority Route Improvement Project, Donegal. The project comprises improvements to three sections of the national road network: N15/N13 Ballybofey–Stranorlar, N56/N13 Letterkenny–Manorcunningham and N14 Manorcunningham–Lifford/Strabane/A5 Link. The application includes the proposed River Swilly crossing associated with the Letterkenny section.	HA05E.324272 / MAC20240012	14/05/2026	The TEN-T project is primarily a terrestrial road scheme, but works associated with the River Swilly crossing provide a hydrological pathway to the wider Lough Swilly system. Potential construction-phase pathways include localised sediment mobilisation, water-quality effects and disturbance associated with works in or adjacent to the River Swilly. These pathways have potential to interact with pathways arising from the Project where they affect functionally connected habitats or species associated with Lough Swilly. Given the scale of the TEN-T scheme and the hydrological connection through the River Swilly, potential in-combination effects are retained for consideration.	Potential likely significant effects in combination with the Project cannot be excluded at Stage 1. Brought forward for further consideration at Stage 2 Appropriate Assessment.
MARA – Maritime Usage Licence Applications	Buncrana Pier maintenance dredging. Donegal County Council has applied for a Maritime Usage Licence for maintenance dredging at Buncrana Pier to retain navigable depth in the navigation channel and RNLI berth.	MUL260023	27/04/2026	The proposed maintenance dredging is located within Lough Swilly and has direct marine connectivity with the Project area. Potential common pathways include seabed disturbance, sediment resuspension and deposition, effects on benthic habitats and prey resources, vessel activity and associated above-water and underwater disturbance. The activity is therefore spatially and ecologically connected to the same receiving environment as the licensed native oyster fishery. Potential in-combination effects cannot be excluded at screening stage, and the project is retained for further assessment.	Potential likely significant effects in combination with the Project cannot be excluded at Stage 1. Brought forward for further consideration at Stage 2 Appropriate Assessment.

Website	Project Details	File Reference	Date Application Received	Assessment of Potential In-combination Effects	Conclusion
Ireland's Marine Atlas / Navigation and Marine Traffic	Navigational and marine traffic	N/A	N/A	Lough Swilly supports an established baseline of ferry, recreational, fishing, aquaculture, emergency-service and other small-vessel activity. Existing marine traffic provides potential common pathways with the Project through vessel presence, above-water visual and noise disturbance and underwater noise. The Project comprises the continuation of established commercial oyster dredging by small fishing vessels within the licensed dredging area and would not introduce a new source or material increase in vessel activity relative to the established fishery. Having regard to the nature and scale of the Project, the existing vessel-activity baseline and the limited additional disturbance from the established fishery, no credible additional disturbance effect has been identified that could result in likely significant effects on relevant QIs or SCIs.	Likely significant effects arising in combination with existing navigational and marine traffic can be excluded at Stage 1 AA.
Donegal County Council – Planning System	A search of the Donegal County Council planning system was undertaken to identify planning applications and developments within and surrounding Lough Swilly with potential to act in combination with the Project.	N/A	N/A	Planning applications within and surrounding Lough Swilly were reviewed for potential spatial, hydrological or ecological connectivity with the Project. The majority of applications identified comprise small-scale terrestrial development, including residential development, extensions and alterations to existing properties and other local development. No additional development was identified through this search with a credible pathway capable of giving rise to likely significant effects in combination with commercial native oyster dredging in Lough Swilly.	No additional projects with potential for likely significant in-combination effects identified.

Website	Project Details	File Reference	Date Application Received	Assessment of Potential In-combination Effects	Conclusion
DHLGH – Foreshore Applications	A search of the DHLGH Foreshore Applications database was undertaken to identify foreshore developments within or hydrologically connected to Lough Swilly with potential to act in combination with the Project.	N/A	N/A	Foreshore applications were reviewed for activities with potential pathways relevant to the Project. Relevant marine developments identified through the wider search process are assessed separately within this table. No additional foreshore development requiring separate consideration for likely significant in-combination effects was identified through this search.	No additional projects with potential for likely significant in-combination effects identified.
Office of Public Works (OPW) – Statutory Consultation	Deele-Swilly Burn Arterial Drainage Scheme – Bogay and Greenhill Embankment Rehabilitation Works comprising maintenance of Embankment E3, Channel C1 between Chainage 300 and 650 and are located within Lough Swilly SAC and Lough Swilly SPA.	Embankment E3, Channel C1	13/03/2025	No likely significant in-combination effects are predicted. The works are temporary and spatially confined to an existing shoreline embankment, while commercial oyster dredging occurs within subtidal fishing grounds. Although both activities occur within Lough Swilly SAC and SPA, no shared pathway capable of resulting in a likely significant effect on the relevant conservation features has been identified. Screened out at Stage 1.	Likely significant in-combination effects with the Project can be excluded at Stage 1. Screened out.
Aquaculture - Licensed	A search of AQUAMIS identified licensed aquaculture sites and aquaculture licence applications within the licensed oyster dredging area in Lough Swilly. Relevant licensed and applied aquaculture sites are considered separately below for potential in-combination effects with the Project.	N/A	N/A	T12-037A1, T12-037A2, T12-037B1, T12-037B2, T12-037B4, T12-343A, T12-251A and T12-251B are licensed aquaculture sites located within the licensed oyster dredging area. Given the direct spatial overlap and potential for common impact pathways with commercial native oyster dredging, likely significant effects arising in combination cannot be excluded at Stage 1. These sites are retained for further assessment at Stage 2 Appropriate Assessment.	Potential likely significant effects in combination with the Project cannot be excluded at Stage 1. Brought forward for further consideration at Stage 2 Appropriate Assessment.

Website	Project Details	File Reference	Date Application Received	Assessment of Potential In-combination Effects	Conclusion
Aquaculture - Applied	A search of AQUAMIS identified licensed aquaculture sites and aquaculture licence applications within Lough Swilly. Relevant licensed and applied aquaculture sites are considered separately below for potential in-combination effects with the Project.	N/A	N/A	Aquaculture applications T12-330A, T12-330B, T12-330C, T12-339A, T12-339B, T12-339C, T12-1027 and T12-1028, together with the review of existing oyster aquaculture site T12-343A, are located within the licensed oyster dredging area. Given the direct spatial overlap and potential for common impact pathways with commercial native oyster dredging, likely significant effects arising in combination cannot be excluded at Stage 1. These applications and the licence review are retained for further assessment at Stage 2 Appropriate Assessment.	Potential likely significant effects in combination with the Project cannot be excluded at Stage 1. Brought forward for further consideration at Stage 2 Appropriate Assessment.

4.7. Screening Outcome and Concluding Statement

The assessment has determined, in light of the best available scientific information, that there is potential for significant effects on conservation features of SACs and SPAs resulting from the Project, *i.e.*, the likelihood of significant effects on European sites cannot be ruled out for several conservation features. Therefore, it is recommended that this Project be brought forward to Stage 2 Appropriate Assessment - Natura Impact Statement (NIS). The assessment determined that there is potential likelihood for significant effects from the Project in combination with other plans or projects. The assessment will therefore be brought forward to Stage 2 – AA. The findings of the assessment are summarised in **Table 4-13**.

Table 4-13: Summary of the Appropriate Assessment Screening outcome.

AA Screening outcome	
Brief description of the Project.	The Project comprises the proposed licensing of native oyster (<i>Ostrea edulis</i>) dredging in Lough Swilly using vessel-towed oyster dredges.
European site(s)	
List of the European site(s) in the Zone of Influence.	The conservation features of the following SACs and SPAs are listed Table 4-2 and Table 4-4 alongside their conservation objectives. SACs • Lough Swilly SAC [002287] • Leannan River SAC [002176] • Cloghernagore Bog and Glenveagh National Park SAC [002047] • Horn Head and Rinclevan SAC [000147] SPAs • Lough Swilly SPA [004075] • Lough Fern SPA [004060] • Horn Head to Fanad Head SPA [004194] • Lough Foyle SPA [004087] • Greers Isle SPA [004082] • Inishbofin, Inishdooey and Inishbeg SPA [004083] • Lough Derg (Donegal) SPA [004057] • Inishtrahull SPA [004100] • West Donegal Islands SPA [004230]
Assessment summary	
Description of the potential impact mechanisms from the Project that have likely significant effects on the conservation features.	Potential impact mechanisms associated with the Project were identified in section 4.3 and assessed in the SAC and SPA screening tables. Below lists the impact mechanisms identified for having potential for significant effects: • Physical habitat disturbance • Increased suspended sediments and smothering • Impacts on benthic community structure • Underwater noise disturbance • Above-water visual and noise disturbance • Effects on prey resources and the trophic food chain

AA Screening outcome	
	• Biosecurity
Conservation features with the potential to be impacted by the Project.	Qualifying Interests screened in: • Estuaries [1130] • Coastal lagoons [1150] • Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] • Atlantic Salmon (<i>Salmo salar</i>) [1106] • Harbour Porpoise (<i>Phocoena phocoena</i>) [1351] • Otter (<i>Lutra lutra</i>) [1355] • Grey Seal (<i>Halichoerus grypus</i>) [1364] Special Conservation Interests screened in: • Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] • Shag (<i>Phalacrocorax aristotelis</i>) [A018] • Grey Heron (<i>Ardea cinerea</i>) [A028] • Whooper Swan (<i>Cygnus cygnus</i>) [A038] • Greylag Goose (<i>Anser anser</i>) [A043] • Barnacle Goose (<i>Branta leucopsis</i>) [A045] • Shelduck (<i>Tadorna tadorna</i>) [A048] • Teal (<i>Anas crecca</i>) [A052] • Mallard (<i>Anas platyrhynchos</i>) [A053] • Pochard (<i>Aythya ferina</i>) [A059] • Scaup (<i>Aythya marila</i>) [A062] • Goldeneye (<i>Bucephala clangula</i>) [A067] • Red-breasted Merganser (<i>Mergus serrator</i>) [A069] • Coot (<i>Fulica atra</i>) [A125] • Oystercatcher (<i>Haematopus ostralegus</i>) [A130] • Knot (<i>Calidris canutus</i>) [A143] • Dunlin (<i>Calidris alpina</i>) [A149] • Curlew (<i>Numenius arquata</i>) [A160] • Redshank (<i>Tringa totanus</i>) [A162] • Greenshank (<i>Tringa nebularia</i>) [A164] • Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] • Common Gull (<i>Larus canus</i>) [A182] • Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] • Herring Gull (<i>Larus argentatus</i>) [A184] • Common Tern (<i>Sterna hirundo</i>) [A193] • Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] • Wigeon (<i>Mareca penelope</i>) [A855] • Shoveler (<i>Spatula clypeata</i>) [A857] • Sandwich Tern (<i>Thalasseus sandvicensis</i>) [A863] • Wetland and Waterbirds [A999]
Description of the potential direct or indirect impacts of the Project in combination with other plans or projects on the European sites.	The in-combination assessment identified plans and projects with impact pathways that may overlap with those associated with the licensed native oyster fishery. Potential common pathways include seabed disturbance, sediment resuspension and deposition, effects on benthic communities and prey resources, vessel related visual and acoustic disturbance, effects on water quality. For several plans or projects, likely significant effects arising in combination with the Project cannot be excluded at the screening stage. These plans and projects are identified in the detailed in combination assessment and

AA Screening outcome	
	are carried forward for further consideration at Stage 2 Appropriate Assessment.
Conservation features with the potential to be impacted by the Project in combination with other plans or projects.	The relevant conservation features are those Qualifying Interests and Special Conservation Interests identified above for which the detailed in combination assessment establishes a common source pathway receptor relationship between the Project and another plan or project.
Concluding statement.	It is concluded that likely significant effects from the Project cannot be excluded for the conservation features identified below at Stage 1 Appropriate Assessment. These features are brought forward to Stage 2 Appropriate Assessment. All other conservation features considered in the SAC and SPA screening tables are screened out at Stage 1.

5. Stage 2: Natura Impact Statement

5.1. Overview

Stage 2 of the Appropriate Assessment process considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a European site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The proponent of the plan or project will be required to submit a Natura Impact Statement (NIS), *that examines* the plan or project and the relevant European sites, to identify and characterise any possible implications for the site in view of the site's conservation objectives, accounting for in-combination effects. This should provide information to enable the competent authority to carry out the appropriate assessment. If the assessment deems that adverse effects on the integrity of a site cannot be excluded, then the process must proceed to Stage 3, or the plan or project should be abandoned.

Regarding the European sites and their associated conservation features identified in the ZOI of the Project, which were not excluded in Stage 1, an appropriate assessment is required to identify the impacts associated with the Project that may have a significant adverse impact. A summary of the screening outcome from the Stage 1 AA Screening can be found in **Table 4-13**.

This NIS gives a detailed ecological assessment of European sites and their associated conservation features, considering *inter alia* site-specific or activity-specific impacts. In preparation of this NIS, the NPWS-DEHLG (2009; revised 2010)/NPWS-DAHG (2012) guidance document on marine NIS in SACs was consulted.

In line with NPWS-DEHLG (2009; revised 2010) guidance, the Stage 2 AA consists of three main steps:

1. **Impact Prediction** - where the likely impacts of the Project are examined. A source-pathway-receptor model has been used to assess potential for impact.
2. **Assessment of Effects** – where the effects of the Project are assessed as to whether they have any adverse effects on the integrity of European Sites as defined by conservation objectives.
3. **Mitigation Measures** – where mitigation measures are identified to ameliorate any adverse effects on the integrity of any European site.

5.2. Impact Prediction

As described in Section 4.5, the impact mechanisms associated with the Project that may result in effects to Qualifying Interests of SACs, and to Special Conservation Interests of SPAs are:

1. Physical habitat disturbance
2. Increased suspended sediments and smothering
3. Impacts on benthic community structure
4. Effects on prey resources and the trophic food chain
5. Above-water visual and noise disturbance
6. Underwater noise disturbance
7. Biosecurity

The following sections consider the risk of potential effects associated with Impact Mechanisms 1 through 7. The prediction of potential impacts to QIs and SCIs from Project impact mechanisms took into account the negative impacting threats and pressures and positive impacting activities/management affecting the sites as listed in Natura 2000 Forms compiled for the sites.

Table 5-1 below summarises the conservation features screened in for Stage 2 assessment. These features are assessed further below in relation to the relevant impact mechanisms and, where applicable, the conservation objectives of the European sites for which they are QIs or SCIs. The impact mechanisms and conservation features brought forward are those identified through the Stage 1 screening assessment.

Table 5-1 Conservation features screened in for Stage 2 assessment.

Ecological Group	Conservation Feature	1. Physical habitat disturbance	2. Increased suspended sediments	3. Benthic community structure	4. Prey resources / trophic	5. Above-water visual and noise disturbance	6. Underwater noise disturbance	7. Biosecurity
Annex I marine habitats	Estuaries [1130]	Potential Direct Effect	Potential Direct Effect	Potential Direct Effect				Potential Direct Effect
Annex I marine habitats	Coastal lagoons [1150]		Potential Indirect Effect					
Annex I coastal habitats	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330]		Potential Indirect Effect	Potential Direct Effect				
Annex II fish species	Atlantic Salmon (<i>Salmo salar</i>) [1106]						Potential Direct Effect	
Annex II marine mammals	Harbour Porpoise (<i>Phocoena phocoena</i>) [1351]						Potential Direct Effect	
Annex II mammals	Otter (<i>Lutra lutra</i>) [1355]				Potential Indirect Effect	Potential Direct Effect		
Annex II marine mammals	Grey Seal (<i>Halichoerus grypus</i>) [1364]					Potential Direct Effect		
SCI bird species	Great Crested Grebe (<i>Podiceps cristatus</i>) [A005]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Shag (<i>Phalacrocorax aristotelis</i>) [A018]				Potential Indirect Effect	Potential Direct Effect		

Ecological Group	Conservation Feature	1. Physical habitat disturbance	2. Increased suspended sediments	3. Benthic community structure	4. Prey resources / trophic	5. Above-water visual and noise disturbance	6. Underwater noise disturbance	7. Biosecurity
SCI bird species	Grey Heron (<i>Ardea cinerea</i>) [A028]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Whooper Swan (<i>Cygnus cygnus</i>) [A038]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Greylag Goose (<i>Anser anser</i>) [A043]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Barnacle Goose (<i>Branta leucopsis</i>) [A045]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Shelduck (<i>Tadorna tadorna</i>) [A048]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Teal (<i>Anas crecca</i>) [A052]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Mallard (<i>Anas platyrhynchos</i>) [A053]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Pochard (<i>Aythya ferina</i>) [A059]				Potential Indirect Effect	Potential Direct Effect		

Ecological Group	Conservation Feature	1. Physical habitat disturbance	2. Increased suspended sediments	3. Benthic community structure	4. Prey resources / trophic	5. Above-water visual and noise disturbance	6. Underwater noise disturbance	7. Biosecurity
SCI bird species	Scaup (<i>Aythya marila</i>) [A062]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Goldeneye (<i>Bucephala clangula</i>) [A067]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Red-breasted Merganser (<i>Mergus serrator</i>) [A069]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Coot (<i>Fulica atra</i>) [A125]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Oystercatcher (<i>Haematopus ostralegus</i>) [A130]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Knot (<i>Calidris canutus</i>) [A143]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Dunlin (<i>Calidris alpina</i>) [A149]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Curlew (<i>Numenius arquata</i>) [A160]				Potential Indirect Effect	Potential Direct Effect		

Ecological Group	Conservation Feature	1. Physical habitat disturbance	2. Increased suspended sediments	3. Benthic community structure	4. Prey resources / trophic	5. Above-water visual and noise disturbance	6. Underwater noise disturbance	7. Biosecurity
SCI bird species	Redshank (<i>Tringa totanus</i>) [A162]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Greenshank (<i>Tringa nebularia</i>) [A164]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Common Gull (<i>Larus canus</i>) [A182]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Herring Gull (<i>Larus argentatus</i>) [A184]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Common Tern (<i>Sterna hirundo</i>) [A193]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]				Potential Indirect Effect	Potential Direct Effect		

Ecological Group	Conservation Feature	1. Physical habitat disturbance	2. Increased suspended sediments	3. Benthic community structure	4. Prey resources / trophic	5. Above-water visual and noise disturbance	6. Underwater noise disturbance	7. Biosecurity
SCI bird species	Wigeon (<i>Mareca penelope</i>) [A855]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Shoveler (<i>Spatula clypeata</i>) [A857]				Potential Indirect Effect	Potential Direct Effect		
SCI bird species	Sandwich Tern (<i>Thalasseus sandvicensis</i>) [A863]				Potential Indirect Effect	Potential Direct Effect		
SPA supporting habitat and waterbird assemblage	Wetland and Waterbirds [A999]	Potential Indirect Effect	Potential Indirect Effect	Potential Indirect Effect	Potential Indirect Effect			

5.2.1. Physical Habitat Disturbance

The proposed dredging activity is using a 1.2 m toothless dredge that scrapes the upper layer of sediment and dislodges oysters from the substratum. This has the potential to cause physical disturbance to marine benthic habitats within the Project footprint. Native oyster dredging causes a direct physical pressure on the seabed through contact of the dredge with the seabed and movement along it. This contact may result in abrasion, the formation of furrows, the displacement of shell and other seabed material and destruction of habitat. The pressure occurs within the area affected by the dredge and may recur where the same oyster grounds are fished repeatedly (Tully & Clarke, 2012; Kennon *et al.*, 2023).

Living oysters and accumulated shell provide hard settlement surfaces and small-scale structural complexity within sedimentary habitats. Dredge contact may damage or displace living oysters, break or redistribute shell and cultch, and disturb associated epifauna and infauna.

The Stage 2 assessment focuses on physical effects within the area directly traversed by the nominal 1.2 m oyster dredge. As the dredge is towed, its teeth/blades scrape and penetrate the surface sediment to dislodge oysters. This can abrade and rework the upper sediment layer, form shallow furrows, and displace shell and other seabed material. The pressure is confined to the dredged footprint but may recur where the same oyster grounds are fished repeatedly (Tully & Clarke, 2012; Kennon *et al.*, 2023).

Native oysters and accumulated shell or cultch provide hard settlement surfaces and small-scale structural complexity within otherwise sedimentary habitats. Dredging may damage or displace living oysters, break or redistribute shell material, and disturb associated epifaunal and infaunal communities. Repeated disturbance may therefore reduce the extent or quality of oyster-associated habitat within actively dredged areas.

The dredging area extends beyond the mapped native-oyster beds and overlaps other sedimentary communities of Estuaries [1130]. Although dredging is expected to be concentrated within known oyster beds, dredging outside these areas or along their margins could directly disturb the seabed through abrasion, sediment reworking and displacement or injury of associated benthic fauna. However dredging is not expected to occur uniformly through the designated area and would be expected to be concentrated within the mapped beds, however under the precautionary principle given the dredge area boundary, these other habitats and communities must be considered.

The effects associated with sediment resuspension and the removal of oysters from the population are assessed separately in **sections 5.2.2** and **5.2.2.1**, respectively.

5.2.1.1. Impact Assessment

The licensed native oyster dredging area is located within Lough Swilly SAC [002287]. A direct impact pathway exists where the dredge contacts Estuaries [1130] and the constituent communities forming part of the Annex I habitat. Potential effects include abrasion and displacement of surface sediment, shallow penetration and reworking of the substratum, formation of dredge tracks, damage or displacement of living oysters, breakage or redistribution of shell and cultch, and injury or displacement of associated benthic fauna.

The site-specific Conservation Objectives require the following constituent communities of Estuaries [1130] to be conserved in natural condition:

- Fine sand community complex;
- Intertidal mixed sediment with polychaetes;
- Subtidal mixed sediment with polychaetes and bivalves;
- Muddy fine sand with *Thyasira flexuosa*;
- Mud community complex; and
- *Ostrea edulis* dominated community.

The approximately 55.4 km² licensed dredging area overlaps all six constituent communities. Approximately 473.8 ha of Fine sand community complex, 564.7 ha of Intertidal mixed sediment with polychaetes, 1,264.1 ha of Subtidal mixed sediment with polychaetes and bivalves, 1,313.5 ha of Muddy fine sand with *Thyasira flexuosa*, 996.3 ha of Mud community complex and 906.1 ha of *Ostrea edulis* dominated community occur within the licensed dredging area. P21371_AA_LoughSwilly_v1_250920...

When compared with the interpolated extent of each community within Lough Swilly SAC, these intersections represent approximately 81% of the Fine sand community complex, 86% of the Intertidal mixed sediment with polychaetes, 96% of the Subtidal mixed sediment with polychaetes and bivalves, 99% of the Muddy fine sand with *Thyasira flexuosa* community, 88% of the Mud community complex and approximately 100% of the *Ostrea edulis* dominated community. These values represent the maximum potential spatial overlap between the licensed dredging area and the constituent communities and do not indicate that these proportions are physically dredged during a fishing season. The underlying interpolated community extents are approximately 583 ha, 655 ha, 1,314 ha, 1,320 ha, 1,127 ha and 906 ha, respectively.

The *Ostrea edulis* dominated community is the main receptor within the established native oyster grounds. The physical effects of dredging on this community were assessed in detail in the supporting Native Oyster

Dredging Impact Study. Lough Swilly has an exceptionally long history of native oyster exploitation and the present *Ostrea edulis* dominated community represents a historically disturbed sedimentary oyster habitat rather than a documented topographic native oyster reef. Commercial dredging is seasonal, operating from 1 September to 30 April, with no native oyster dredging between 1 May and 31 August. Direct physical disturbance is therefore interrupted annually for four months.

Marine Institute surveys undertaken between 2021 and 2026 generally encompassed almost all of the known commercial native oyster stock in Lough Swilly. Native oyster biomass varied substantially over the survey series, but the stock persisted, smaller oysters were repeatedly represented and biomass increased from 67.1 ± 23.8 tonnes in 2025 to 131.1 ± 46.1 tonnes in 2026. These observations do not demonstrate that local shell breakage, sediment reworking or changes in small-scale seabed structure are absent, but provide indirect evidence that physical disturbance has not reached a magnitude sufficient to prevent continued recruitment, survival and growth within the established native oyster grounds.

The Dredging Impact Study concluded that physical disturbance associated with native oyster dredging in Lough Swilly is seasonal and is not continuous. Although localised disturbance of oysters, shell material, sediment and associated fauna is expected where dredging occurs, the long history of fishing, sedimentary character of the oyster grounds, annual cessation of dredging during much of the active growth period and continued persistence and replenishment of the native oyster population do not indicate progressive physical deterioration at a scale capable of compromising the natural condition of the *Ostrea edulis* dominated community. Physical disturbance of the established native oyster grounds was therefore assessed as not significant in relation to the Conservation Objective for Estuaries [1130].

Greater uncertainty applies to physical disturbance of the other constituent communities of Estuaries [1130]. The full licensed dredging area should not be interpreted as the physical disturbance footprint of the fishery because commercial dredging is expected to be directed towards established native oyster concentrations. However, spatially resolved commercial fishing effort, tow frequency and annual swept-area data are not available to demonstrate that dredging is confined to the native oyster beds. The existing licence therefore permits dredging across very large proportions of the other constituent communities and a direct physical pathway cannot be excluded.

The resistance, resilience and sensitivity of the constituent sedimentary communities to physical disturbance vary according to sediment type, the position of fauna within the sediment and the frequency and intensity of disturbance. The NPWS supporting document identifies predominantly infaunal polychaetes, bivalves, amphipods and oligochaetes as distinguishing fauna within the Fine sand, mixed sediment, muddy fine sand and mud communities. Representative MarLIN biotopes indicate that many sedimentary communities have relatively high recovery potential following a single surface-abrasion event, but direct effects can include

mortality or displacement of shallow-burrowing bivalves and amphipods, damage to polychaete tubes and feeding structures and disturbance or compaction of the upper sediment layer. Relevant muddy-sand and mud biotopes are generally assessed as having Medium resistance, High resilience and Low sensitivity to surface abrasion, while representative fine-sand biotopes also generally have High resilience following disturbance.

The Muddy fine sand with *Thyasira flexuosa* community warrants particular consideration because *Thyasira* spp. have thin and relatively fragile shells. MarLIN records evidence of declines in *Thyasira flexuosa* following trawling disturbance and assesses a representative *Thyasira* biotope as having Medium resistance, High resilience and Low sensitivity to surface abrasion. Shallow penetration into the substratum has greater potential to damage infaunal organisms than surface abrasion alone. The 1–2 cm penetration expected from the oyster dredge is substantially shallower than the benchmark used for many MarLIN subsurface-penetration assessments, but direct effects on organisms occupying the upper sediment cannot be excluded.

The *Ostrea edulis* dominated community differs from the other sedimentary communities because living oysters and accumulated shell occur directly at the sediment surface and are exposed to dredge contact. MarLIN assesses *Ostrea edulis* beds on shallow sublittoral muddy mixed sediment as having Low resistance, Low resilience and High sensitivity to abrasion/disturbance of the seabed surface. However, the site-specific evidence for Lough Swilly, including the long history of dredging, seasonal cessation of fishing and continued persistence and recruitment of the native oyster stock, supports the Dredging Impact Study conclusion that physical disturbance of the established native oyster grounds is not significant or persistent.

The NPWS Conservation Objective supporting document states that significant continuous or ongoing disturbance should not exceed approximately 15% of the interpolated area of each constituent community. It also recognises that activities which cause significant disturbance but do not necessarily represent a continuous or ongoing source of disturbance may be assessed in a context-specific manner having regard to the nature and scale of the activity, the resilience of the receiving habitat and other activities within the designated site.

The percentage of each constituent community contained within the licensed dredging area should not be equated directly with the percentage subject to significant continuous or ongoing disturbance, because the licence boundary does not represent the area actually dredged. Nevertheless, the very large spatial overlap, together with the absence of spatially resolved fishing-effort data, means that it cannot currently be demonstrated that physical disturbance of the other constituent communities is restricted to a sufficiently small area. Under the existing licence arrangement, direct dredge contact could occur across substantial areas outside the established native oyster beds.

Consequently, although physical disturbance of the established *Ostrea edulis* dominated community has been assessed as not significant or persistent, significant effects from physical habitat disturbance on the wider constituent communities of Estuaries [1130] cannot be excluded in the absence of spatial mitigation.

5.2.1.2. Mitigation Measures

- Restrict native oyster dredging to the known distribution of native oyster beds within Lough Swilly SAC, based on the combined extent of the *Ostrea edulis* dominated community mapped by NPWS and the most recent Marine Institute native oyster stock survey mapping.
- The revised dredging area shall be incorporated as an enforceable condition of the IFI oyster dredge licences and provided to licence holders in an appropriate mapped format.
- The permitted dredging area shall be reviewed against the most recent available Marine Institute native oyster stock survey information when licences are renewed or where updated survey information demonstrates a material change in native oyster bed distribution.

5.2.1.3. Conclusion

Physical disturbance within the established *Ostrea edulis* dominated community is seasonal and was assessed as not significant or persistent. However, under the existing licence boundary, significant effects on the other constituent communities of Estuaries [1130] cannot be excluded because dredging is authorised across large proportions of their mapped extent.

With dredging restricted to the mapped native oyster beds as described above, direct physical disturbance of the wider constituent communities will be avoided. Adverse effects on the integrity of Lough Swilly SAC from physical habitat disturbance can therefore be excluded.

5.2.2. Increased Suspended Sediments and Smothering

5.2.2.1. Impact Assessment

The oyster dredge may disturb and resuspend unconsolidated surface sediment. Suspended material may temporarily increase turbidity before being dispersed by tidal currents or deposited within or beyond the dredge track. Where deposition occurs, sediment may cover living oysters, spat, exposed shell and associated benthic fauna. This may restrict feeding or respiration, reduce the availability of clean settlement surfaces and temporarily alter the condition of the affected benthic habitat.

The concentration, spatial extent and duration of any sediment plume will depend on the sediment particle size, quantity of material disturbed, number and duration of dredge tows, frequency with which the same ground is dredged, water depth and prevailing hydrodynamic conditions. Coarser sand and gravel will generally settle within or close to the dredge track, while finer silt and clay may remain in suspension for longer and be transported over a greater distance.

The dredge teeth are expected to penetrate approximately 1–2 cm into the surface sediment. The activity does not involve the removal or disposal of large volumes of material. Repeated dredging of fine sediment could result in increased localised resuspension and deposition. The assessment considers the shallow penetration of the dredge, sediment characteristics, and the spatial distribution of the oyster grounds and other adjacent benthic communities.

Annex I Habitats

Estuaries [1130]

The principal receptor is Estuaries [1130] within Lough Swilly SAC [002287], including its six constituent communities, as detailed in **Figure 5-1**:

- Fine sand community complex;
- Intertidal mixed sediment with polychaetes;
- Subtidal mixed sediment with polychaetes and bivalves;
- Muddy fine sand with *Thyasira flexuosa*;
- Mud community complex; and
- *Ostrea edulis* dominated community.

The *Ostrea edulis* dominated community occurs intertidally and subtidally. It occurs predominantly within areas described as Intertidal mixed sediment with polychaetes and Subtidal mixed sediment with polychaetes and bivalves. The intertidal mixed sediment community occurs from the upper to the lower shore with a

variable sediment composition, comprising largely of gravel (0-44%), fine sand (2-80%) and silt-clay (2-72%) (NPWS, 2011). In the subtidal mixed sediment community fine sand is the main sediment fraction ranging from 6-75%; varying levels of coarser sediments occur, with gravel frequently present (6-23%) (NPWS, 2011).

Higher proportions of fine sediment occur elsewhere within the licensed dredging area. Silt and clay account for approximately 12–33% of the Muddy fine sand with *Thyasira flexuosa* community and approximately 39–96% of the Mud community complex. If dredging occurs within these finer sedimentary communities, disturbed material may remain in suspension for longer and may be transported farther from the dredge track than material disturbed within areas with coarser material.

The fishery is directed towards established native-oyster beds, surveyed and mapped by the MI annually, and native oyster dredging mainly occurs within the *Ostrea edulis* dominated community habitat type but may also occur in adjacent benthic habitats. Resuspension is therefore expected to be concentrated within and immediately around the oyster grounds, with more limited potential for disturbance of adjoining sedimentary communities at the margins of those grounds.

The most vulnerable receptors include living native oysters, recently settled spat and exposed shell suitable for settlement. MarLIN classifies *Ostrea edulis* as having High sensitivity to deposition of up to 5 cm of fine material in a single discrete event. This benchmark describes receptor sensitivity and does not indicate that dredging would generate deposition of this magnitude. No measurements or modelling are available to quantify deposition thickness from the fishery. However, the shallow penetration of the dredge, the limited quantity of sediment disturbed during individual passes and the dispersal and redistribution of suspended material within the estuary do not indicate a mechanism capable of causing widespread or sustained burial. Temporary covering of oysters, spat or exposed shell cannot be excluded, but no evidence indicates deposition approaching the MarLIN benchmark within the oyster grounds.

The NPWS Conservation Objective requires the constituent communities of Estuaries [1130] to be conserved in natural condition. Local and temporary increases in suspended sediment and limited deposition may occur within individual dredge tracks. However, the shallow penetration of the dredge, concentration of activity within established oyster grounds, local settlement of the coarser sediment and annual fallow period indicate that widespread or sustained smothering is unlikely. At the levels proposed, the activity is not expected to reduce the permanent extent of Estuaries [1130] or cause a lasting change in the distribution, biological composition or ecological functioning of its constituent communities due to increased suspended sediment and subsequent deposition.

Coastal lagoons [1150]

Coastal lagoons [1150] are situated within the wider Lough Swilly estuarine system. The coastal lagoons comprise Blanket Nook Lough and Inch Lough. Coastal lagoons does not form part of the actively dredged native-oyster grounds. For resuspended sediment from oyster dredging to affect a coastal lagoon, sediment would need to be transported from the active oyster grounds into the lagoon and deposited in sufficient quantities to alter water clarity, sediment conditions, lagoonal communities or the physical and hydrological functioning of the lagoon. The shallow penetration of the dredge, limited sediment volume generated during individual tows and expected local settlement of sand and coarser material do not indicate a plume of sufficient magnitude or persistence to produce such an effect.

Atlantic salt meadows [1330]

Atlantic salt meadows [1330] occur around the margins of Lough Swilly and do not overlap the native oyster dredging grounds. The only credible pathway is therefore indirect, through transport and deposition of sediment resuspended by dredging. For an effect to be significant, suspended sediment would need to be transported into the upper intertidal saltmarsh and deposited in sufficient quantities to alter sediment supply, creek structure, vegetation composition or zonation. Given the localised and temporary nature of sediment resuspension predicted from oyster dredging, deposition of sufficient magnitude or persistence to affect these attributes is not expected. No measurable alteration of the extent, structure, vegetation or ecological functioning of Atlantic salt meadows is therefore predicted.

Annex II species, migratory fish and SCI birds

Any indirect effects of increased suspended sediment on Harbour Porpoise, Otter, Atlantic Salmon or screened-in SCI bird species would arise through a temporary change in foraging conditions or prey availability. Sediment plumes will be minor, spatially associated with active dredge tracks and will disperse or settle following the cessation of individual dredging events. They will not extend across Lough Swilly or create a barrier to the movement of migratory fish, marine mammals or diving waterbirds. The activity will not result in an increase in suspended sediment that would cause a sustained reduction in fish or benthic-prey biomass.

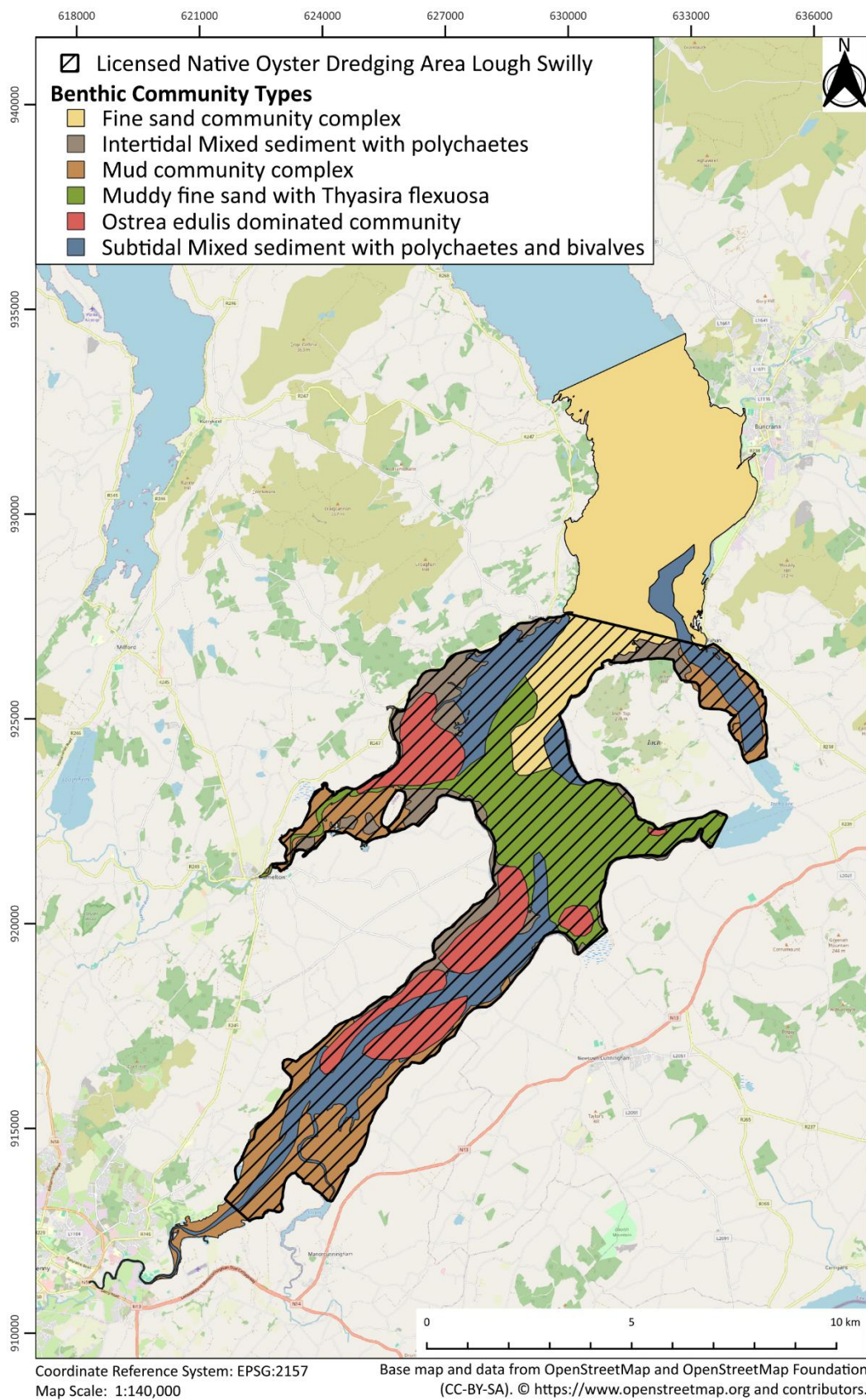


Figure 5-1: Distribution of marine benthic community types within the licensed native oyster dredging in Lough Swilly.

5.2.2.2. Mitigation measures

No additional mitigation is required specifically for this impact pathway beyond the existing management conditions applying to the Lough Swilly native oyster fishery.

5.2.2.3. Conclusion

Increased suspended sediment and subsequent deposition arising from native oyster dredging will be localised, temporary and reversible. The available evidence does not indicate a mechanism capable of causing widespread or persistent smothering or lasting changes to the natural condition of the constituent communities of Estuaries [1130], Coastal lagoons [1150] or Atlantic salt meadows [1330]. Indirect effects on Annex II species and screened-in SCI bird species through temporary changes in water clarity or prey availability are also not expected to be significant. Sediment resuspension and smothering are therefore assessed as not significant or persistent, and adverse effects on the integrity of the relevant European sites can be excluded.

5.2.3. Impacts on Benthic Community Structure

As described in Section 4.3.3, native oyster dredging may alter benthic community structure through the removal of native oysters, incidental capture, injury or displacement of associated fauna, and the removal, breakage or redistribution of shell and cultch. Repeated removal of larger oysters may also alter the abundance and size structure of the native oyster population and reduce spawning-stock biomass, with consequent effects on recruitment and the continued maintenance of the *Ostrea edulis* dominated community.

The relevant conservation feature is Estuaries [1130] within Lough Swilly SAC. The site-specific Conservation Objective requires the Fine sand community complex, Intertidal mixed sediment with polychaetes, Subtidal mixed sediment with polychaetes and bivalves, Muddy fine sand with *Thyasira flexuosa*, Mud community complex and *Ostrea edulis* dominated community to be conserved in natural condition. The *Ostrea edulis* dominated community occurs within the southern part of the lough and is associated with areas otherwise characterised by intertidal and subtidal mixed sediments.

The NPWS supporting documentation provides that significant continuous or ongoing disturbance should not exceed approximately 15% of the interpolated area of each constituent community type. Activities that cause disturbance but are not continuous or ongoing may be assessed having regard to the nature and scale of the activity, the resilience of the receiving community and the capacity for recovery between disturbance events.

Further assessment of the effects of dredging on the native oyster population and constituent benthic communities is provided in the Native Oyster Dredging Impact Study (Appendix 1).

5.2.3.1. Impact assessment

The licensed native oyster dredging area overlaps all six mapped constituent communities of Estuaries [1130]. However, the licence boundary represents the area within which fishing is authorised and not the area that is dredged during an individual fishing season. Native oyster dredging is targeted towards the *Ostrea edulis* dominated community. Direct interaction with adjoining sedimentary communities is expected mainly at the margins of the oyster grounds. The Dredging Impact Study similarly concluded that the licensed area should not be interpreted as evidence that commercial fishing occurs uniformly across the wider constituent communities.

As assessed in Section 5.2.1, direct dredge contact may locally remove or displace epifauna and shallow infauna within individual dredge tracks. However, the fishery is not directed towards the Fine sand community complex, Intertidal mixed sediment with polychaetes, Subtidal mixed sediment with polychaetes and bivalves, Muddy fine sand with *Thyasira flexuosa* or Mud community complex. Dredging is concentrated on the native oyster grounds, and repeated disturbance of substantial areas of these adjoining sedimentary communities is therefore not expected.

Some contact with sedimentary communities at the margins of the oyster grounds may nevertheless occur because the *Ostrea edulis* dominated community occurs within sedimentary habitat and the boundaries between mapped benthic communities are not discrete on the seabed. Such interaction may temporarily alter the abundance or distribution of shallow infauna or epifauna within individual dredge tracks. However, the activity is not expected to result in a lasting change in the distribution, biological composition or ecological functioning of the wider Fine sand, mixed sediment, muddy fine sand or mud communities within the SAC.

The main potential effect on benthic community structure therefore relates to the *Ostrea edulis* dominated community itself. The Lough Swilly oyster grounds are historically exploited sedimentary habitats rather than biogenic oyster reef. Nevertheless, living native oysters are a defining biological component of the community and commercial harvesting directly removes individuals from it. Because oyster dredging is poorly size-selective, undersized oysters and spat may also be captured and returned during sorting, while spat attached to retained oysters may be removed with the landed catch. Shell and cultch may also be displaced or damaged during dredging. These effects may locally alter oyster density, population size structure and the availability of settlement substrate.

The main pathway capable of causing a lasting change in community structure is the harvest of legal-sized native oysters. Larger oysters comprise an important component of spawning-stock biomass. Their removal reduces the abundance and density of reproductive individuals and may consequently reduce reproductive output and subsequent recruitment. The population-level effect may therefore persist where recruitment and subsequent growth do not replace the level of biomass harvested by the fishery.

Recent Marine Institute surveys confirm that the Lough Swilly native oyster biomass is relatively low and its capacity to accommodate continued removal is uncertain. Native oyster biomass varied substantially between 2021 and 2026 and increased from approximately 67.1 tonnes in 2025 to approximately 131.1 tonnes in 2026. The 2026 size distribution was also more favourable than that recorded in 2025, with 25.3% of measured oysters below 55 mm and 10.3% at or above the 76-mm Minimum Landing Size. These observations indicate recruitment and some capacity for recovery but do not demonstrate that annual harvest is consistently being replaced.

The legal-sized component of the stock has also been small in recent surveys. In April 2025, raised biomass at or above 76 mm was estimated at only approximately 0.88 tonnes, equivalent to approximately 1.3% of total native oyster biomass, and no strong indication of spat recruitment was reported. The improved size structure recorded in 2026 is encouraging, but a single year of stronger recruitment or increased legal-sized biomass does not demonstrate sustained recovery or that annual removals are within the replacement capacity of the stock.

The capacity of the Lough Swilly population to accommodate fishing mortality is also reduced by additional sources of mortality and competition that are greater than in some other Irish native oyster fisheries. *Bonamia ostreae* is present in Lough Swilly and provides an additional source of mortality. Marine Institute monitoring recorded *Bonamia* prevalence of approximately 20% in sampled live oysters in 2021 and approximately 10% in 2023. These estimates represent prevalence among surviving oysters at the time of sampling and therefore do not capture oysters that had already died following infection; consequently, they should not be interpreted as measures of the cumulative disease burden or mortality attributable to *Bonamia* within the population. Naturalised Pacific oyster *Magallana gigas* is widespread across historical native oyster grounds and competes with *O. edulis* for habitat and settlement space, while the non-native American slipper limpet *Crepidula fornicata* provides a further source of competition and habitat modification. Pacific oyster biomass has substantially exceeded native oyster biomass in several recent surveys. These pressures reduce the margin within which additional fishing mortality can be accommodated.

Under the current management regime, there is no stock-linked Total Allowable Catch or equivalent annual limit directly relating harvest to the most recent estimate of legal-sized native oyster biomass. The statutory 76-mm Minimum Landing Size protects oysters through several years of growth and the May-August seasonal

closure provides protection during the main reproductive and growth period, but neither measure controls the proportion of the legal-sized stock that may be removed within an individual fishing season.

Earlier proposed management plans for Lough Swilly recognised the need to control exploitation and protect spawning stock. The 2012–2017 Fishery Natura Plan proposed limiting exploitation to 33% of pre-fishery spawning-stock biomass, closing areas of low oyster density and juvenile-dominated grounds, shortening the fishing season and establishing a spawning reserve. Although the numerical thresholds and spatial boundaries proposed at that time should not be transferred directly to the present fishery, these proposals demonstrate that stock-linked harvest control and spatial protection of part of the oyster grounds have previously been identified as appropriate management approaches for Lough Swilly.

Commercial dredging itself is seasonal rather than continuous. However, cessation of fishing between May and August does not remove the population-level effect of harvest where spawning-stock biomass, oyster density and population size structure have not recovered before fishing recommences. The Dredging Impact Study therefore concluded that removal of native oysters and its consequent effects on spawning stock and recruitment are potentially persistent and significant in relation to the Conservation Objective for Estuaries [1130].

Most of the commercially fished native oyster grounds are also likely to be exposed to dredging over time. The spatial extent of disturbance of the *Ostrea edulis* dominated community is therefore likely to substantially exceed the approximately 15% benchmark identified by NPWS. Under the current management regime, it cannot therefore be demonstrated that removal will remain at a level compatible with conserving the *Ostrea edulis* dominated community in natural condition. Mitigation is required to limit annual harvesting of legal-sized oysters and ensure that part of the oyster bed remains protected from dredging each year.

5.2.3.2. Mitigation measures

The following measures shall apply to the licensed Lough Swilly native oyster fishery:

- An annual Total Allowable Catch (TAC) shall be set for native oysters in Lough Swilly at 40% of the total pre-fishery raised biomass of native oysters ≥ 76 mm for Lough Swilly, for the most recent available survey year provided by the Marine Institute.
- At least 50 hectares of the native oyster beds in Lough Swilly shall be closed to commercial dredging for native oysters during each fishing season. The closed area may remain in the same location between years or may operate as part of a rotational closure system. The closed area defined must comprise 50 ha of native oyster bed as defined by the marine institute for Lough Swilly.

The 40% TAC has been selected as a precautionary stock-linked harvest limit having regard to the condition of the Lough Swilly stock and the additional sources of mortality acting on the population. Tully and Clarke (2012) estimated that fishing mortality in Inner Tralee Bay represented annual removal of approximately 60% of oysters recruited to the fishery. In Lough Swilly, recent removals of legal-sized oysters appear to have been substantially higher relative to the available legal-sized stock, with the April 2025 Marine Institute survey estimating only approximately 0.88 tonnes of native oyster ≥ 76 mm remaining, equivalent to approximately 1.3% of total native oyster biomass. A harvest limit below the 60% annual removal estimated for Inner Tralee Bay is therefore required. This is particularly important because the Lough Swilly stock is additionally affected by *Bonamia ostreae*, with prevalence of approximately 10–20% recorded in sampled live oysters in recent monitoring in Lough Swilly (Marine Institute, 2023), mortality from infection increasing in larger oysters, together with competition for food, habitat and settlement space from naturalised Pacific oyster *Magallana gigas* and American slipper limpet *Crepidula fornicata*. These pressures reduce the capacity of the stock to accommodate fishing mortality relative to less pressured and substantially larger native oyster populations such as that in Tralee Bay. On this basis, limiting annual harvest to 40% of the estimated pre-fishery raised biomass of oysters ≥ 76 mm provides a precautionary reduction in fishing mortality while retaining at least 60% of the legal-sized stock within the population following fishing.

The closed-area measure provides complementary spatial protection that cannot be achieved through the TAC alone. At least 50 ha of mapped native oyster bed will remain free from commercial dredging during each fishing season, thereby retaining a spatially protected component of the *Ostrea edulis* dominated community, including legal-sized spawning oysters, undersized oysters, spat and associated shell and cultch. This reduces the likelihood that fishing pressure is distributed across the full extent of the oyster grounds and provides an area in which population size structure, spawning-stock biomass and settlement substrate can be maintained without direct annual dredging disturbance. The closed area therefore acts together with the TAC to reduce both the magnitude and spatial extent of fishing effects on the *Ostrea edulis* dominated community.

These measures shall be reviewed every five years using available Marine Institute stock-survey data, fishery records and evidence of recruitment and population size structure. The management measures shall be adjusted where necessary to ensure that the *Ostrea edulis* dominated community continues to meet the Conservation Objective for Estuaries [1130].

5.2.3.3. Assessment conclusion

Commercial native oyster dredging is concentrated on the established oyster grounds and is not expected to cause a lasting change in the distribution, biological composition or ecological functioning of the wider Fine sand, intertidal and subtidal mixed sediment, muddy fine sand or mud communities within Estuaries [1130].

Limited interaction may occur at the margins of the oyster grounds, but this will be localised and will not compromise the natural condition of these wider sedimentary communities.

The main potential effect relates to removal of legal-sized *Ostrea edulis* from the oyster-dominated community. Without additional management, annual harvesting could reduce spawning-stock biomass and alter oyster abundance and size structure for periods extending between fishing seasons.

The annual TAC is set at 40% of the estimated pre-fishery raised biomass of native oysters ≥ 76 mm. This represents a precautionary reduction in fishing mortality relative to the approximately 60% annual removal of oysters recruited to the fishery estimated by Tully and Clarke (2012) for Inner Tralee Bay. A lower exploitation rate is required in Lough Swilly because the legal-sized component of the stock has recently been very small and the population is subject to additional mortality and competitive pressures, including *Bonamia ostreae* infection and competition from naturalised Pacific oyster *Magallana gigas* and American slipper limpet *Crepidula fornicata*. The 40% TAC therefore limits annual removal while retaining at least 60% of the estimated legal-sized stock within the population following fishing.

The requirement to close at least 50 ha of mapped native oyster bed to commercial dredging during each fishing season provides complementary spatial protection. The closure ensures that part of the *Ostrea edulis* dominated community remains free from direct annual dredging and harvest, thereby protecting legal-sized spawning oysters, undersized oysters, spat and associated shell and cultch. This reduces the spatial extent of annual fishing pressure and maintains a protected component of the oyster grounds from which spawning and recruitment can continue.

With these measures implemented, significant or persistent deterioration of the *Ostrea edulis* dominated community is not expected. The community can therefore be maintained in natural condition and the Conservation Objective for Estuaries [1130] can continue to be achieved.

Adverse effects on the integrity of Lough Swilly SAC arising from impacts on benthic community structure can therefore be excluded in light of the best scientific knowledge available, subject to implementation of the mitigation measures identified above.

5.2.4. Effects on Prey Resources and the Trophic Food Chain

Dredging may locally remove, injure or displace benthic invertebrates and temporarily alter their abundance or accessibility within individual dredge tracks. This could indirectly affect species that forage within the oyster grounds if the activity caused a significant or persistent reduction in an important prey resource. The receptors

considered under this pathway are Otter [1355] and the screened-in SCI bird species identified in Table 5-1. Effects associated with visual or noise disturbance of foraging birds are assessed separately in Section 5.2.5.

5.2.4.1. Impact assessment

The screened-in bird species utilise a wide range of trophic resources and feeding habitats within Lough Swilly. The Lough Swilly SPA supporting document identifies terrestrial agricultural habitat as the main feeding habitat for Whooper Swan, Greenland White-fronted Goose and Greylag Goose; intertidal mud and sandflats for several waders and Shelduck; shallow subtidal waters for diving ducks, grebes and mergansers; and lagoon habitats for species including Coot. The food/prey requirements of most species are described as wide or moderately specialised rather than dependent on a single prey resource.

Native oyster is not identified as an important direct prey item for the screened-in bird species. Great Crested Grebe and Red-breasted Merganser are primarily piscivorous, while Wigeon is predominantly herbivorous. Scaup and Goldeneye consume a range of aquatic prey, including molluscs and crustaceans, while the principal prey of intertidal waders includes polychaetes, crustaceans and smaller bivalves. Dunlin, for example, feed on polychaetes, small bivalves, gastropods and amphipods, while Curlew take larger worms, crabs and bivalves and Redshank feed on prey including *Hediste diversicolor*, *Hydrobia ulvae* and *Corophium volutator*.

Oystercatcher has the clearest association with the native oyster grounds. NPWS recorded important foraging use of the Ballybegley, Castle Shanaghan and Shellfield subsites, which contain native oyster beds. However, the supporting document specifically states that oysters do not form a large proportion of the Oystercatcher diet. Their association with the oyster beds is considered more likely to reflect the diverse invertebrate communities supported by shellfish habitat. Cockles (*Cerastoderma edule*) and mussels (*Mytilus edulis*) are identified as favoured prey, together with other bivalves and larger polychaetes. Oystercatchers also forage extensively elsewhere within Lough Swilly, including Fahan Creek where native oyster beds are not present.

The other benthic-feeding waders similarly utilise prey that occur widely within the intertidal mud and mixed-sediment communities of Lough Swilly rather than being dependent on native oyster. Knot principally take small bivalves such as *Scrobicularia plana*, *Macoma balthica* and *Mytilus edulis*, while Dunlin, Curlew, Redshank and Greenshank exploit a broad range of polychaetes, crustaceans, molluscs and other invertebrates across the estuary.

Although living oysters and shell provide attachment surfaces and structural complexity that can support associated benthic fauna, these prey resources are not restricted to the *Ostrea edulis* dominated community. Lough Swilly also supports a substantial naturalised Pacific oyster (*Magallana gigas*) population; estimated

Pacific oyster biomass in 2026 remained approximately 2.6 times greater than native oyster biomass and represented a quantitatively important component of the oyster assemblage.

For piscivorous birds, including Great Crested Grebe, Red-breasted Merganser, Shag and terns, the relevant trophic pathway would require dredging to cause a consequential reduction in fish abundance. Native oyster dredging does not remove fish as a target resource, and the localised seabed effects identified for the fishery do not provide a mechanism for a significant or persistent reduction in fish biomass across Lough Swilly. The same applies to Otter. The site-specific Conservation Objective for Otter requires no significant decline in available fish biomass and identifies fish as the dominant component of the species' diet. Oyster removal therefore does not represent a direct loss of an important Otter prey resource.

The Conservation Objectives for Lough Swilly SPA require the long-term population trends of the waterbird SCIs to remain stable or increasing and that there is no significant decrease in the number or range of areas used by them. Given the diversity and spatial extent of alternative prey resources and feeding habitats within Lough Swilly, native oyster dredging will not cause a significant or lasting reduction in food availability capable of affecting these targets.

The conservation objective for Wetland and Waterbirds [A999] is to maintain the favourable conservation condition of wetland habitat in Lough Swilly SPA as a resource for regularly occurring migratory waterbirds. Its habitat-area target requires the permanent area of subtidal, intertidal, supratidal and lagoon-associated wetland habitat to remain stable and not significantly below 4,162 ha, 2,419 ha, 201 ha and 317 ha, respectively, other than through natural variation (NPWS, 2011). The Project does not involve reclamation, infilling or permanent structures and is not expected to convert wetland habitat to non-wetland habitat or permanently reduce its area.

Retention of wetland area alone does not establish that its ecological support function will be maintained. Dredge contact, repeated disturbance, sediment deposition and changes to benthic communities or prey could affect the condition of habitat used by waterbirds within the dredged footprint. The assessments in **Sections 5.2.1 - 5.2.4** also address Wetland and Waterbirds [A999]. Physical habitat disturbance, increased suspended sediments and smothering, effects on benthic community structure, and effects on prey resources will not cause permanent loss of the wetland habitat within Lough Swilly SPA or a sustained reduction in its function as a resource for regularly occurring migratory waterbirds. The Project will therefore not undermine the conservation objective for the permanent area of subtidal, intertidal, supratidal or lagoon-associated wetland habitat. Adverse effects on the integrity of Lough Swilly SPA arising through Wetland and Waterbirds [A999] from these pathways can be excluded.

5.2.4.2. Mitigation measures

No additional mitigation is required specifically for this impact pathway.

5.2.4.3. Assessment conclusion

Native oyster does not represent an important direct prey resource for Otter or the screened-in SCI bird species. Benthic-feeding birds utilise a wide range of alternative invertebrate prey throughout Lough Swilly, while piscivorous species and Otter are dependent mainly on fish resources that will not be significantly reduced by the Project.

The Project will therefore not cause a significant or persistent reduction in prey availability or adversely affect the trophic resources supporting the relevant conservation features. Adverse effects on the integrity of the relevant European sites arising from effects on prey resources and the trophic food chain can therefore be excluded.

5.2.5. Above-water Visual and Noise Disturbance

Visual and above water noise disturbance may arise from the presence and movement of fishing vessels, fishers, and deployment of dredging equipment. Potential responses of sensitive fauna identified (Grey Seal (*Halichoerus grypus*) [1364], Otter (*Lutra lutra*) [1355], and SCI bird species) include increased alertness, interrupting of feeding, flushing, and short-term displacement of the immediate vicinity of an active vessel.

Twenty-five oyster-dredge licences were recorded for Lough Swilly in 2026. Licence numbers indicate the maximum number of authorised operators but do not demonstrate that all licences are actively used or that the associated vessels operate simultaneously. Dredging is undertaken from relatively small fishing vessels moving at low speeds over established oyster grounds. The resulting visual and noise stimulus will therefore be intermittent, mobile and comparable with other routine small-vessel activity within the lough.

Lough Swilly is already used for commercial fishing, aquaculture, recreation, tourism and water sports. The Project will not introduce a novel type of vessel activity or establish a fixed source of above-water noise. Dredging may occur between September and April, but individual vessels will move between oyster grounds rather than remain continuously at one location. Consequently, the activity will not create a persistent disturbance source or exclude fauna from an area of otherwise suitable habitat. Moreover, the activity will mainly take place near high tide.

Otter

Otter may utilise the shoreline, intertidal areas and adjacent shallow waters of Lough Swilly for foraging and commuting. An otter present close to an operating vessel may temporarily avoid the immediate area. However, oyster dredging is undertaken from vessels and does not require works at the shoreline or direct interaction with holts, couches or natal dens. It will not remove terrestrial or marine otter habitat or obstruct movement along the shoreline or between feeding areas.

Any avoidance response will be temporary and confined to the immediate vicinity of the vessel. The wider shoreline and shallow-water habitat will remain accessible throughout the activity. The Project will therefore not affect otter distribution, access to resting sites, commuting routes or the availability of suitable foraging habitat.

Grey Seal

Grey Seal associated with Horn Head and Rinclevan SAC may forage or transit through the wider Lough Swilly area. A seal close to an operating vessel may change direction or temporarily avoid the vessel. Such responses would be comparable with those arising from other fishing and recreational vessels operating within the lough.

The Project does not involve access to or alteration of seal breeding, moulting or resting sites. Vessel activity will not form a barrier across Lough Swilly or prevent seals from moving between the lough and coastal waters. Any disturbance will be localised, brief and reversible and will not affect the distribution, survival or reproductive success of Grey Seal associated with the designated site.

SCI birds and supporting wetland habitat

Lough Swilly SPA [004075] overlaps the licensed dredging area and supports wintering waterbirds, waders, gulls, terns and other species that may forage, loaf or move through the oyster grounds. Individual birds could temporarily move away from an approaching vessel or interrupt feeding while dredging is undertaken nearby. The September - April fishing season overlaps the period during which wintering waterbirds are present, and temporary interactions are therefore possible.

The dredging activity is restricted to vessels operating on the water and does not involve access to or modification of shoreline roosts, breeding areas or terrestrial feeding habitat. The vessels are small, slow-moving and similar to other craft already used in Lough Swilly. Any displacement will be limited to the vicinity of an active vessel, and birds will remain able to use surrounding intertidal and subtidal foraging areas. Once a vessel moves away, the affected area will become available for use again.

For SCI species associated with more distant SPAs but whose foraging ranges overlap Lough Swilly, an interaction would require an individual bird to be present close to an operating vessel. Any response would

affect individual birds temporarily and would not alter access to their breeding colonies, roosts or principal foraging areas. The Project will not result in habitat loss, a barrier to movement or sustained displacement. It will not affect the population abundance or distribution of the screened-in SCI species or the extent and functioning of the Wetland and Waterbirds habitat [A999].

Table 5-2 presents I-WeBS site peak counts for screened-in SCI species recorded at Lough Swilly between 2013/14 and 2022/23. The data confirm continued use of Lough Swilly by the relevant waterbird assemblage, including during the September to April native oyster dredging season. Peak-count months for several screened-in species fall within this period and therefore confirm temporal overlap between the Project and SCI use of the wider SPA.

The five-year mean for 2018/19–2022/23 was higher than the 2013/14 site peak count for a number of screened-in SCIs, including Grey Heron, Greylag Goose, Common Gull, Dunlin, Greenshank, Herring Gull, Knot, Shelduck, Mallard, Whooper Swan and Goldeneye. Particularly large differences were recorded for Herring Gull, Knot, Mallard, Whooper Swan and Goldeneye. These data demonstrate continued and comparatively high recent use of the wider Lough Swilly site. These counts represent use of the wider Lough Swilly I-WeBS site and should not be taken as evidence of population trends or of any effect from commercial native oyster dredging within the licensed area.

Table 5-2: I-WeBS site peak counts for Lough Swilly from 2013/14 to 2022/23 for screen-in SCI species.

SCI	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Mean	% Change between 2013/14 and 2018/19 to 2022/23	Site Peak Months
Grey Heron	52	48	59	91	64	49	66	61	82	55	62.6	20.38%	Sep
Sandwich Tern				24	5	5		11	65	13	18.8	N/A	Sep
Greylag Goose (resident)	2034	1856	2121	2247	2802	2650	3382	1889	2486	2057	2492.8	22.56%	Dec
Common Gull	1340	1141	920	1321	1052	1002	1713	1481	3007	2289	1898.4	41.67%	Feb, Nov, Dec
Dunlin	4428	5283	2330	5019	4293	5606	3554	6234	6277	6042	5542.6	25.17%	Jan
Red-breasted Merganser	154	126	167	94	136	185	201	49	110	116	132.2	-14.16%	Dec
Great Crested Grebe	193	223	166	98	157	99	111	54	106	122	98.4	-49.02%	Jan, Nov
Greenshank	92	83	80	106	49	125	140	49	100	94	101.6	10.43%	Sep
Herring Gull	148	543	667	656	1184	676	1319	202	783	276	651.2	340.00%	Nov
Curlew	1937	1553	1432	1738	1862	1662	1916	1183	1291	1616	1533.6	-20.83%	Feb
Knot	293	751	866	775	1036	900	590	377	1001	730	719.6	145.60%	Dec
Shelduck	661	748	431	684	923	1251	526	471	853	884	797.	20.57%	Mar
Redshank	1807	1374	1838	1735	1352	1848	1374	1154	1872	1951	1639.8	-9.25%	Sep, Oct, Nov, Dec
Greenland White-fronted Goose	926	592	724	683	745	922	721	412	912	1100	813.4	-12.16%	Feb, Mar
Mallard	494	1598	1533	1321	686	584	875	1252	1190	1187	1017.6	105.99%	Sep
Whooper Swan	640	1057	618	645	1566	652	751	338	1258	2005	1000.8	56.38%	Mar

SCI	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	Mean	% Change between 2013/14 and 2018/19 to 2022/23	Site Peak Months
Oystercatcher	1787	2652	2056	2157	1952	1826	1067	1190	1181	1522	1357.2	-24.05%	Sep, Dec
Goldeneye	94	131	63	131	73	116	86	238	155	159	150.8	60.43%	Jan, Feb
Black-headed Gull	3024	1540	1309	2178	2166	3276	2797	2649	2552	1876	2630.	-13.03%	Mar
Common Tern								3	8		2.2	N/A	Sep, Oct
Wigeon	2206	1743	2122	4383	1964	1946	1867	1656	1939	1630	1807.6	-18.06%	Nov
Pochard	5	6	6	49	36	108	203	54	42	68	95.	1800.00%	Nov
Teal	3045	2067	2196	2328	2779	2161	1969	1292	2604	2483	2101.8	-30.98%	Jan, Nov
Barnacle Goose	6	4	4	5	9	7	11	5	10	1	6.8	13.33%	Nov
Shag	1	6	8	1	31	2	8	4	10	1	5.	400.00%	Feb, Sep, Oct, Nov
Scaup	17	3	7	61	15	27	5	1	4	7	8.8	-48.24%	Nov
Coot	480	602	457	765	530	493	570	253	285	220	364.2	-24.13%	Nov
Lesser Black-backed Gull	5	50	76	56	89	27	519	50	120	24	148.	2860.00%	Sep

5.2.5.1. Impact assessment

A risk assessment to examine the potential impacts on the identified SCIs has been undertaken using the following criteria:

- Species risk of disturbance (**Table 5-3**)
- Species population sensitivity (**Table 5-4**)
- Licenced area habitat suitability (**Table 5-5**)
- Species habitat flexibility (**Table 5-6**)
- Assessment of significance of risk (**Table 5-8**)

The numerical framework provides supporting information and does not determine the Appropriate Assessment conclusion. The conclusion is based on the characteristics of the activity, the spatial distribution and ecological requirements of each SCI, the NPWS survey information, recent I-WeBS data and the site-specific Conservation Objectives.

Risk of disturbance

The presence and movement of vessels within or beside feeding or roosting habitat may result in behavioural disturbance. Species differ in their propensity to exhibit alert behaviour, cease feeding or move away from an approaching vessel.

The disturbance categories in **Table 5-3** draw on Garthe and Hüppop (2004), Furness and Wade (2012), Furness et al. (2013) and Goodship and Furness (2022). Where Goodship and Furness provide a qualitative category rather than a numerical value, that category has been translated to the five-point scale used in this assessment with 1 representing very low disturbance sensitivity, characterised by little escape or avoidance behaviour and/or a very low fleeing distance, and 5 representing high disturbance sensitivity, characterised by strong escape or avoidance behaviour and/or a large fleeing distance. N/A indicates that a directly applicable numerical score was not identified. It does not indicate that a species is insensitive to disturbance or that it has not been assessed. For

Table 5-3 Disturbance risk categories of the screened-in bird species.

Bird species	Disturbance Category
Great Crested Grebe (<i>Podiceps cristatus</i>)	3
Shag (<i>Phalacrocorax aristotelis</i>)	3

Bird species	Disturbance Category
Grey Heron (<i>Ardea cinerea</i>)	N/A
Whooper Swan (<i>Cygnus cygnus</i>)	N/A
Greylag Goose (<i>Anser anser</i>)	N/A
Barnacle Goose (<i>Branta leucopsis</i>)	N/A
Shelduck (<i>Tadorna tadorna</i>)	5
Teal (<i>Anas crecca</i>)	N/A
Mallard (<i>Anas platyrhynchos</i>)	2
Pochard (<i>Aythya ferina</i>)	N/A
Scaup (<i>Aythya marila</i>)	4
Goldeneye (<i>Bucephala clangula</i>)	4
Red-breasted Merganser (<i>Mergus serrator</i>)	N/A
Coot (<i>Fulica atra</i>)	N/A
Oystercatcher (<i>Haematopus ostralegus</i>)	3
Knot (<i>Calidris canutus</i>)	N/A
Dunlin (<i>Calidris alpina</i>)	3
Curlew (<i>Numenius arquata</i>)	5
Redshank (<i>Tringa totanus</i>)	3
Greenshank (<i>Tringa nebularia</i>)	N/A
Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	2
Common Gull (<i>Larus canus</i>)	2
Lesser Black-backed Gull (<i>Larus fuscus</i>)	2
Herring Gull (<i>Larus argentatus</i>)	2

Bird species	Disturbance Category
Common Tern (<i>Sterna hirundo</i>)	2
Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>)	N/A
Wigeon (<i>Mareca penelope</i>)	5
Shoveler (<i>Spatula clypeata</i>)	N/A
Sandwich Tern (<i>Thalasseus sandvicensis</i>)	2

Furness and Wade (2012) and Furness et al. (2013) indicate comparatively greater sensitivity to vessel disturbance for Scaup and Goldeneye than for gulls and terns. However, these generic scores are considered together with the distribution of each species within Lough Swilly and the degree of actual spatial and temporal overlap with oyster dredging.

Species population sensitivity

BoCCI4 conservation status is used as one indicator of population sensitivity. Red, Amber and Green listing identifies national conservation concern and does not, on its own, determine whether the Project will adversely affect an SCI population. The classification is considered together with the site-specific population trend, recent I-WeBS counts, distribution within Lough Swilly and local use of the areas potentially affected by vessel activity (Table 5-4).

Table 5-4 Sensitivity criteria.

Sensitivity	Definition
High	Receptor population has a very limited or no tolerance of effect. e.g. likely to have no capacity to absorb change, a population-level effect very likely to occur. Likely to be limited to populations with poor or very poor existing conservation status – BoCCI Red List.
Medium	Receptor population has limited tolerance of effect. e.g. very minor capacity to absorb change, so a population effect possible. Likely to include but not be limited to populations with poor existing conservation status – BoCCI Amber List.

Sensitivity	Definition
Low	Receptor population has some tolerance of effect. e.g. likely to have minor capacity to absorb additional mortality or reduction in productivity or habitat loss, so a population-level effect unlikely – BoCCI Green List.
Negligible	Receptor population generally tolerant of effect. e.g. likely to have moderate capacity to absorb additional mortality or reduction in productivity or habitat loss, so a population effect very unlikely.

Licensed dredge area habitat suitability

Habitat suitability was assessed specifically in relation to the potential for birds to occur within, or immediately adjacent to, areas while dredging is taking place. This differs from a general assessment of habitat suitability across Lough Swilly SPA.

The native oyster grounds are principally associated with shallow intertidal and subtidal areas of the southern and inner lough. Dredging is undertaken from vessels and will mainly occur around high tide. Consequently, species whose use of Lough Swilly is predominantly associated with exposed intertidal, supratidal or terrestrial habitat have limited spatial and temporal interaction with active dredging. Intertidal feeding at lower tidal states occurs when these areas are inaccessible to dredging vessels.

The NPWS waterbird surveys nevertheless identified a number of screened-in SCIs using subtidal habitat. Shelduck, Mallard, Red-breasted Merganser, Great Crested Grebe, Oystercatcher, Curlew, Redshank, Wigeon, Scaup, Goldeneye, Grey Heron, Greenshank and Common Gull were recorded using subtidal habitat for feeding and/or resting. The strength and spatial extent of that association differed considerably among species.

The strongest potential interaction occurs for Great Crested Grebe. The NPWS surveys recorded this species widely across Lough Swilly, with a clear preference for subtidal foraging waters at Ballymoney and Shellfield and use of several other inner-lough subsites. Great Crested Grebe is therefore likely to occur within or close to active oyster grounds while dredging is taking place.

Red-breasted Merganser also used shallow subtidal waters throughout the lough, including Ballybegley, Shellfield, Ballymoney and Rathmullan. However, concentrations shifted among subsites between surveys, consistent with a mobile piscivorous species tracking mobile fish prey. Scaup used subtidal habitat but occurred principally at Inch Lough and Levels, West Inch and Ballymoney, while Goldeneye was concentrated mainly at Inch Lough and Levels with smaller and irregular use of other subsites.

Mallard was widely distributed and used intertidal, subtidal, terrestrial and lagoonal habitat, but Inch Lough and Levels was the main foraging area. Wigeon similarly used terrestrial, intertidal and subtidal habitat, with most birds concentrated at Inch Lough and Levels and Blanket Nook. Oystercatcher showed a spatial association with several oyster-bed subsites, including Ballybegley, Castle Shanaghan and Shellfield, although its feeding activity was predominantly intertidal.

For the remaining screened-in SCIs, their main foraging and/or roosting habitat either does not overlap the active oyster grounds, is primarily intertidal and therefore generally unavailable to dredging vessels when birds are feeding there, or occurs extensively elsewhere within Lough Swilly SPA. The SPA contains extensive alternative subtidal, intertidal, lagoonal, shoreline and terrestrial feeding and roosting habitat.

Habitat preference follows that identified for the species in Furness and Wade (2012), Furness et al. (2013) (Table 5-5) and, where those papers do not cover the relevant species, the site-specific ecological information and distribution data in the Lough Swilly SPA Conservation Objectives supporting document.

Table 5-5 Suitability and use of habitat within the licensed dredge area by screened-in bird SCIs. A score of 1 represents direct and regular use of habitat within the active dredging area, while a score of 4 represents little or no functional overlap with active dredging.

Bird species	Species habitat preference / site-specific use	Suitability score
Great Crested Grebe (<i>Podiceps cristatus</i>)	Sheltered and shallow subtidal waters. Widespread subtidal foraging within Lough Swilly, with important use of Ballymoney and Shellfield.	1
Shag (<i>Phalacrocorax aristotelis</i>)	Coastal marine waters used for diving for fish. Very low numbers recorded within Lough Swilly and no important concentration associated with the oyster grounds.	3
Grey Heron (<i>Ardea cinerea</i>)	Shallow water margins and sheltered shallow subtidal habitat. Widespread but predominantly solitary use of Lough Swilly.	2
Whooper Swan (<i>Cygnus cygnus</i>)	Mainly agricultural and polderland feeding habitat at Inch Levels, Blanket Nook and associated areas.	4
Greylag Goose (<i>Anser anser</i>)	Mainly agricultural and polderland habitat.	4
Barnacle Goose (<i>Branta leucopsis</i>)	Terrestrial/coastal grazing habitat; no important association with active oyster grounds identified.	4
Shelduck (<i>Tadorna tadorna</i>)	Estuarine mudflats and shallow waters. Subtidal use occurs, but feeding is widely distributed and principally associated with intertidal habitat.	2
Teal (<i>Anas crecca</i>)	Shallow subtidal, lagoonal and intertidal habitat; main concentrations are associated with lagoons and sheltered shallow areas.	3

Bird species	Species habitat preference / site-specific use	Suitability score
Mallard (<i>Anas platyrhynchos</i>)	Broad wetland generalist using shallow subtidal, intertidal, lagoonal and terrestrial habitats. Subtidal foraging is scattered and extensive alternative habitat occurs.	2
Pochard (<i>Aythya ferina</i>)	Mainly freshwater and lagoonal open-water habitat; little functional overlap with the oyster grounds.	4
Scaup (<i>Aythya marila</i>)	Shallow coastal and estuarine waters. Some subtidal foraging and roosting occurs, but recorded use was concentrated in a small number of subsites.	2
Goldeneye (<i>Bucephala clangula</i>)	Sheltered and shallow subtidal waters and lagoons. Some subtidal foraging and roosting occurs but the main recorded concentration was at Inch Lough and Levels.	2
Red-breasted Merganser (<i>Mergus serrator</i>)	Sheltered shallow subtidal waters. Subtidal foraging is widespread but mobile and distributed among numerous subsites.	2
Coot (<i>Fulica atra</i>)	Coastal lagoon and sheltered freshwater habitat. Recorded principally at Inch Lough and Levels.	4
Oystercatcher (<i>Haematopus ostralegus</i>)	Mainly intertidal shellfish-bearing mud and sand flats. Some use occurs in oyster-bed subsites but feeding is principally intertidal.	2
Knot (<i>Calidris canutus</i>)	Intertidal mud and sand flats.	3
Dunlin (<i>Calidris alpina</i>)	Intertidal mudflats and exposed sediments.	3
Curlew (<i>Numenius arquata</i>)	Mainly intertidal mudflats, saltmarsh and adjacent terrestrial habitat, with some shallow-water use.	3
Redshank (<i>Tringa totanus</i>)	Mainly intertidal mudflats, tidal creeks and shallow margins, with some subtidal use.	3
Greenshank (<i>Tringa nebularia</i>)	Intertidal and shallow-water margins; some subtidal feeding occurs but birds are widely distributed.	3
Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	Flexible estuarine, coastal and terrestrial generalist. Main breeding colony occurs at Inch Lough.	3
Common Gull (<i>Larus canus</i>)	Flexible inshore generalist using intertidal and shallow subtidal waters. Subtidal feeding and resting occurs widely within the SPA.	2
Lesser Black-backed Gull (<i>Larus fuscus</i>)	Highly flexible coastal, marine and terrestrial forager.	2
Herring Gull (<i>Larus argentatus</i>)	Highly flexible coastal, marine and terrestrial forager.	2
Common Tern (<i>Sterna hirundo</i>)	Marine and estuarine surface-feeding species. Main SPA breeding colony is associated with Inch Lough and breeding largely coincides with the seasonal closure.	3

Bird species	Species habitat preference / site-specific use	Suitability score
Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>)	Agricultural/polderland feeding habitat, particularly Big Isle and Inch Levels.	4
Wigeon (<i>Mareca penelope</i>)	Shallow coastal, intertidal, lagoonal and terrestrial habitat. Some subtidal use occurs, but main concentrations are associated with Inch Lough and Levels and Blanket Nook.	2
Shoveler (<i>Spatula clypeata</i>)	Sheltered shallow water and lagoonal habitat. Limited overlap with active oyster grounds.	3
Sandwich Tern (<i>Thalasseus sandvicensis</i>)	Coastal and estuarine waters. Main SPA breeding colony occurs at Inch Lough and the breeding season largely coincides with the seasonal closure.	3

Species habitat flexibility

The habitat use flexibility scores are based on Garthe and Hüppop (2004) and Furness and Wade (2012) and Furness et al. (2013). The habitat flexibility scores indicate the degree to which a species is associated with particular marine habitat characteristics. Scoring goes from 1 to 5, with 1 indicating a species is very flexible in habitat use and 5 indicating that the species is reliant on specific habitat characteristics. N/A indicates that an equivalent published score was not available and does not imply that the species lacks alternative habitat (Table 5-6).

Table 5-6 Habitat flexibility scores.

Bird species	Flexibility score
Great Crested Grebe (<i>Podiceps cristatus</i>)	4
Shag (<i>Phalacrocorax aristotelis</i>)	3
Grey Heron (<i>Ardea cinerea</i>)	N/A
Whooper Swan (<i>Cygnus cygnus</i>)	N/A
Greylag Goose (<i>Anser anser</i>)	N/A
Barnacle Goose (<i>Branta leucopsis</i>)	N/A
Shelduck (<i>Tadorna tadorna</i>)	N/A
Teal (<i>Anas crecca</i>)	N/A
Mallard (<i>Anas platyrhynchos</i>)	N/A

Bird species	Flexibility score
Pochard (<i>Aythya ferina</i>)	N/A
Scaup (<i>Aythya marila</i>)	4
Goldeneye (<i>Bucephala clangula</i>)	4
Red-breasted Merganser (<i>Mergus serrator</i>)	N/A
Coot (<i>Fulica atra</i>)	N/A
Oystercatcher (<i>Haematopus ostralegus</i>)	N/A
Knot (<i>Calidris canutus</i>)	N/A
Dunlin (<i>Calidris alpina</i>)	N/A
Curlew (<i>Numenius arquata</i>)	N/A
Redshank (<i>Tringa totanus</i>)	N/A
Greenshank (<i>Tringa nebularia</i>)	N/A
Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	2
Common Gull (<i>Larus canus</i>)	2
Lesser Black-backed Gull (<i>Larus fuscus</i>)	1
Herring Gull (<i>Larus argentatus</i>)	1
Common Tern (<i>Sterna hirundo</i>)	3
Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>)	N/A
Wigeon (<i>Mareca penelope</i>)	N/A
Shoveler (<i>Spatula clypeata</i>)	N/A
Sandwich Tern (<i>Thalasseus sandvicensis</i>)	3

Assessment of the significance of the effects

The significance categories in **Table 5-7** are used to describe the anticipated ecological effect. These categories do not replace the Article 6(3) test. An effect described as Slight remains below the Significant category in this framework and does not, by itself, establish an adverse effect on the integrity of a European site.

Table 5-7 Significance of effects.

Significance of effects	Definition
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
Slight effects	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
Moderate effects	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
Significant effects	An effect which, by its character, magnitude, duration or intensity, alters a sensitive aspect of the environment.
Very significant effects	An impact which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment.
Profound effects	An impact which obliterates sensitive characters.

The species-level assessment is presented in **Table 5-8**. The potential for above-water visual and noise disturbance is primarily determined by whether birds are likely to be present within or close to an area while it is actively dredged. Although numerous screened-in SCIs use the wider inner Lough Swilly area, much of their feeding activity is associated with exposed intertidal, lagoonal, supratidal or terrestrial habitat. Intertidal habitat used for feeding at lower tidal states is not simultaneously available to dredging vessels, and the fishery is expected to operate mainly around high tide.

Great Crested Grebe differs from the remaining screened-in SCIs because the NPWS surveys identified widespread and repeated use of shallow subtidal habitat, including concentrations within Ballymoney and Shellfield, where overlap with the oyster grounds is credible. Its high habitat-specificity score also indicates comparatively low flexibility if disturbed from preferred shallow-water habitat. The recent I-WeBS series recorded a decline from 193 birds in 2013/14 to 122 in 2022/23, although these data do not identify the cause of that decline. Given the combination of direct habitat overlap, repeated subtidal use and relatively low habitat flexibility, temporary feeding interruption or local displacement from an operating dredging vessel is assessed as a Slight effect.

A number of other SCIs use subtidal habitat, including Shelduck, Mallard, Red-breasted Merganser, Oystercatcher, Curlew, Redshank, Wigeon, Scaup, Goldeneye, Grey Heron, Greenshank and Common Gull. However, site-specific NPWS data demonstrate either a scattered distribution across numerous subsites, stronger use of other habitat types, substantial use of areas outside the active oyster grounds, or mobility between feeding areas. Any displacement from an individual vessel would therefore affect only a small part of the available habitat temporarily. Effects on these species are assessed as Not significant.

For the remaining SCIs, direct interaction with active dredging is substantially more limited. Their main feeding or roosting habitat is predominantly intertidal, lagoonal, supratidal or terrestrial, occurs away from the active oyster grounds, or their use of Lough Swilly during the fishing season is limited. Effects on these species are therefore assessed as Imperceptible or Not significant, with the more precautionary Not significant classification applied where conservation sensitivity or potential occasional overlap warrants it.

Table 5-8 Assessment of the significance of Above water visual and noise disturbance effects on screened-in SCIs.

Bird species	Disturbance sensitivity	Population sensitivity BoCCI4	Habitat suitability	Habitat flexibility	Description of effect	Significance of effects
Great Crested Grebe (<i>Podiceps cristatus</i>)	3	Medium – Amber List	1	4	Regular and widespread use of shallow subtidal habitat, with important concentrations at Ballymoney and Shellfield and credible overlap with oyster grounds. Relatively low habitat flexibility increases sensitivity to local displacement. Recent I-WeBS counts are lower than at the start of the 2013/14–2022/23 series. Temporary interruption of feeding or local displacement may occur.	Slight effects
Shag (<i>Phalacrocorax aristotelis</i>)	3	Medium – Amber List	3	3	Marine forager but recorded in very low numbers in Lough Swilly. No important concentration or dependence on the oyster grounds is identified.	Imperceptible effects
Grey Heron (<i>Ardea cinerea</i>)	N/A	Low – Green List	2	N/A	Some shallow-water/subtidal feeding occurs, but birds are widespread, generally solitary and use numerous areas throughout the SPA.	Not significant
Whooper Swan (<i>Cygnus cygnus</i>)	N/A	Medium – Amber List	4	N/A	Main feeding areas are agricultural and polderland habitats, especially Inch Levels and Blanket Nook. No meaningful interaction with active dredging is predicted.	Imperceptible effects
Greylag Goose (<i>Anser anser</i>)	N/A	Medium – Amber List	4	N/A	Main feeding habitat is terrestrial/polderland and does not overlap active dredging. Recent I-WeBS counts remain high.	Imperceptible effects
Barnacle Goose (<i>Branta leucopsis</i>)	N/A	Medium – Amber List	4	N/A	Very low numbers occur within Lough Swilly and no important use of the active oyster grounds has been identified.	Imperceptible effects
Shelduck (<i>Tadorna tadorna</i>)	5	Medium – Amber List	2	N/A	High generic disturbance sensitivity is acknowledged. Some subtidal feeding occurs, but NPWS recorded the species widely across the estuary and the majority of suitable feeding habitat is intertidal or shallow water distributed throughout the SPA.	Not significant
Teal (<i>Anas crecca</i>)	N/A	Medium – Amber List	3	N/A	Uses shallow-water, lagoonal and intertidal habitat, with important concentrations outside the oyster grounds. Any interaction with dredging vessels would be temporary and localised.	Not significant

Bird species	Disturbance sensitivity	Population sensitivity BoCCI4	Habitat suitability	Habitat flexibility	Description of effect	Significance of effects
Mallard (<i>Anas platyrhynchos</i>)	2	Medium – Amber List	2	N/A	Scattered subtidal feeding occurs, but the species uses intertidal, lagoonal and terrestrial habitat and is widely distributed. Inch Lough and Levels supports the main concentrations.	Not significant
Pochard (<i>Aythya ferina</i>)	N/A	High – Red List	4	N/A	Predominantly associated with lagoonal/open-water habitat rather than the active oyster grounds. No important disturbance pathway is identified.	Imperceptible effects
Scaup (<i>Aythya marila</i>)	4	High – Red List	2	4	Comparatively high generic disturbance sensitivity and some subtidal feeding/roosting occur, but recorded use is concentrated principally at Inch Lough and Levels, West Inch and Ballymoney. The recent I-WeBS population is small and direct exposure to individual dredging vessels will be spatially limited.	Not significant
Goldeneye (<i>Bucephala clangula</i>)	4	High – Red List	2	4	Comparatively high generic disturbance sensitivity, but most recorded foraging occurred at Inch Lough and Levels, with smaller and irregular use of other areas. Temporary local avoidance will not materially restrict available habitat.	Not significant
Red-breasted Merganser (<i>Mergus serrator</i>)	N/A	Medium – Amber List	2	N/A	Subtidal forager occurring throughout the lough, but concentrations shift between subsites in response to mobile fish prey. Extensive alternative shallow-water habitat is available and any displacement will be brief.	Not significant
Coot (<i>Fulica atra</i>)	N/A	Medium – Amber List	4	N/A	Recorded use is strongly concentrated at Inch Lough and Levels rather than the oyster grounds.	Imperceptible effects
Oystercatcher (<i>Haematopus ostralegus</i>)	3	High – Red List	2	N/A	Important use occurs in oyster-bed subsites, but feeding is predominantly associated with intertidal shellfish habitat exposed at lower tidal states. Some potential interaction remains at higher water, but extensive alternative habitat is available.	Not significant
Knot (<i>Calidris canutus</i>)	N/A	High – Red List	3	N/A	Predominantly an intertidal feeder. Little simultaneous spatial and temporal interaction with active dredging is predicted.	Imperceptible effects

Bird species	Disturbance sensitivity	Population sensitivity BoCCI4	Habitat suitability	Habitat flexibility	Description of effect	Significance of effects
Dunlin (<i>Calidris alpina</i>)	3	High – Red List	3	N/A	Predominantly forages on exposed intertidal mudflats. Active dredging will mainly occur at higher tidal states when these feeding areas are submerged.	Imperceptible effects
Curlew (<i>Numenius arquata</i>)	5	High – Red List	3	N/A	High generic disturbance sensitivity is acknowledged. Some shallow-water/subtidal use occurs, but feeding is mainly intertidal or terrestrial and the species is widely distributed throughout the SPA.	Not significant
Redshank (<i>Tringa totanus</i>)	3	High – Red List	3	N/A	Some shallow-water use occurs, but feeding is predominantly intertidal and widely distributed across the inner lough. Direct exposure to dredging is limited.	Not significant
Greenshank (<i>Tringa nebularia</i>)	N/A	Low – Green List	3	N/A	Some shallow-water feeding occurs but individuals are widely distributed and generally occur in relatively small numbers.	Not significant
Black-headed Gull (<i>Chroicocephalus ridibundus</i>)	2	Medium – Amber List	3	2	Flexible habitat use and low generic disturbance sensitivity. The designated breeding colony is associated with Inch Lough and the main breeding period coincides with the May–August closure.	Imperceptible effects
Common Gull (<i>Larus canus</i>)	2	Medium – Amber List	2	2	Subtidal foraging and resting occur, including within the inner lough, but the species is highly widespread and uses numerous intertidal, subtidal and terrestrial areas. Temporary displacement will not materially restrict available habitat.	Not significant
Lesser Black-backed Gull (<i>Larus fuscus</i>)	2	Medium – Amber List	2	1	Highly flexible generalist with very low habitat specificity. No dependence on the active oyster grounds is identified.	Imperceptible effects
Herring Gull (<i>Larus argentatus</i>)	2	Medium – Amber List	2	1	Highly flexible generalist using a wide range of marine, coastal and terrestrial habitats. Any response to dredging vessels will be temporary.	Imperceptible effects
Common Tern (<i>Sterna hirundo</i>)	2	Medium – Amber List	3	3	Main breeding colony is at Inch Lough and the May–August closure removes dredging during most of the breeding period. Only very small I-WeBS counts occurred during September–October.	Imperceptible effects

Bird species	Disturbance sensitivity	Population sensitivity BoCCI4	Habitat suitability	Habitat flexibility	Description of effect	Significance of effects
Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>)	N/A	Medium – Amber List	4	N/A	Foraging is strongly associated with agricultural/polderland habitat, particularly Big Isle and Inch Levels. No meaningful overlap with active dredging is predicted.	Imperceptible effects
Wigeon (<i>Mareca penelope</i>)	5	Medium – Amber List	2	N/A	Some subtidal feeding occurs, but most birds use terrestrial, lagoonal and intertidal habitat, particularly Inch Lough and Levels and Blanket Nook. High generic sensitivity is acknowledged but exposure to active dredging is limited.	Not significant
Shoveler (<i>Spatula clypeata</i>)	N/A	High – Red List	3	N/A	Uses sheltered shallow-water and lagoonal habitat, with main recorded concentrations outside the active oyster grounds.	Not significant
Sandwich Tern (<i>Thalasseus sandvicensis</i>)	2	Medium – Amber List	3	3	Main breeding colony is at Inch Lough. Dredging is closed during most of the breeding period and September I-WeBS records represent limited seasonal overlap.	Imperceptible effects

The key NPWS evidence supporting the distinction in **Table 5-8** is that Great Crested Grebe (slight effects) showed repeated, concentrated shallow-subtidal use at Ballymoney and Shellfield, whereas Red-breasted Merganser moved between several subtidal feeding areas. Scaup and Goldeneye also used subtidal waters, but their distributions were centred more strongly on Inch Lough/West Inch and were much more spatially restricted. Common Gull was particularly widespread, occurring across the site and feeding in both intertidal and subtidal habitat, so local displacement from one oyster ground would not substantially reduce available habitat.

Roosting distribution

Roosting habitat does not provide a material interaction pathway for most of the proposed dredging. The NPWS surveys identified numerous intertidal, supratidal, terrestrial and lagoonal roosting locations throughout Lough Swilly SPA. Although some occur within the same broad subsites as the oyster grounds, many intertidal roosting locations are used when exposed and therefore are not simultaneously available to dredging vessels.

The proposed activity will not remove, occupy or modify any intertidal, supratidal or terrestrial roosting habitat. Consequently, disturbance of roosting birds is not predicted to occur at a frequency or intensity capable of causing sustained displacement from an important roost. The extensive distribution of alternative roosting habitat throughout Lough Swilly SPA provides additional resilience to occasional disturbance associated with vessel movements.

Some species, particularly Scaup and Goldeneye, were recorded roosting on subtidal waters. However, these roosts were spatially distributed and did not indicate dependence on an individual area or oyster ground. Any displacement caused by an approaching fishing vessel would therefore be localised and temporary.

The potential effect of above-water visual and noise disturbance on the screened-in SCIs is therefore associated mainly with birds foraging in subtidal habitat rather than with roosting birds. Great Crested Grebe is the only screened-in SCI for which the combination of regular subtidal use, spatial overlap with the oyster grounds and comparatively limited habitat flexibility warrants a Slight effect classification.

The Conservation Objectives for the non-breeding SCIs of Lough Swilly SPA require long-term population trends to remain stable or increase and no significant decrease in the range, timing or intensity of use of areas other than that arising from natural patterns of variation. The localised and temporary behavioural disturbance predicted for Great Crested Grebe will not materially reduce the availability of shallow-subtidal foraging habitat or alter the range, timing or intensity of use of the SPA. For the remaining SCIs, the limited spatial and temporal overlap, widespread distribution of suitable alternative habitat and/or flexible use of the wider SPA mean that these conservation objective targets will not be undermined.

5.2.5.2. Mitigation measures

To minimise disturbance of subtidally foraging Great Crested Grebe within the native oyster grounds, active dredging shall avoid large aggregations (> 100 individuals) of this species that are foraging within the proposed dredge areas.

Where a large foraging aggregation of Great Crested Grebe is present within the dredging area, the vessel shall maintain 100 m separation from the aggregation and dredging shall be undertaken elsewhere within the licensed fishing grounds until the birds have moved naturally from the area.

5.2.5.3. Assessment conclusion

Above-water visual and noise disturbance is expected to result mainly in temporary localised effects on birds foraging close to an operating vessel. The main interaction pathway is with Great Crested Grebe using shallow subtidal habitat within the inner Lough Swilly area, including areas overlapping or adjoining the native oyster grounds. The effect on Great Crested Grebe is assessed as Slight.

For the remaining screened-in bird SCIs, interaction with active dredging is limited because their main feeding and roosting habitat is predominantly intertidal, lagoonal, supratidal or terrestrial; their subtidal use is scattered or concentrated outside the active oyster grounds; or suitable alternative habitat is widely available elsewhere within the SPA. Effects on these species are therefore assessed as Imperceptible or Not significant.

No significant effect on roosting birds is predicted. Subject to implementation of the proposed mitigation measure for large foraging aggregations of Great Crested Grebe, adverse effects on the integrity of Lough Swilly SPA from above-water visual and noise disturbance can be excluded.

5.2.6. Underwater Noise Disturbance

5.2.6.1. Impact Assessment

Underwater noise will arise from vessel engines, propellers, and the movement of the dredge across the seabed. These sources will produce intermittent, non-impulsive sound characteristic of routine small fishing-vessel operations. Twenty-five dredge licences were recorded in 2026, but this does not represent the number of vessels operating simultaneously. Noise will be generated by individual mobile vessels working over the oyster beds and will attenuate with distance from the source. The sound will not be emitted continuously from a fixed location or affect the entirety of the lough. Lough Swilly is subject to existing underwater noise from commercial fishing, aquaculture vessels, recreational craft and other marine activity and the baseline will not be significantly affected.

Harbour Porpoise

Harbour Porpoise may occur within Lough Swilly for foraging and transit. Harbour Porpoise relies on sound for navigation, communication and prey detection and may respond to approaching vessels through short-term avoidance or a change in direction. Engine and propeller noise from small fishing vessels is substantially different in magnitude and character from the high-energy impulsive sources associated with auditory injury.

The Project is not expected to generate sound levels capable of causing permanent or temporary auditory injury. A porpoise present close to an operating vessel may move away from the immediate area, but the source will be mobile and spatially limited. The activity will not create a continuous acoustic barrier, prevent movement through Lough Swilly or result in sustained masking of biologically important sounds.

The wider lough will remain available for foraging and movement during individual dredging events. Any behavioural response will be temporary and reversible and will not affect Harbour Porpoise distribution, access to suitable habitat, prey availability or population condition.

Atlantic Salmon

Atlantic Salmon associated with the Leannan River SAC may pass through Lough Swilly during adult or smolt migration. Vessel and dredging noise could cause a brief local behavioural response if a fish passes close to an operating vessel. However, the source will occupy only a small part of the available water body at any one time.

The Project will not generate a continuous noise source across a migratory route or create a physical or acoustic barrier between the Leannan River and coastal waters. Migrating salmon will be able to pass around an operating vessel, and no effect on migration success, access to freshwater habitat, survival or recruitment is predicted.

5.2.6.1. Mitigation Measures

No additional mitigation measures are proposed for this impact pathway.

5.2.6.2. Assessment conclusion

Underwater noise generated by the Project will comprise intermittent, non-impulsive sound from small fishing-vessel engines, propellers and operation of the oyster dredge. Noise will be associated with individual mobile vessels, will attenuate with distance and will not form a continuous acoustic source or barrier across Lough Swilly.

For Harbour Porpoise, the Project is not expected to generate sound levels capable of causing auditory injury. Short-term behavioural responses, including local avoidance of an operating vessel, may occur but will be temporary and reversible. The activity will not restrict movement within the SAC, result in sustained exclusion from suitable habitat or materially affect foraging opportunities or population condition.

For Atlantic Salmon associated with the Leannan River SAC, any response to vessel or dredging noise will be localised and temporary. The Project will not create an acoustic barrier to migration or prevent movement between the Leannan River and coastal waters, and no effect on migration success, survival or recruitment is expected.

Underwater noise from the Project will therefore not undermine the relevant Conservation Objectives for Harbour Porpoise in Lough Swilly SAC or Atlantic Salmon in the Leannan River SAC. Adverse effects on the integrity of these European sites arising from underwater noise disturbance can be excluded in light of the best scientific knowledge available. No additional mitigation is required for this impact pathway.

5.2.7. Biosecurity

5.2.7.1. Impact Assessment

A biosecurity pathway may arise where vessels, dredges, ropes, stock or other fishing equipment are moved between water bodies while carrying biofouling organisms, sediment, retained water, shell material, pathogens or parasites. Such movements can contribute to the introduction or secondary spread of non-native species and disease-causing organisms where equipment is transferred between areas of different ecological or disease status (McKindsey *et al.*, 2007; Watson *et al.*, 2009; Padilla *et al.*, 2011).

The principal pathway is the movement of vessels and dredging equipment between Lough Swilly and other fishing areas. Native oyster (*Ostrea edulis*) is indigenous to Ireland, and the Project concerns the harvesting of an existing wild stock rather than the introduction or relaying of cultivated oysters into Lough Swilly; the activity does not create a direct pathway through imported stock or non-local oyster genotypes.

Lough Swilly supports a naturalised Pacific oyster (*Magallana gigas*) population, and the non-native slipper limpet (*Crepidula fornicata*) has been recorded at oyster sites within the lough. The parasite *Bonamia ostreae* has also been detected in native oysters. These records establish their presence but do not describe their current distribution across all oyster grounds. Where fishing equipment retains live oysters or attached organisms, its movement between grounds or water bodies provides a potential transfer pathway. Retained

oysters, shell, sediment and other biological material on dredges and handling equipment could therefore provide a pathway for transfer between grounds as well as between water bodies.

Without controls, the transfer of retained biological material on vessels and fishing equipment could introduce or redistribute non-native organisms or pathogens, potentially affecting the natural condition of the *Ostrea edulis* dominated community within Estuaries [1130] in Lough Swilly SAC. An adverse effect on the integrity of Lough Swilly SAC arising from this pathway cannot therefore be excluded in view of the conservation objective for Estuaries [1130]. Mitigation is required to control the movement of retained oysters and attached organisms on fishing equipment. The measures set out below address material retained during fishing, its handling within the lough, and the movement of vessels and equipment between water bodies.

5.2.7.2. Mitigation Measures

The following measures will be secured through the Project's licence conditions and implemented by fishery operators:

- Before dredges, ropes, catch containers or other oyster-handling equipment used in one bay are used in another, operators will remove retained oysters, shell and sediment. Gear and catch containers will be checked for non-native species including Pacific oysters (*Magallana gigas*) and slipper limpets (*Crepidula fornicata*), then cleaned and disinfected before reuse. No oysters retained will be transferred between bays, including native oysters that could be infected with *Bonamia ostreae*.
- No live native oysters from another water body will be relayed in Lough Swilly. Undersized native oysters and native non-target organisms will be returned to the area of capture. Any shell/cultch laid in Lough Swilly that originated from another waterbody should be clean before use.
- Any non-native shellfish by-caught (such as pacific oyster) while fishing for native oyster will be retained.
- Operators will record movements of vessels and equipment between water bodies documenting cleaning/disinfecting gear. Unusual oyster mortality will be reported to the relevant authority.

5.2.7.3. Assessment conclusion

Provided that the biosecurity measures set out above are secured and implemented, adverse effects on the integrity of the relevant European sites arising from the Project's biosecurity pathway can be excluded in view of their conservation objectives.

5.3. Summary of Mitigation Measures

The following mitigation measures will apply to the licensed Lough Swilly native oyster fishery:

- Restrict native oyster dredging to the known distribution of native oyster beds within Lough Swilly SAC, based on the combined extent of native oyster bed mapped by NPWS and the MI.
- The revised dredging area shall be incorporated as an enforceable condition of the IFI oyster dredge licences and provided to licence holders in an appropriate mapped format.
- The permitted dredging area shall be reviewed against the most recent available Marine Institute native oyster stock survey information when licences are renewed or where updated survey information demonstrates a material change in native oyster distribution.
- An annual Total Allowable Catch (TAC) shall be set for native oysters in Lough Swilly at 40% of the total pre-fishery raised biomass of native oysters ≥ 76 mm for Lough Swilly, for the most recent available survey year where pre-fishery raised biomass is provided by the Marine Institute.
- At least 50 hectares of the native oyster beds in Lough Swilly shall be closed to commercial dredging for native oysters during each fishing season. The closed area may remain in the same location between years or may operate as part of a rotational closure system. The closed area defined must comprise 50 ha of native oyster bed as defined by the marine institute for Lough Swilly.
- Active dredging shall avoid large aggregations (> 100 individuals) of Great Crested Grebe where birds are observed feeding within the dredge areas. Where a large foraging aggregation is present within the immediate dredging area, the vessel shall maintain 100 m separation and dredging shall be undertaken elsewhere until the birds have moved naturally.
- Before dredges, ropes, catch containers or other oyster-handling equipment used in one bay are used in another, operators will remove retained oysters, shell and sediment. Gear and catch containers will be checked for non-native species including Pacific oysters (*Magallana gigas*) and slipper limpets (*Crepidula fornicata*), then cleaned and disinfected before reuse. No oysters retained will be transferred between bays, including native oysters that could be infected with *Bonamia ostreae*.
- No live native oysters from another water body will be relayed in Lough Swilly. Undersized native oysters and native non-target organisms will be returned to the area of capture. Any shell/cultch laid in Lough Swilly that originated from another waterbody should be clean before use.
- Any non-native shellfish by-caught, such as Pacific oyster, while fishing for native oyster will be retained.
- Operators will record movements of vessels and equipment between water bodies documenting cleaning/disinfecting gear. Unusual oyster mortality will be reported to the relevant authority.

5.4. Assessment of In-Combination Effects

As outlined in **section 4.6**, the plans or projects that might act in-combination with the proposed Project include developments, maritime pier maintenance activity, and existing and applied aquaculture sites. The potential for interaction with other plans or projects in-combination is assessed below.

Two threats and pressures in particular are highlighted in the Natura 2000 Standard Data Forms for the Lough Swilly SAC/SPA as causing negative impacts on the sites. Of particular relevance to the in-combination assessment are Marine and freshwater aquaculture [F01] and Benthic dredging [F02.02.05]. Marine and freshwater aquaculture is identified as a pressure within both Lough Swilly SAC and Lough Swilly SPA, while benthic dredging is identified as a Medium negative pressure within Lough Swilly SAC. These recorded pressures provide relevant contextual information for the assessment of potential interactions between the Project and existing or proposed activities within Lough Swilly.

The licensed and proposed aquaculture activities carried forward from Stage 1 comprise bivalve cultivation within Lough Swilly, including bottom-cultured blue mussel, Pacific oyster cultivation on trestles or basket systems, and suspended blue mussel cultivation using ropes and nets (**Table 5-9**). Access is either from the shore to intertidal sites by tractor or vehicle, or by boat from existing facilities including Buncrana Pier and Rathmullan Pier.

Potential in-combination pathways include benthic disturbance, suspended sediment and deposition, water quality, effects on supporting habitat and prey resources, above-water and underwater disturbance, and biosecurity. Commercial native oyster dredging has been established within Lough Swilly for many years, and the Project does not represent a new activity or an increase in dredging vessel numbers. Dredging vessels will not operate within aquaculture farm footprints, and the Project will not contribute to permanent habitat occupation associated with trestles, baskets or suspended culture structures. Native oyster dredging is not expected to cause deterioration in water quality, and suspended sediment effects have been assessed as localised, temporary and reversible.

Aquaculture servicing and harvesting may generate additional vessel movements within the lough, but the Project will not materially increase the existing oyster-fishing vessel baseline. Any overlap in vessel-related disturbance will therefore remain within the established background of fishing, aquaculture, recreational and service-vessel activity in Lough Swilly. No additional pathway has been identified whereby commercial native oyster dredging would materially increase effects on waterbirds, marine mammals or other conservation features associated with the identified aquaculture sites.

On this basis, the Project will not act in combination with the licensed and proposed aquaculture activities to adversely affect the integrity of Lough Swilly SAC or Lough Swilly SPA in view of their conservation objectives. No additional mitigation is required in respect of in-combination effects with aquaculture.

For the identified benthic dredging [F02.02.05] pressure, the proposed Buncrana Pier maintenance dredging under MUL260023 has the potential to act in combination with commercial native oyster dredging through seabed disturbance, sediment resuspension and deposition, effects on benthic habitats and prey resources, and vessel-related above-water and underwater disturbance. The maintenance dredging area is outside the licensed native oyster dredging area and there is no spatial overlap between the respective seabed disturbance footprints. Maintenance dredging would also be undertaken intermittently over a limited period during individual dredging events.

As assessed in **Section 5.2.2**, sediment resuspension and deposition from commercial native oyster dredging will be localised, temporary and reversible and is not expected to result in widespread or persistent smothering or deterioration of the relevant benthic communities. Any temporal overlap in vessel activity would occur within the existing background of fishing, aquaculture, recreational and service-vessel activity in Lough Swilly, and the Project will not increase the established number of oyster-dredging vessels. The spatial separation of the dredging footprints, temporary nature of the maintenance works, and absence of a persistent additive sediment or disturbance pathway mean that the Project will not act in combination with Buncrana Pier maintenance dredging to adversely affect the integrity of Lough Swilly SAC or Lough Swilly SPA in view of their conservation objectives. No additional mitigation is required in respect of this in-combination interaction.

The TEN-T Priority Route Improvement Project and associated three-span bridge crossing of the River Swilly could not be excluded at Stage 1 due to the hydrological connection between the works and Lough Swilly SAC and SPA. The proposed bridge is located outside the native oyster dredging area within the innermost part of Lough Swilly near Letterkenny. The TEN-T NIS identifies sediment mobilisation and pollution during construction as the principal pathways relevant to Lough Swilly SAC. The bridge has been designed with no temporary or permanent in-channel footprint, and the TEN-T NIS concludes that, with the project-specific mitigation measures incorporated into the development, no adverse effects on the integrity of Lough Swilly SAC or SPA will arise.

Commercial native oyster dredging is spatially separated from the bridge works and, as assessed in Section 5.2.2, sediment resuspension and deposition associated with the Project will be localised, temporary and reversible. The Project will not introduce a material water-quality pressure capable of acting additively with the temporary construction-related pathways identified for the TEN-T project. No additional source-pathway-receptor relationship has therefore been identified through which the two projects would combine to

undermine the conservation objectives of the relevant QIs or SCIs. Adverse effects on the integrity of the relevant European sites arising from the Project in combination with the TEN-T development can therefore be excluded. No additional mitigation is required specifically in respect of this in-combination interaction.

Having regard to the spatial and temporal characteristics of the retained plans and projects, the predicted effects identified in their respective environmental assessments, the Project-specific assessments presented in **Sections 5.2.1 - 5.2.7**, and the mitigation measures incorporated into the respective projects, no adverse effects on the integrity of the relevant European sites are predicted as a result of the Project acting in combination with the plans and projects assessed above. No additional mitigation is required specifically in respect of in-combination effects.

Table 5-9: Aquaculture sites and status in Lough Swilly.

Site code	Species	Cultivation method	Licensee	Applied / determined
T12-037A1	Blue mussel (<i>Mytilus edulis</i>)	Bottom culture	Lough Swilly Shellfish Growers Co-operative Society Ltd	Determined / licensed
T12-037A2	Pacific oyster (<i>Magallana gigas</i>)	Bags and trestles / trestles and baskets	Lough Swilly Shellfish Growers Co-operative Society Ltd	Determined / licensed
T12-037B1	Blue mussel (<i>Mytilus edulis</i>)	Bottom culture	Lough Swilly Shellfish Growers Co-operative Society Ltd	Determined / licensed
T12-037B2	Blue mussel (<i>Mytilus edulis</i>)	Bottom culture	Lough Swilly Shellfish Growers Co-operative Society Ltd	Determined / licensed
T12-037B4	Pacific oyster (<i>Magallana gigas</i>)	Bags and trestles / trestles and baskets	Lough Swilly Shellfish Growers Co-operative Society Ltd	Determined / licensed
T12-251A	Blue mussel (<i>Mytilus edulis</i>)	Bottom culture	Private	Determined / licensed
T12-251B	Pacific oyster (<i>Magallana gigas</i>) and Blue mussel (<i>Mytilus edulis</i>)	Trestles / trestles and baskets, Bottom culture	Private	Determined / licensed
T12-343A	Pacific oyster (<i>Magallana gigas</i>)	Bags and trestles	Private / Shannon Shellfish Ltd	Determined / licensed, with current review application
T12-330A	Blue mussel (<i>Mytilus edulis</i>)	Bottom culture	Fresco Seafood Ltd	Applied
T12-330B	Blue mussel (<i>Mytilus edulis</i>)	Bottom culture	Fresco Seafood Ltd	Applied
T12-330C	Blue mussel (<i>Mytilus edulis</i>)	Bottom culture	Fresco Seafood Ltd	Applied
T12-339A	Pacific oyster (<i>Magallana gigas</i>)	Bags and trestles	Lough Swilly Wild Oyster Society Ltd	Applied
T12-339B	Pacific oyster (<i>Magallana gigas</i>)	Bags and trestles	Lough Swilly Wild Oyster Society Ltd	Applied
T12-339C	Pacific oyster (<i>Magallana gigas</i>)	Bags and trestles	Lough Swilly Wild Oyster Society Ltd	Applied
T12-1027	Pacific oyster (<i>Magallana gigas</i>)	Bags and trestles	Private	Applied
T12-1028	Pacific oyster (<i>Magallana gigas</i>)	Bags and trestles	Private	Applied
T12-1020	Blue mussel (<i>Mytilus edulis</i>)	Ropes and nets / smart-farm system	Inish Oysters Ltd	Applied
T12-1021	Blue mussel (<i>Mytilus edulis</i>)	Ropes and nets / smart-farm system	Inish Oysters Ltd	Applied
T12-1022	Blue mussel (<i>Mytilus edulis</i>)	Ropes and nets / smart-farm system	Inish Oysters Ltd	Applied
T12-284A	Pacific oyster (<i>Magallana gigas</i>)	Flip-farm baskets	Atlantic Crab Ltd	Determined / licensed, with current renewal/review application

5.5. Conclusion

This report has been prepared having regard to the relevant provisions of Council Directive 92/43/EEC and the European Communities (Birds and Natural Habitats) Regulations 2011, as amended.

This NIS has been prepared because the Screening for Appropriate Assessment could not exclude, on the basis of objective scientific information, the possibility that the proposed licensing of commercial native oyster (*Ostrea edulis*) dredging in Lough Swilly, either alone or in combination with other plans or projects, may have likely significant effects on relevant European sites. The Project comprises an established seasonal fishery within defined dredging areas in Lough Swilly.

This NIS has examined and analysed, in light of the best scientific knowledge available, the potential effects of the proposed dredging on the Qualifying Interests of SACs and the Special Conservation Interests of SPAs brought forward to Stage 2, having regard to the relevant impact pathways and the conservation objectives of those European sites. In accordance with the Stage 2 Appropriate Assessment test, the assessment has considered whether adverse effects on site integrity can be excluded, taking account of the mitigation measures relied upon to avoid or reduce identified effects.

Mitigation measures have been identified where required to avoid adverse effects on the integrity of the relevant European sites in view of their conservation objectives. The TEN-T Priority Route Improvement Project, Buncrana Pier maintenance dredging, and relevant licensed and proposed aquaculture activities were carried forward from Stage 1 for in-combination assessment at Stage 2. Taking account of the mitigation measures specified for the Project and the relevant measures incorporated into those other projects, the Stage 2 assessment concludes that adverse effects on the integrity of Lough Swilly SAC and Lough Swilly SPA arising in combination can be excluded. No additional mitigation is required specifically for those in-combination interactions.

Following examination, analysis and evaluation of the relevant information, including the nature and extent of the predicted effects of the proposed dredging and the mitigation measures identified in this NIS, it is objectively concluded that the proposed licensing of commercial native oyster dredging in Lough Swilly will not adversely affect, either directly or indirectly, the integrity of any European site, either alone or in combination with other plans or projects. There is no reasonable scientific doubt in relation to this conclusion.

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7. Appendices

7.1. Appendix 1

Native oyster (*Ostrea edulis*) dredging impact study

Tralee Bay, Blacksod Bay & Lough Swilly

Inland Fisheries Ireland

Native oyster (*Ostrea edulis*) dredging impact study

Tralee Bay, Blacksod Bay & Lough Swilly

B. Dickerson, Dr A. Long, A. Khokhlova

AQUAFACT REF: P21371

2026

COMMERCIAL IN CONFIDENCE



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Report Approval Sheet

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Glossary of terms

Abbreviation	Full term
AA	Appropriate Assessment
DAFM	Department of Agriculture, Food and the Marine
DE	Dredge efficiency
HDI	Highest density interval
IFI	Inland Fisheries Ireland
IQR	Interquartile range
MarLIN	Marine Life Information Network
MI	Marine Institute
MLS	Minimum Landing Size
NIS	Natura Impact Statement
NPWS	National Parks and Wildlife Service
SAC	Special Area of Conservation
TAC	Total Allowable Catch

1. Introduction

1.1. Project Background

Inland Fisheries Ireland (IFI) is the statutory body responsible for the protection, management and conservation of the inland fisheries resource within the State under section 7 of the Inland Fisheries Act 2010. As part of its statutory functions, IFI administers oyster fishing licences authorising the use of oyster fishing engines within specified fishery districts. Section 277(1) of the Fisheries (Consolidation) Act 1959 makes it an offence to take oysters from an oyster fishery in a fishery district using an oyster fishing engine unless an oyster fishing licence is in force in respect of that engine and authorises its use in that fishery district.

The native oyster fisheries in Tralee Bay, Blacksod Bay and Lough Swilly occur within or in ecological connection with European sites. In exercising its licensing function, IFI is required to comply with the requirements of Article 6(3) of the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations 2011, as amended. This requires Screening for Appropriate Assessment to determine whether the licensed activity, either alone or in combination with other plans or projects, is likely to have a significant effect on a European site. Where likely significant effects cannot be excluded on the basis of objective scientific information, Appropriate Assessment is required before a licensing decision may be made.

IFI identified a requirement for a specific Native Oyster Dredging Impact Study to provide supporting scientific information for the Appropriate Assessment process associated with the proposed licensing of native oyster dredging. AQUAFAC, an APEM Group company, was commissioned to prepare one Dredging Impact Study covering Tralee Bay, Blacksod Bay and Lough Swilly, together with a separate Screening for Appropriate Assessment report for each fishery. Where a Screening report determines that likely significant effects cannot be excluded, a Natura Impact Statement may be required to provide the information necessary to inform Stage 2 Appropriate Assessment for the relevant fishery.

This report provides an evidence-based review of the nature, scale, frequency, duration, persistence and reversibility of the potential effects arising from native oyster dredging on *Ostrea edulis* and its associated benthic community within Annex I habitats. The assessment considered whether the activity could affect the qualifying interests, Special Conservation Interests or conservation objectives of the relevant European sites. Particular regard was given to native oyster populations and *Ostrea edulis* dominated communities. In Tralee Bay, the assessment also considered potential interactions with other sensitive benthic communities, including *Mytilus*, *Zostera* and *Sabellaria* dominated communities, where a credible source pathway receptor relationship was identified.

The assessment reviewed the relevant conservation objectives and supporting documents, the spatial relationship between the proposed dredging areas and protected benthic communities, Marine Institute stock survey data, available fishery management and licensing information, and relevant published scientific evidence. Each fishery was assessed separately, having regard to its regulatory framework, management arrangements, fishing activity, stock condition and relationship with the relevant European sites. Existing management measures were considered when evaluating the activity. Where the available evidence indicated that additional controls may be required, further Fisheries Management Measures were identified for consideration through the Appropriate Assessment and licensing processes.

1.2. Study Objectives and Scope

The purpose of this desktop-based Dredging Impact Study was to provide Inland Fisheries Ireland with an evidence-based technical assessment of the potential effects of licensed commercial native oyster dredging in Tralee Bay, Blacksod Bay and Lough Swilly. The report was prepared to inform the Appropriate Assessment process, including the separate Stage 1 Screening for Appropriate Assessment reports required for each area.

The assessment considered the potential for licensed native oyster dredging to give rise to likely significant effects on the qualifying interests, Special Conservation Interests and Conservation Objectives of the relevant Natura 2000 sites. Particular regard was given to native oyster populations, *Ostrea edulis* dominated communities where identified, associated sedimentary and biogenic communities, and other sensitive habitats and species for which a credible source-pathway-receptor relationship was identified.

The report reviewed the site-specific Conservation Objectives, the mapped relationship between proposed dredging areas and relevant habitats and communities, Marine Institute native oyster stock information, available fishery management and licensing information, and relevant published scientific evidence. It assessed the nature, scale, frequency, duration, persistence, and reversibility of the identified dredging pathways. The assessment also identified limitations arising from the absence of data such as effort and post-dredging ecological response data.

Where the available evidence indicated that potential effects could not be excluded with the required degree of scientific certainty, the report identified fisheries management measures for consideration in subsequent stages of the Appropriate Assessment process.

1.3. Description of the licensed native oyster fisheries

1.3.1. License numbers over time

Commercial native oyster dredging in Tralee Bay, Blacksod Bay and Lough Swilly is undertaken using a nominal four foot dredge, equivalent to approximately 1.22 m in width. The dredge is deployed from the rear or side of a fishing vessel and towed in contact with the seabed to capture native oysters. Publicly available information does not specify the weight, tooth or blade configuration, bag construction, tow speed, tow duration, number of tows or daily operating hours associated with oyster dredging in each bay.

The operating periods and temporal controls differ among the three fisheries. Native oyster dredging in Blacksod Bay occurs mainly during February and March, with a small number of fishing days also occurring between September and December. Annual fishing effort is low and usually comprises no more than eight fishing days, although a few additional fishing days may occur in some years.

Commercial native oyster dredging in Tralee Bay and Lough Swilly are undertaken from 1st September to 30th April inclusive, with no commercial dredging taking place between May and August. This cessation encompasses the main spawning and larval settlement period for native oysters. The specific opening dates, fishing days and catch controls applied within the wider authorised period are determined through the management of the fishery.

The licensing and management arrangements also differ among the fisheries. The Tralee Bay native oyster fishery is managed under the Oyster Fishery Order for Brandon Bay, Tralee Bay and Ballyheige Bay, 1981. The Order grants the Tralee Oyster Fisheries Society Limited rights to manage and regulate the oyster beds within the defined area. Native oyster dredging in Blacksod Bay operates within aquaculture licensed areas managed by the North Mayo Oyster Development Co-operative and is also subject to individual IFI oyster dredge licensing. Lough Swilly operates as a public native oyster fishery. No Fishery Order, aquaculture licence for the native oyster fishery or implemented statutory fishery management plan is in effect for Lough Swilly, although individual fishers must apply for a IFI oyster dredge licensing and the applicable vessel registration requirements.

Table 1-1 summarises the main management and licensing framework identified for each fishery and is adapted from Tully and Clarke (2012).

Table 1-1: Management orders for relevant dredge oyster fisheries, adapted from Tully & Clarke, 2012.

Site	SAC	Licensing			Other bivalve species
		Aquaculture	Fishery Order	Public fishery	
Tralee Bay	Yes		Yes		
Blacksod Bay	Yes	Yes			
Lough Swilly	Yes			Yes	Mussels, Pacific Oyster

The naturalised Pacific oyster *Magallana gigas* population in Lough Swilly represents an additional ecological pressure on the native oyster population through potential competition for habitat and other resources (Tully and Clarke, 2012; Marine Institute, 2025).

Table 1-2 presents the annual oyster dredge licence data provided by IFI for the period from 2010 to 2026. Licence numbers indicate the number of operators authorised to participate in a fishery but do not establish the number of active vessels or the intensity of dredging. A licence may not be used during a particular year, while fishing days, numbers of tows, catches and the spatial concentration of activity may vary among licence holders and between years. The licence data were therefore used as an indicator of potential participation and not as a quantitative measure of fishing effort.

Table 1-2: Oyster dredge licences issued by IFI from 2010 to 2026.

Year	Bangor District (includes Blacksod Bay)	Tralee Bay	Lough Swilly
2026	26	79	24
2025	32	79	24
2024	32	79	24
2023	33	79	24
2022	33	79	24
2021	31	79	24
2020	32	79	24
2019	33	79	24
2018	29	79	24
2017	32	79	24
2016	34	79	24
2015	32	79	24
2014	32	78	24
2013	34	78	24
2012	34	78	24
2011	17	78	22
2010	4	0	16

The available licence data for Blacksod Bay relate to the wider Bangor District which includes the Blacksod Bay native oyster fishery. IFI indicated that approximately 70% of licence holders would potentially fish Blacksod Bay. In 2026, this was equivalent to approximately 26 of the 37 licences issued within the Bangor District.

Licence numbers were highest in Tralee Bay, with between 78 and 79 licences issued annually from 2011 to 2026. In Lough Swilly, the number of oyster dredge licences issued increased from 16 in 2010 to 22 in 2011 and 24 in 2012. Licence numbers subsequently remained constant, with 24 licences issued annually from 2012 to 2026. This indicates that potential fishery participation has remained stable over this period.

1.3.2. Blacksod Bay

This oyster bed was originally anthropogenically seeded and managed in the 19th century, before lying dormant until the 20th century when fishers from Mayo, Galway and Donegal started fishing the beds in the late 1970s. The native oyster beds within the aquaculture licensed areas of Inner Blacksod Bay are managed by the North Mayo Oyster Development Co-operative. Recent membership numbers are approximately 143 participants. The Co-operative was formed in 1983 in response to concerns regarding overexploitation of the fishery. In 1993 the Co-operative was successful in their application for an aquaculture licence for three areas. Only eligible Co-operative members operating registered vessels and holding an oyster dredge licence issued by Inland Fisheries Ireland may fish within the licensed areas. Available information indicates that the Co-operative may further restrict the areas fished, fishing hours and number of fishing days within the wider period authorised for dredging. Oyster beds have been closed for several years over the course of this fishery, to support stock recovery. Fishing occurs mainly during February and March, with a small number of fishing days also occurring between September and December. Annual fishing effort is usually limited to no more than eight fishing days, although a few additional fishing days may occur in some years. The aquaculture licence numbers for the three zones where native oysters are fished are T10-028A, T10-028B, and T10-028C.

During the 1980s, the Co-operative purchased mussel shell cultch and distributed it across the oyster beds to provide settlement substrate and support recruitment. Bags of mussel shell were also suspended from buoys in areas where oyster spatfall was known to occur. Following settlement, the shell and attached spat were transferred to the seabed. Other measures implemented by the Co-operative included the hand collection of broodstock from shallow areas of the bay and transferring them to deeper water.

The native oyster dredging involves the use of a four-foot dredge, which is fished from the side or back of a boat. The boundaries of the native oyster sites have been redefined based on the findings of a previous Natura Impact Statement (NIS) assessment carried out in 2017. This report found that the proposed licence areas were incompatible with the conservation of marine habitats and several sensitive marine community types.

Blacksod Bay forms part of the Mullet/Blacksod Bay Complex SAC [000470], which supports a range of marine, coastal, freshwater and terrestrial conservation features. The conservation features particularly relevant to oyster dredging are Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160] and Reefs [1170] (NPWS, 2013a; NPWS, 2014a).

1.3.3. Tralee Bay

The Tralee Bay native oyster fishery is managed under the Oyster Fishery Order (Brandon Bay, Tralee Bay and Ballyheige Bay), 1981, under sections 256 and 260 and subject to section 267 of the Fisheries (Consolidation) Act, 1959 (No. 14 of 1959) and the Foreshore Act, 1933 (No. 12 of 1933). The Order grants the Tralee Oyster Fisheries Society Limited exclusive rights to deposit, propagate, dredge, fish for and take oysters within the area defined by the Order and to maintain and regulate the oyster beds. Commercial fishing is undertaken during a September to April (inclusive) season and is informed by annual Marine Institute stock surveys, catch controls, and supplemented by local experience and historical knowledge of the fishery, as determined by the Society on an annual basis. No commercial dredging takes place between May and August (inclusive) as this is when recruitment is occurring for native oyster and the main growth period. The statutory Minimum Landing Size is 76 mm, while a voluntary Minimum Landing Size of 78 mm is applied within the Tralee Bay fishery as designated by the Society. A total of 79 dredge licences were issued for Tralee Bay in 2026. This number represents authorised participation and does not establish that all of these vessels will actually fish.

Tralee Bay forms part of the Tralee Bay and Magharees Peninsula, West to Cloghane SAC [002070]. The conservation features of main relevance to oyster dredging are Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160], Estuaries [1130], and Reefs [1170]. The *Ostrea edulis* dominated community has an indicative mapped extent of approximately 650 ha within the Large shallow inlets and bays habitat and occurs in two main areas; within the inner bay between Fenit and Spa and in the outer bay off Castlegregory, occurring at depths of approximately 0 to 8 m (NPWS, 2014d).

1.3.4. Lough Swilly

Lough Swilly operates as a public native oyster fishery with no statutory fishery management plan in place. The Lough Swilly Wild Oyster Society Limited was established to represent members of the native oyster fishing community and has promoted the conservation and management of the stock since 2000. The proposed Fishery Natura Plan for 2012–2017 recorded 29 members but also confirmed that the Society did not have legal authority to manage the fishery. The plan was not implemented and did not establish a statutory management framework.

Fishers are required to hold an oyster dredge licence issued by Inland Fisheries Ireland, and participating vessels must meet the applicable sea-fishing vessel registration and licensing requirements, but being a member of the Society is not required to fish for native oysters. A total of 24 dredge licences were recorded for Lough Swilly in 2026. This does not establish the number of licence holders actively fishing or the associated dredging effort. The fishery is regulated by the Minimum Landing Size of 76 mm and the season is operated from the 1st of September to the 30th of April (inclusive).

No current Total Allowable Catch, stock linked annual catch limit or equivalent control on native oyster dredging has been identified for Lough Swilly.

Lough Swilly is situated in the northern part of Co. Donegal, with the inner part of the lough designated as the Lough Swilly SAC [002287]. The conservation feature that are most relevant to oyster dredging is Estuaries [1130], as this encompasses the intertidal and subtidal benthic communities within which the fishery operates. A substantial naturalised population of Pacific oyster (*Magallana gigas*) has been established in the lough,

2. Baseline review of Conservation Objectives and Qualifying Interests

The conservation objectives for Lough Swilly SAC, Tralee Bay SAC and Mullet/Blacksod Bay Complex SAC were reviewed to identify the qualifying interests, community types, and conservation targets that may be affected by native oyster dredging. Particular attention was given to the objective to conserve *Ostrea edulis* dominated communities in a natural condition. For Tralee Bay, the assessment considers potential interactions with other sensitive benthic communities, including *Mytilus*, *Zostera* and *Sabellaria* dominated communities, where these overlap with or occur adjacent to proposed dredging areas. The review identified the key ecological attributes that must be maintained, including habitat distribution, community extent, community structure, characterising species, and the requirement to avoid significant or persistent disturbance. Conservation objectives are the site-specific objectives established to maintain or restore the favourable conservation condition of these features.

For the purposes of this assessment, the scope was limited to the effects of commercial native oyster dredging on *Ostrea edulis*, *O. edulis* dominated communities and other relevant benthic communities identified within the Annex I habitat Qualifying Interests of the relevant SACs, including *Zostera*, *Mytilus*, *Sabellaria* and *Serpula* dominated communities. Potential effects on other Qualifying Interests are outside the scope of this report and will be considered in the corresponding Screening for Appropriate Assessment (AA) reports.

2.1.1. Blacksod Bay

Blacksod Bay forms part of the Mullet/Blacksod Bay Complex SAC [000470], which supports a range of marine, coastal, freshwater and terrestrial conservation features. The Annex I habitat Qualifying Interests relevant to this assessment are Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160] and Reefs [1170]. This assessment considered the effects of commercial native oyster dredging on *Ostrea edulis* and relevant benthic communities associated with these habitats. Potential effects on the remaining Qualifying Interests are outside the scope of this report and will be considered in the corresponding Screening for Appropriate Assessment.

The conservation objective for Mudflats and sandflats not covered by seawater at low tide [1140] is to maintain its favourable conservation condition. This requires the permanent habitat area to remain stable or increase, subject to natural processes, and its constituent benthic communities to be conserved in natural condition (NPWS, 2014a). This conservation feature is relevant where dredging occurs within or adjacent to intertidal areas, as bottom towed fishing gear and associated sediment redistribution could disturb sediments and affect the associated infaunal communities (NPWS, 2014c).

The conservation objective for Large shallow inlets and bays [1160] is to maintain its favourable conservation condition, including the extent and natural condition of its constituent communities. These include extensive sand communities and sensitive *Zostera*, maerl and *Serpula* dominated communities (NPWS, 2014a; NPWS, 2014c). These communities are regarded as keystone communities of high ecological importance and low resilience, and significant anthropogenic disturbance to their extent or quality should be avoided (NPWS, 2014c). As this conservation feature encompasses much of the marine environment within which the oyster fishery operates, the spatial relationship between dredging activity and these communities is a primary consideration.

The conservation objective for Reefs [1170] is to maintain its favourable conservation condition, including the extent, distribution and natural condition of its constituent reef communities. These include intertidal reef, sheltered subtidal reef and *Laminaria* dominated community complexes, together with the sensitive *Serpula* dominated community (NPWS, 2014a; NPWS, 2014c). This conservation feature is relevant where dredging overlaps or occurs adjacent to reef habitat, as direct contact or associated sediment redistribution could affect reef structure, attached biological communities and habitat complexity.

Native oyster *Ostrea edulis* is not a qualifying interest of the SAC but is both the target species of the fishery and an ecological component of the bay's benthic communities, identified as a notable species within the Conservation Objectives document. Native oysters have been recorded within sediment communities in the inner bay (NPWS, 2013a; NPWS, 2014c). Oyster removal, incidental mortality and disturbance of shell material or cultch may therefore be relevant to the objective of maintaining these communities in natural condition.

On the basis of the source-pathway-receptor relationships identified above, Large shallow inlets and bays [1160], Mudflats and sandflats not covered by seawater at low tide [1140] and Reefs [1170] require detailed consideration in the subsequent impact assessment. The assessment considers whether the location, extent, intensity, and frequency of oyster dredging, could alter the extent, distribution, structure, function or natural condition of these conservation features such that the applicable site-specific attributes and targets could not be achieved.

Table 2-1 below shows the site-specific conservation objectives and qualifying interests relevant to the dredging impact assessment on *O. edulis*.

Table 2-1: Conservation features of the Mullet/Blacksod Bay Complex SAC [000470] relevant to oyster dredging on *Ostrea edulis*.

Qualifying interests	Relevant benthic communities	Site-specific objective	Potential interaction(s) with oyster dredging
Mudflats and sandflats not covered by seawater at low tide [1140]	Mobile sand with <i>Bathyporeia guilliamsoniana</i> community; Sand with <i>Angulus tenuis</i> and <i>Pygospio elegans</i> community complex	To maintain	Potentially relevant where dredging or associated sediment redistribution interacts with intertidal sediment communities.
Large shallow inlets and bays [1160]	<i>Zostera</i> dominated community; Maërl dominated community; <i>Serpula vermicularis</i> dominated community complex; Sand with <i>Angulus tenuis</i> and <i>Pygospio elegans</i> community complex; Sand with <i>Gastrosaccus spinifer</i> community complex; Fine sand with <i>Angulus fabula</i> community complex; Intertidal reef community complex; Sheltered subtidal reef community complex; <i>Laminaria</i> dominated community complex	To maintain	Main SAC receptor because it encompasses much of the marine environment within which the oyster fishery operates and includes sensitive sediment, <i>Zostera</i> -, maërl- and <i>Serpula</i> -dominated communities.
Reefs [1170]	<i>Serpula vermicularis</i> dominated community complex; Intertidal reef community complex; Sheltered subtidal reef community; <i>Laminaria</i> dominated community complex.	To maintain	Potentially relevant where dredging overlaps or occurs adjacent to reef habitat and associated communities, through direct seabed contact or sediment redistribution.

2.1.1.1. Spatial relationship between the licensed dredging area and benthic communities

The spatial relationship between the licensed native oyster dredging area and the mapped benthic communities of the Mullet/Blacksod Bay Complex SAC was examined using the NPWS marine community dataset (NPWS, 2025). **Figure 2.1** shows the distribution of mapped benthic community types in Blacksod Bay in relation to the licensed dredging area. This spatial comparison identifies the communities that potentially occur within the area available to the fishery and therefore require consideration in the dredging impact assessment.

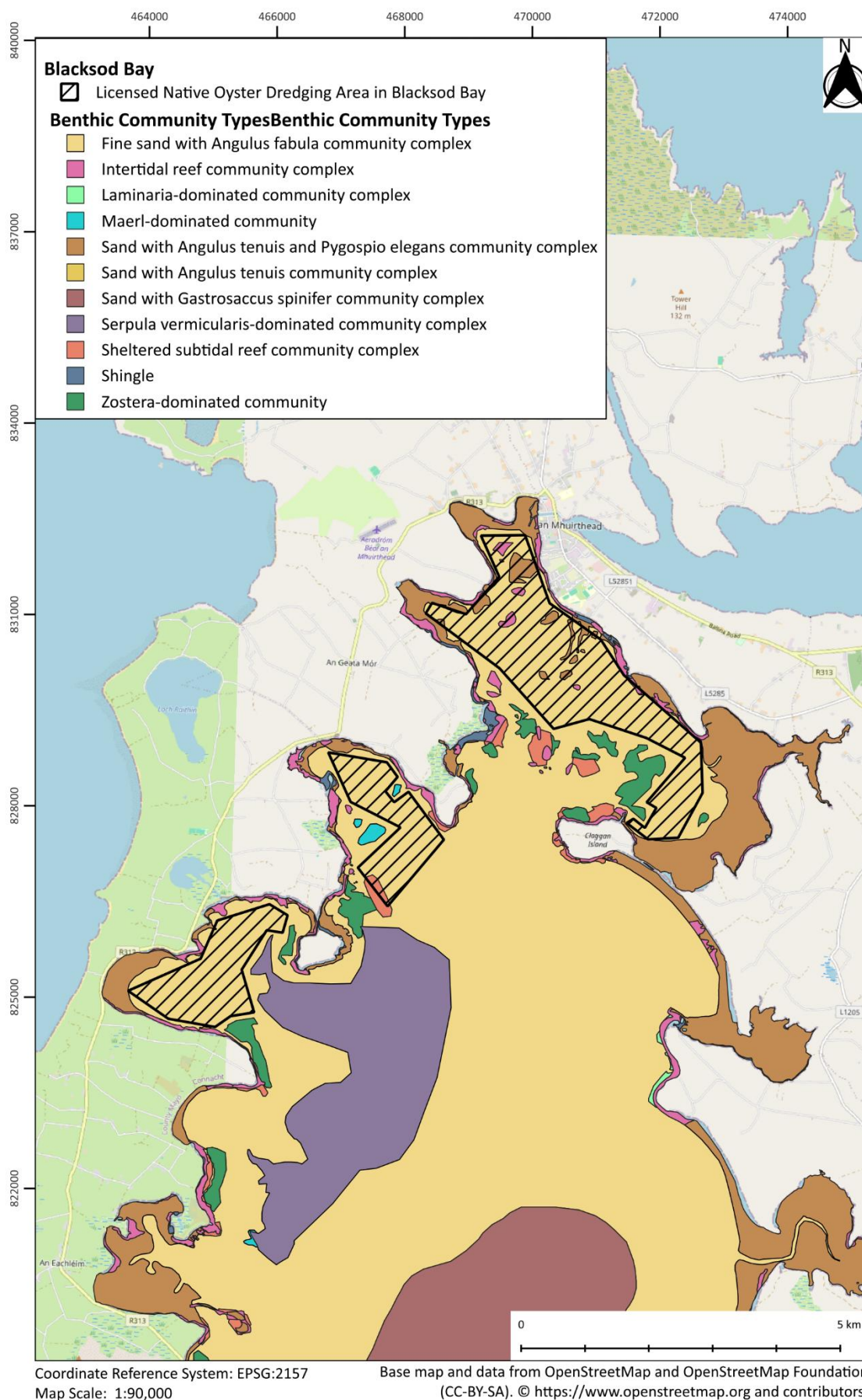


Figure 2.1: Licensed native oyster dredging area and distribution of benthic community types in Blacksod Bay.

Table 2-2 shows the area and percentage cover of mapped benthic community types within the licensed native oyster dredging area in Blacksod Bay. Areas were calculated from the spatial intersection of the licensed native oyster dredging area with mapped benthic community polygons. Percentage cover represents the proportion of the total licensed dredging area occupied by each mapped community type. The total licensed dredging area is approximately 9,499,923 m² (9.500 km²).

Table 2-2: Area and percentage of the licensed native oyster dredging area in Blacksod Bay occupied by each mapped benthic community type.

Benthic Community Type	Area (km ²)	Percentage covered (%)
Sheltered subtidal reef community complex	0.06	0.59
Intertidal reef community complex	0.11	1.13
Sand with <i>Angulus tenuis</i> and <i>Pygospio elegans</i> community complex	0.35	3.70
Fine sand with <i>Angulus fabula</i> community complex	8.99	94.58

The licensed native oyster dredging area in Blacksod Bay is predominantly associated with the Fine sand with *Angulus fabula* community complex, which accounts for approximately 94.6% of the licensed dredging polygon. The Sand with *Angulus tenuis* and *Pygospio elegans* community complex represents a further approximately 3.7%, while the Intertidal reef community complex accounts for approximately 1.1%. The Sheltered subtidal reef community complex represents approximately 0.6% of the licensed dredging area.

2.1.2. Tralee Bay

Tralee Bay forms part of the Tralee Bay and Magharees Peninsula, West to Cloghane SAC [002070], which supports a range of marine, coastal, freshwater and terrestrial conservation features. The Annex I habitat Qualifying Interests relevant to this assessment are Mudflats and sandflats not covered by seawater at low tide [1140] and Large shallow inlets and bays [1160]. Estuaries [1130] may also be relevant where fishing activity extends into the mapped estuarine habitat, while Reefs [1170] are relevant where the proposed dredge areas overlap mapped Intertidal and Subtidal reef community complexes. This assessment considered the effects of commercial native oyster dredging on *Ostrea edulis* and relevant benthic communities associated with these habitats. Potential effects on the remaining Qualifying Interests are outside the scope of this report and will be considered in the corresponding Screening for Appropriate Assessment.

The conservation objective for Mudflats and sandflats not covered by seawater at low tide [1140] is to maintain its favourable conservation condition. This requires the permanent habitat area of approximately 1,685 ha to remain stable or increase, subject to natural processes. The objectives also require the extent and quality of the *Zostera*, *Mytilus* and *Sabellaria* dominated communities to be maintained, and the sedimentary

communities, including the *Ostrea edulis* dominated community, to be conserved in natural condition (NPWS, 2026). This conservation feature is relevant where dredging occurs within intertidal or shallow subtidal areas, as bottom towed fishing gear may disturb sediments and affect the associated benthic communities.

Large shallow inlets and bays [1160] is the conservation feature of significant relevance because it encompasses large amounts of the marine environment within which the oyster fishery operates. Its conservation objective is to maintain its favourable conservation condition, including the permanent habitat area of approximately 10,130 ha and the extent, quality and natural condition of its constituent communities. These include *Zostera*, *Mytilus* and *Sabellaria* dominated communities, sedimentary benthic communities and intertidal, subtidal and *Laminaria* dominated reef communities.

The *Ostrea edulis* dominated community is specifically included among the communities that must be conserved in natural condition. It has an indicative mapped extent of approximately 650 ha within the Large shallow inlets and bays habitat and occurs in two key areas: within the inner bay between Fenit and Spa and in the outer bay off Castlegregory, at depths of approximately 0 to 8 m (NPWS, 2014). As native oyster is the target species of the fishery, the conservation objective for this community is directly relevant to the assessment of oyster removal, incidental mortality, disturbance of shell and cultch, and changes to the associated benthic assemblage.

The *Zostera*, *Mytilus* and *Sabellaria* dominated communities are identified by NPWS as keystone communities of particular ecological importance due to their physical complexity and the habitats they provide for other species. The location of oyster dredging in relation to these communities should therefore be established, particularly where dredging occurs in shallow water or close to the margins of mapped sensitive habitats.

The conservation objectives for Estuaries [1130] and Reefs [1170] are also to maintain their favourable conservation condition. The relevance of Estuaries will depend on whether the fishing footprint overlaps the mapped estuarine habitat or its associated sedimentary communities. Reef habitat is relevant where dredging may contact or occur adjacent to intertidal, subtidal, *Laminaria*, *Mytilus* or *Sabellaria* dominated reef communities. Direct contact could abrade reef surfaces, damage biogenic structures or dislodge attached organisms. Available reef and community mapping is partly based on spatial interpolation and may underestimate small-scale or steeply sloping reef features.

NPWS estimated the mapped extent of the sensitive benthic communities relevant to the licensed dredging areas. Within Large shallow inlets and bays [1160], the *Zostera* dominated community complex was estimated at approximately 350 ha, the *Mytilus* dominated community at 11 ha and the *Sabellaria* dominated community complex at 7 ha. Within Reefs [1170], the Intertidal reef community complex was estimated at approximately 221 ha, the Subtidal reef community complex at approximately 2,499 ha and the *Laminaria*-dominated reef

community complex at approximately 117 ha. NPWS noted that the mapped extent of reef communities is likely to underestimate their actual area because areas of sheer and steeply sloping rock are not fully represented (NPWS, 2014).

Table 2-3 below shows the conservation features, their site-specific objectives, and the potential interaction of oyster dredging on *O. edulis*.

On the basis of the source-pathway-receptor relationships identified above, Mudflats and sandflats [1140] and Large shallow inlets and bays [1160], particularly the *Ostrea edulis* dominated community, are the conservation features with the clearest potential pathways to effects from oyster dredging. The assessment considers the location, extent, intensity, and frequency of dredging in relation to the mapped oyster grounds and other sensitive benthic communities.

Other benthic communities relevant to native oyster dredging include the *Zostera* dominated community complex, *Mytilus* dominated community and *Sabellaria* dominated community complex. These are identified as keystone communities, with conservation targets requiring their extent and high quality to be maintained. The *Zostera* dominated community complex occurs intertidally from Derrymore Island to west of Blennerville, with smaller beds at Spa, Fermoy and Fahamore, and subtidally between Kilshannig Point, Castlegregory and Scraggane Point. The *Mytilus* dominated community occurs in Inner Tralee Bay between Derrymore Peninsula and Annagh Island, while the *Sabellaria alveolata* reef community is recorded on Derrymore Strand. The Mixed sediment with crustaceans, bivalves and polychaetes community complex and Sand with *Nephtys cirrosa* community complex are also particularly relevant because the *Ostrea edulis* dominated community occurs mainly within the former and extends into the latter in Inner Tralee Bay. The remaining sediment and reef communities are also required to be conserved in natural condition and may be affected where dredging causes direct seabed disturbance or the removal or displacement of characteristic fauna (NPWS, 2014d).

Table 2-3: Conservation features of the Tralee Bay and Magharees Peninsula, West to Cloghane SAC relevant to oyster dredging on *Ostrea edulis*.

Qualifying interest	Relevant benthic communities	Site-specific objective	Potential interaction with oyster dredging
Estuaries [1130]	<i>Zostera</i> dominated community complex; <i>Mytilus</i> dominated community; Sand to sandy mud with polychaetes and bivalves community complex; Mixed sediment with crustaceans, bivalves and polychaetes community complex; Intertidal reef community complex	To maintain	Potentially relevant where the fishing footprint or associated sediment redistribution interacts with the mapped estuarine habitat or its constituent benthic communities.
Mudflats and sandflats not covered by seawater at low tide [1140]	<i>Mytilus</i> dominated community; <i>Zostera</i> dominated community complex; <i>Sabellaria</i> dominated community complex; Sand to sandy mud with polychaetes and bivalves community complex; Sand with <i>Nephtys cirrosa</i> community complex; <i>Ostrea edulis</i> dominated community	To maintain	Potentially relevant where dredging or associated sediment redistribution interacts with intertidal areas, including the mapped <i>Ostrea edulis</i> dominated community.
Large shallow inlets and bays [1160]	<i>Mytilus</i> dominated community; <i>Zostera</i> dominated community complex; <i>Sabellaria</i> dominated community complex; Sand to sandy mud with polychaetes and bivalves community complex; Sand with <i>Nephtys cirrosa</i> community complex; Mixed sediment with crustaceans, bivalves and polychaetes community complex; <i>Ostrea edulis</i> dominated community; Intertidal reef community complex; Subtidal reef community complex; <i>Laminaria</i> dominated reef community complex	To maintain	Main marine receptor because it encompasses the oyster fishery and includes the <i>Ostrea edulis</i> dominated community and other sensitive benthic communities.
Reefs [1170]	<i>Mytilus</i> dominated community; <i>Sabellaria</i> dominated community complex; Intertidal reef community complex; Subtidal reef community complex; <i>Laminaria</i> dominated reef community complex	To maintain	Potentially relevant where dredging overlaps or occurs adjacent to rocky or biogenic reef and reef-associated communities.

2.1.2.1. Spatial relationship between the proposed dredging areas and benthic communities

The spatial relationship between the proposed dredge areas within Tralee Bay and the mapped benthic communities of Tralee Bay and Magharees Peninsula, West to Cloghane SAC was examined using the NPWS marine community dataset (NPWS, 2025). **Figure 2.2** shows the distribution of mapped benthic community types in Tralee Bay in relation to the two proposed dredge areas (Inner Tralee Bay and Outer Tralee Bay native oyster beds). The two areas were assessed separately as they represent distinct native oyster beds. This spatial comparison identifies the communities that potentially occur within the areas that the Tralee Co-op propose to dredge and therefore these areas are the focus of the dredging impact assessment for Tralee Bay.

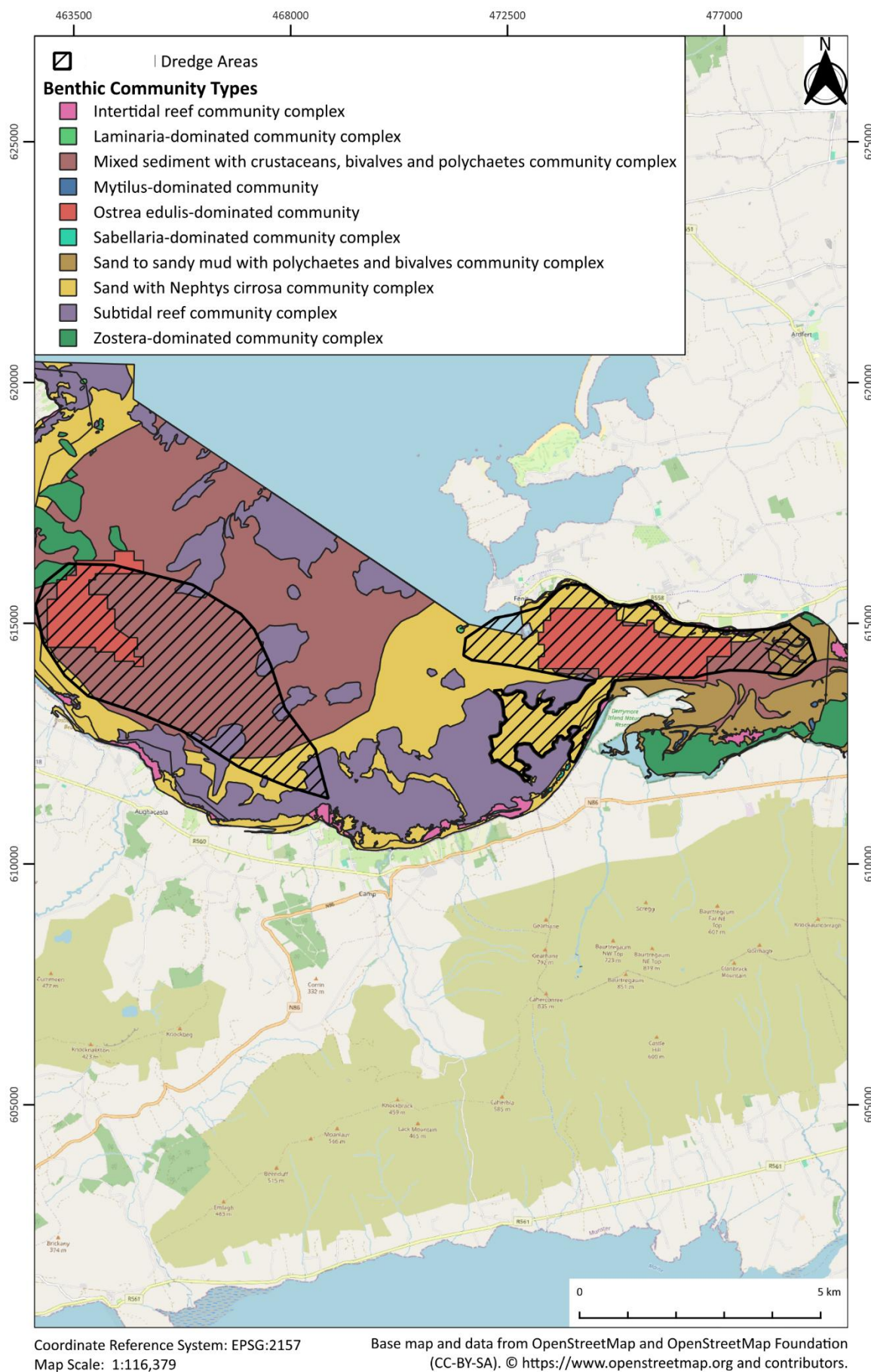


Figure 2.2: Proposed native oyster dredge areas and distribution of benthic community types in Tralee Bay.

Table 2-4 and **Table 2-5** show the area and percentage cover of mapped benthic community types within the proposed dredge areas in Tralee Bay. Areas were calculated from the spatial intersection of each proposed dredge area with mapped benthic community polygons (NPWS, 2025). Percentage cover represents the proportion of the respective proposed dredge areas occupied by each mapped community type. The total proposed dredge area in Outer Tralee Bay is 14,996,187 m² (14.996 km²) and 10,872,525 m² (10.873 km²) in Inner Tralee Bay.

Table 2-4: Area and percentage of the proposed dredge areas in Outer Tralee occupied by each mapped benthic community type.

Benthic Community Type	Area (km ²)	Percentage covered (%)
Sand with <i>Nephtys cirrosa</i> community complex	0.96	6.4
<i>Zostera</i> dominated community complex	0.11	0.7
<i>Ostrea edulis</i> dominated community	2.28	15.2
Mixed sediment with crustaceans, bivalves and polychaetes community complex	10.59	70.6
Subtidal reef community complex	1.05	7.0

The proposed dredge area in Outer Tralee Bay is predominantly associated with the Mixed sediment with crustaceans, bivalves and polychaetes community complex, which accounts for approximately 70.6% of the proposed dredging area. The *Ostrea edulis* dominated community represents approximately 15.2% of the proposed dredge area in Outer Tralee Bay, while the Subtidal reef community complex and Sand with *Nephtys cirrosa* community complex account for approximately 7.0% and 6.4% of that area, respectively. *Zostera* dominated community complex occupies a comparatively small proportion of the proposed dredge area (~ 0.7%).

Table 2-5: Area and percentage of the proposed dredging area in Inner Tralee occupied by each mapped benthic community type. 2.348% is unaccounted for as this area within the proposed dredge area is not within the SAC and is not mapped

Benthic Community Type	Area (km ²)	Percentage Covered (%)
Sand with <i>Nephtys cirrosa</i> community complex	4.79	44.10
<i>Ostrea edulis</i> dominated community	3.93	36.18
Mixed sediment with crustaceans, bivalves and polychaetes community complex	0.9998	9.20
Sand to sandy mud with polychaetes and bivalves community complex	0.73	6.68
Intertidal reef community complex	0.12	1.15
Subtidal reef community complex	0.04	0.34

Benthic Community Type	Area (km ²)	Percentage Covered (%)
<i>Mytilus</i> dominated community	0.0011	<0.1

The proposed dredge area in Inner Tralee Bay has a substantially greater proportional overlap with the *Ostrea edulis* dominated community, which accounts for approximately 36.18% of the proposed dredging area. The Sand with *Nephtys cirrosa* community complex represents approximately 44.10%, while the Mixed sediment with crustaceans, bivalves and polychaetes community complex and Sand to sandy mud with polychaetes and bivalves community complex account for approximately 9.2% and 6.68%, respectively. Smaller areas of Intertidal reef community complex (1.15%), Subtidal reef community complex (0.34%) and *Mytilus* dominated community (<0.1%) also occur within the proposed dredging area.

When expressed relative to the total mapped extent of the corresponding communities within the SAC, the proposed dredge areas overlap approximately 5.6% of the Intertidal reef community complex and approximately 4.4% of the Subtidal reef community complex. The Outer Tralee Bay proposed dredge area also overlaps approximately 3.2% of the *Zostera* dominated community complex mapped within Large shallow inlets and bays [1160], while the Inner Tralee Bay proposed dredge area overlaps approximately 0.9% of the *Mytilus* dominated community mapped within Reefs [1170]. No mapped overlap occurs with the *Sabellaria* dominated community complex or *Laminaria* dominated reef community complex. These values represent maximum mapped spatial overlap and do not indicate that the full overlapping area is dredged.

2.1.3. Lough Swilly

Lough Swilly is situated in the northern part of Co. Donegal, with the inner part of the lough designated as the Lough Swilly SAC [002287]. The SAC extends from below Letterkenny to north of Buncrana and supports seven conservation features. The Annex I habitat Qualifying Interests relevant to this assessment is Estuaries [1130], as this encompasses the intertidal and subtidal benthic communities within which the fishery operates. This assessment considered the effects of commercial native oyster dredging on *Ostrea edulis* and relevant benthic communities associated with these habitats. Potential effects on the remaining Qualifying Interests are outside the scope of this report and will be considered in the corresponding Screening for Appropriate Assessment.

The conservation objective for Estuaries [1130] is to maintain its favourable conservation condition. This requires the permanent habitat area of approximately 6,118 ha to remain stable or increase, subject to natural processes. The objective also requires the Fine sand community complex, Intertidal mixed sediment with polychaetes, Subtidal mixed sediment with polychaetes and bivalves, Muddy fine sand with *Thyasira flexuosa*,

Mud community complex and *Ostrea edulis* dominated community to be conserved in natural condition (NPWS, 2011a; NPWS, 2011c).

The *Ostrea edulis* dominated community is directly relevant because native oyster is the target species of the fishery. This community occurs both intertidally and subtidally and is concentrated in the southern part of the lough, extending from Ballygreen Point and Ballymoney Point southwards to Ardrumman and Ballylawn Point, with a smaller area recorded at Ballykenny Point (NPWS, 2011c). Oyster removal, incidental mortality and disturbance of shell, cultch and associated sediments may therefore be relevant to the objective of conserving this community in natural condition. The location, intensity and frequency of dredging should also be considered in relation to the other sediment communities through which the oyster beds extend.

On the basis of the source-pathway-receptor relationships identified above, Estuaries [1130], particularly the *Ostrea edulis* dominated and associated sediment communities, represents the SAC conservation feature with the clearest potential pathway to effects from oyster dredging.

Among the other constituent communities, the Intertidal mixed sediment with polychaetes and Subtidal mixed sediment with polychaetes and bivalves communities are particularly relevant because the *Ostrea edulis* dominated community occurs within both. The intertidal community extends along much of the western shore from Rathmullan to Ardrumman, around Inch Island and along sections of the eastern shore. The subtidal community occurs in the central and southern parts of the SAC, including Fahan Creek, the head of the lough and the subtidal slopes west of Inch Island. The Muddy fine sand with *Thyasira flexuosa* community extends from Ramelton to the southwestern margin of Inch Island, while the Mud community complex occurs within the inner estuarine shores of Fahan Creek, Ramelton Channel and the head of the lough. The Fine sand community complex is largely confined to the northern part of the SAC. Each community is subject to the conservation target requiring its natural condition to be maintained and may be affected where dredging causes direct seabed disturbance or the removal or displacement of characteristic polychaete and bivalve fauna (NPWS, 2011c).

Table 2-6: Conservation features of the Lough Swilly SAC relevant to oyster dredging on oyster beds.

Conservation feature	Relevant benthic communities / habitat associations	Site-specific objective	Potential interaction with oyster dredging
Estuaries [1130]	Fine sand community complex; Intertidal mixed sediment with polychaetes; Subtidal mixed sediment with polychaetes and bivalves; Muddy fine sand with <i>Thyasira flexuosa</i> ; Mud community complex; <i>Ostrea edulis</i> dominated community.	To maintain	Main SAC receptor because it encompasses the oyster fishery and includes the <i>Ostrea edulis</i> dominated and associated sediment communities.

2.1.3.1. Spatial relationship between the licensed dredging area and benthic communities

The spatial relationship between the licensed native oyster dredging area and the mapped benthic communities of Lough Swilly SAC was examined using the NPWS marine community dataset (NPWS, 2025). **Figure 2.3** shows the distribution of mapped benthic community types in Lough Swilly in relation to the licensed dredging area. This spatial comparison identifies the communities that potentially occur within the area available to the fishery and therefore require consideration in the dredging impact assessment.

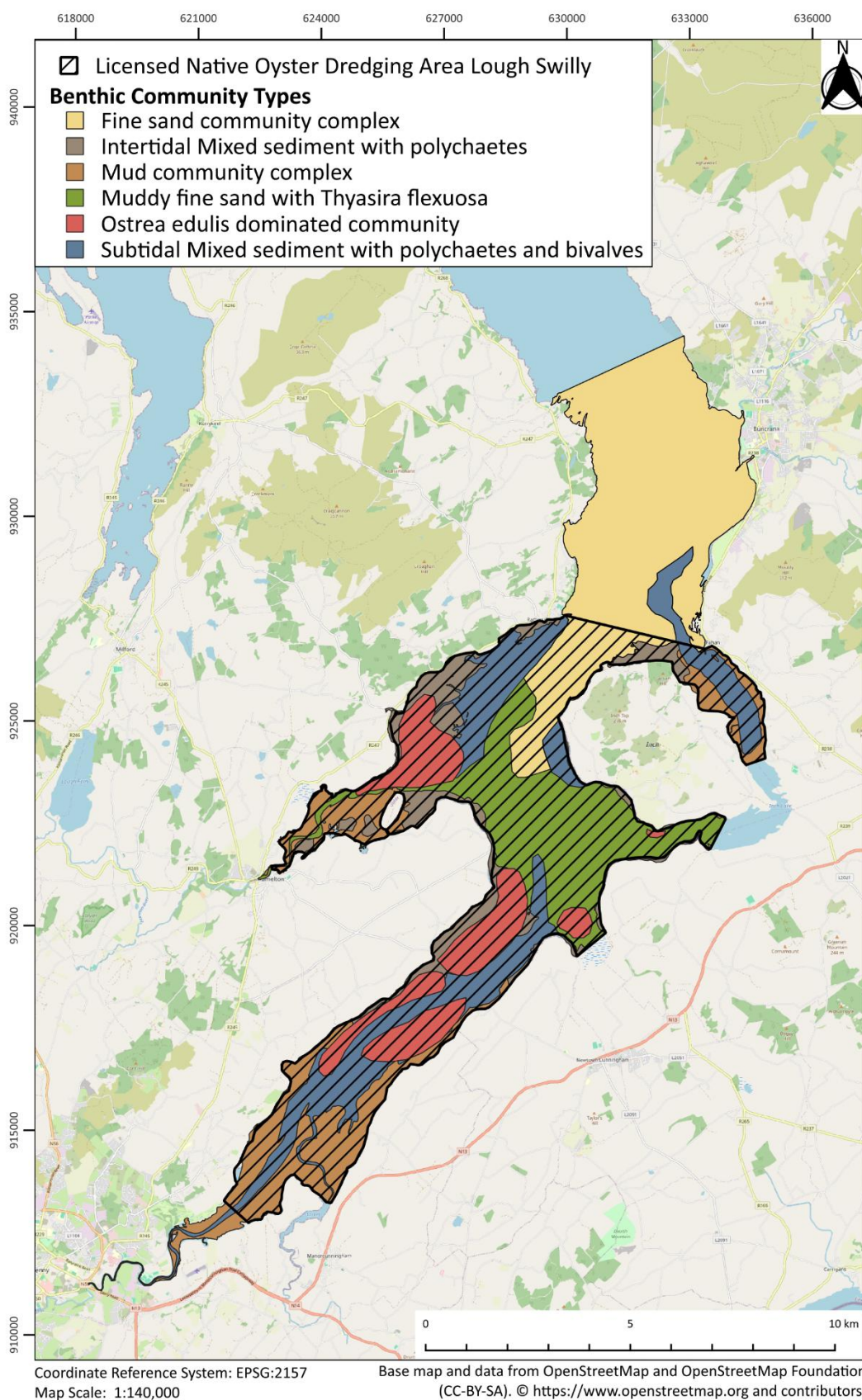


Figure 2.3: Licensed native oyster dredging area and distribution of benthic community types in Lough Swilly.

Table 2-7 shows the area and percentage cover of mapped benthic community types within the licensed native oyster dredging area in Lough Swilly. Areas were calculated from the spatial intersection of the licensed native oyster dredging area with mapped benthic community polygons. Percentage cover represents the proportion of the total licensed dredging area occupied by each mapped community type. The total licensed dredging area is approximately 55,412,665 m² (55.413 km²).

Table 2-7: Area and percentage of the licensed native oyster dredging area in Lough Swilly occupied by each mapped benthic community type.

Benthic Community Type	Area (km ²)	Percentage covered (%)
Intertidal Mixed sediment with polychaetes	5.65	10.2
<i>Ostrea edulis</i> dominated community	9.06	16.4
Mud community complex	9.960	18.0
Subtidal Mixed sediment with polychaetes and bivalves	12.64	22.8
Fine sand community complex	4.74	8.6
Muddy fine sand with <i>Thyasira flexuosa</i>	13.14	23.7

The licensed native oyster dredging area in Lough Swilly overlaps a range of sedimentary benthic communities. The largest proportion is occupied by the Muddy fine sand with *Thyasira flexuosa* community, which accounts for approximately 23.7% of the licensed dredging area, followed by the Subtidal Mixed sediment with polychaetes and bivalves community at approximately 22.8%. The Mud community complex represents approximately 18.0%, while the *Ostrea edulis* dominated community accounts for approximately 16.4% of the licensed dredging area. The Intertidal Mixed sediment with polychaetes and Fine sand community complexes account for approximately 10.2% and 8.6%, respectively.

The overlap with the *Ostrea edulis* dominated community is of particular relevance because native oyster is the target species of the fishery and this community is specifically identified within the site-specific conservation objectives for Estuaries [1130] as requiring conservation in natural condition. The licensed dredging area also overlaps extensively with the other sedimentary communities forming part of the Estuaries conservation feature. The spatial overlaps identified here provide the basis for the subsequent assessment of potential dredging effects in relation to the relevant conservation objectives and community-specific sensitivities.

2.2. Marine Institute Native Oyster Survey data

2.2.1. Historical context

Native oyster (*Ostrea edulis*) stocks were historically much more widespread and productive around the Irish coast than they are today. Oyster fishing in Ireland has been documented since at least the 1500s, and important oyster fisheries formerly occurred at approximately 50 locations around the coast. National production peaked during the mid- to late nineteenth century, driven particularly by the large offshore Irish Sea fishery and the Galway Bay fishery. Reported production from the main Arklow and Galway beds reached approximately 34–38 million oysters annually in 1863–1864, followed by a marked decline during subsequent decades (Tully & Clarke, 2012). By the early twentieth century, several formerly prolific public beds, including those in Cork, the Shannon, Clew Bay and Blacksod Bay, were already producing relatively small quantities.

The causes of the long-term decline have varied among locations and cannot be attributed to a single pressure. Historical overexploitation and poorly regulated fishing contributed to the depletion or loss of some stocks, while environmental variability, severe winter mortality, habitat loss, disease and, more recently, introduced species have also affected stock productivity and persistence. *Bonamia ostreae*, first detected in Ireland in the late 1980s, has subsequently become an important source of mortality in a number of oyster-producing areas. Tully and Clarke (2012) emphasised that these pressures act on populations in which spawning, larval settlement and recruitment can already be highly variable, thereby increasing the risk that mortality exceeds the capacity of depleted populations to replenish.

The present distribution of native oysters is therefore considerably reduced relative to this historical range. The largest remaining stocks occur in Inner Tralee Bay, Galway Bay, Cill Chiaráin Bay, Bertraghuoy Bay, Clew Bay, Blacksod Bay and Lough Swilly. Biomass is currently low relative to historical levels in most areas, with Inner Tralee Bay representing the main exception and supporting the majority of the national native oyster biomass and harvest tonnage (Marine Institute, 2025). This concentration of national biomass in Inner Tralee Bay was already evident during the Marine Institute surveys undertaken between 2010 and 2012, when more than 80% of the native oyster biomass recorded across the main surveyed stocks occurred in Inner Tralee Bay, despite the bed representing only a relatively small proportion of the total surveyed area (Tully & Clarke, 2012). Biomass estimates from those surveys were approximately 982–1,329 tonnes in Inner Tralee Bay, compared with approximately 124 tonnes in Lough Swilly, 99 tonnes in Outer Tralee Bay and 25 tonnes in Blacksod Bay.

The earlier surveys also demonstrated that commercial native oyster stocks are typically spatially heterogeneous. Oyster densities were generally below 0.5 oysters m⁻² across much of the surveyed grounds, with commercially important concentrations occurring in relatively discrete patches rather than uniformly

across the wider area in which oysters were present. Inner Tralee Bay differed substantially from the other surveyed stocks, supporting localised densities of up to approximately 50 oysters m⁻² (Tully & Clarke, 2012).

Native oyster populations are also characterised by episodic rather than consistently annual recruitment. The 2010–2012 surveys indicated relatively regular recruitment in Inner Tralee Bay and Lough Swilly, but less frequent recruitment in several other stocks, including Blacksod Bay. This is consistent with the wider ecology of *O. edulis*, for which successful replenishment depends on the interaction between sufficient spawning-stock density, favourable environmental conditions during spawning and larval development, and the availability of suitable settlement substrate. Young-of-the-year oysters are also poorly represented in dredge surveys, meaning that recruitment signals become clearer as cohorts grow into sizes that are more effectively retained and detected during subsequent surveys (Tully & Clarke, 2012).

Population density itself is important to reproductive potential. *O. edulis* fertilisation depends on sperm released by neighbouring oysters, and very low adult densities may reduce fertilisation success. Tully and Clarke (2012) identified low stock density as a potential constraint on recovery in depleted oyster populations, particularly where recruitment is already irregular. Maintaining sufficiently dense spawning aggregations is relevant both to fishery productivity and to the resilience of oyster populations.

The condition of the seabed is similarly important to oyster persistence and recovery. Native oyster populations in Irish estuaries occur in dynamic environments subject to variation in salinity, sedimentation, temperature and physical disturbance. Tully and Clarke (2012) describe oyster habitat in terms of a “shell budget”, whereby the development and maintenance of shell-rich habitat depends on shell accumulation exceeding shell loss. Where spawning potential is sufficiently high, recruitment occurs regularly and physical disturbance and mortality remain sufficiently low, dead shell can accumulate and increase seabed complexity and the availability of hard settlement surfaces for oyster larvae. Conversely, loss or fragmentation of shell material, sedimentation and reduced habitat complexity can constrain settlement and subsequent stock recovery.

Although *O. edulis* is capable of forming structurally complex biogenic reef habitat, well-developed topographic native oyster reefs have not been documented in Irish shallow-water oyster fisheries during the modern period. Tully and Clarke (2012) noted, however, that the main Irish oyster beds have been subjected to fishing and other pressures for centuries, making it difficult to determine their pre-exploitation structure. Historical offshore beds in the Irish Sea produced very large numbers of oysters and may have supported extensive, relatively continuous oyster cover, but their original physical structure and ecological function are poorly documented. Present-day oyster-bed condition should therefore not necessarily be regarded as representing an undisturbed ecological reference state.

Native oyster fisheries are currently managed primarily through a statutory minimum landing size of approximately 76–78 mm, which oysters generally attain at approximately four to five years of age, although sexual maturity typically occurs at smaller sizes. Management arrangements vary among fisheries. In many areas, authority has been devolved to local oyster co-operatives through Fishery Orders or aquaculture licences, and fisheries may additionally be controlled through seasonal openings, limits on dredge permits and local quotas or total allowable catches (Marine Institute, 2025).

Native oyster stocks continue to face several pressures in addition to fishery removals, including *Bonamia ostreae* infection, environmental conditions affecting habitat suitability and, in Lough Swilly for example, competition with naturalised Pacific oyster (*Magallana gigas*). Marine Institute surveys in 2011 found Pacific oyster to be widespread and abundant within areas historically occupied by native oyster, although Pacific oyster tended to dominate more intertidal areas while native oyster was relatively more common towards channel margins and shallow subtidal areas (Tully & Clarke, 2012). *M. gigas* has subsequently persisted as a major component of the Lough Swilly oyster assemblage and supports a commercial fishery (Marine Institute, 2025).

2.2.2. Data sources, survey methods and data limitations

Marine Institute (MI) oyster survey data were reviewed to characterise the current condition of the native oyster stocks in Tralee Bay, Lough Swilly and Blacksod Bay. The analysis focused on three complementary lines of evidence relevant to the subsequent dredging impact assessment: stock biomass, oyster size structure and the recent spatial distribution of biomass within the oyster beds. Inner and Outer Tralee Bay were treated as separate stock units because they support spatially distinct oyster beds and are presented separately in the annual Shellfish Stock Review reported by the MI (Marine Institute, 2025).

For Lough Swilly, equivalent information for Pacific oyster (*Magallana gigas*) was also examined because this naturalised species occurs extensively within former and existing native oyster habitat and represents an important additional pressure on *Ostrea edulis* in Lough Swilly.

The analysis used oyster survey datasets supplied by the MI, supplemented by information reported in the annual Shellfish Stocks and Fisheries Review series and the earlier national assessment of native oyster stocks by Tully and Clarke (2012). MI oyster surveys are undertaken using locally appropriate oyster dredges. Current stock reviews apply a dredge-efficiency coefficient of 35% to raise survey catches and estimate stock biomass, with biomass estimated using a geostatistical framework that accounts for spatial autocorrelation in the survey

data (Marine Institute, 2025). The raised biomass estimates and associated 95% highest density intervals (HDIs) supplied by the MI were used for this assessment.

Annual biomass data for *O. edulis* were available for Inner Tralee Bay for 2018–2025, Outer Tralee Bay for 2020–2026. Annual biomass data for *O. edulis* and *M. gigas* were available in Lough Swilly for 2021–2026, although not every stock was surveyed in every year. Biomass data for *O. edulis* was only available for 2011 in Blacksod Bay. Raw oyster shell-length measurements were available for the corresponding Tralee and Lough Swilly surveys and for Blacksod Bay in 2011.

For each native oyster stock, shell-length measurements were summarised in 5-mm size classes and expressed as the percentage of measured oysters within each annual survey. Median and interquartile shell lengths were also calculated. Oysters <55 mm were used as a descriptive indicator of the smaller/juvenile component of the surveyed stock, while oysters ≥76 mm represented the component at or above the statutory Minimum Landing Size (MLS) for *O. edulis*. These thresholds are used as stock-structure indicators and should not be interpreted as direct estimates of annual recruitment or spawning-stock biomass.

Some limitations apply to the available survey data. Survey coverage in Inner Tralee Bay and Lough Swilly generally encompasses almost all of the known commercial oyster stock. Outer Tralee Bay is more spatially complex, with a patchier oyster distribution and areas of overlap or close association with seagrass. Consequently, the area surveyed has varied appreciably between years and more recent years of the survey encompass the full extent of the Outer Tralee oyster bed. Biomass per surveyed square kilometre was therefore considered alongside total biomass for Outer Tralee Bay.

The spatial survey outputs were designed to characterise biomass within the known oyster grounds rather than precisely identify the outer boundary of the oyster bed in each year. As a result, annual spatial layers cannot be used to infer small changes in bed extent, expansion, contraction or movement through time. The most recent available spatial biomass surface for each stock is instead used in this assessment to describe the contemporary distribution of biomass and its spatial relationship with the dredging license area and neighbouring benthic habitats.

Changes in biomass or size structure cannot in isolation be attributed to dredging. Native oyster populations are influenced by recruitment variability, natural mortality, food availability, temperature, salinity, disease, invasive and non-native species and fishery removals. The stock evidence presented below is therefore used to describe stock condition and biological context for the separate assessment of dredging impacts.

The MI survey data was interpreted using the following indicators (Table 2-8).

Table 2-8 Summary of Marine Institute oyster stock indicators for Blacksod Bay, Inner and Outer Tralee Bay and Lough Swilly, including raised biomass estimates, biomass per surveyed area and native oyster size-structure indicators.

Indicator	Use in this assessment	Interpretation
Raised biomass estimate	Describes the relative abundance and recent trajectory of each surveyed stock	Provides evidence of lower or higher stock biomass through the available survey series
Biomass per surveyed area	Provides additional context where the area surveyed varies between years	Particularly relevant to Outer Tralee Bay, where total survey coverage has changed
Shell-length distribution	Describes the representation of small, intermediate and large oysters	Used as a descriptive indicator of recruitment, cohort structure and retention of larger oysters
Oysters <55 mm	Descriptive indicator of the smaller/juvenile component	A high proportion indicates substantial representation of recently recruited/small oysters
Oysters ≥76 mm	Describes the proportion of measured oysters at or above the MLS	Indicates representation of the larger, harvestable component of the stock
Latest spatial biomass surface	Describes the contemporary distribution of biomass within the surveyed oyster grounds	Used to identify where biomass is concentrated and its relationship with dredging areas and sensitive habitats

2.2.3. Inner Tralee Bay

The MI survey data identifies Inner Tralee Bay as the largest of the stocks assessed in terms of native oyster biomass. Recent surveys show a reduction in biomass following 2023, but the size distributions continue to contain both small oysters indicative of recruitment and a larger component at or above the MLS. These characteristics provide important context for assessing the effect of fishery removals and repeated dredging on stock condition and replenishment.

2.2.3.1. Annual *O. edulis* Biomass over time

Inner Tralee Bay supported substantially greater native oyster biomass than the other stocks examined. Within the supplied 2018–2025 series, raised biomass estimates ranged from approximately 410 tonnes to 1,619

tonnes. Considering the most recent sequence, biomass increased from 617 tonnes in 2021 to 801 tonnes in 2022 and 891 tonnes in 2023, before declining to 503 tonnes in 2024 and 409.8 tonnes in 2025. The 2025 estimate was therefore approximately 54% lower than the 2023 estimate and was the lowest estimate within the supplied 2018–2025 dataset.

Mean biomass per surveyed area showed the same recent pattern, declining from 198.4 tonnes km⁻² in 2023 to 101.4 tonnes km⁻² in 2024 and 85.9 tonnes km⁻² in 2025. The lower recent total biomass therefore reflects a lower estimated biomass within the surveyed stock area rather than being explained by a substantial reduction in survey coverage.

Table 2-9 Annual raised biomass trends for Inner Tralee Bay 2010-2025 (Marine Institute, 2025).

Year	Month of survey	Survey area (km ²)	Biomass (tonnes)	Biomass (tonnes km ⁻²)
2010	September	4.26	982	230.54
2011	September	3.57	631	87.03
2012	February	3.80	655	85.02
2013	September	3.76	506	66.33
2014	September	3.80	1,265	164.16
2015	September	4.51	409	44.78
2016	September	3.66	901	121.44
2017	September	4.28	843	197.08
2018	September	3.92	1,161	296.17
2019	October	3.70	879	237.57
2020	September	5.32	1,618	304.14
2021	September	4.05	617	152.35
2022	September	4.55	801	176.04
2023	September	4.49	891	198.44
2024	September	4.96	503	101.41
2025	September	4.76	409	85.90

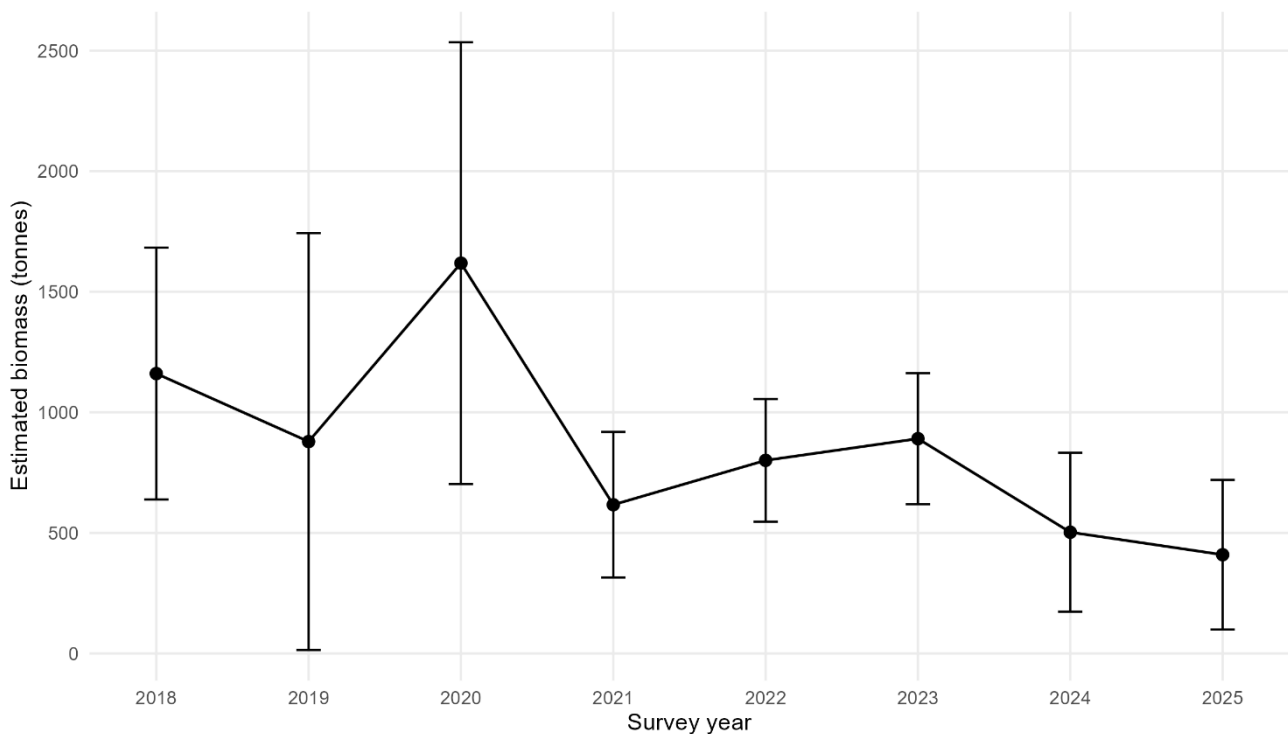


Figure 2.4 Marine Institute raised native oyster (*Ostrea edulis*) biomass estimates for Inner Tralee Bay. Error bars show 95% highest density intervals (HDIs).

2.2.3.2. Size distribution of *O. edulis* over time

The Inner Tralee Bay size distribution data demonstrate substantial interannual variation in the relative contribution of small and large oysters. Between 2018 and 2022, oysters < 55 mm generally represented approximately 39–51% of measured oysters, while 9–17% were ≥76 mm. The stock shifted towards larger size classes in 2023, when the median shell length increased to 69 mm, only 15.4% of measured oysters were <55 mm, and 26.1% were ≥76 mm.

Smaller oysters became more prominent again during 2024 and 2025. In 2025, median shell length was 64 mm, 31.1% of measured oysters were <55 mm and 17.0% were ≥76 mm. The recent size structure therefore indicates continued representation of small oysters, consistent with ongoing recruitment, while a component of larger oysters has also been retained within the stock. The increase in the small-oyster component following the larger size structure observed in 2023 is consistent with recurrent recruitment rather than a stock composed predominantly of a single ageing cohort.

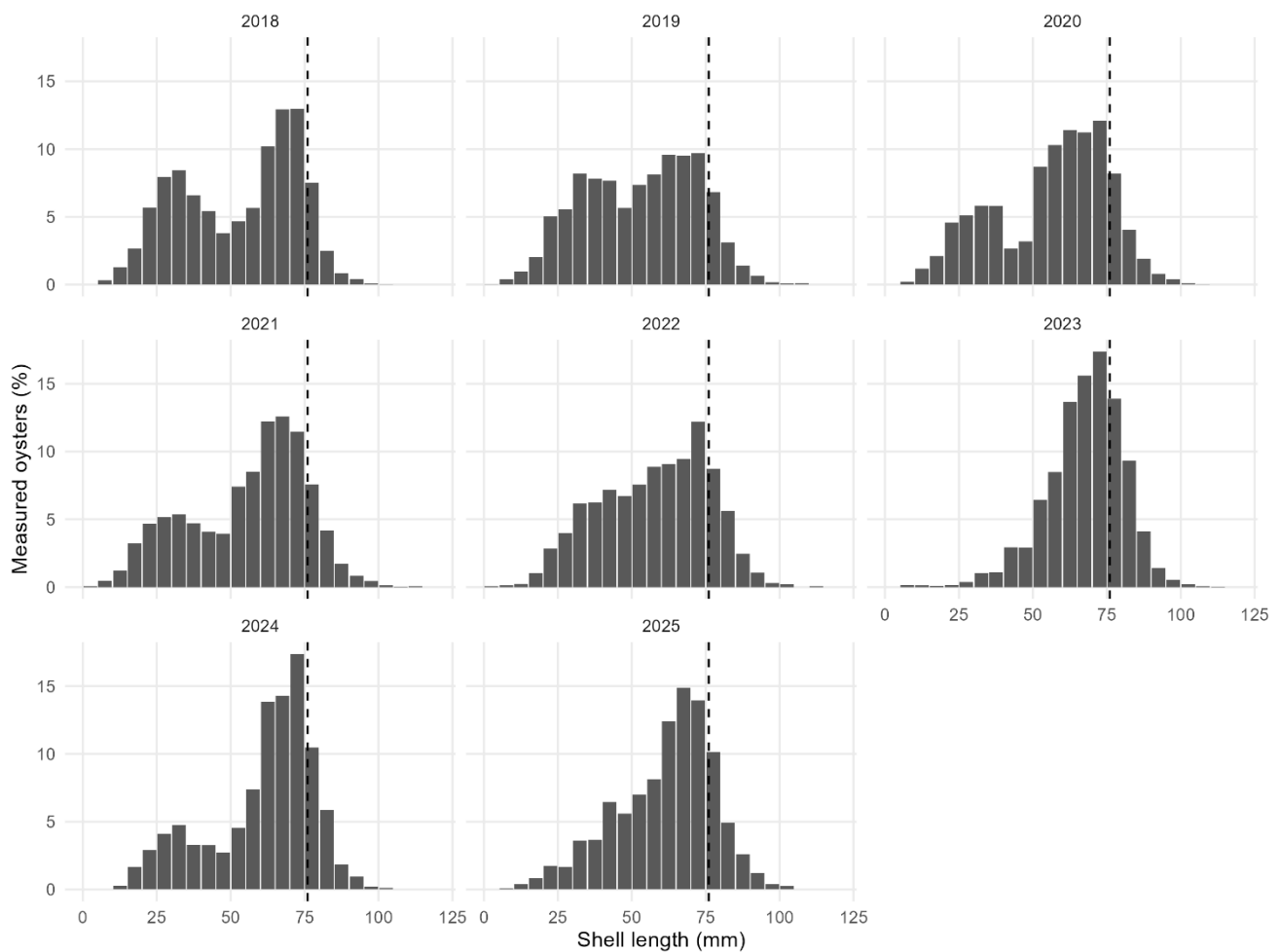


Figure 2.5 Annual shell-length distributions of native oyster (*Ostrea edulis*) measured during Marine Institute surveys of Inner Tralee Bay. The dashed line indicates the 76-mm minimum landing size.

2.2.3.1. Spatial distribution of *O. edulis* in Inner Bay

The latest available Marine Institute spatial biomass data show that native oyster (*Ostrea edulis*) biomass is unevenly distributed within the Inner Tralee Bay oyster grounds (**Figure 2.6**). The estimated *O. edulis* biomass ranges from approximately 0 to 0.07 kg/m².

The highest biomass was concentrated in the central to eastern part of the surveyed ground, where values approached 0.07 kg/m². A further area of relatively high biomass occurred towards the south-central part of the ground. Lower biomass was recorded mainly in the north-central area and towards the south-eastern margin. Overall, biomass was unevenly distributed, with localised areas of higher biomass within the wider oyster ground.

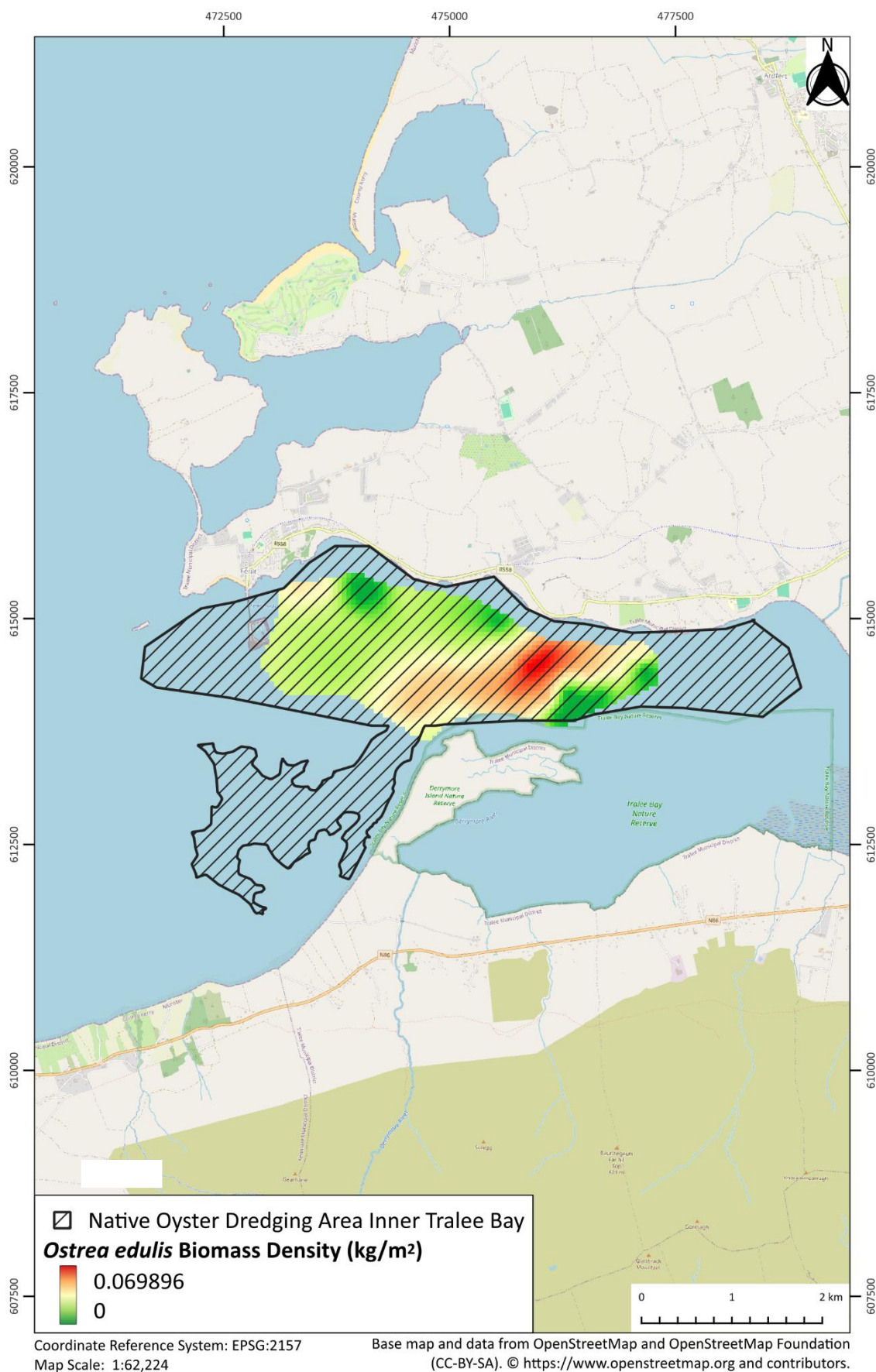


Figure 2.6: Latest available (2025) biomass density spatial distribution data for native oyster (*Ostrea edulis*) within the surveyed Inner Tralee Bay oyster grounds (provided by the Marine Institute).

2.2.4. Outer Tralee Bay

The most recent Outer Tralee surveys show an increase in biomass per surveyed area during 2026 together with a marked dominance of small oysters in the size distribution. This provides evidence of recent stock replenishment, while the comparatively small proportion of oysters ≥ 76 mm indicates that much of the current stock has not yet progressed into the larger harvestable size classes.

2.2.4.1. Annual *O. edulis* Biomass over time

Total raised biomass in Outer Tralee Bay was estimated at 150.9 tonnes in 2020, 86.0 tonnes in 2021 and 83.7 tonnes in 2023. The estimated total decreased to 48.4 tonnes in 2025 before increasing to 107.1 tonnes in 2026.

Interpretation of total biomass alongside the surveyed area provides additional information on this trajectory. Survey coverage was approximately 8.0–9.1 km² during 2020–2023 but 4.7 km² in 2025 and 5.56 km² in 2026. Mean estimated biomass per surveyed area was 16.8 tonnes km⁻² in 2020, 10.8 tonnes km⁻² in 2021, 9.2 tonnes km⁻² in 2023 and 10.3 tonnes km⁻² in 2025. It increased to 19.3 tonnes km⁻² in 2026, the highest value in the time series. The 2026 survey therefore indicates an increase in oyster biomass within the area surveyed relative to the preceding surveys, with total estimated biomass more than doubling between 2025 and 2026.

Table 2-10 Annual raised biomass trends for Outer Tralee Bay 2020-2025 (Marine Institute, 2025).

Year	Month of survey	Survey area (km ²)	Biomass (tonnes)	Biomass (tonnes km ⁻²)
2020	September	9.0	151.0	16.78
2021	September	8.0	86.0	10.75
2022	–	–	–	–
2023	January	9.1	83.7	9.20
2024	–	–	–	–
2025	February	4.7	48.44	10.30

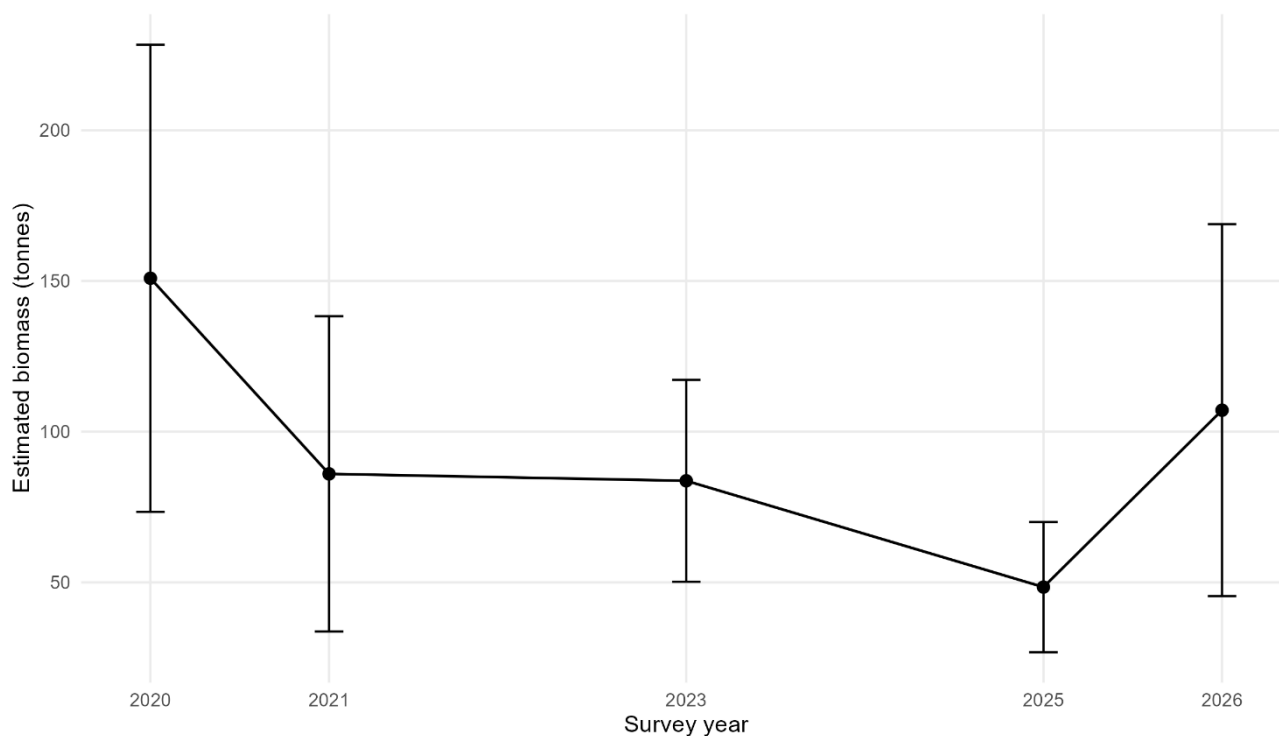


Figure 2.7 Raised native oyster (*Ostrea edulis*) biomass estimates for Outer Tralee Bay, 2020–2026. Error bars show 95% highest density intervals (HDIs).

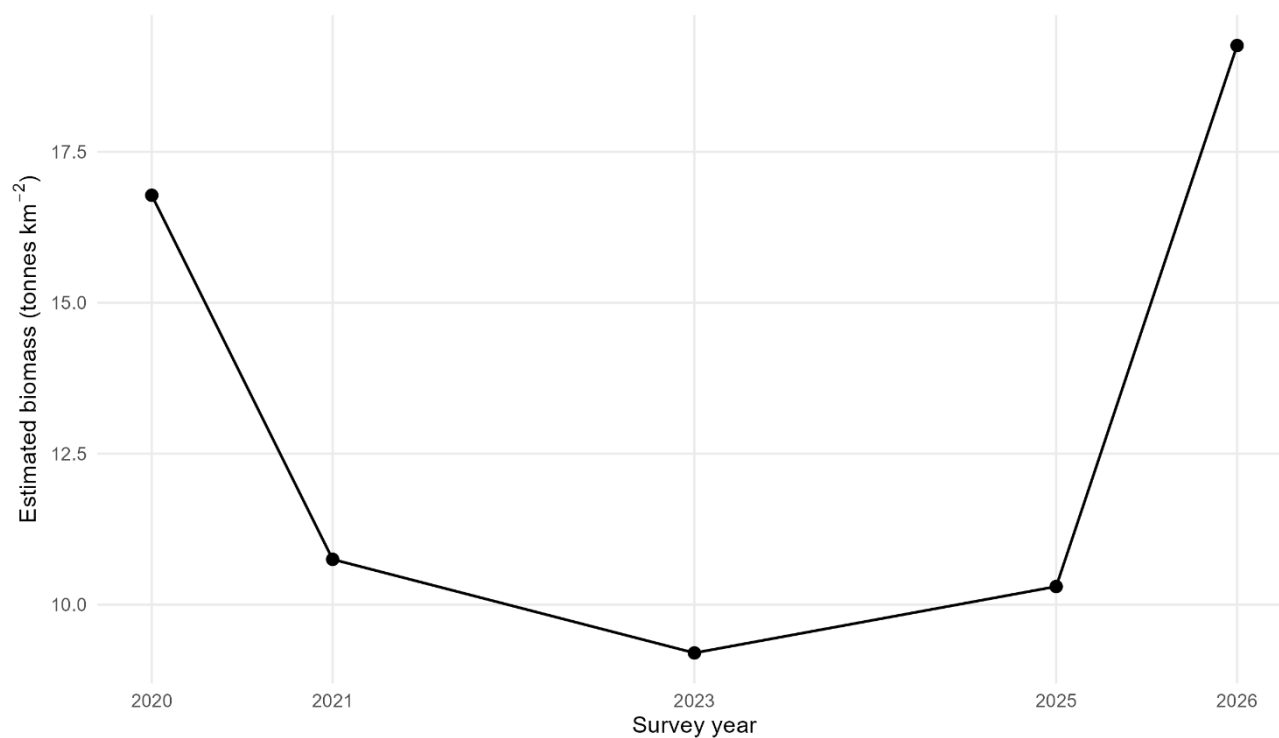


Figure 2.8 Mean estimated native oyster (*Ostrea edulis*) biomass per surveyed square kilometre in Outer Tralee Bay, 2020–2026.

2.2.4.1. Size distribution of *O. edulis* over time

A pronounced shift towards smaller oysters occurred in the two most recent Outer Tralee surveys. Between 2020 and 2023, median shell length was approximately 64–65 mm, 34–40% of measured oysters were <55 mm and approximately 29–32% were ≥76 mm.

In 2025, the median shell length decreased to 35.5 mm and 61.2% of measured oysters were <55 mm. This pattern became still more pronounced in 2026, when the median shell length was 32 mm, 65.9% of oysters were <55 mm and only 11.6% were ≥76 mm. The 2026 distribution contained particularly strong representation of very small oysters, including a prominent mode below approximately 15 mm.

The 2025 and 2026 surveys therefore provide a strong recent recruitment signal, with the stock currently containing a high proportion of small oysters. At the same time, the proportion of oysters at or above the MLS has decreased relative to the 2020–2023 surveys. Survival and growth of these smaller size classes will consequently be important to future replenishment of the larger oyster component.

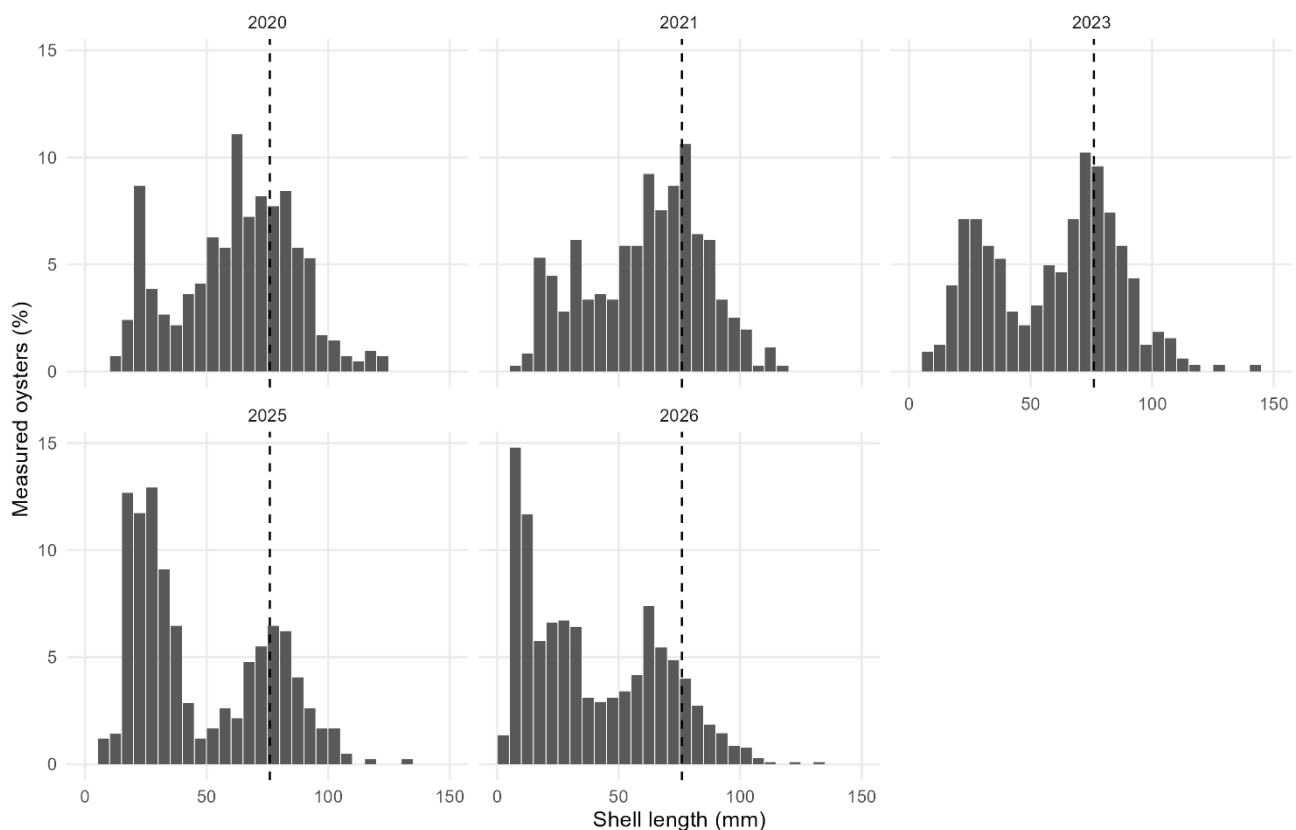


Figure 2.9 Annual shell-length distributions of native oyster (*Ostrea edulis*) measured during Marine Institute surveys of Outer Tralee Bay. The dashed line indicates the 76-mm minimum landing size.

2.2.4.2. Spatial distribution of *O. edulis* in Outer Bay

The latest available Marine Institute spatial biomass data show that native oyster (*Ostrea edulis*) biomass is unevenly distributed within the Outer Tralee Bay oyster grounds (**Figure 2.10**). The estimated *O. edulis* biomass ranges from approximately 0 to 0.016 kg/m². The highest biomass was concentrated in the western and south-eastern parts of the surveyed ground, where values approached 0.016 kg/m². Lower biomass was recorded mainly in the north-central part of the oyster ground and towards the eastern margin. Overall, biomass was unevenly distributed, with localised areas of higher biomass within the wider oyster ground.

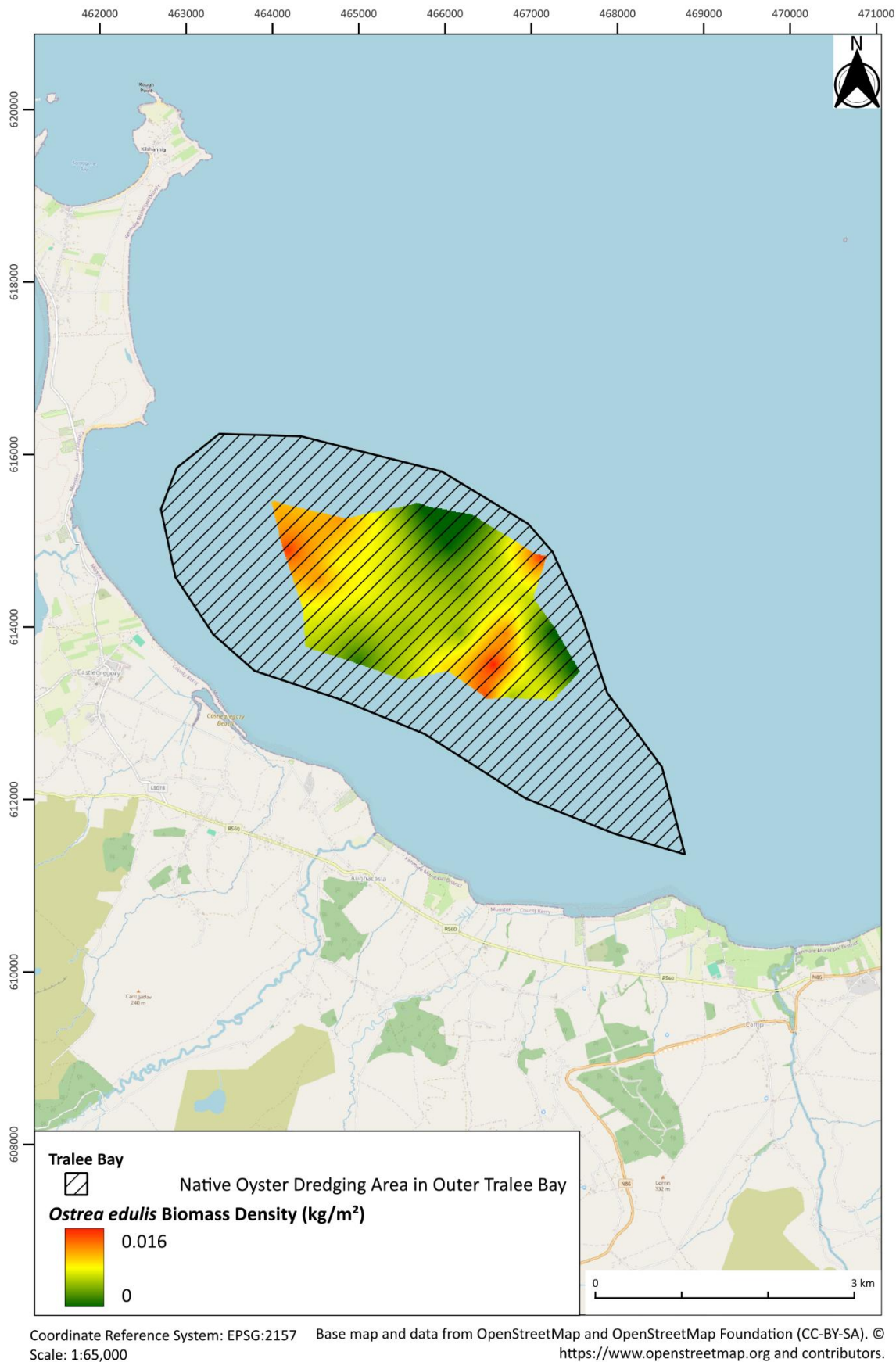


Figure 2.10: Latest available (2026) biomass density spatial distribution data for native oyster (*Ostrea edulis*) within the surveyed Outer Tralee Bay oyster grounds (provided by the Marine Institute).

2.2.5. Lough Swilly

The Lough Swilly survey data shows contrasting recent trajectories for native oyster (*O. edulis*) and Pacific oyster (*M. gigas*). Native oyster biomass increased between 2025 and 2026, and the most recent size distribution contained a greater representation of intermediate and larger oysters than the preceding survey while retaining evidence of smaller oysters within the population. Pacific oyster biomass, by contrast, has decreased markedly from its 2022 peak but remained greater than native oyster biomass in 2026.

2.2.5.1. Annual *Ostrea edulis* biomass over time

Raised native oyster biomass in Lough Swilly varied substantially over the available 2021–2026 survey series. Biomass was estimated at 110.5 ± 47.4 tonnes in 2021 and increased to 259.1 ± 158.6 tonnes in 2022, the highest estimate in the available series. Biomass subsequently decreased to 111.0 ± 47.0 tonnes in 2024 and 67.1 ± 23.8 tonnes in 2025, before increasing to 131.1 ± 46.1 tonnes in 2026.

The 2026 estimate represented an increase of approximately 95% relative to 2025 and was broadly comparable with the estimates recorded in 2021 and 2024, although it remained approximately 49% below the higher biomass recorded in 2022. Biomass per surveyed area followed the same overall pattern, increasing from 13.6 tonnes km^{-2} in 2021 to 31.7 tonnes km^{-2} in 2022, decreasing to 13.1 tonnes km^{-2} in 2024 and 8.8 tonnes km^{-2} in 2025, and increasing to 18.2 tonnes km^{-2} in 2026. The most recent survey therefore indicates an increase in native oyster biomass following the lower estimate recorded in 2025.

Table 2-11 Annual raised biomass trends for *O. edulis* in Lough Swilly 2011-2025 (Marine Institute, 2025).

Year	Month of survey	Survey area (km ²)	Biomass (tonnes)	Biomass (tonnes km ⁻²)
2011	March	1.56	40.0	25.64
2011	November	13.07	124.0	9.52
2012	October	11.48	177.0	15.46
2013	October	5.96	84.0	14.14
2014	October	13.19	209.0	15.85
2015	August	5.19	33.0	6.50
2016	August	5.58	97.0	17.40
2017	September	7.19	316.0	43.99
2018	April	7.81	207.0	26.48

Year	Month of survey	Survey area (km ²)	Biomass (tonnes)	Biomass (tonnes km ⁻²)
2020	July	10.00	318.0	31.78
2021	November–December	8.10	110.5	13.64
2022	November–December	8.20	259.1	31.60
2024	April	8.46	111.0	13.12
2025	April	7.60	67.1	8.83

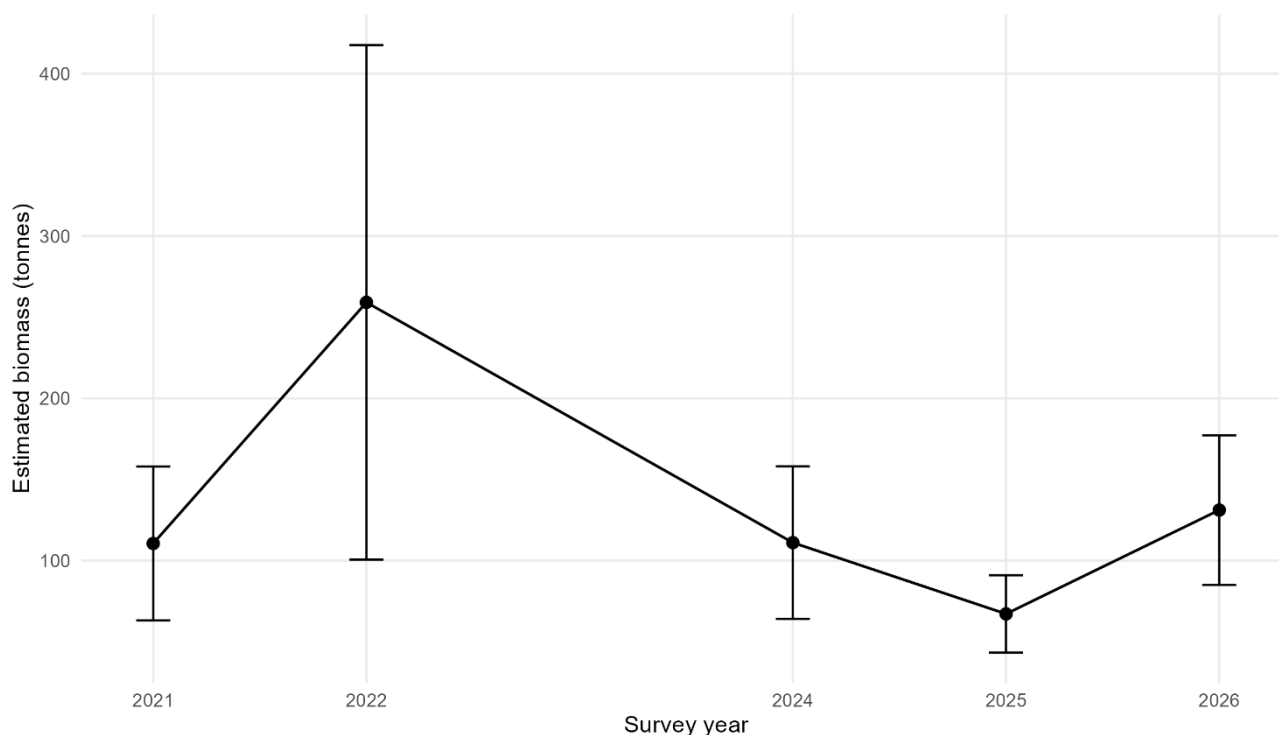


Figure 2.11 Raised native oyster (*Ostrea edulis*) biomass estimates for Lough Swilly, 2021–2026. Error bars show 95% highest density intervals (HDIs).

2.2.5.2. Annual *Magallana gigas* biomass over time

Pacific oyster biomass was considerably higher than native oyster biomass throughout the corresponding Lough Swilly survey series. Raised biomass was estimated at 745.5 ± 265.3 tonnes in 2021 and increased markedly to $3,275.9 \pm 787.3$ tonnes in 2022. Biomass subsequently decreased to $1,538.9 \pm 369.9$ tonnes in 2024, 605.0 ± 280.3 tonnes in 2025 and 346.3 ± 194.3 tonnes in 2026.

The 2026 estimate was approximately 89% lower than the peak recorded in 2022 and approximately 54% lower than the 2021 estimate. Biomass per surveyed area similarly decreased from 400.5 tonnes km⁻² in 2022 to 181.9 tonnes km⁻² in 2024, 79.6 tonnes km⁻² in 2025 and 48.1 tonnes km⁻² in 2026.

Despite this substantial reduction, estimated Pacific oyster biomass remained approximately 2.6 times greater than native oyster biomass in 2026. *M. gigas* therefore remained a quantitatively important component of the oyster assemblage in Lough Swilly in the most recent survey.

Table 2-12 Annual raised biomass trends for *M. gigas* in Lough Swilly 2011-2025 (Marine Institute, 2025).

Year	Month of survey	Survey area (km ²)	Number of <i>M. gigas</i> (millions; no DE)	Biomass (tonnes)	Biomass (tonnes km ⁻²)
2011	March	1.56	1.10	–	–
2011	November	13.07	5.60	–	–
2012	October	11.48	1.40	–	–
2013	October	5.96	0.50	–	–
2014	October	13.19	3.30	–	–
2015	August	5.19	1.30	–	–
2016	August	5.58	1.15	–	–
2017	September	7.19	–	–	–
2018	April	7.81	–	1,180.0	151.1
2020	July	10.00	–	1,718.3	171.8
2021	December	8.10	–	745.5	92.0
2022	December	8.18	–	3,275.9	400.5
2024	April	8.46	–	1,538.9	181.9
2025	April	7.60	–	605.0	79.6

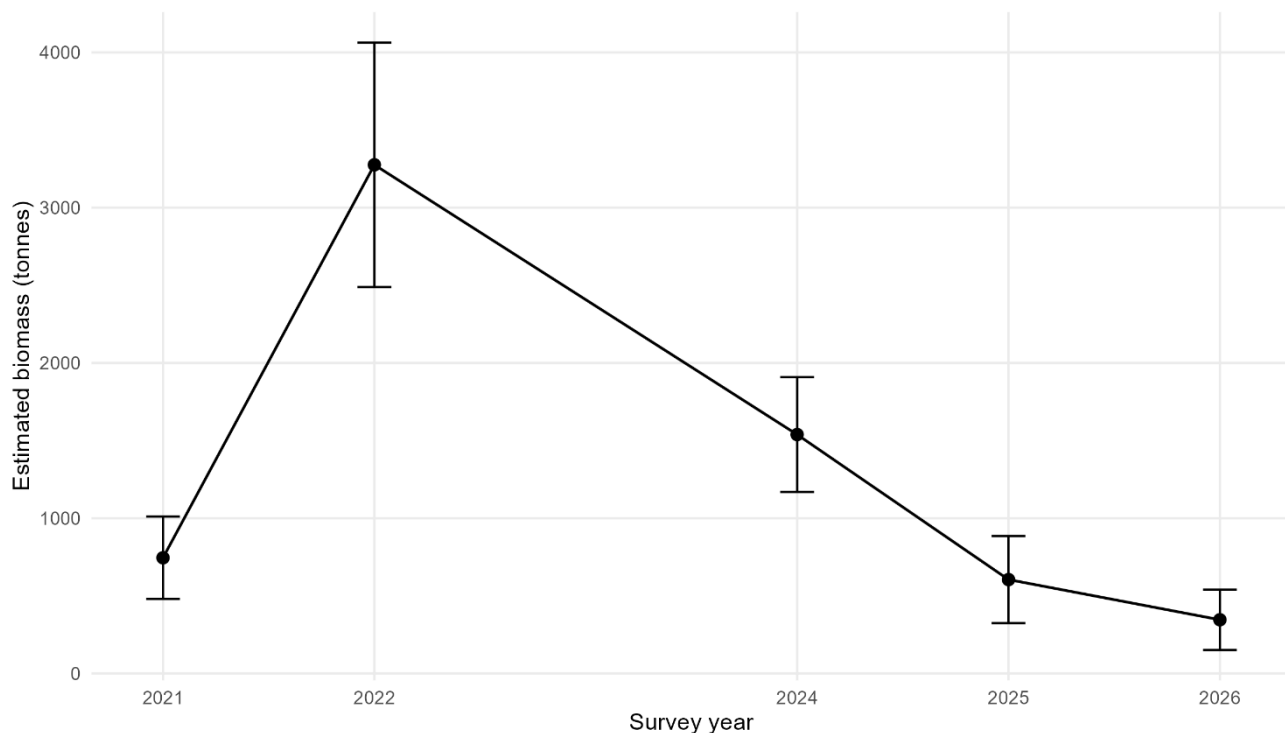


Figure 2.12 Raised Pacific oyster (*Magallana gigas*) biomass estimates for Lough Swilly, 2021–2026. Error bars show 95% highest density intervals (HDIs).

2.2.5.3. Size distribution of *Ostrea edulis* over time

The size structure of the Lough Swilly native oyster population varied considerably among surveys and provides evidence of repeated representation of smaller oysters within the stock. In 2021, the median shell length was 55.0 mm, with 50.0% of measured oysters <55 mm and 5.1% ≥76 mm. The contribution of smaller oysters increased further in 2022, when the median shell length was 49.0 mm and 63.5% of oysters were <55 mm, while only 3.9% were ≥76 mm.

The population shifted towards larger size classes in 2024, when median shell length increased to 59.4 mm and the proportion <55 mm decreased to 32.6%. Smaller oysters again became more prominent in 2025, when 48.2% were <55 mm. In the latest survey in 2026, median shell length increased to 62.5 mm, the proportion <55 mm decreased to 25.3%, and the proportion ≥76 mm increased to 10.3%, the highest proportion of oysters at or above the MLS recorded in the available 2021–2026 series.

The repeated occurrence of substantial numbers of smaller oysters indicates recurrent recruitment to the native oyster population during the survey period. The 2026 distribution was shifted towards intermediate and larger size classes relative to 2025, consistent with progression of oysters through the population size structure, while smaller oysters remained represented within the stock.

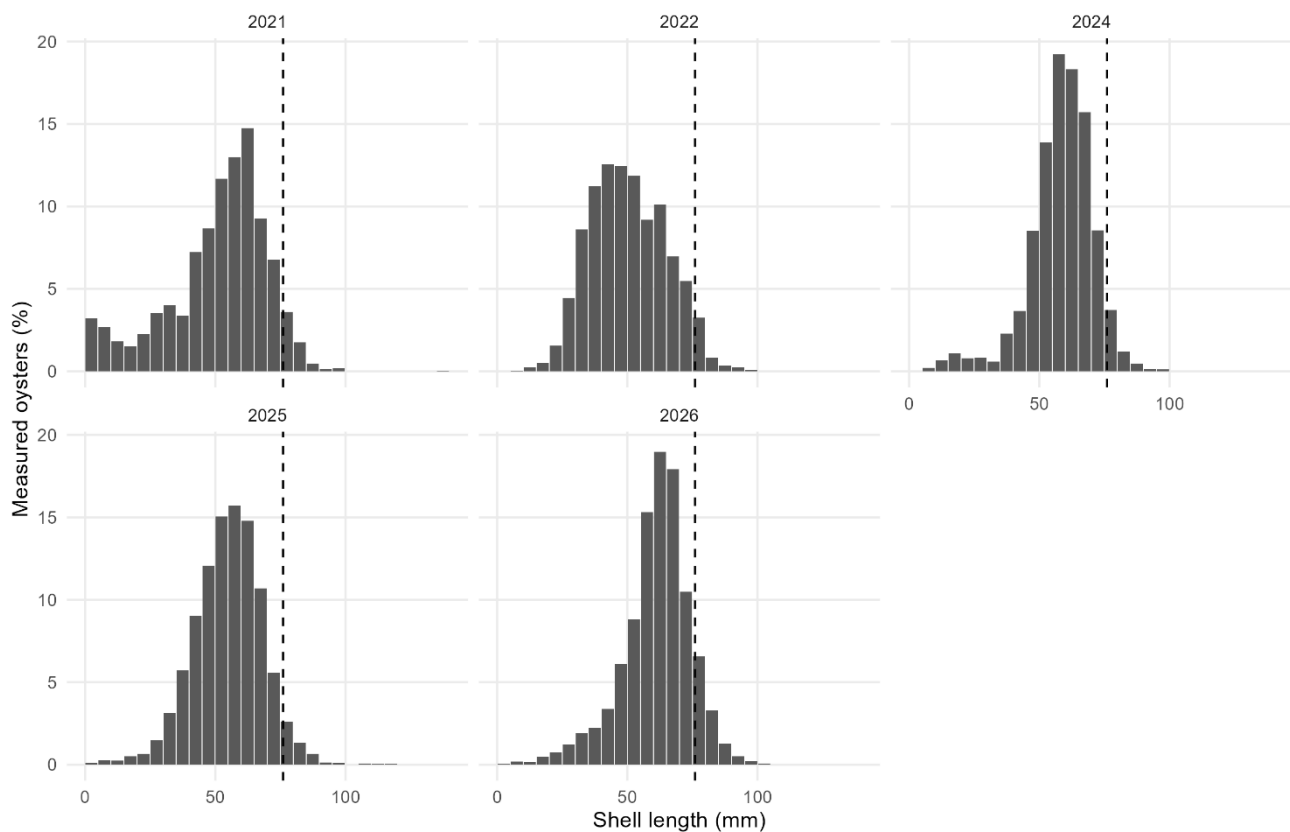


Figure 2.13 Size distribution of native oyster (*Ostrea edulis*) recorded during Marine Institute surveys of Lough Swilly, 2021–2026. The vertical dashed line indicates the statutory MLS of 76 mm.

2.2.5.4. Size distribution of *Magallana gigas* over time

Pacific oyster size structure showed a progressive shift towards larger oysters across the available survey series. Median shell length was 69.0 mm in both 2021 and 2022, increasing to 79.2 mm in 2024, 83.6 mm in 2025 and 87.7 mm in 2026. The interquartile range similarly shifted towards larger shell lengths, from 52–84 mm in 2021 to approximately 74–102 mm in 2026.

The 2021 distribution contained a pronounced component of very small Pacific oysters, including oysters <10 mm, while subsequent surveys were increasingly dominated by intermediate and larger size classes. The progressive increase in median shell length between 2022 and 2026 therefore indicates a shift in the measured population towards larger individuals over the recent survey period. This occurred concurrently with the substantial reduction in estimated total Pacific oyster biomass described above.

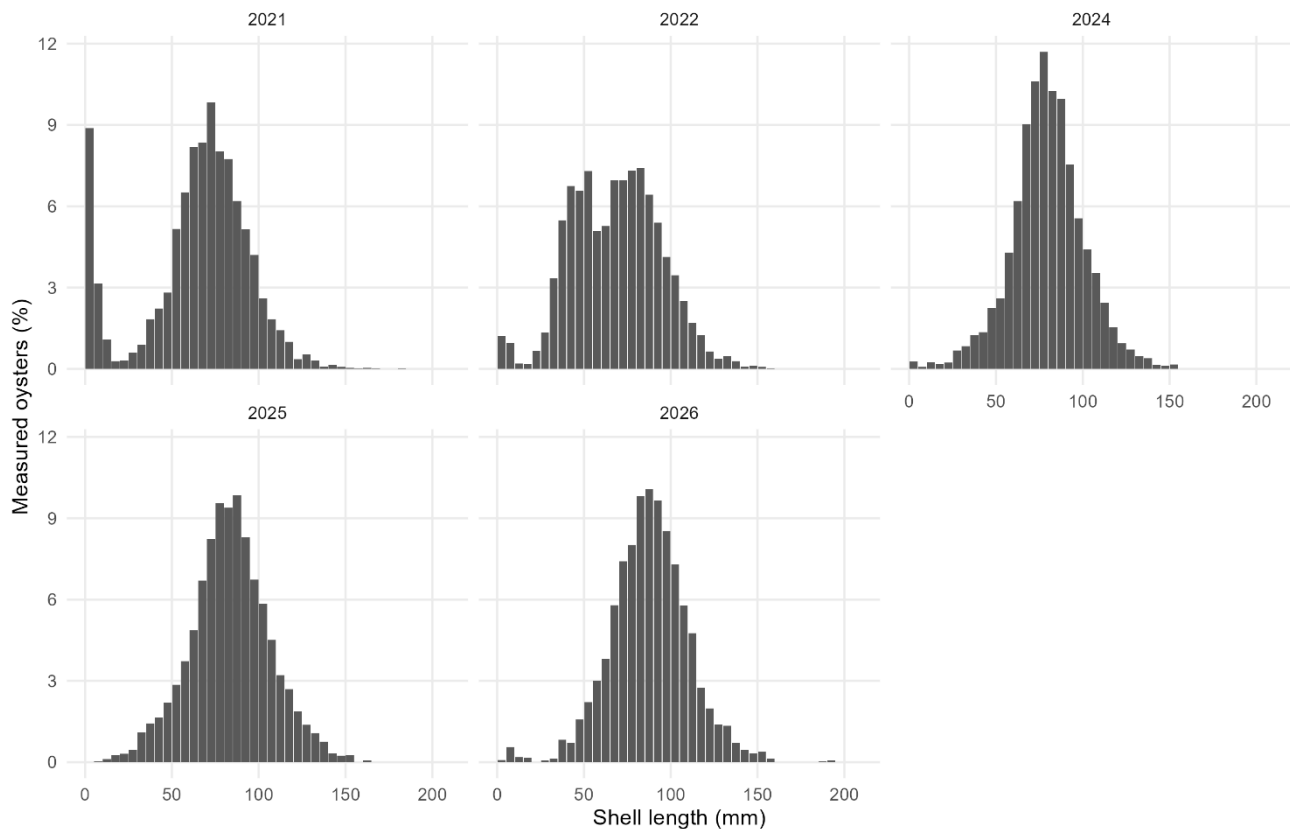


Figure 2.14 Size distribution of Pacific oyster (*Magallana gigas*) recorded during Marine Institute surveys of Lough Swilly, 2021–2026.

2.2.5.5. Spatial distribution of *Ostrea edulis* over time

The latest available Marine Institute spatial biomass data show that native oyster (*Ostrea edulis*) biomass is unevenly distributed within the Lough Swilly oyster grounds (Figure 2.15). The estimated *O. edulis* biomass density ranges from approximately 0.0001 to 0.0692 kg/m². The most recent survey was undertaken in 2026.

The highest biomass was concentrated in a small area in the north-eastern part of the surveyed grounds, near Fahan, where values approached 0.0692 kg/m². Areas of relatively higher biomass were also present along the eastern side of the lough, south of Inch, and within a smaller area in the central part of the surveyed grounds. Most of the remaining mapped oyster areas supported lower biomass, particularly across the western and southern parts of the lough. Overall, biomass was patchily distributed, with localised areas of higher biomass occurring within the wider licensed native oyster dredging area.

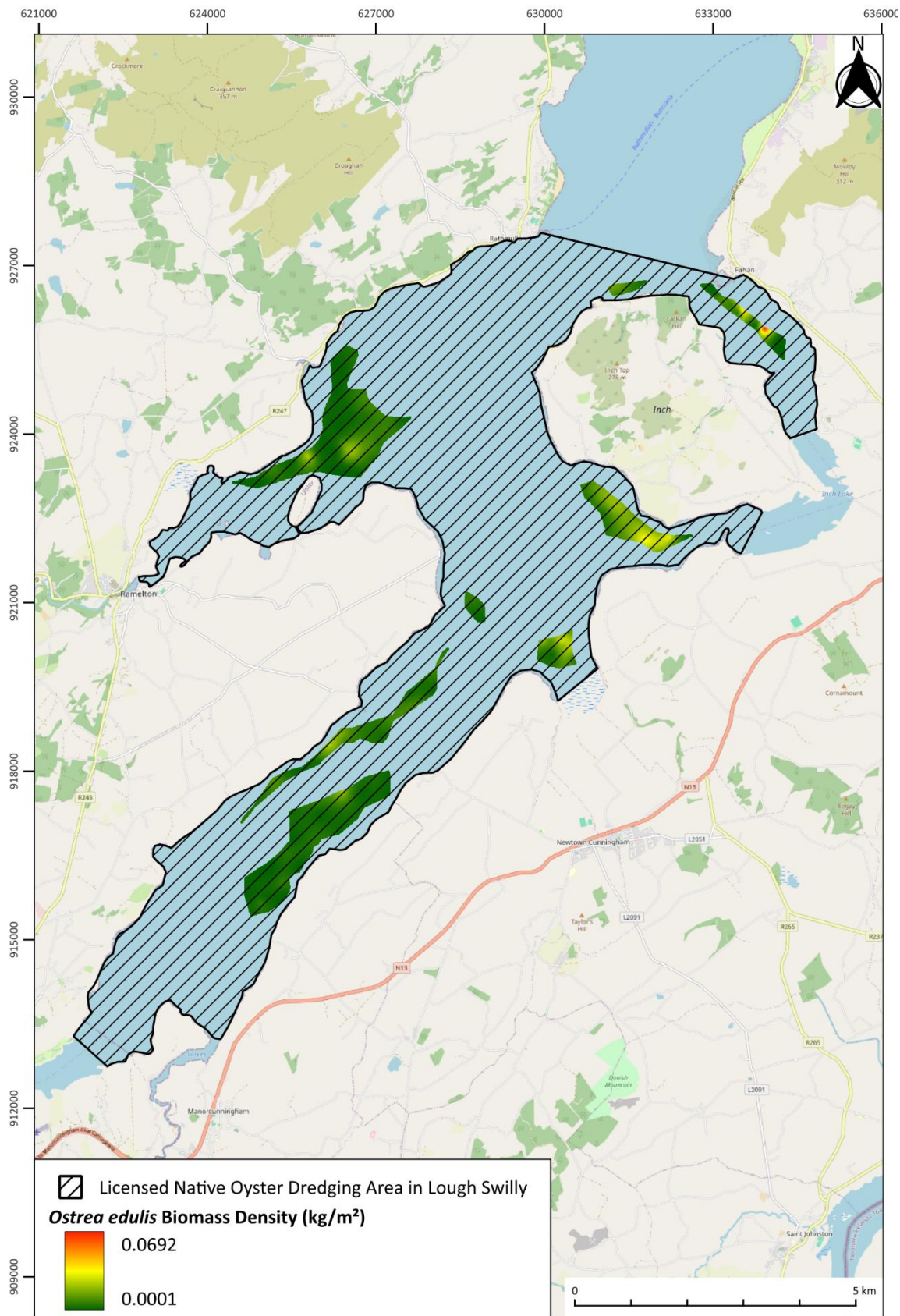


Figure 2.15: Latest available (2026) native oyster (*Ostrea edulis*) biomass density data within the surveyed Lough Swilly oyster grounds (provided by the Marine Institute).

2.2.5.6. Spatial distribution of *Magallana gigas* over time

The latest available Marine Institute spatial biomass data show that Pacific oyster (*Magallana gigas*) biomass is unevenly distributed within the Lough Swilly oyster grounds (**Figure 2.16**). The estimated *M. gigas* biomass density ranges from approximately 0.0003 to 0.0537 kg/m

The highest biomass was concentrated in the western part of the surveyed grounds, east of Ramelton, where values approached 0.0537 kg/m². A further area of relatively high biomass occurred in the southern part of the lough, with smaller areas of moderate biomass present around Inch and towards Fahan. Lower biomass was recorded across several of the remaining mapped areas.

The distribution of *M. gigas* overlaps with *O. edulis* in several parts of the licensed dredging area, including areas around Fahan, Inch, the western part of the lough and the southern oyster grounds. However, the areas of highest biomass differ between the two species. The highest *O. edulis* biomass was recorded towards Fahan in the north-east, whereas the highest *M. gigas* biomass occurred further west, east of Ramelton. Overall, both species show a patchy distribution within the licensed dredging area, with areas of spatial overlap as well as differences in the location of their main biomass concentrations.

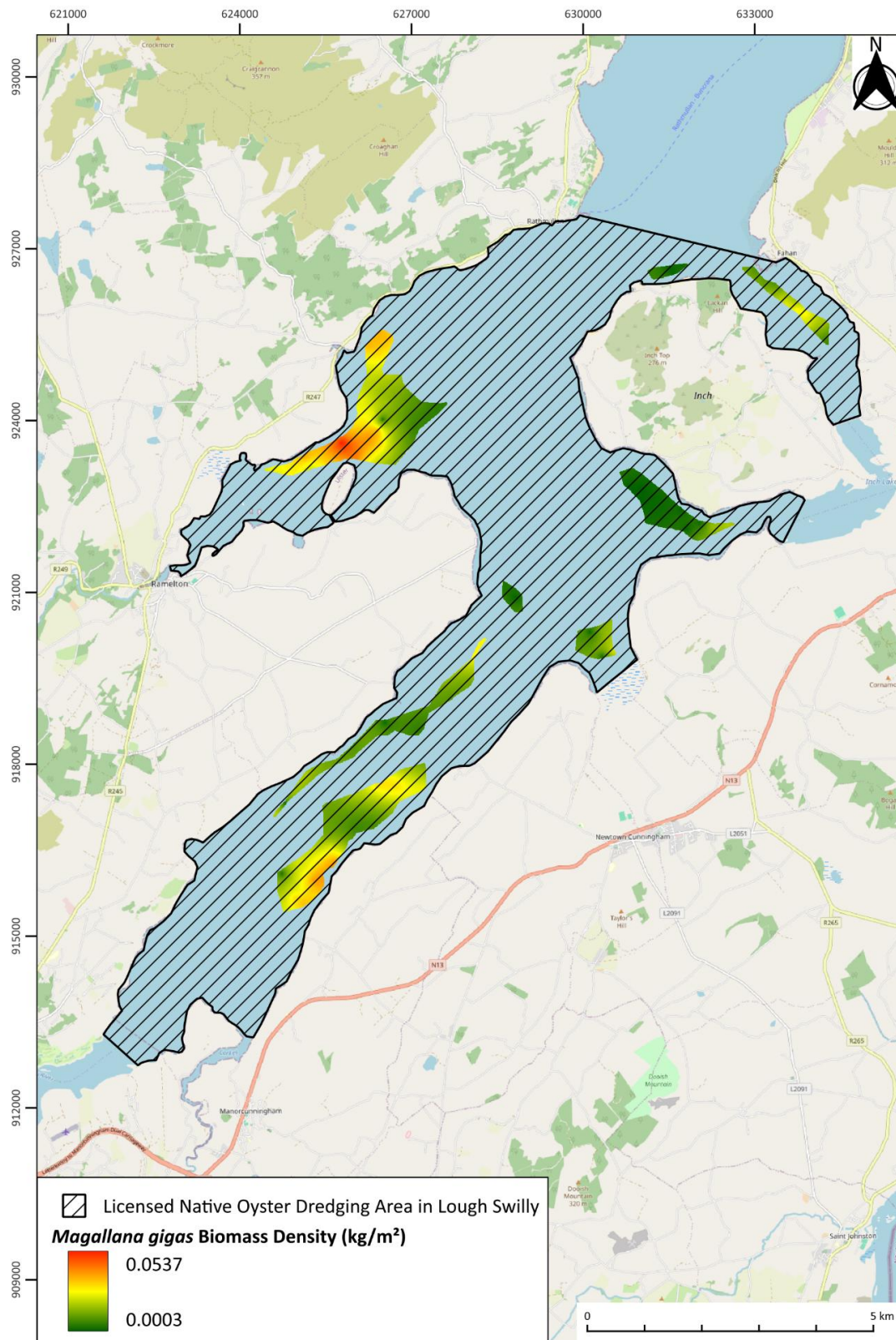


Figure 2.16: Latest available (2026) for Pacific oyster (*Magallana gigas*) biomass density within the surveyed Lough Swilly oyster grounds (provided by the Marine Institute).

2.2.6. Blacksod Bay

O. edulis biomass in Blacksod Bay was relatively low in the only year they were surveyed (2011) in which approximately half of the measured oysters were at or above the MLS.

2.2.6.1. *Ostrea edulis* biomass (2011)

The only available biomass estimate for Blacksod Bay is from the Marine Institute survey undertaken in January 2011 and reported by Tully and Clarke (2012). The survey estimated a native oyster biomass of 25 ± 6 tonnes within the surveyed area. This was among the lower biomass estimates recorded across the Irish oyster stocks surveyed during 2010–2012 (Tully & Clarke, 2012).

2.2.6.2. Size distribution of *Ostrea edulis* (2011)

A total of 421 native oysters were measured across 84 survey stations in Blacksod Bay in 2011. Shell length ranged from 26 to 121 mm, with a median of 76 mm and an interquartile range of 65–85 mm. The size distribution was therefore centred approximately on the statutory MLS.

Oysters ≥ 76 mm accounted for 51.5% of measured individuals, while 37.8% were between 55 and <76 mm and 10.7% were <55 mm. The most frequently represented size classes occurred broadly between 65 and 85 mm, with smaller oysters comprising a comparatively limited component of the measured population. The 2011 survey therefore described a population containing a substantial proportion of larger oysters at or above the MLS, alongside representation of intermediate and smaller size classes.

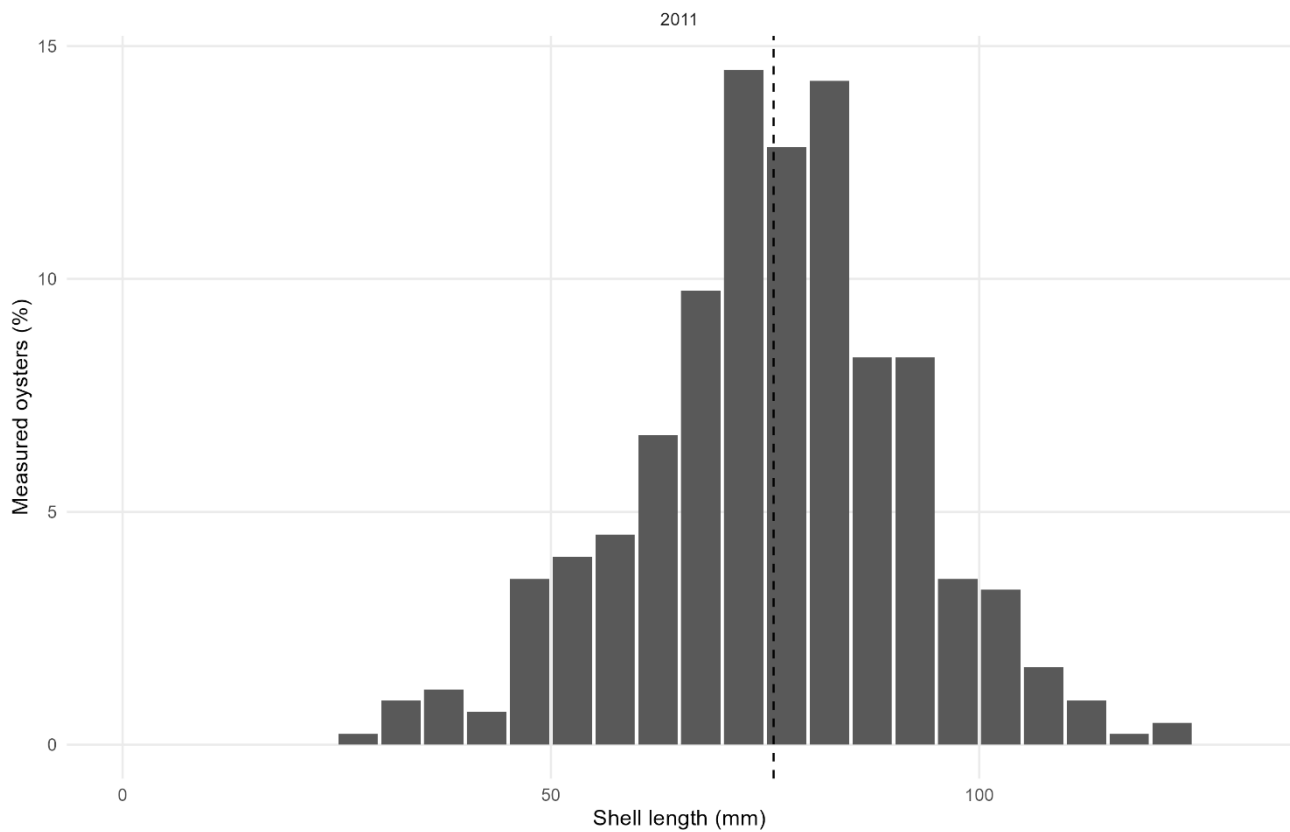


Figure 2.17 Size distribution of native oyster (*Ostrea edulis*) recorded during the 2011 Marine Institute survey of Blacksod Bay. The vertical dashed line indicates the statutory MLS of 76 mm.

2.2.6.3. Spatial Distribution of *Ostrea edulis* (2011)

The 2011 Marine Institute survey covered approximately 2.39 km² north of Claggan Point, immediately south of Belmullet. Total native oyster biomass was estimated at 25 ± 6 tonnes, among the lowest recorded across the Irish oyster beds surveyed during 2010–2012. Spatial distribution was patchy, with most of the northern bed supporting approximately 0.05–0.2 oysters m⁻² and localised areas reaching 0.2–0.3 oysters m⁻² or > 0.3 oysters m⁻². The smaller southern bed generally supported approximately 0.01–0.1 oysters m⁻², with a small, localised area exceeding 0.3 oysters m⁻². Overall densities ranged from 0 to 1 oyster m⁻².

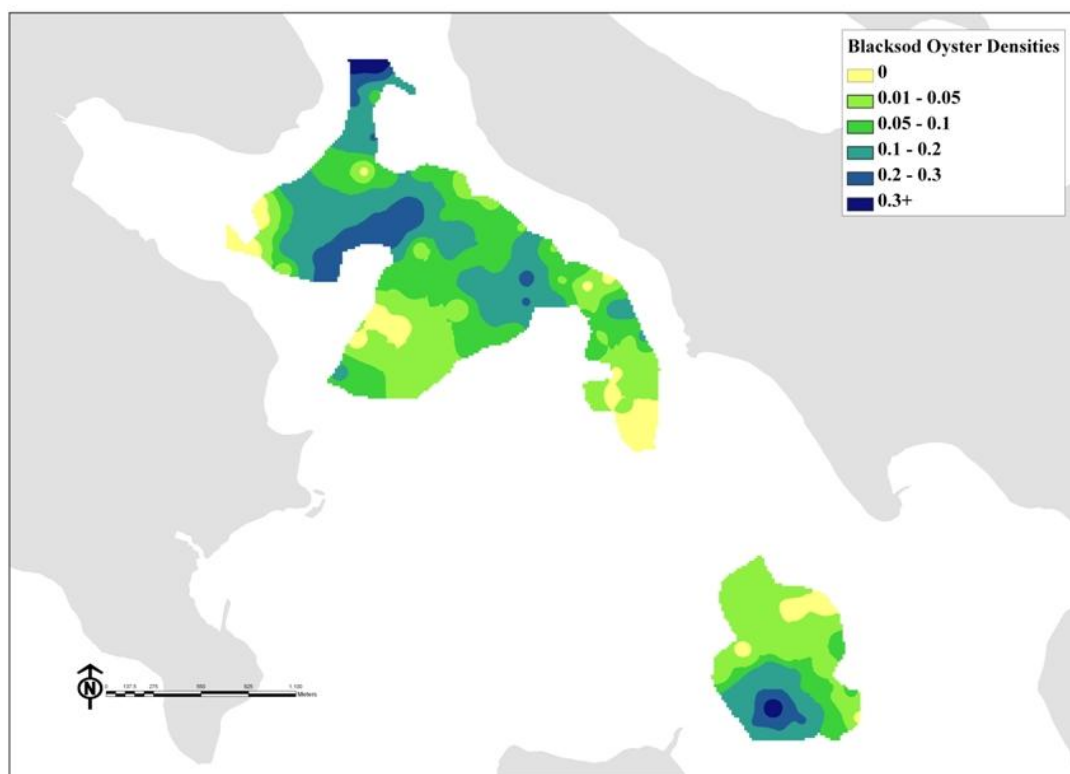


Figure 2.18 Spatial distribution of native oyster (*Ostrea edulis*) biomass density in 2011 for Blacksod Bay recorded by the Marine Institute (Tully & Clarke, 2012).

2.2.7. Synthesis of stock condition relevant to dredging assessment

Table 2-13 summarises the main quantitative stock indicators derived from the latest available MI survey data. The indicators describe the condition and size structure of each stock and provide biological context for the assessment of oyster removal, repeated physical disturbance, effects on recruitment and longer-term population resilience considered in Section 3.

Table 2-13 Summary of latest available Marine Institute oyster stock indicators.

Stock	Latest biomass survey	Raised biomass (t) ± 95% HDI	Mean biomass per surveyed area (t km ⁻²)	Median length (IQR) (mm)	<55 mm (%)	≥76 mm (%)
Blacksod Bay – <i>O. edulis</i>	–	–	–	76.0 (65.0–85.0)	10.7	51.5

Stock	Latest biomass survey	Raised biomass (t) $\pm$ 95% HDI	Mean biomass per surveyed area (t km ⁻²)	Median length (IQR) (mm)	<55 mm (%)	$\geq$ 76 mm (%)
Inner Tralee Bay – <i>O. edulis</i>	2025	409.8 $\pm$ 310.2	85.9	64.0 (50.0–72.0)	31.1	17.0
Outer Tralee Bay – <i>O. edulis</i>	2026	107.1 $\pm$ 61.7	19.3	32.0 (13.0–63.0)	65.9	11.6
Lough Swilly – <i>O. edulis</i>	2026	131.1 $\pm$ 46.1	18.2	62.5 (54.8–69.1)	25.3	10.3
Lough Swilly – <i>M. gigas</i>	2026	346.3 $\pm$ 194.3	48.1	87.7 (74.0–101.6)	N/A	N/A

Note: Biomass values are raised estimates with $\pm$ 95% highest density intervals (HDIs). Mean biomass per surveyed area is calculated as total estimated biomass divided by the area surveyed. The < 55 mm category is used as a descriptive indicator of the smaller native oyster component; $\geq$ 76 mm represents oysters at or above the statutory minimum landing size.

Across the stocks with recent biomass information, the MI data identify contrasting stock conditions rather than a common temporal response. Inner Tralee Bay continues to support the greatest absolute native oyster biomass but has undergone a recent reduction from the higher biomass recorded in 2022–2023. Outer Tralee Bay shows a strong recent input of small oysters together with an increase in biomass per surveyed area in 2026. Lough Swilly also shows evidence of recurrent native oyster recruitment and an increase in native oyster biomass in 2026, while remaining subject to substantial pressure from a naturalised Pacific oyster population whose biomass continues to exceed that of the native stock.

These differences are important to the dredging impact assessment because the ecological consequence of oyster removal and repeated disturbance depends not only on the area exposed to dredging, but also on the abundance, size structure, recruitment and wider pressure context of the affected oyster population.

3. Assessment of dredging impact pathways

This section considers the available evidence on the environmental effects of native oyster dredging, with particular focus on impact pathways that could affect the relevant Conservation Features and Conservation Objectives of Blacksod Bay, Tralee Bay and Lough Swilly. Evidence relating directly to *Ostrea edulis* fisheries is prioritised. Studies of other oyster species, bivalve fisheries and bottom towed fishing gear were considered where they provide relevant evidence concerning impact mechanisms or receptor sensitivity. The applicability of this supporting evidence to the three fisheries is considered in relation to differences in fishing gear, fishing intensity, environmental conditions and the sensitivity of the receiving habitats.

The assessment considered the scale, intensity, frequency, duration, reversibility and recovery potential of the identified effects. It distinguishes short-term physical disturbance associated with individual dredge passes from longer-term effects on oyster density, shell and cultch availability, habitat structure, recruitment and associated benthic communities. Particular emphasis is placed on determining whether effects are likely to be significant or persistent, having regard to the relevant Conservation Objective attributes and targets, the sensitivity and recovery potential of the affected receptors, and the interval between successive fishing seasons (Tully & Clarke, 2012; Kennon et al., 2023).

Ostrea edulis is an active suspension-feeding bivalve occurring in productive estuarine and shallow coastal environments. The species occurs on a range of seabed types, including muddy sand, muddy gravel, consolidated silt, shell-bearing sediment and rock, where sufficient stable material is available for settlement. Reproductive timing varies according to temperature and local environmental conditions, but spawning and larval release generally occur during the summer months, commonly between June and September. Eggs are fertilised internally and brooded to the veliger stage before the larvae are released into the water column. The species is highly fecund, with reported egg production ranging from approximately 91,000 to 2 million eggs and increasing with the age and size of the adult oyster (Paling et al., 2026).

Following their planktonic phase, larvae preferentially settle on clean, stable hard substrata, including living and dead bivalve shell. Suitable settlement habitat within exploited fisheries may therefore be maintained or enhanced through the placement of clean shell or other appropriate hard material. The suitability of shell material depends on its stability, condition, particle size and availability above the sediment surface, and highly fragmented or buried shell may not provide equivalent settlement habitat. Repeated settlement can result in the development of dense and potentially multi-layered oyster beds where recruitment is sufficient and fishing pressure and other forms of physical disturbance are limited (Paling et al., 2026; Preston et al., 2020).

Native oyster beds perform several ecological functions within estuarine and coastal ecosystems. The production of faeces and pseudofaeces increases the transfer of organic material from the water column to

the seabed and influences sediment biogeochemistry and the availability of food to other benthic organisms. Living oysters and accumulated shell also provide hard settlement surfaces and interstitial spaces within otherwise sedimentary habitats, increasing seabed complexity and supporting diverse associated communities (Paling et al., 2026; Lown et al., 2021). Oyster-bed condition may therefore be characterised using living-oyster abundance and density, population size structure, shell and cultch availability, seabed relief and complexity, and the composition of the associated benthic community.

Native oyster stocks in Ireland have undergone substantial historical declines. Intensive or unregulated fishing on formerly productive beds represented an important pressure, particularly where recruitment was intermittent or insufficient to replace fishing and natural mortality. The former Arklow oyster beds provide a documented Irish example in which sustained heavy fishing contributed to the collapse of an extensive offshore stock that may also have experienced irregular larval retention and settlement. Overfishing, unregulated fishing and poor compliance with management measures were also implicated in the decline of stocks within coastal bays and estuaries (Tully & Clarke, 2012).

Removal of adult oysters can reduce spawning-stock abundance and increase the distance between remaining individuals, potentially reducing fertilisation success and subsequent recruitment (Guy et al., 2019). Fishing may also remove, break, bury or redistribute shell material and cultch, while shell fragmentation may reduce seabed relief and the structural complexity of the oyster bed (Bromley et al., 2016; Kennon et al., 2023). These pressures operate alongside habitat loss and degradation, variable recruitment and disease. Bonamiosis, caused by the protozoan parasite *Bonamia ostreae*, has resulted in substantial mortality within native oyster populations. Disease is not treated as an impact caused directly by dredging unless a credible pathway exists through the movement of oysters, shell or equipment. It is however, relevant to receptor sensitivity and recovery because disease-related mortality may reduce the capacity of a population to withstand additional fishing mortality or recover following disturbance. The combined influence of fishing, habitat degradation, disease and irregular recruitment may therefore limit the ability of depleted populations to replace mortality and recover (Tully & Clarke, 2012; Pouvreau et al., 2023).

Irish native oyster fisheries have historically operated under a range of governance arrangements, including public access, Fishery Orders and aquaculture licences. Fishery Orders confer defined management or fishing rights within specified areas, while aquaculture licences authorise aquaculture activity at defined sites and do not necessarily confer equivalent management authority over a wider public fishery. Management authority was devolved to a number of local co-operatives through Fishery Orders issued during the late 1950s and early 1960s. Other native oyster fisheries operate within aquaculture-licensed or public-fishery frameworks. The Marine Institute has identified that management objectives, harvest control rules and reference points remain insufficiently developed in some fisheries. Locally applied Total Allowable Catches may be informed by annual

surveys or other available knowledge, but the evidential basis and application of these controls vary among fisheries (Tully & Clarke, 2012; Marine Institute, 2025).

The statutory Minimum Landing Size (MLS) for native oyster is 76 mm, with a voluntary limit of 78 mm applied in Tralee Bay. The MLS is generally reached at approximately four to five years of age, while sexual maturity normally occurs at a smaller size. This measure therefore provides some protection for oysters before recruitment to the fishery, although its effectiveness depends on the density and condition of the remaining spawning stock, recruitment frequency and the level of fishing mortality applied to oysters above the MLS (Tully & Clarke, 2012; Marine Institute, 2025).

The authorised commercial fishing in Tralee Bay generally extends from September to April inclusive, although the actual duration of fishing may be shorter depending on local opening and closing arrangements, stock availability, catch limits and weather conditions. Fishing therefore occurs largely outside the main summer spawning and larval-settlement period. However, activity commencing in September could overlap with late reproductive activity because spawning, larval release and settlement vary according to temperature and local environmental conditions. Management arrangements differed substantially among the fisheries. Within Blacksod Bay, the North Mayo Oyster Development Co-operative manages the native oyster beds under aquaculture licences. Fishing occurs mainly during February and March, with a small number of fishing days also occurring between September and December. Annual fishing effort is usually no more than eight fishing days, although a few additional fishing days may occur in some years. Fishing activity is therefore intermittent and of low annual duration. Lough Swilly operates as a public fishery with dredging authorised under Inland Fisheries Ireland licences between the 1st of September and the 30th of April.

The seasonal fishery closure in Tralee Bay provides an interval during which disturbed sediments, oyster populations and associated benthic communities may begin to recover. However, the presence of a closed period does not, by itself, establish that the effects of dredging are non-persistent. Physical disturbance associated with an individual dredge pass may be temporary, while the removal of adult oysters or settlement shell may affect oyster density, recruitment and oyster-bed structure over several subsequent fishing seasons. Repeated disturbance of the same grounds may also result in cumulative effects where recovery remains incomplete before fishing recommences (Kennon et al., 2023).

Oyster dredging may affect both the target population and the wider benthic environment through a combination of direct oyster removal and incidental mortality, physical seabed disturbance, removal or redistribution of shell and cultch, sediment resuspension and redeposition, and disturbance of associated fauna. Dredging may also affect recruitment and population recovery indirectly by reducing broodstock density, increasing the distance between reproductive individuals or reducing the availability and suitability of settlement substrate. The nature and magnitude of these effects depend on the characteristics of the dredge

and receiving habitat, the intensity, frequency and spatial distribution of fishing, the existing condition of the oyster population and oyster-bed habitat, and the period required for ecological recovery (McLavery et al., 2020; Kennon et al., 2023)

3.1. Impact Assessment

This impact assessment considers the effects arising from the dredging of native oyster (*Ostrea edulis*) populations, oyster-bed habitat, and the relevant Conservation Features within Blacksod Bay, Tralee Bay and Lough Swilly. The assessment is undertaken separately for each bay and for each identified impact pathway. The impact mechanisms comprise physical disturbance of oyster beds and associated benthic habitats, removal of oysters from the population, effects on oyster bed structure and habitat complexity, disturbance or displacement of associated benthic fauna, sediment resuspension and smothering, effects on recruitment, repeated or cumulative disturbance over successive fishing seasons, and potential interaction with other sensitive communities or Conservation Features.

The scale of fishing pressure and the response of the oyster populations are interpreted using the available Marine Institute stock assessment data, licence numbers as an indicator of potential fishery participation and literature on impacts of oyster dredging on relevant benthic habitats and oyster populations. Marine Institute data relating to oyster biomass (a proxy of population size) and catch size structure (a proxy of recruitment) provide evidence of stock condition over time. However, changes in these parameters cannot be attributed to dredging solely on the basis of temporal association because oyster populations are also influenced by recruitment variability, disease, environmental conditions, natural mortality, invasive species, management measures and changes in survey design or dredge efficiency. Total Allowable Catches indicate the maximum authorised level of removal, while landings provide a measure of the recorded harvest. Neither measure accounts fully for incidental mortality, damage to oysters that are contacted but not retained, the return and subsequent survival of undersized oysters, or the removal, breakage or displacement of shell material. These measures also provide no direct information on the area swept by the dredge or the frequency with which the same ground is contacted. Licence numbers similarly indicate the number of persons authorised to participate in a fishery but do not demonstrate whether each licence was used or quantify the duration, intensity or spatial distribution of fishing activity.

Sea surface temperature, salinity, water depth, and hydrodynamic exposure are not assessed as impact pathways because these environmental conditions are not caused directly by oyster dredging. They are, however, relevant to the interpretation of oyster sensitivity and recovery because they influence growth, spawning, larval development, larval retention, recruitment and natural mortality. Differences in environmental conditions may consequently contribute to variations in oyster population dynamics between

the three bays and may affect the capacity of a population to recover following fishing disturbance (Tully & Clarke, 2012). These factors will therefore be considered as part of the ecological context but will not be attributed to dredging unless an appropriate causal pathway exists.

The assessment is undertaken having regard to the site-specific Conservation Objectives for the relevant Special Areas of Conservation and, where applicable, Special Protection Areas associated with the three bays. For the Special Areas of Conservation, the assessment considers whether dredging could affect the extent, distribution, structure, biological composition or ecological functions of the relevant Annex I habitats and their constituent communities. Live oysters, accumulated shell, and associated fauna may form an important component of the structure and function of the protected marine habitats in these bays. This relationship is particularly direct in Tralee Bay, where an *Ostrea edulis* dominated community is expressly identified as a constituent community that must be conserved in natural condition. Maintenance or recovery of native oyster populations is therefore relevant where the condition of the oyster bed contributes to achievement of the applicable habitat Conservation Objectives (Tully & Clarke, 2012; NPWS, 2014d).

For the purposes of this assessment, significance relates to whether dredging could cause a biological or physical change that would be capable of compromising the applicable Conservation Objective attributes and targets or the ability to maintain or restore a Conservation Feature to favourable conservation condition. A change outside the range reasonably expected through natural processes may provide evidence of an anthropogenic effect, but departure from natural variability is not treated as the sole test of significance. The assessment must also consider the ecological importance, magnitude and spatial extent of the change and its implications for the structure, function and recovery of the affected receptor.

Persistence relates to whether an effect is continuous, ongoing or recurs with sufficient frequency to prevent the affected population, habitat or community from recovering within an ecologically relevant period. An effect may therefore be persistent even where the activity causing it is seasonal or intermittent. The level of disturbance will be assessed by considering the spatial scale, intensity, frequency, duration and reversibility of each effect, together with the sensitivity, existing condition and recovery potential of the affected receptor.

NPWS guidance distinguishes between sensitive keystone communities and other structurally important marine communities. Significant anthropogenic disturbance to the extent or quality of sensitive keystone communities should be avoided. For other constituent communities, NPWS advises that significant continuous or ongoing disturbance should not generally exceed approximately 15% of the interpolated area of each community type. Where this approximate area is exceeded, an increasingly cautious approach and further management review are recommended before additional activities are licensed. Intermittent or episodic

activities may be assessed on a site-specific basis, having regard to the nature and scale of the activity, and the resilience of the receiving habitat (NPWS, 2011c; NPWS, 2014c; NPWS, 2014d).

The seasonal cessation of fishing provides an interval during which disturbed sediments, oyster populations and associated benthic communities may recover. Persistence will be determined separately for each pathway by considering the frequency with which the same areas are dredged, the duration of the resulting ecological change and whether recovery is likely to occur before fishing recommences. Repeated disturbance over successive fishing seasons may result in a persistent or cumulative effect where recovery remains incomplete.

The assessment was therefore informed collectively by the Marine Life Information Network pressure benchmarks and sensitivity classifications for *Ostrea edulis* (Paling et al., 2026), oyster biomass data from Marine Institute stock surveys, size distribution data from Marine Institute stock surveys and other literature concerning the effects of oyster dredging on marine habitats and species relevant to Tralee Bay, Blacksod Bay and Lough Swilly. This evidence was considered together with the current scale, magnitude, persistence and management of each fishery, the characteristics and sensitivity of each receiving environment and the applicable Conservation Objectives for the SAC in each bay.

3.1.1. Physical disturbance of oyster dredging

3.1.1.1. Literature review

Oyster dredging causes a direct physical pressure on the seabed through the contact and movement of the dredge frame, teeth or blade across the sediment surface. Depending on the configuration and operation of the gear, this contact may result in abrasion, penetration or ploughing of surface sediments, formation of dredge tracks, overturning or displacement of shell and other seabed material, and damage to living oysters and associated epifauna. Repeated dredging may also flatten small-scale seabed relief and modify the physical structure of oyster-bed habitat. These changes have the potential to affect oyster-bed condition and associated benthic communities, although the occurrence, magnitude and persistence of the effect are dependent on the characteristics of the gear, the receiving habitat and the intensity and frequency of fishing (Cranfield et al., 2003; Sciberras et al., 2018).

The magnitude of physical disturbance is influenced by dredge width and weight, the presence and spacing of teeth or blades, tow speed, vessel power, the number of passes over an area and the proportion of the seabed swept. The response of the receiving habitat is influenced by sediment type, hydrodynamic exposure, existing shell density, seabed complexity and the presence of sensitive or habitat forming species. Experimental evidence indicated that the physical structure of clean sand could be restored within days to a few months, while restoration of muddy sand could take several months or more than one year. Following experimental

intertidal dredging, recovery of annelid and mollusc abundance was projected to occur after approximately 98 to 109 days in sand. Equivalent recovery estimates for fauna in muddy sand ranged from approximately 870 to 1,210 days, although these longer estimates were extrapolated beyond the 540 day monitoring period and were therefore uncertain. In biogenic habitats, the effects of scallop dredging were projected to persist for approximately 972 to 1,175 days, while studies of areas closed to scallop fishing indicated recovery periods of approximately two to five years (Kaiser et al., 2006). A later meta-analysis predicted that benthic community abundance following towed dredging could take three years or longer to recover and that species richness in biogenic habitats would not recover within three years, irrespective of gear penetration depth (Sciberras et al., 2018). Comparable quantitative recovery periods were not established for gravel and shell rich seabeds, although significant effects of scallop dredging were recorded during both short and longer term observations. The same dredging intensity may therefore produce materially different effects in different receiving environments. Although these studies did not examine the Irish native oyster fisheries and therefore do not provide direct predictions for them, they provide relevant analogue evidence of the potential physical effects of dredging on benthic habitats. The scale of the impact may be different as scallop dredges may be larger and are configured differently.

Physical structure is particularly important within *Ostrea edulis* habitat with living oysters and accumulated shell providing stable hard substrata, vertical relief, and interstitial spaces within otherwise sedimentary environments. These features provide settlement surfaces for oyster larvae and habitat for associated epifauna and mobile organisms. Oyster larvae preferentially settle on suitable hard substrata, including living oysters and clean dead shell with relatively low levels of silt, although settlement success is also influenced by larval supply, hydrodynamic conditions, predation, and post-settlement survival (Fulford et al., 2011; Bromley et al., 2016; Preston et al., 2020). Physical disturbance that breaks, overturns, buries, removes or redistributes shell may consequently alter the availability, stability, and spatial configuration of settlement habitat.

Bromley et al. (2016) undertook a three-year field experiment in Lough Foyle using a bladed oyster dredge frame with the collecting bag removed, leaving only the dredge as a harrow. Harrowing altered the composition and distribution of shell material, with harrowed plots containing a greater proportion and weight of oyster shell than unharrowed plots. The harrowing did not significantly change shell fouling or suspended particulate matter concentrations. However, a significant difference in epifaunal and mobile macrofaunal assemblage composition between harrowed and unharrowed treatments was found, although interannual variation had a stronger influence on assemblage composition than harrowing vs no harrowing (Bromley et al., 2016).

Another study did a spatial comparison within the rotationally managed Loch Ryan oyster fishery in southwestern Scotland (Kennon et al., 2023). It examined plots that had last been fished one, two and six years

pre survey. Oyster shell density, shell cover and macrofaunal biodiversity differed significantly among the plots, with the highest values recorded where six years had elapsed since fishing. Oyster shell density in the plot last fished six years before the survey was 8.5 times that recorded in the plot last fished one year before the survey, while Shannon Wiener diversity and Margalef's richness were 60.5% and 68.8% higher, respectively, in the six year plot. Oyster shell density and percentage cover were also positively related to macrofaunal biodiversity, indicating that the accumulation of living and dead shell contributes to habitat complexity and supports an increasingly diverse associated benthic community (Kennon et al., 2023). Modelling indicated that biodiversity recovery may extend over approximately ten years. However, in the absence of an undisturbed reference habitat, this period cannot be regarded as a confirmed estimate of the time required for full recovery. The findings indicate that changes to oyster-bed structure and associated biodiversity may persist for several years and that recovery may remain incomplete between successive fishing seasons.

Broader bottom fishing studies support the conclusion that the response to physical disturbance is strongly dependent on gear and habitat type. Kaiser et al. (2006) found that scallop dredging produced significant short term reductions in the abundance of benthic taxa in sand and muddy sand habitats, including negative responses among deposit feeding and suspension feeding fauna. Gravel habitats were negatively affected in both short and longer term observations, while biogenic habitats exhibited some of the greatest initial effects and prolonged recovery. The study also identified a relationship between restoration of the physical habitat and recovery of its biological community. However, scallop dredges generally differ from the oyster dredges used in the three Irish fisheries in weight, tooth configuration, penetration and towing arrangement. The reported effect magnitudes and recovery periods are therefore treated as supporting analogue evidence.

This broader evidence is supported by Sciberras et al. (2018), who found that a single pass of bottom towed fishing gear reduced benthic invertebrate abundance and species richness across the experiments included in their global meta-analysis. Although this study did not examine the Irish native oyster fisheries and therefore do not provide direct predictions for them, it provides relevant analogue evidence of the potential physical effects of dredging on benthic habitats. The scale of the impact may be different as scallop dredges may be larger and are configured differently. The magnitude of the response increased with gear penetration depth. High resolution fishing data from the Danish blue mussel fishery showed that increasing dredging intensity was associated at the regional scale with reduced benthic community biomass and shifts in species composition. The compositional change reflected differing responses among taxa, with many sedentary taxa occurring at lower densities in dredged areas and mobile gastropods and opportunistic oligochaetes occurring at higher densities. These opposing responses meant that no significant change in total community density was detected. The study also found no significant effect on functional richness or trait composition (McLaverly et al., 2020). The strength of these relationships varied locally according to background eutrophication, natural

disturbance and the availability of suitable reference conditions (McLavery et al., 2020). Although the study did not examine *Ostrea edulis* beds directly, it provides relevant supporting evidence that benthic responses to bivalve dredging depend on fishing intensity, spatial scale and receiving environmental conditions.

Long-term evidence indicates that repeated physical disturbance can contribute to more extensive habitat modification where oyster beds support complex biogenic reefs. Cranfield et al. (2003) associated prolonged oyster dredging in an *Ostrea chilensis* fishery with disruption of oyster-associated bryozoan reefs, redistribution of biogenic sediment and flattening of the seabed. Thurstan et al. (2013) documented the historical extirpation of *O. edulis* and the transformation of extensive biogenic habitat into less diverse soft sediment communities within the Firth of Forth. Intensive removal of adult and juvenile oysters occurred alongside damage from bottom trawling and dredging, which disrupted and removed the consolidated surface shell matrix. Other pressures included sediment deposition following land drainage and reclamation, physical smothering by suspended coal mine waste and dumped coal and ash, and industrial pollution from gas works, tanneries and dye works. The loss of shell substrate also reduced suitable settlement habitat and contributed to recruitment failure. These findings demonstrate the potential for repeated disturbance and removal, acting alongside other environmental pressures, to contribute to long term changes in oyster associated reef habitats (Thurstan et al., 2013).

For the purposes of the site-specific assessments below, physical disturbance includes direct abrasion and displacement of the seabed, damage or displacement of living oysters, breakage or redistribution of shell and cultch, alteration of small-scale seabed relief, and direct injury or displacement of fauna associated with the oyster grounds. Sediment resuspension and deposition and interactions with separate sensitive benthic communities are assessed independently in subsequent sections.

3.1.1.2. Blacksod Bay

Physical disturbance occurs where the oyster dredge contacts the seabed and may include local abrasion of sediment, formation of dredge tracks, displacement of oysters, breakage or redistribution of shell and cultch, and injury or displacement of associated benthic fauna. Within Blacksod Bay, the main receptors considered under this pathway are the native oyster grounds and the sedimentary communities within which they occur. Potential interaction with the separately mapped *Zostera*-, *Serpula*- and reef-dominated communities is considered under the assessment of interactions with other sensitive communities and Qualifying Interests.

The receiving habitat is predominantly sedimentary. Approximately 94.6% of the licensed area comprises the Fine sand with *Angulus fabula* community complex and a further 3.6% comprises the Sand with *Angulus tenuis* and *Pygospio elegans* community complex. These are predominantly sandy habitats and do not represent a documented topographic native oyster reef. Physical disturbance of mobile sedimentary habitat is generally

more reversible than disturbance of structurally complex biogenic habitat, while evidence from bottom-contact fishing studies indicates that previously fished communities are generally less strongly affected by additional disturbance than previously unfished communities (Kaiser et al., 2006; Sciberras et al., 2018). This is relevant because the Blacksod Bay oyster grounds have a long history of commercial exploitation and therefore represent a historically disturbed receiving environment. Tully and Clarke (2012) similarly noted that well-developed topographic native oyster reefs have not been documented in contemporary Irish shallow-water oyster fisheries.

The magnitude and frequency of the pressure are also limited by the low annual fishing effort. Fishing occurs mainly during February and March, with a small number of fishing days also occurring between September and December. Annual fishing effort is usually no more than eight fishing days, although a few additional fishing days may occur in some years. Direct seabed contact is therefore intermittent and of short total annual duration rather than continuous or ongoing. Most fishing occurs during the cooler months, although fishing in September and potentially later in autumn may overlap with the end of the period of active shell growth. Tully and Clarke (2012) identified strong seasonality in juvenile oyster growth and noted that dredge contact during active growth may damage the fragile growing shell margin. The small number of fishing days during September to December limits the frequency and duration of this potential interaction.

Tully and Clarke (2012) identified progressive shell breakage and homogenisation of oyster grounds as a potential consequence of repeated dredging. Localised changes of this kind cannot be excluded along individual dredge tracks. However, the sandy receiving habitat, its capacity for natural physical reworking and the low number of fishing days each year substantially reduce the likelihood that such effects would accumulate to produce significant bed-scale alteration. The absence of a contemporary stock time series means that stock stability should not be relied upon as a separate line of evidence for Blacksod Bay.

Assessment conclusion

Physical disturbance associated with native oyster dredging in Blacksod Bay is intermittent and is not continuous or ongoing. Taking account of the predominantly sandy and historically disturbed receiving habitat, the absence of documented biogenic oyster reef and the low annual fishing effort, local physical effects are not expected to develop into disturbance of a magnitude or duration capable of compromising the natural condition of the oyster-bearing sedimentary communities. The occurrence of a small number of additional fishing days between September and December does not materially alter this assessment because total annual fishing effort remains low and is separated by extended periods without dredging. Physical disturbance is therefore assessed as **not significant** and **not persistent**.

3.1.1.3. Tralee Bay

Physical disturbance occurs where the oyster dredge contacts the seabed and may locally abrade or displace sediment, overturn or damage living oysters, break or redistribute shell and cultch, reduce small-scale seabed relief and injure or displace associated benthic fauna. The main receptor is the *Ostrea edulis* dominated community within Inner and Outer Tralee Bay, which forms a constituent community of Mudflats and sandflats not covered by seawater at low tide [1140] and Large shallow inlets and bays [1160] and is required to be conserved in natural condition.

Commercial fishing is directed towards the established oyster grounds rather than uniformly across the full licensed area (Fishery Order) which includes much of Tralee Bay. The wider spatial overlap between the licence areas and other mapped benthic communities should therefore not be treated as the physical disturbance footprint of the fishery. Direct interaction at the margins of the oyster grounds, including areas of transition towards *Zostera*, *Mytilus* or reef communities, is considered separately under the assessment of interactions with other sensitive communities and Qualifying Interests.

The Tralee Bay oyster grounds are long-established, historically exploited sedimentary oyster beds rather than documented topographic oyster reefs. Although repeated dredging can progressively break shell and reduce small-scale relief (Tully & Clarke, 2012), the response of historically fished sedimentary communities to further disturbance is generally less pronounced than that of previously unfished or biogenic habitats (Sciberras et al., 2018). The current physical character of the Tralee Bay oyster grounds must therefore be considered in the context of a long history of recurrent dredging rather than as previously undisturbed habitat.

The fishery operates between September and April, with no commercial dredging between May and August. This removes direct physical disturbance during much of the main shell-growth period. Tully and Clarke (2012) demonstrated strong seasonal growth in Irish native oysters, including little or no winter growth in younger oysters, and identified damage to the actively growing shell margin as a potential effect of dredge contact. The timing of the fishery therefore substantially limits this particular effect.

The longer-term MI survey record provides an additional site-specific line of evidence. Surveys of Inner Tralee Bay generally encompass the entire known stock, historically distributed over approximately 4 km², while more recent Outer Tralee Bay surveys encompass the known patchy oyster grounds. Biomass varies substantially among years and should not be described as constant; nevertheless, the oyster stocks continue to occupy the established grounds and repeatedly contain smaller, intermediate and larger oysters. The surveys therefore provide no evidence of a progressive loss of the oyster grounds or of physical disturbance sufficient to prevent their continued recruitment and persistence (Tully & Clarke, 2012; Marine Institute, 2025).

Direct measurements of shell cover, fragmentation and seabed relief are not available, and local structural effects of dredging therefore cannot be excluded. However, if repeated shell breakage and flattening were occurring at a magnitude sufficient to materially impair oyster-bed function across the mapped community, a sustained deterioration in the ability of the grounds to support oysters and recruitment would be expected. This is not apparent from the available survey series. The evidence therefore supports local and reversible physical disturbance rather than progressive bed-scale deterioration.

Assessment conclusion

Physical disturbance associated with native oyster dredging in Tralee Bay is seasonal and is not continuous. Although local disturbance of oysters, shell material and associated fauna occurs along dredge tracks, the long-established and historically disturbed nature of the sedimentary oyster grounds, the annual May-August cessation of fishing and the continued persistence and replenishment of the established oyster stocks indicate that the pressure is not causing significant deterioration of the *Ostrea edulis* dominated community. Physical disturbance is therefore assessed as **not significant** in relation to the applicable Conservation Objectives for Mudflats and sandflats not covered by seawater at low tide [1140] and Large shallow inlets and bays [1160].

3.1.1.4. Lough Swilly

Physical disturbance occurs where the oyster dredge contacts the seabed and may locally abrade or displace sediment, overturn or damage living oysters, break or redistribute shell and cultch, alter small-scale seabed relief and injure or displace associated benthic fauna. The main receptor for this pathway is the *Ostrea edulis* dominated community, which is a constituent community of Estuaries [1130] and is required to be conserved in natural condition.

The active oyster fishery is directed towards known oyster beds and the full approximately 55.4 km² licensed area should not be interpreted as the area physically disturbed by dredging. The fact that the licence polygon overlaps all six constituent communities of Estuaries [1130] therefore identifies potential spatial pathways but does not demonstrate direct exposure of those communities. Physical disturbance associated with the targeted fishery is mainly concentrated within the oyster grounds; potential contact with other constituent communities at the margins or transitional areas of those grounds is assessed separately under interactions with other sensitive communities and Qualifying Interests.

Lough Swilly has a long history of native oyster exploitation. Oysters were recorded in commercial quantities in 1604 and a traditional fishery has operated in the lough for centuries. The present *Ostrea edulis* dominated community is therefore a historically disturbed sedimentary oyster habitat rather than an undisturbed or topographic native oyster reef. Tully and Clarke (2012) noted that well-developed topographic oyster reefs

have not been documented in contemporary Irish shallow-water fisheries and that Irish estuarine oyster grounds are naturally subject to sediment movement, salinity variation and other physical disturbance. The history of fishing is also relevant because benthic communities with previous exposure to bottom fishing generally experience lower additional depletion than comparable previously unfished communities (Sciberras et al., 2018).

The licensing period assessed in this report extends from September to April, leaving May to August without oyster dredging. Direct physical pressure is consequently seasonal rather than continuous and is absent during much of the main period of active shell growth. This reduces the potential for repeated damage to the fragile growing shell margin identified by Tully and Clarke (2012) and provides an annual period without further mechanical disturbance.

The comparable MI surveys undertaken between 2021 and 2026 generally encompass almost all of the known commercial native oyster stock in Lough Swilly. Biomass is variable rather than stable, but the population has persisted throughout the series, smaller oysters have been repeatedly represented and biomass increased again in 2026 following the lower 2025 estimate. These observations provide evidence that the established oyster grounds continue to support recruitment, survival and growth despite the long history of dredging and other pressures acting within the lough. They do not demonstrate that local shell breakage or small-scale changes in bed relief are absent, but they provide indirect evidence that physical disturbance has not reached a magnitude sufficient to prevent continued ecological functioning of the oyster grounds.

Tully and Clarke (2012) identified gradual shell breakage, homogenisation and loss of small-scale relief as potential consequences of repeated oyster dredging. Direct time-series measurements of these structural attributes are not available for Lough Swilly, so local effects cannot be excluded. However, there is no evidence from the available stock assessments of progressive loss of the native oyster population from the established grounds or of a sustained failure of recruitment that would indicate physical degradation of the bed at a scale sufficient to compromise its continued function. The substantial variation in native oyster biomass must also be considered in the context of other important pressures in Lough Swilly, including *Bonamia* and competition with the much larger naturalised Pacific oyster population, and cannot be attributed to physical dredging disturbance alone.

Assessment conclusion

Physical disturbance associated with native oyster dredging in Lough Swilly is seasonal and is not continuous. Localised disturbance of oysters, shell material, sediment and associated fauna is expected where dredging occurs, but the long history of fishing, sedimentary character of the oyster grounds, annual cessation of dredging during much of the active growth period and continued persistence and replenishment of the native

oyster population do not indicate progressive physical deterioration at a scale capable of compromising the natural condition of the *Ostrea edulis* dominated community. Physical disturbance is therefore assessed as **not significant** in relation to the Conservation Objective for Estuaries [1130].

3.1.2. Removal of oysters from the population

3.1.2.1. Literature review

Removal of oysters through commercial harvesting directly reduces living-oyster abundance and biomass and disproportionately affects the larger component of the stock. As larger oysters contribute to spawning-stock biomass, sustained removal may also reduce reproductive output and subsequent recruitment. For the purposes of this assessment, effects on recruitment arising through the reduction of spawning-stock abundance and density are therefore assessed as a consequence of oyster removal rather than as a separate impact mechanism. Removal of individual oysters is permanent; however, the resulting population-level effect is not persistent where recruitment and subsequent growth replace harvested individuals and maintain the abundance and size structure of the stock.

The effects of removal are not limited to adults above the MLS. Native oyster dredging is poorly size-selective because oysters frequently occur in aggregations or are attached to dead shells, resulting in the capture of all size classes, including recently settled spat. Catches are sorted on board, with oysters above the minimum landing size of approximately 76–78 mm retained and undersized oysters returned to the seabed, where survival is generally high unless individuals are damaged during handling or separation from larger oysters. Spat attached to retained oysters may also be removed from the population through landing, although in Tralee Bay efforts are made to detach and return these smaller individuals (though the survival rate of the spat returned in this way is thought to be low; Tully, O., *pers. comms.*).

Marine Institute surveys undertaken between 2010 and 2012 provide direct evidence of the selective removal of legal-sized *Ostrea edulis* from commercially exploited Irish stocks. Surveys completed following the oyster-dredging season generally recorded a lower proportion of oysters at or above the statutory Minimum Landing Size of 76 mm than surveys undertaken before fishing commenced. Using the observed difference in total mortality between surveys undertaken before and after fishing, mainly in Tralee Bay, Tully and Clarke (2012) estimated an instantaneous fishing-mortality coefficient of 0.9. This was considered equivalent to an annual fishing mortality of approximately 60% among legal-sized oysters. The findings demonstrate that seasonal dredging can remove a substantial proportion of the harvestable and reproductively important component of a native oyster stock.

The ecological consequences of removal are also influenced by oyster density and spatial distribution. Fertilisation in *O. edulis* occurs within the mantle cavity of the functional female following the release of sperm by neighbouring oysters. A reduction in population density and an increase in the distance between reproductive individuals may reduce fertilisation success. Dense commercial aggregations have been identified as important sources of larvae capable of contributing to the regeneration of surrounding oyster

grounds, while fragmented and dispersed populations may produce substantially fewer larvae (Kennedy & Roberts, 2006; Guy et al., 2019).

Recruitment in *O. edulis* is naturally variable and depends on broodstock condition, larval production, hydrodynamic retention, suitable settlement substrate and the survival of spat and juveniles. A fishery may therefore sustain a defined level of removal during periods of successful recruitment but experience progressive depletion where recruitment is weak or intermittent. Historical evidence from Ireland and Britain demonstrates that sustained exploitation has contributed to the exhaustion or extirpation of native oyster beds, particularly where fishing continued after stock density and catch rates had declined (Tully & Clarke, 2012; Thurstan et al., 2013).

Recovery cannot be inferred solely from the closure of a fishery or the presence of a seasonal period without dredging. Depleted populations may require several recruitment and growth cycles to rebuild the legal-sized and reproductively important components of the stock. Recovery may also remain limited by disease, invasive species, insufficient broodstock density or unsuitable settlement habitat after fishing pressure has been reduced. Declining abundance, decreasing population size structure, and poor recruitment have been recorded within southern English populations despite fishery closures and reduced fishing effort, demonstrating that cessation of removal does not necessarily result in population recovery where other limiting pressures remain (Helmer et al., 2019).

The persistence and significance of oyster removal depend on whether fishing mortality exceeds the capacity of the population to replace losses through recruitment and growth. This will be informed by trends in biomass and recruitment. Changes in these parameters must be interpreted in the context of natural mortality, disease, invasive species, environmental variability and survey uncertainty, as observed changes cannot necessarily be attributed to dredging alone.

3.1.2.2. Blacksod Bay

The magnitude of oyster removal in Blacksod Bay is mainly constrained by the low annual fishing effort. Fishing occurs mainly during February and March, with a small number of fishing days also occurring between September and December. Annual fishing effort is usually no more than eight fishing days, although a few additional fishing days may occur in some years. The opportunity for oyster removal therefore remains substantially lower than in fisheries operating regularly over several months. The MI also applies an average dredge-efficiency coefficient of approximately 35% to oyster survey catches, demonstrating that individual dredge passes do not capture all oysters present within the swept track, although this coefficient should not be interpreted as an annual exploitation rate.

The statutory MLS of 76 mm provides further protection to spawning stock. Native oysters generally reach the MLS at approximately four to five years of age but become reproductively mature at a smaller size and younger age. Consequently, a component of the sub-MLS population can reproduce before becoming available for legal retention. *O. edulis* is also highly fecund, producing approximately 0.5–2 million eggs per spawning depending on individual size and condition. The combination of a mature sub-MLS component, incomplete dredge catchability and the low number of fishing days each year provides substantial scope for reproductive oysters to remain within the population.

The available Blacksod Bay stock information is limited and is not sufficient to describe recruitment trends. The 2011 survey recorded a median shell length of 76 mm, with 37.8% of oysters between 55 and <76 mm and 51.5% at or above 76 mm, although Tully and Clarke (2012) considered evidence of recent spat settlement to be limited.

Assessment conclusion

Removal of oysters in Blacksod Bay is intermittent and is not continuous. Although individual landed oysters are permanently removed from the population, annual fishing effort remains low, usually comprising no more than eight fishing days, although a few additional fishing days may occur in some years. Together with the protection provided to mature sub-MLS oysters, this limits the annual opportunity for spawning-stock depletion. The additional fishing activity between September and December does not indicate a level of removal likely to prevent population replenishment or materially alter the native oyster component of the relevant benthic communities. The population-level effect of oyster removal is therefore assessed as **not persistent** and **not significant** in relation to Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160] and Reefs [1170].

3.1.2.3. Tralee Bay

Tralee Bay supports by far the largest native oyster stock in Ireland, with Inner Tralee Bay containing the majority of national native oyster biomass. This provides a substantially larger spawning-stock resource than occurs in the other fisheries considered in this assessment. Although biomass varies considerably among years, the long-term MI survey series does not indicate a progressive monotonic decline associated with harvesting. Inner Tralee Bay has continued to support several hundred tonnes of native oyster biomass throughout the survey series, while Outer Tralee Bay increased from approximately 48.4 tonnes in 2025 to 107.1 tonnes in 2026.

Importantly, this persistence has occurred despite historically substantial exploitation. Tully and Clarke (2012) estimated that fishing mortality in Inner Tralee Bay during 2010–2012 removed approximately 58–60% of

oysters recruited to the fishery (>76 mm) during a fishing season. The continued persistence of substantial biomass and repeated recruitment following this level of historical exploitation provides direct site-specific evidence that removal has not prevented replacement of harvested oysters at the population scale. The MI surveys generally encompass the entire Inner Tralee Bay stock, which is distributed over approximately 4 km², providing a consistent long-term basis for assessing stock condition.

The size-distribution data provide a complementary line of evidence. Smaller and intermediate oysters have been repeatedly recorded in both Inner and Outer Tralee Bay, demonstrating continued recruitment and progression through the population. In 2025, 31.1% of measured Inner Tralee Bay oysters were <55 mm, while the recent Outer Tralee Bay surveys showed particularly strong recruitment, including distinct modes at approximately 30 and 75 mm in 2025 and 65.9% of measured oysters <55 mm in 2026. These observations demonstrate that removal of legal-sized oysters has not prevented recruitment under the existing fishery regime.

This outcome is consistent with the existing management framework. The fishery is managed by the Tralee Oyster Fisheries Society under the Oyster Fishery Order (Brandon Bay, Tralee Bay and Ballyheige Bay), 1981. Management includes annual MI stock surveys, a TAC/catch limit set by the co-operative with reference to the stock assessment and local knowledge, a statutory MLS of 76 mm, a voluntary MLS of 78 mm, and a defined September–April fishing season with no fishing from May to August. Because oysters mature below the MLS, the size restriction allows a proportion of the stock to contribute to reproduction before becoming available for legal harvest. The annual survey and TAC additionally provide a mechanism through which removals can be adjusted in response to stock condition.

The recent reduction in Inner Tralee Bay biomass between 2023 and 2025 is recognised and should not be presented as evidence that biomass is invariant. However, this occurs within a highly variable long-term series and cannot be attributed to removal alone. Recruitment has continued, substantial spawning biomass remains, and there is no evidence that the established oyster grounds have undergone material loss as a consequence of harvesting. Tralee Bay also does not experience the naturalised Pacific-oyster pressure documented in Lough Swilly, and *B. ostreae* has not been detected under disease surveillance, increasing the capacity of the stock to accommodate managed fishing mortality relative to the more heavily pressured Lough Swilly stock.

Assessment conclusion

Oyster removal in Tralee Bay is seasonal and is not continuous. Although a substantial proportion of legal-sized oysters may be removed during individual fishing seasons, the large standing stock, recurrent recruitment, protection of mature sub-MLS oysters and the existing combination of annual stock assessment,

TAC, MLS and seasonal controls have maintained the capacity of the population to replenish harvested individuals. The available long-term stock record does not indicate that removal under the existing management regime has caused a persistent deterioration in the *O. edulis* dominated community. Removal and its consequent effect on spawning stock and recruitment are therefore assessed as **not persistent** and **not significant** in relation to the Conservation Objectives for Mudflats and sandflats not covered by seawater at low tide [1140] and Large shallow inlets and bays [1160].

3.1.2.4. Lough Swilly

The capacity of the Lough Swilly native oyster population to withstand removal is materially lower and more uncertain than in Tralee Bay. Recent native oyster biomass has been substantially lower, varying from approximately 67.1 tonnes in 2025 to 259.1 tonnes in 2022 and increasing to 131.1 tonnes in 2026. The 2021, 2024 and 2026 estimates were of a broadly similar order, indicating persistence of the stock, and the increase between 2025 and 2026 provides evidence of some capacity for recovery. However, the absence of a monotonic decline does not demonstrate that current fishery removals are within the replacement capacity of the stock.

The size structure provides reason for caution. Legal-sized oysters have generally represented a small component of the recent stock. In the April 2025 post-fishery survey, estimated biomass ≥ 76 mm was only approximately 0.88 tonnes, equivalent to approximately 1.3% of total native oyster biomass, and the MI reported no strong indication of spat recruitment. The 2026 survey was more favourable, with 10.3% of measured oysters ≥ 76 mm and 25.3% < 55 mm, but the recent size distributions do not show the consistently strong and clearly separated recruitment cohorts evident in Tralee Bay. The increase in 2026 is encouraging but is insufficient on its own to demonstrate sustained stock recovery or that annual removals are being replaced.

The stock is also subject to additional mortality and competitive pressures that reduce its capacity to accommodate fishing mortality. *B. ostreae* occurs in Lough Swilly and contributes additional mortality, while naturalised Pacific oyster *M. gigas* competes with native oyster for habitat and has become dominant across parts of the historical native oyster grounds. Pacific oyster biomass was approximately 3,276 tonnes in 2022 and 1,539 tonnes in 2024, compared with native oyster biomass of 259 and 111 tonnes respectively. Although Pacific oyster biomass declined to approximately 346 tonnes in 2026, it remained approximately 2.6 times greater than native oyster biomass. Tully and Clarke (2012) identified competition from Pacific oyster as a realised threat to the maintenance of native oyster populations in Lough Swilly.

These biological pressures are compounded by a lack of fishery management. Lough Swilly operates as a public fishery and no current stock-linked TAC or equivalent annual limit on native oyster removal has been

identified. Twenty-four dredge licences were recorded in 2026, but the number actively used and fishing effort could not be quantified. The Lough Swilly Wild Oyster Society does not have legal authority equivalent to the Tralee Fishery Order, and the proposed 2012–2017 Fishery Natura Plan was not implemented. That plan itself recognised the risk associated with uncontrolled removal and proposed an exploitation limit of 33% of pre-fishery spawning-stock biomass, closures where oyster density was <0.25 oysters m^{-2} , protection of juvenile-dominated areas and establishment of a spawning reserve.

The statutory 76-mm MLS and seasonal closure from May-August provides some protection of the spawning and growth period. However, unlike Tralee Bay, there is currently no demonstrated mechanism linking the quantity removed each year to the available spawning-stock biomass or subsequent recruitment. Given the relatively low native-oyster biomass, weak recent recruitment signal, additional mortality from *Bonamia*, strong competition from naturalised Pacific oyster and absence of a stock-linked catch limit, the available evidence does not demonstrate that annual removals can be replaced consistently before subsequent fishing occurs.

Assessment conclusion

Oyster removal in Lough Swilly is not continuous as a fishing activity; however, its population-level effects may persist between successive fishing seasons where recruitment and growth do not replace harvested oysters. The native oyster stock persists and showed improved biomass and size structure in 2026, but it remains relatively small and is subject to substantial additional biological pressures. In the absence of a stock-linked TAC, quantified annual exploitation rate or evidence of consistently strong recruitment, it cannot be demonstrated that current removals are compatible with maintaining the *O. edulis* dominated community in natural condition. Removal of oysters and its consequent effects on spawning stock and recruitment are therefore assessed as **potentially persistent** and **significant** in relation to the Conservation Objective for Estuaries [1130].

3.1.3. Sediment resuspension and smothering

3.1.3.1. Literature review

Passage of an oyster dredge across the seabed may disturb and resuspend unconsolidated sediment. This suspended material is then dispersed by currents or subsequently deposited within or beyond the area dredged. Where deposited sediment accumulates on living oysters, exposed shell or the surrounding seabed, it may bury settlement surfaces, smother spat and alter the condition of oyster habitat and associated benthic communities. Resuspension and subsequent deposition therefore provide a pathway through which dredging may affect native oysters and the protected communities within which they occur.

The source of the potential effect is licensed commercial native oyster dredging. The pathway comprised the resuspension of seabed sediment through contact with the dredge and the subsequent transport and deposition of disturbed material within the oyster grounds. The receptors were the *Ostrea edulis* dominated communities identified as constituent communities of the relevant qualifying interest habitats.

The magnitude and duration of the effect depends on the quantity and particle size of the sediment disturbed, the number and duration of dredge tows, the frequency with which the same area is dredged and the hydrodynamic conditions governing dispersion and deposition. Fine sediment may remain in suspension for longer and be transported beyond the dredge track, while coarser material is more likely to settle closer to the area disturbed. The occurrence of sediment resuspension does not itself constitute a persistent effect, as suspended material may be dispersed or deposited temporarily within a naturally dynamic environment. Persistence depends on whether deposited sediment remains within the oyster habitat or whether repeated dredging causes deposition to recur before the affected surfaces and communities recover.

Historical accounts from the Wadden Sea associated the poor condition of oyster beds and limited recruitment with a combination of management practices and environmental pressures, including the removal of large oysters and shell, siltation and competition with other filter feeders. Siltation was identified as a particular concern within shallow estuarine systems because accumulated fine sediment may bury shell and smother oyster spat (Berghahn & Ruth, 2005). This evidence supports the potential for sediment deposition to affect oyster habitat and recruitment but does not establish that siltation was the sole cause of the changes recorded or provide a deposition threshold that can be applied to the assessed fisheries.

Experimental harrowing undertaken using an oyster dredge frame in Lough Foyle did not result in a significant increase in suspended particulate matter, and the results indicated that the accumulation of silt was unlikely to account for the limited oyster settlement recorded during the study (Bromley et al., 2016). Though

harrowing without a collecting bag did not reproduce all aspects of commercial oyster dredging, Bromley et al. (2016) still highlighted that contact with an oyster dredge does not necessarily result in sustained sediment accumulation. They also show that the absence of oyster settlement cannot be attributed to siltation alone.

The main consequence of smothering for native oyster habitat is the burial or covering of living oysters, spat and shell surfaces. Deposited sediment may reduce the availability of exposed shell for settlement and may affect benthic fauna occurring within or on the surface of the sediment. The quantity deposited, the duration of exposure and the condition of the affected oysters and communities must also be considered. Effects on oyster settlement and population recruitment were assessed separately under the relevant impact pathway, while the present pathway considered the direct effects of sediment resuspension, deposition and smothering.

Sediment resuspension and subsequent deposition may affect different life stages of *Ostrea edulis* through different mechanisms. Planktonic larvae would not be directly smothered by seabed deposition, but sediment deposited on exposed shell or other suitable hard substrate may reduce the availability and quality of settlement habitat. Recently settled spat may be vulnerable to burial or smothering where deposition is sufficiently extensive or persistent. Juvenile and adult oysters may also be affected where repeated deposition covers living oysters, restricts feeding or alters the stability and physical structure of the oyster grounds. The sensitivity of each life stage would depend on the thickness, duration and recurrence of deposition, together with local hydrodynamic conditions and the availability of suitable settlement substrate.

The site-specific assessments considered the mapped sedimentary and benthic communities, their overlap with the licensed dredging areas, the distribution of native oysters, available information on fishing activity and management arrangements. No direct measurements of suspended sediment concentrations, the extent or thickness of deposition, the duration of sediment plumes or the condition of oysters and benthic communities following commercial dredging were available for Blacksod Bay, Tralee Bay or Lough Swilly. Instead, available information was used to identify where the pathway could occur and the factors influencing its likely magnitude and duration, but it did not provide a direct measurement of sediment resuspension or smothering caused by oyster dredging.

Persistence was assessed by considering whether deposited sediment could remain within oyster habitat beyond the interval between fishing events or whether repeated dredging could prevent the clearance of deposited material and recovery of the affected surfaces and communities. Significance was assessed by reference to the scale, extent and duration of the effect and whether it could compromise native oyster survival, the availability of suitable settlement surfaces or the maintenance of a protected community in a condition consistent with the relevant site specific conservation objective targets.

Deposited sediment may cover living oysters, bury exposed shell or other suitable settlement substrate, and smother spat or benthic fauna where deposition is sufficiently extensive or persistent (Berghahn & Ruth, 2005; Bromley et al., 2016). Available information on sediment characteristics, the distribution of oyster grounds and benthic communities, the environmental setting of each bay, fishing activity and management arrangements was used as indirect evidence within the site-specific assessments. These data were considered alongside the Marine Life Information Network (MarLIN) assessment of smothering and siltation rate changes under the light deposition benchmark. This pressure represented the pathway through which sediment resuspended by an oyster dredge may subsequently settle on living oysters, spat, exposed shell or associated benthic habitat.

MarLIN classified *Ostrea edulis* as having High sensitivity to deposition of up to 5 cm of fine material in a single discrete event. This benchmark described receptor sensitivity and did not establish that oyster dredging would generate deposition of this magnitude. The potential significance of sediment resuspension and smothering was assessed by considering the sensitivity classification alongside the expected scale and duration of sediment disturbance, the characteristics of the receiving environment and the potential for sediment dispersion or accumulation.

3.1.3.2. Blacksod Bay

Within the Mullet/Blacksod Bay Complex SAC, the Conservation Objectives did not identify an *Ostrea edulis* dominated community. Native oyster was not a Qualifying interest or the subject of a separate population target. It was nevertheless identified as a notable species occurring towards the head of Blacksod Bay, while small patches were recorded at Cartron within the Sand with *Angulus tenuis* and *Pygospio elegans* community complex. The Fine sand with *Angulus fabula* community complex was a constituent community of Large shallow inlets and bays [1160]. The Sand with *Angulus tenuis* and *Pygospio elegans* community complex was a constituent community of both Mudflats and sandflats not covered by seawater at low tide [1140] and Large shallow inlets and bays [1160]. The applicable Conservation Objectives require these communities to be conserved in natural condition, subject to natural processes. Effects on native oysters, spat and exposed shell were therefore relevant where they contributed to, or provided an indication of change in, the structure and function of these constituent communities of the Qualifying interest habitats rather than as a separate native oyster population target. Sediment resuspension and subsequent deposition provided a pathway through which dredging could affect these receptors (NPWS, 2013a; NPWS, 2014a; NPWS, 2014c).

The licensed native oyster dredging area extended across approximately 9.500 km². The Fine sand with *Angulus fabula* community complex accounted for approximately 94.6% of the licensed area shown in **Figure 2.1**, while approximately 3.7% overlapped the Sand with *Angulus tenuis* and *Pygospio elegans* community

complex. Smaller overlaps occurred with the Intertidal reef and Sheltered subtidal reef community complexes, which accounted for approximately 1.1% and 0.6% of the licensed area, respectively. These spatial relationships identified the communities that could potentially be exposed but did not represent the area actually dredged or the extent of sediment deposition.

Very fine and fine sand together accounted for between 79.1% and 98.1% of the sediment within the main Fine sand with *Angulus fabula* community complex. Silt and clay generally accounted for less than 3%, while gravel and other coarse fractions generally accounted for less than 5%. The inner bay variant contained more variable sand and gravel fractions, although a corresponding silt and clay range was not available. The recorded sediment composition indicated that most material disturbed within the main community would comprise sand rather than a large proportion of finer cohesive sediment.

Sand disturbed by dredging would be expected to settle comparatively rapidly within or close to the dredge track. Fine and very fine sand could remain in suspension for longer and could be deposited adjacent to the disturbed area. The smaller silt and clay fraction could be transported farther where local currents permitted. Blacksod Bay is shallow and generally has weak tidal streams. However, no measurements or modelling were available to determine suspended sediment concentrations, plume duration, transport distance or deposition thickness within the commercially dredged areas.

The High MarLIN sensitivity classification for *Ostrea edulis* applied to deposition of up to 5 cm of fine material in a single discrete event. The recorded sediment composition and potential for local deposition were considered against this sensitivity. However, no evidence demonstrated that commercial oyster dredging generated deposition approaching the specified benchmark or caused sustained burial of oysters, spat or exposed settlement surfaces. Local and temporary covering of oysters or seabed habitat could occur within or adjacent to individual dredge tracks, but the available information did not indicate widespread or prolonged smothering.

The frequency and duration of the pathway are substantially limited by the low annual fishing effort. Fishing occurs mainly during February and March, with a small number of fishing days also occurring between September and December. Annual fishing effort is usually no more than eight fishing days, although a few additional fishing days may occur in some years. Sediment disturbance is therefore intermittent and of short total annual duration, with extended periods between fishing activity during which no commercial oyster dredging occurs. This low fishing effort means that effects from suspended sediment or smothering are expected to be highly localised in space and time, and likely deposition height would be <5 cm.

Assessment Conclusion

Sediment resuspension and deposition may occur locally where the dredge contacts the seabed. However, the predominantly sandy seabed type in the licensed area, the low proportion of silt and clay and the absence of evidence that deposition reached the applicable MarLIN benchmark indicate that widespread or prolonged smothering is not expected.

The low number of fishing days each year means that sediment disturbance is intermittent and is separated by extended periods without further dredging. The small number of fishing days occurring between September and December does not materially increase the frequency or duration of the pathway to a level at which repeated or prolonged sediment effects would be expected. Sediment resuspension and smothering arising from native oyster dredging in Blacksod Bay are therefore assessed as **not persistent** and **not significant** in relation to Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160] and Reefs [1170].

3.1.3.3. Tralee Bay

Within Tralee Bay and Magharees Peninsula, West to Cloghane SAC, sediment resuspension and subsequent deposition could affect the *Ostrea edulis* dominated community and the other constituent sedimentary communities occurring within the proposed dredging areas. The qualifying interests of this SAC were identified as Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160] and Reefs [1170].

The proposed dredge area in Outer Tralee Bay extended across approximately 14.996 km². The Mixed sediment with crustaceans, bivalves and polychaetes community complex accounted for approximately 70.6% of this area, while the *Ostrea edulis* dominated community accounted for approximately 15.2%. The proposed dredge area in Inner Tralee Bay area extended across approximately 10.873 km², of which approximately 36.18% comprised the *Ostrea edulis* dominated community. The proposed dredge areas in Tralee Bay also overlapped other sedimentary, *Zostera*, *Mytilus* and reef communities that could potentially be exposed where a sediment transport pathway occurred.

The Mixed sediment with crustaceans, bivalves and polychaetes community complex was characterised mainly by mixed and coarse sediment. Silt and clay generally accounted for less than 8%, although higher proportions occurred at some sheltered locations. The Sand with *Nephtys cirrosa* community complex was predominantly composed of sand, with silt and clay generally accounting for less than 3%. Higher proportions of fine sediment occurred in sheltered areas and within parts of the Sand to sandy mud with polychaetes and bivalves community complex, particularly around Spa, Derrymore Island and Scraggane Point.

These sediment characteristics indicated that much of the material disturbed in the proposed dredge areas in Tralee Bay would comprise sand or mixed sediment. Coarser material would be expected to settle within or close to individual dredge tracks, limiting the duration and spatial extent of suspension. Localised resuspension and deposition could be greater within sheltered areas containing higher proportions of silt and clay. However, the available sediment data did not establish whether these finer deposits coincided with the areas subject to active or repeated commercial dredging.

The High MarLIN sensitivity classification for *Ostrea edulis* applied to deposition of up to 5 cm of fine material in a single discrete event. The presence of locally finer sediment meant that temporary covering of oysters, spat and exposed shell could not be excluded. However, no evidence demonstrated that commercial dredging generated deposition approaching this benchmark within the *Ostrea edulis* dominated community.

The fishery operated between September and April, with no commercial oyster dredging between May and August. Sediment disturbance was therefore seasonal rather than continuous and would not occur during the main growing and spawning season of native oysters during the summer months. The seasonal closure provided a period during which suspended material could settle or disperse and during which affected seabed surfaces could partially recover. This interruption substantially reduced the potential for sediment resuspension and deposition to remain continuous or to accumulate throughout the year.

Marine Institute surveys continued to record substantial oyster biomass and the presence of smaller oysters within Inner and Outer Tralee Bay. These results did not directly measure suspended sediment or deposition. They nevertheless provided indirect evidence that sediment disturbance under the existing fishery had not prevented the continued survival, recruitment and growth of oysters within the established grounds to maintain biomass within the historical range of the MI native oyster stock survey (2010-2025).

Localised and temporary sediment resuspension and deposition could occur where dredging disturbed areas containing fine sediment. However, much of the proposed dredge areas in Tralee Bay comprised sand or mixed sediment, and no evidence indicated deposition at the applicable MarLIN benchmark or widespread smothering of the *Ostrea edulis* dominated community or other sensitive receptors. The cessation of dredging between May and August also prevented the pressure from remaining continuous throughout the year.

Assessment Conclusion

Sediment resuspension and deposition arising from native oyster dredging in Tralee Bay are expected to be localised and seasonal. The available evidence did not indicate widespread or prolonged smothering of living oysters, spat, settlement surfaces or associated benthic communities. No sediment transport pathway of sufficient magnitude or duration to affect *Ostrea* dominated communities was demonstrated.

The annual cessation of dredging between May and August interrupts the pressure and provides a period for sediment dispersal and habitat recovery. Sediment resuspension and smothering arising from native oyster dredging in Tralee Bay are therefore assessed as **not persistent** and **not significant** in relation to Estuaries [1130], Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160] and Reefs [1170].

3.1.3.4. Lough Swilly

Within Lough Swilly SAC, the Conservation Objectives identified the *Ostrea edulis* dominated community as a constituent community of Estuaries [1130]. The community occurred intertidally and subtidally, mainly within the southern part of the lough from Ballygreen Point and Ballymoney Point southwards to Ardrumman and Ballylawn Point, with a smaller area at Ballykenny Point. The applicable Conservation Objective requires the *O. edulis* dominated community and the other constituent sedimentary communities of Estuaries [1130] to be conserved in natural condition, subject to natural processes.

The licensed dredging area extended across approximately 55.413 km² and overlapped all six constituent communities of Estuaries [1130]. The *Ostrea edulis* dominated community accounted for approximately 16.4% of the licensed area, equivalent to approximately 9.061 km². The remaining licensed area included fine sand, mixed sediment, muddy fine sand and mud habitat. However, oyster dredging is largely confined to the *Ostrea edulis* dominated community. The *Ostrea edulis* dominated community occurred within the Intertidal mixed sediment with polychaetes and Subtidal mixed sediment with polychaetes and bivalves communities. The intertidal community contained variable proportions of gravel, sand, silt and clay. The subtidal community was mainly characterised by fine sand, with gravel also forming a substantial sediment fraction at some locations.

Higher proportions of fine sediment occurred within other parts of the licensed area. Silt and clay accounted for between 12% and 33% of the Muddy fine sand with *Thyasira flexuosa* community and between 39% and 96% of the Mud community complex. These communities contained sediment that could remain in suspension for longer than sand and could be transported beyond the immediate dredge track if dredging were to occur there.

Localised sediment resuspension was expected where the dredge contacted mixed or fine sediment within the oyster grounds. Sand and coarser material would generally settle within or close to the area disturbed, while finer material could remain in suspension for longer and be deposited over a wider area. No measurements or modelling were available to quantify suspended sediment concentrations, plume duration, transport distance or deposition thickness. However due to the relatively shallow teeth in the dredges used (only entering 1-2 cm deep into sediment), the available evidence did not indicate that sediment resuspension

would result in widespread or sustained deposition across the *Ostrea edulis* dominated community or the other constituent communities of Estuaries [1130].

The High MarLIN sensitivity classification for *Ostrea edulis* applied to the deposition of up to 5 cm of fine material in a single discrete event. The presence of mixed and locally muddy sediment meant that temporary covering of oysters, spat and settlement surfaces could not be excluded. However, no evidence demonstrated deposition approaching the specified benchmark within the oyster grounds. The sensitivity classification was therefore considered as evidence of the potential consequence where the benchmark was reached rather than evidence that smothering of this magnitude occurred in Lough Swilly.

The Lough Swilly native oyster fishing season operates from 1st of September to 30th of April, with no commercial oyster dredging between 1st of May and 31st of August. Sediment resuspension and deposition are therefore seasonal rather than continuous or ongoing. The annual four month closure removes the pressure and provides a period during which affected seabed habitats can recover. This seasonal closure substantially reduces the potential for recurring sediment deposition to accumulate continuously throughout the year.

Assessment Conclusion

Sediment resuspension and deposition may occur locally where oyster dredging disturbs mixed or fine sediment within the established fishing grounds. However, the licensed area does not represent the active dredging footprint, and the presence of muddy communities within the wider polygon does not demonstrate that these areas are subject to repeated disturbance. No evidence indicated deposition at the applicable MarLIN benchmark or widespread smothering of living oysters, spat, settlement surfaces or constituent benthic communities.

The cessation of dredging between 1st of May and 31st of August interrupts sediment disturbance and provides an annual interval for habitat recovery. Sediment resuspension and smothering arising from native oyster dredging in Lough Swilly are therefore assessed as **not persistent** and **not significant** in relation to Estuaries [1130].

3.1.4. Potential interaction with other sensitive benthic communities

3.1.4.1. Literature review

This pathway does not reassess the direct effects of seabed disturbance or sediment resuspension and deposition considered under the preceding mechanisms. It considered whether these effects could give rise to a separate credible interaction with other sensitive protected marine communities in each bay such as

Zostera dominated community or the *Serpula vermicularis* dominated community complex. The source of the potential effect was licensed commercial native oyster dredging. The pathways comprised direct contact between the dredge and the seabed and the resuspension, transport and subsequent deposition of disturbed sediment. The receptors were the *Zostera* dominated community and the *Serpula vermicularis* dominated community complex identified within the relevant Qualifying Interest habitats of the Mullet/Blacksod Bay Complex SAC, and the *Zostera*, *Sabellaria*, and *Mytilus* dominated communities in Tralee Bay and Magharees Peninsula, West to Cloghane SAC.

A potential direct interaction was identified where the licensed dredging area overlapped the mapped distribution of either community. An indirect interaction required a credible hydrodynamic or sediment transport pathway through which material disturbed elsewhere could be deposited within the community. Spatial overlap was treated as evidence of potential exposure rather than evidence that dredging had occurred within, or adversely affected, the community.

Direct dredge contact with a *Zostera* dominated community may damage or uproot shoots and rhizomes, disturb associated fauna and increase fragmentation of the meadow. An Irish before after control impact experiment did not identify significant effects of traditional oyster dredging on *Zostera marina* rhizome biomass, shoot density or blade density during the subsequent growing season. The results were specific to the conditions examined, including dredging during early spring, relatively limited gear penetration and the historical exposure of the receiving habitat to dredging. Higher intensity dredging was associated with reduced abundance of sessile fauna within the same experiment. The findings demonstrated that responses differed among receptors and dredging intensities and did not establish that effects would be absent under different environmental or operational conditions (Breen et al., 2024).

The *Serpula vermicularis* dominated community complex in Blacksod Bay comprised distinct clusters of biogenic reef formed by aggregations of calcareous tubes within otherwise soft sediment. The reef structures provided habitat for associated sessile and mobile fauna. The applicable Conservation Objectives required the avoidance of mortality to living *S. vermicularis* reef and significant disturbance involving the destruction of reef structures (NPWS, 2014c). Direct contact with an oyster dredge could break or displace living tubes, remove sections of reef, reduce structural complexity and disturb the associated biological community. Recovery of individual worms or surviving reef fragments would not necessarily restore the physical structure and ecological functioning of the reef, which may require many years to develop. MarLIN classified resistance to surface abrasion as None and resilience as Very Low, resulting in High sensitivity. Resistance to subsurface penetration was also classified as None and resilience as Very Low, resulting in High sensitivity. Evidence from other towed fishing gear indicated that structurally complex biogenic habitats could experience substantial initial effects and extended recovery periods, while increasing bivalve dredging intensity had been associated

with reduced benthic biomass and changes in species composition (Kaiser et al., 2006; Sciberras et al., 2018; McLaverty et al., 2020). This evidence supported the identification of a credible impact pathway but did not provide an effect magnitude or recovery period that could be applied directly to the *S. vermicularis* dominated community complex within Blacksod Bay.

Zostera marina reproduces through seed production and vegetative extension of rhizomes. Although seed production may be high, seed and seedling mortality are also high, and dispersal is generally limited. Vegetative growth is therefore the main mechanism of local expansion and recovery following small-scale disturbance. Narrow scars may be recolonised from adjacent plants, while recovery of larger denuded areas may depend on the seed bank or external seed sources and can take decades in isolated or fragmented systems. Physical abrasion may remove shoots and reduce productivity, while deeper penetration can damage or remove rhizomes and roots. MarLIN classified *Z. marina* as having Low resistance and Medium resilience, resulting in Medium sensitivity to surface abrasion and None resistance, Low Resilience and High Sensitivity to subsurface penetration. Recovery depended on the extent and configuration of the disturbed area, sediment stability and the continued presence of viable plants or seeds (Manley et al., 2015; Paulo et al., 2019).

Mytilus edulis has high fecundity and a planktonic larval stage that provides the potential for dispersal and recolonisation. However, recruitment is spatially and temporally variable, while mortality among larvae and recently settled mussels is high. Recovery of disturbed beds therefore depends on larval supply, suitable attachment substrate, bed stability, hydrographic conditions and the absence of continuing disturbance. Strong recruitment may allow relatively rapid re-establishment, but large or repeatedly disturbed gaps may remain for several years or expand through wave action, predation and weakened byssal attachment. MarLIN classified *M. edulis* beds on littoral sediments as having Low resistance, Medium resilience and Medium sensitivity to surface abrasion, subsurface penetration and incidental removal. These pressures may remove mussels, weaken their attachment and alter the structure and associated fauna of the bed (Seed & Suchanek, 1992; Moyse et al., 2026).

The *Sabellaria* dominated community complex in Tralee Bay was formed by *Sabellaria alveolata* reef on Derrymore Strand. The reef occurred as hummocks standing above the substrate or interspersed with boulder reef. Reef cover ranged from approximately 20% to 80% towards Derrymore Bridge and from approximately 10% to 15% towards Bunawonder. The applicable Conservation Objectives required the avoidance of mortality to living *S. alveolata* and significant disturbance to community quality (NPWS, 2014d). Small areas of surface damage may be repaired rapidly through tube building by surviving worms, with trawl impressions reported to disappear within four to five days. More extensive damage may remove reef sections, be enlarged by wave action and require larval recolonisation. Recovery may then take months to years and, in isolated populations, potentially decades. MarLIN classified resistance to surface abrasion as Medium and resilience as High,

resulting in Low sensitivity. Resistance to subsurface penetration was classified as Low and resilience as Medium, resulting in Medium sensitivity. Evidence relating directly to *Sabellaria alveolata* was considered alongside the wider literature on *S. spinulosa*. Evidence derived from *S. spinulosa* or from different reef forms was treated as supporting evidence only, because sensitivity and recovery may differ between species and reef morphology (Gibb et al., 2014; Vorberg, 2000; Plicanti et al., 2016).

Commercial oyster dredging could interact with these communities through direct abrasion, subsurface disturbance, incidental removal and changes in sediment suspension or deposition. The ecological response would depend on the location, spatial extent, intensity and recurrence of dredging, together with the recovery characteristics of the receptor. Where site-specific management measures prevented direct gear contact with mapped *Zostera*, *Mytilus* and *Sabellaria* communities in Tralee Bay and *Serpula* and *Zostera* dominated communities in Blacksod Bay, and limited cumulative seabed disturbance, effects on these communities were not expected to be persistent or significant at the scale of the bay or SAC.

Within the site-specific assessments, the potential for oyster dredging to interact with these sensitive communities was evaluated using the timing and duration of the fishing season, the applicable fishery management plans and management measures, and the spatial relationship between the licensed dredging areas and the mapped distributions of the communities. Spatial overlap was determined using the maps and associated tables presented in **section 2**. Where a licensed dredging area overlapped a mapped sensitive community, this was treated as evidence of potential exposure and not as evidence that dredging had occurred within the community or caused an ecological effect. The potential significance and persistence of an interaction were assessed by considering the extent of the mapped overlap alongside the frequency and duration of fishing, the restrictions imposed through the applicable management arrangements, the sensitivity and recovery characteristics of the receptor and the relevant Conservation Objective attributes and targets.

3.1.4.2. Blacksod Bay

Within the Mullet/Blacksod Bay Complex SAC, the Conservation Objectives identified the *Zostera* dominated community, maërl dominated community and *Serpula vermicularis* dominated community complex as constituent communities of Large shallow inlets and bays [1160]. The *Serpula vermicularis* dominated community complex and other reef communities were also constituent communities of Reefs [1170]. The Conservation Objectives required the extent and quality of the *Zostera*, maërl and *Serpula vermicularis* communities to be maintained, subject to natural processes, and required the other constituent communities to be conserved in natural condition. The source of the potential effect was licensed commercial native oyster dredging. The pathways comprised direct contact between the dredge and the seabed and the resuspension

and subsequent deposition of disturbed sediment. The receptors were the sensitive constituent communities that could be reached through these pathways.

The licensed dredging area extended across approximately 9.500 km². The maps and spatial overlap tables presented in **section 2.1.1** indicated that the licensed area overlapped approximately 1.13% of the Intertidal reef community complex and 0.59% of the Sheltered subtidal reef community complex. No mapped overlap with the maërl dominated, *Serpula vermicularis* or *Zostera* dominated communities, was identified. These spatial relationships represented the maximum mapped areas within which direct interaction could occur. Licensed spatial overlap was treated as evidence of potential exposure and did not demonstrate that dredging occurred throughout the overlapping areas or that the communities had been affected.

Direct contact with the Intertidal reef and Sheltered subtidal reef community complexes could similarly damage or displace attached fauna and disturb reef structure. The mapped overlaps accounted for a limited proportion of the licensed area and did not represent the actual dredging footprint. The fishery was directed towards the native oyster grounds rather than uniformly across the full licensed polygon. Although local effects could not be excluded where dredging occurred within an overlapping reef area, the available spatial information did not indicate disturbance across the wider extent of the reef communities.

No direct contact pathway was identified for the maërl dominated community because no mapped overlap occurred. An effect would require sediment disturbed within the licensed area to be transported and deposited over the mapped maërl habitat.

The magnitude and frequency of potential interaction are mainly limited by the low annual fishing effort. Fishing occurs mainly during February and March, with a small number of fishing days also occurring between September and December. Annual fishing effort is usually no more than eight fishing days, although a few additional fishing days may occur in some years. Direct seabed contact and associated sediment disturbance are therefore intermittent rather than continuous or ongoing. Although local interaction with sensitive communities cannot be excluded, the limited mapped overlap and low number of fishing days substantially reduce the spatial extent, frequency and duration of potential effects.

Assessment Conclusion

Potential interaction with other sensitive communities arising from native oyster dredging in Blacksod Bay is intermittent and is not continuous or ongoing. Although local damage could occur if dredging directly contacted reef communities, the limited mapped overlap and low annual fishing effort substantially limit the opportunity for repeated or widespread disturbance. The small number of fishing days occurring between September and December does not materially change the frequency or duration of the pressure. No direct

contact pathway was identified for the maërl dominated, *Serpula vermicularis* dominated and *Zostera* dominated communities, and the available evidence did not indicate an indirect sediment pathway of sufficient magnitude or duration to affect those communities. Potential effects on these sensitive communities are therefore assessed as **not significant** and **not persistent**.

3.1.4.3. Tralee Bay

Within Tralee Bay and Magharees Peninsula, West to Cloghane SAC, the Conservation Objectives identify the *Zostera*-dominated community complex, *Mytilus*-dominated community and *Sabellaria*-dominated community complex as sensitive constituent communities of one or more Annex I habitats. Intertidal reef, Subtidal reef and *Laminaria*-dominated reef community complexes are constituent communities of the Reefs [1170] Qualifying Interest. The Conservation Objectives require the extent and quality of the keystone communities to be maintained and the reef community complexes to be conserved in natural condition, subject to natural processes.

The proposed dredge areas overlap only a limited proportion of the mapped extent of the reef communities at SAC scale. In Inner Tralee Bay, approximately 12.45 ha of the Intertidal reef community complex occurs within the proposed dredge boundary. NPWS estimates the total mapped extent of this community within the Reefs [1170] habitat at approximately 221 ha. The proposed dredge boundary therefore overlaps approximately 5.6% of the mapped Intertidal reef community complex within the SAC. In Outer Tralee Bay, approximately 105.36 ha of the Subtidal reef community complex occurs within the proposed dredge area, with a further approximately 3.4 ha occurring within the Inner Tralee Bay proposed dredge area. Combined, approximately 109.01 ha of Subtidal reef lies within the proposed dredge areas, equivalent to approximately 4.4% of the 2,499 ha mapped within the SAC. No overlap with the *Laminaria*-dominated reef community complex was identified. NPWS also notes that the mapped extent of reef communities is likely to underestimate their actual area because areas of sheer and steeply sloping rock are not fully represented (NPWS, 2014).

These percentages represent conservative maximum spatial overlaps rather than the area that would necessarily be dredged. The proposed dredging areas define where fishing may occur and do not imply complete dredging coverage of all seabed within those boundaries. Even if the full mapped reef overlap were conservatively treated as potentially disturbed, the maximum spatial exposure would therefore remain approximately 5.6% of the Intertidal reef community and 4.4% of the Subtidal reef community. Both are substantially below the approximate 15% area identified by NPWS for significant continuous or ongoing disturbance of constituent community types.

Direct dredge contact could nevertheless cause localised abrasion, displacement or mortality of reef-associated organisms where fishing occurs over these communities. However, the spatial scale of this potential disturbance is small relative to the wider distribution of the communities throughout the SAC. The Intertidal reef community is recorded extensively from the Magharees Peninsula through Tralee Bay and around its northern shore, while the Subtidal reef community occurs extensively from Derrymore westwards, through the central bay and around the Magharees Peninsula. Dredging within the proposed areas would therefore not result in loss of these community types from Tralee Bay, contraction of their overall distribution within the SAC, or a change in the character of Reefs [1170] at the scale of the SAC.

The interaction with the *Zostera*-dominated community complex is similarly spatially limited. Approximately 11.07 ha of mapped *Zostera* occurs within the Outer Tralee Bay dredge boundary, equivalent to approximately 3.2% of the 350 ha estimated by NPWS within Large shallow inlets and bays [1160]. NPWS identifies *Zostera* as a keystone community and requires significant anthropogenic disturbance to its extent to be avoided (NPWS, 2014). Direct dredging could damage shoots and rhizomes where fishing occurs within the mapped meadow. However, the limited spatial overlap and the seasonal nature of the fishery reduce the potential magnitude and persistence of this effect. Commercial oyster dredging ceases between May and August, substantially avoiding the main summer growth period. Breen et al. (2024) experimentally dredged a historically fished Irish *Zostera marina* meadow in early spring and found no effect on subsequent rhizome weight, shoot density or blade density during the growing season. The authors considered restriction of fishing to winter or early spring, before the main seagrass growing season, to be a potentially important factor allowing traditional fishing activity and seagrass to coexist (Breen et al., 2024).

The *Mytilus*-dominated community has only negligible spatial overlap with the proposed Inner Tralee Bay dredge area. Approximately 0.109 ha occurs within the proposed boundary compared with an estimated 12 ha within the Reefs [1170] habitat, equivalent to approximately 0.9% of its mapped extent. NPWS identifies *Mytilus* as a keystone community and requires significant disturbance to its extent and quality to be avoided (NPWS, 2014). Given the very small area of potential interaction, any direct effects would be localised and would not alter the distribution or ecological function of the community within the SAC. No mapped overlap occurs with the *Sabellaria*-dominated community complex.

The fishery is also temporally discontinuous. Oyster dredging occurs seasonally between September and April and ceases between May and August. The pressure therefore does not represent continuous year-round disturbance, and the annual four-month closure provides a period without dredging disturbance. NPWS explicitly recognises that intermittent or episodic activities which do not represent continuous or ongoing disturbance may be assessed contextually with regard to their scale and the resilience of the receiving community.

Assessment Conclusion

Potential interactions between native oyster dredging and other sensitive benthic communities in Tralee Bay are assessed as **not significant** and **not persistent**. The proposed dredge areas in Inner Tralee Bay and Outer Tralee Bay overlap approximately 5.6% of the mapped Intertidal reef community, 4.4% of the Subtidal reef community, 3.2% of the *Zostera*-dominated community and 0.9% of the *Mytilus*-dominated community, with no mapped overlap with the *Sabellaria*-dominated community. These represent conservative maximum spatial overlaps and would not reduce the wider distribution or ecological function of these communities within the SAC. The seasonal cessation of dredging between May and August further limits persistence, including by substantially avoiding the main summer growth period for *Zostera*.

3.1.4.4. Lough Swilly

Within Lough Swilly SAC, the Conservation Objectives identified Estuaries [1130] and required the Fine sand community complex, Intertidal mixed sediment with polychaetes, Subtidal mixed sediment with polychaetes and bivalves, Muddy fine sand with *Thyasira flexuosa*, Mud community complex and *Ostrea edulis* dominated community to be conserved in natural condition. The Conservation Objectives and marine habitats supporting document did not identify *Zostera*, *Sabellaria* or *Mytilus* dominated communities as separate constituent communities of Estuaries [1130] (NPWS, 2011a; NPWS, 2011c). The source of the potential effect was licensed commercial native oyster dredging. The pathways considered were direct contact between the dredge and the seabed and sediment resuspension and deposition.

The licensed dredging area overlapped each of the mapped constituent communities of Estuaries [1130]. However, this represented the area within which dredging was authorised and did not demonstrate that commercial fishing occurred uniformly across the licensed area. The fishery was directed towards established native oyster concentrations within the *Ostrea edulis* dominated community. Potential disturbance of the adjoining sedimentary communities would arise through the impact mechanisms already assessed and did not represent a separate interaction with another sensitive community.

The Lough Swilly native oyster fishing season operates from 1st of September to 30th of April, with no commercial oyster dredging between 1st of May and 31st of August. Direct seabed contact and any associated interaction with benthic communities are therefore seasonal rather than continuous or ongoing.

No additional source, pathway and receptor linkage was identified between native oyster dredging and a separately mapped sensitive benthic community in Lough Swilly. Potential effects on the *Ostrea edulis* dominated community and the other constituent sedimentary communities were not disregarded but were addressed under the relevant preceding assessments. The available information did not indicate an additional

interaction capable of causing continuous or ongoing disturbance or compromising the natural condition of a separately identified sensitive community.

Assessment Conclusion

No separately mapped *Zostera*, *Mytilus*, *Sabellaria* or reef dominated community was identified within Lough Swilly SAC. Potential effects on the *Ostrea edulis* dominated community and associated sedimentary communities were assessed under the preceding impact pathways and did not require separate assessment under this mechanism. The annual four month cessation interrupts the pressure and provides a period during which disturbed habitats and communities can recover without further dredging. The potential interaction is therefore assessed as not persistent.

Potential interaction with other sensitive communities arising from native oyster dredging in Lough Swilly is therefore assessed as **not persistent** and **not significant** in relation to Estuaries [1130].

4. Evaluation Against NPWS Guidance and SAC Integrity

The findings of the impact assessment were evaluated against the site-specific Conservation Objectives and supporting documentation for the Mullet/Blacksod Bay Complex SAC, Tralee Bay and Magharees Peninsula, West to Cloghane SAC and Lough Swilly SAC. For relevant constituent communities, NPWS states that “significant continuous or ongoing disturbance of communities should not exceed an approximate area of 15% of the interpolated area of each community type, at which point an inter-Departmental management review is recommended prior to further licensing of such activities”. NPWS guidance further provides that activities which cause significant disturbance but do not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner, having regard to the nature and scale of the activity, the resilience of the receiving habitat and other activities within the designated site (NPWS, 2011c; NPWS, 2014c; NPWS, 2014d).

The 15% threshold relates specifically to significant continuous or ongoing disturbance and not to physical contact with, or disturbance of, a community. Spatially resolved commercial fishing effort, tow frequency and annual swept-area estimates were not available for the three fisheries and the exact proportion of each oyster bed contacted by dredging could therefore not be quantified. However, commercial dredging is directed towards established oyster grounds and consultation with the Marine Institute indicated that nearly all of the commercially fished oyster beds are likely to have been subject to dredging disturbance. The spatial extent of disturbance within the oyster beds is therefore considered likely to be substantially greater than 15% and closer to the full extent of the commercially fished beds than to the 15% benchmark. The assessment against the NPWS target consequently depends mainly on whether the disturbance identified in Section 3 is significant and continuous or ongoing.

4.1. Blacksod Bay

The Conservation Objectives for the Mullet/Blacksod Bay Complex SAC do not identify an *Ostrea edulis* dominated community and native oyster is not a Qualifying Interest or subject to a separate population target. Native oyster is, however, identified as a notable species within the SAC and *Ostrea edulis* are present in low abundance within the Sand with *Angulus tenuis* and *Pygospio elegans* community complex. Effects on native oysters are therefore relevant where they contribute to, or indicate, changes in the structure and function of constituent communities required to be conserved in natural condition.

The exact proportion of the Blacksod Bay oyster bed contacted by commercial dredging is uncertain, but the targeted nature of the fishery indicates that most of the commercially fished bed is likely to be subject to dredging over time. The spatial extent of disturbance of the oyster bed is therefore likely well above 15%. This

should not, however, be interpreted as demonstrating disturbance of more than 15% of the wider interpolated area of the sedimentary community types within which the oysters occur, because the native oyster bed is not mapped as a separate constituent community in the Conservation Objectives. The oyster beds in Blacksod bay are best presented in Marine Institute survey findings from Tully and Clarke (2012) seen in Figure 2.18.

Section 3 concluded that physical disturbance in Blacksod Bay is intermittent, is not continuous or ongoing and is not significant.. Oyster removal is similarly intermittent and its population-level effect was assessed as not persistent and not significant in relation to Mudflats and sandflats not covered by seawater at low tide [1140], Large shallow inlets and bays [1160] and Reefs [1170]. The spatial extent of disturbance of the oyster bed may therefore substantially exceed 15%, but the disturbance does not meet the requirement of being both significant and continuous or ongoing. The approximately 15% management-review threshold is therefore not triggered by native oyster dredging in Blacksod Bay.

4.2. Tralee Bay

The *Ostrea edulis* dominated community is a constituent community of both Mudflats and sandflats not covered by seawater at low tide [1140] and Large shallow inlets and bays [1160] within Tralee Bay and Magharees Peninsula, West to Cloghane SAC. The applicable Conservation Objectives require the *Ostrea edulis* dominated community to be conserved in natural condition (NPWS, 2014d; NPWS, 2026).

Commercial dredging is directed towards the established oyster grounds in Inner and Outer Tralee Bay. Although the absence of spatially resolved commercial fishing-effort data prevents calculation of the exact annual swept area, most of the commercially fished *Ostrea edulis* dominated community is likely to be subject to dredging disturbance over time. The proportion disturbed should therefore be considered well above 15% and closer to the full extent of the commercially fished oyster grounds than to the 15% benchmark.

For Mudflats and sandflats not covered by seawater at low tide [1140], **Section 3** concluded that physical disturbance is seasonal rather than continuous or ongoing and is not causing significant deterioration of the *Ostrea edulis* dominated community. Oyster removal is also seasonal and was assessed as not persistent and not significant, with the long-term stock record demonstrating continued recruitment and replenishment under the existing management regime. Sediment resuspension and smothering were similarly assessed as not persistent and not significant. Consequently, although disturbance is likely to occur across substantially more than 15% of the oyster bed, significant continuous or ongoing disturbance was not identified and the approximately 15% management-review threshold is not triggered for Mudflats and sandflats not covered by seawater at low tide [1140].

For Large shallow inlets and bays [1160], the same *Ostrea edulis* dominated community and dredging pressure are relevant. Section 3 concluded that physical disturbance is seasonal and not significant, while oyster removal and its consequent effects on spawning stock and recruitment are not persistent and not significant under the existing management regime. The annual cessation of dredging between May and August also interrupts direct physical disturbance and sediment disturbance. Consequently, despite disturbance being likely across substantially more than 15% of the commercially fished oyster grounds, the disturbance was not assessed as both significant and continuous or ongoing. The approximately 15% management-review threshold is therefore not triggered for Large shallow inlets and bays [1160].

4.3. Lough Swilly

Within Lough Swilly SAC, the *Ostrea edulis* dominated community is a constituent community of Estuaries [1130]. The Conservation Objective requires the Fine sand community complex, Intertidal mixed sediment with polychaetes, Subtidal mixed sediment with polychaetes and bivalves, Muddy fine sand with *Thyasira flexuosa*, Mud community complex and *Ostrea edulis* dominated community to be conserved in natural condition. The applicable target states that significant continuous or ongoing disturbance should not exceed approximately 15% of the interpolated area of each community type (NPWS, 2011a; NPWS, 2011c).

Commercial dredging is directed towards the established native oyster grounds. The exact proportion of the *Ostrea edulis* dominated community contacted in any individual fishing season cannot be calculated from the available information because spatially resolved commercial dredging effort is unavailable. Nevertheless, most of the commercially fished oyster bed is likely to be subject to dredging disturbance over time and the spatial extent of disturbance is therefore considered likely to be substantially greater than 15% and closer to the full extent of the commercially fished bed.

Section 3 concluded that direct physical disturbance is seasonal, is not continuous or ongoing and is not significant in relation to Estuaries [1130]. Sediment resuspension and smothering were similarly assessed as not persistent and not significant. Oyster removal, however, was assessed differently. Although dredging itself ceases annually, the population-level effect of removal may persist between successive fishing seasons where recruitment and growth do not replace harvested oysters. In the absence of a stock-linked TAC, quantified annual exploitation rate or evidence of consistently strong recruitment, Section 3 concluded that current removals could not be demonstrated to be compatible with maintaining the *Ostrea edulis* dominated community in natural condition. Oyster removal and its consequent effects on spawning stock and recruitment were therefore assessed as potentially persistent and significant in relation to Estuaries [1130].

The spatial extent of disturbance of the oyster bed is likely substantially greater than 15%, while a significant effect that may persist between successive fishing seasons cannot be excluded. Consequently, the

requirement that significant continuous or ongoing disturbance should not exceed approximately 15% of the *Ostrea edulis* dominated community cannot be demonstrated to be met. On a precautionary basis, the approximately 15% management-review threshold is therefore considered to be triggered for Estuaries [1130] in Lough Swilly. In accordance with the Conservation Objective supporting documentation, an inter-Departmental management review is recommended prior to further licensing of such activities.

4.4. Assessment conclusion

The available information indicates that commercial native oyster dredging is likely to disturb substantially more than 15% of the commercially fished native oyster beds in all three fisheries, although the exact proportion cannot be quantified and is likely closer to the full extent of the actively fished beds than to the 15% benchmark. Spatial extent of disturbance is therefore not the main factor distinguishing the three fisheries.

In Blacksod Bay, disturbance is intermittent and was assessed as not significant and not persistent. In Tralee Bay, disturbance of the *Ostrea edulis*-dominated community was assessed as seasonal rather than continuous or ongoing and as not significant or persistent for both Mudflats and sandflats not covered by seawater at low tide [1140] and Large shallow inlets and bays [1160]. Potential interactions with other sensitive benthic communities were also assessed as not significant and not persistent, based on their limited spatial overlap with the proposed dredge areas, maintenance of their wider distribution and ecological function within the SAC, and the seasonal cessation of dredging between May and August. The approximately 15% management-review threshold is therefore not triggered in either fishery. In Lough Swilly, however, oyster removal and its consequent effects on spawning stock and recruitment were assessed as potentially significant and persistent between successive fishing seasons. As these effects occur within an *Ostrea edulis* dominated community likely subject to dredging disturbance over an area substantially greater than 15%, the approximately 15% management-review threshold is triggered for Estuaries [1130].

5. Potential fisheries management measures

The assessment concluded that the approximately 15% threshold for significant continuous or ongoing disturbance was not triggered by native oyster dredging in Blacksod Bay or Tralee Bay. In Lough Swilly, the threshold was considered to be triggered in relation to the *Ostrea edulis* dominated community within Estuaries [1130]. This conclusion arose mainly from the harvest of native oysters and the potential for effects on spawning stock biomass and recruitment to persist between successive fishing seasons. The native oyster population is also subject to additional pressures that may reduce its capacity to recover from current fishing mortality, including infection by *Bonamia ostreae*, competition with the naturalised Pacific oyster *Magallana gigas*, competition with the non-native American slipper limpet *Crepidula fornicata*, and comparatively limited fisheries management controls compared to Tralee Bay and Blacksod Bay. Lough Swilly currently operates as a public fishery and no stock-linked Total Allowable Catch (TAC) or equivalent annual harvest limit for native oyster is in place.

Fisheries management measures are therefore required to reduce fishing mortality and improve the capacity of the Lough Swilly native oyster population to maintain and replenish its spawning stock. The measures below are presented as potential components of an updated fisheries management framework and should be developed in consultation with local fishers and relevant public bodies such as IFI, NPWS, the marine institute and potentially others. Their implementation should be adaptive and informed by annual stock assessment rather than fixed thresholds transferred from previous management plans.

5.1. Total Allowable Catch

Establishment of a stock-linked TAC could be the main management measure for the Lough Swilly native oyster fishery. The absence of a mechanism linking annual harvest to available native oyster biomass was a key factor in the assessment that fishing mortality may result in significant and persistent effects on the *Ostrea edulis* dominated community.

The TAC should be set annually using the most recent Marine Institute stock assessment and should take account of total biomass, harvestable biomass, spawning stock biomass, size structure, recent recruitment and uncertainty associated with the biomass estimates. The TAC should be precautionary where biomass is low, recruitment is weak or uncertainty is high. Where the available stock assessment does not demonstrate that the proposed harvest can be sustained while maintaining adequate spawning stock biomass, the TAC should be reduced accordingly or the fishery should remain closed.

The TAC should be developed in consultation with the Lough Swilly Wild Oyster Society and other local fishers, the Marine Institute and IFI. Experience from other managed native oyster fisheries should be used to develop a practical harvest control rule linking annual scientific advice to the quantity that may be harvested. Tully and Clarke (2012) identified Inner Tralee Bay as an example where annual survey information was used to inform TACs, while cooperative management arrangements elsewhere demonstrate how local fishing knowledge can be incorporated with scientific stock assessment.

The previous Lough Swilly Fishery Natura Plan proposed limiting the exploitation rate to 33% of pre-fishery spawning stock biomass. This provides useful evidence that a stock-linked exploitation limit has previously been considered feasible for the fishery; however, the proposed 33% value was developed from stock information available in 2011–2012 and should not be adopted as a current threshold without reassessment using current stock condition and Marine Institute advice.

Catch and harvest should be recorded throughout the fishing season so that the TAC can be monitored and enforced in real time. Agreed landing points, vessel-specific catch records or equivalent reporting arrangements could be used to provide a reliable record of harvest. The native oyster fishery should close when the TAC is reached.

The statutory Minimum Landing Size of 76 mm should be retained. This protects oysters through several years of growth before recruitment to the fishery but does not, by itself, control the proportion of larger oysters harvested each year. The MLS should therefore operate alongside the stock-linked TAC rather than as the main control on fishing mortality.

5.2. Extension of the seasonal closure

The existing seasonal closure between May and August provides an annual period without commercial native oyster dredging during the main reproductive period. An extension of the seasonal closure could be considered to reduce annual fishing effort and provide additional protection to spawning stock, recently settled oysters and juveniles. This could be achieved through a later opening date, an earlier closing date, or both. The precise dates should be agreed through the annual management process with reference to native oyster biology, stock condition, Marine Institute advice and consultation with fishers.

The previous Fishery Natura Plan proposed shortening the fishing season by delaying opening in September and closing at the end of March. These dates should not be adopted automatically but demonstrate that a shorter fishing season has previously been considered practicable within Lough Swilly.

Seasonal restriction should complement, rather than replace, the TAC. A shorter fishing season would provide limited control of fishing mortality if the same total harvest were taken over fewer fishing days.

5.3. Participation and effort controls

Twenty-four oyster dredge licences were recorded for Lough Swilly in 2026, although the number of licence holders who actively participated in the fishery and their fishing effort could not be quantified. Fishery participation should therefore be reviewed as part of the management response.

A cap or reduction in the number of fishers permitted to participate in the Lough Swilly native oyster fishery could provide a practical means of controlling fishing participation and effort. A precautionary first step could include preventing any increase in fishery participation while the stock-linked management framework is established, followed by review of the appropriate level of participation against stock condition and the agreed TAC.

Fishery participation alone would not provide adequate control because fishing effort can vary substantially among fishers and vessels. The management framework should therefore also provide for direct fishing effort controls where required. These could include limits on fishing days, fishing hours, dredge numbers or other measures directly related to the amount of fishing undertaken. Such controls could be adjusted where annual stock assessment indicates weak recruitment, low spawning stock biomass or deterioration in other stock indicators.

Any participation or fishing effort controls should apply consistently across the fishery. This is particularly important because Lough Swilly is a public fishery and the Lough Swilly Wild Oyster Society does not currently have legal authority to manage participation or harvest by all licensed fishers. The earlier Fishery Natura Plan similarly identified the absence of mechanisms to control vessel numbers, fishing effort and annual harvest as a constraint on effective fisheries management.

5.4. Spatial closures

Spatial closures could be used to retain areas of native oyster spawning stock that are protected from commercial harvest. Permanent or multi-annual closures could protect comparatively high densities of mature *Ostrea edulis*, maintain local spawning stock density and provide a source of larvae to surrounding oyster grounds.

The location and extent of protected areas should be determined from current Marine Institute survey information rather than the boundaries proposed in the 2012–2017 Fishery Natura Plan. Priority should be given to areas supporting relatively high densities of mature native oysters, consistent recruitment or spat settlement and suitable shell habitat.

Temporary closures should also be available as an adaptive management measure. Areas containing a high proportion of juvenile oysters, showing strong recent recruitment or declining to low native oyster density could be closed to fishing until subsequent surveys demonstrate adequate recovery. The earlier Fishery Natura Plan proposed both a spawning reserve and closures based on oyster density and juvenile representation; these approaches remain relevant in principle, although the specific areas and numerical thresholds require reassessment using current survey data.

Rotational harvesting could also be considered where oyster grounds can be divided into biologically meaningful management areas. Reopening should be based on demonstrated recovery of native oyster biomass, size structure and recruitment rather than the passage of a fixed period alone.

5.5. Control of non-native species, disease monitoring and biosecurity

Management of fishing mortality could be accompanied by measures addressing the additional biological pressures acting on the native oyster population.

Naturalised Pacific oyster *Magallana gigas* represents a substantial pressure in Lough Swilly. Recent Marine Institute surveys demonstrated that Pacific oyster biomass remained considerably greater than native oyster biomass, while historical surveys showed Pacific oyster occupying areas of former native oyster habitat. Control of the naturalised population should therefore form part of the wider fisheries management framework.

A spatially targeted Pacific oyster removal programme could be developed for areas where *M. gigas* is abundant within native oyster grounds. However, fishing for Pacific oyster would itself create seabed disturbance and could result in native oyster bycatch. The fishing method, season, spatial extent and permitted fishing effort should therefore be defined in advance, and catch and harvest of native and Pacific oysters should be recorded separately. Pacific oysters caught during authorised native oyster dredging could also be retained rather than returned to the bed where this is legally and practically feasible. The earlier Fishery Natura Plan proposed a targeted Pacific oyster control fishery and provides a useful starting point for development of an updated approach, but its spatial boundaries require revision using current distribution data.

The current distribution and abundance of American slipper limpet *Crepidula fornicata* within native oyster grounds should also be established. Where substantial overlap occurs and removal is technically and environmentally feasible, targeted control could be investigated. Any such measure would need to demonstrate that the ecological benefit of removal outweighs the additional seabed disturbance associated with the control method.

Bonamia ostreae cannot be managed through conventional fisheries controls in the same way as fishing mortality or non-native species abundance. Disease surveillance should nevertheless form part of the fisheries management framework because disease-related mortality affects the capacity of the stock to sustain fishing mortality. Monitoring should establish temporal and spatial patterns in prevalence where practicable and should inform decisions on oyster movement and any restoration measures.

Biosecurity measures should minimise the risk of spreading disease or additional non-native species. Movement of living oysters, shell or fishing equipment between areas should therefore be subject to appropriate cleaning, disinfection, disease-screening and statutory fish-health requirements.

5.6. Stock, catch and fishing effort monitoring and adaptive management

Annual pre-fishery stock surveys carried out by the Marine Institute should provide the main scientific evidence for management of the fishery. Monitoring should continue to estimate native oyster biomass, density and size structure. The spatial distribution and biomass of Pacific oyster should also continue to be assessed, together with other relevant pressures where practicable (e.g. *Bonamia*).

These biological data should be supported by improved fishery-dependent data. At a minimum, annual records should include fishery participation, fishing effort and harvest (landings data for each oyster species). Spatial information on fishing effort would provide additional evidence for assessing the distribution of fishing pressure and the effectiveness of spatial closures.

Management responses should be agreed in advance for situations where stock indicators deteriorate. These could include reduction of the TAC, extension of the seasonal closure, temporary closure of individual oyster grounds, reductions in fishery participation or fishing effort, or closure of the fishery where necessary. Conversely, restrictions could be reviewed where repeated surveys demonstrate improved biomass, recruitment and spawning stock condition.

The management framework should therefore operate adaptively, with annual stock assessment informing any proposed TAC, fishing season, participation, fishing effort and spatial management measures applied during the subsequent fishing season. The earlier Lough Swilly plan similarly identified annual monitoring and review as important because spawning, settlement, growth and survival of native oysters vary substantially among years.

5.7. Restoration and recruitment enhancement

Active restoration should be considered only after practicable controls on fishing mortality, protection of spawning stock and management of non-native species have been implemented. The native oyster population

remains present within Lough Swilly and the first management response should therefore be to reduce pressures on the existing stock and support natural recruitment rather than use restoration to compensate for continued fishing mortality.

Restoration may nevertheless be appropriate where monitoring identifies a specific constraint on natural recovery. For example, cultch addition could be investigated where insufficient clean shell substrate is demonstrated to limit spat settlement. Small-scale trials using clean shell substrate and untreated control areas could be used to determine whether cultching increases settlement and survival before any larger intervention is considered.

Translocation of mature oysters to increase local broodstock density has also previously been proposed for Lough Swilly. However, the presence of *Bonamia ostreae* and non-native species creates important biosecurity constraints on movement of live oysters. Any translocation would therefore require a clear ecological justification, appropriate disease screening and agreement with the relevant fish-health and regulatory authorities.

Restoration should not be used as an alternative to controlling fishing mortality. Where the existing native oyster stock retains the capacity for natural recruitment, management of harvest, maintenance of spawning stock biomass and protection of suitable settlement habitat are likely to provide more practical and direct fisheries management measures.

5.8. Updated Lough Swilly Native Oyster Fishery Management Plan

An updated Native Oyster Fishery Management Plan should be prepared for Lough Swilly to provide an agreed framework through which the measures identified above can be implemented, monitored and reviewed. The Fishery Natura Plan for Native Oysters in Lough Swilly 2012–2017 provides a useful foundation because it previously identified many of the same management issues, including the need to control annual harvest, protect spawning stock, manage Pacific oyster, monitor *Bonamia*, improve fishery-dependent data and establish an effective governance structure (Lough Swilly Wild Oyster Society Limited, 2012). However, the plan is now outdated and should not simply be re-adopted. It should be revised using the substantially improved Marine Institute stock information now available and the findings of the present impact assessment.

The updated plan should be developed collectively with the Lough Swilly Wild Oyster Society, other licensed fishers, IFI, the Marine Institute, NPWS, BIM, DAFM and other relevant stakeholders. Experience gained from management of the Tralee Bay and Blacksod Bay native oyster fisheries should also be considered, particularly the use of cooperative management, stock-linked harvest controls, seasonal closures and spatial closures.

At a minimum, the updated plan should establish the annual process for setting the TAC; the fishing season; fishery participation and fishing effort controls; spatial protection of spawning stock and recruitment areas; non-native species management; disease surveillance and biosecurity; catch, harvest and fishing effort reporting; stock monitoring; compliance and enforcement; and predefined management responses to deterioration in stock condition.

The governance arrangements should also identify how agreed management measures will be applied across the public fishery. Because participation in the Lough Swilly Wild Oyster Society does not provide authority over all licensed fishers, measures agreed through the management plan should be given effect, where required, through IFI licence conditions or another appropriate statutory mechanism.

The plan should be reviewed annually following the Marine Institute stock assessment. This would allow management to respond to changes in native oyster biomass, recruitment, disease, non-native species, fishery participation, fishing effort and harvest, and would provide a transparent mechanism for demonstrating that future native oyster dredging is managed consistently with the requirement to conserve the *Ostrea edulis* dominated community in natural condition within Estuaries [1130].

6. References

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