Report supporting Appropriate Assessment Screening of Extensive Aquaculture in Glengarriff Harbour and Woodland SAC [000090].

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Glossary of Acronyms

AA	Appropriate Assessment
CM	Conservation measure
COs	Conservation Objective(s)
DAFM	Department of Agriculture, Food and the Marine
DEHLG	Department of Environment, Heritage, and Local Government
EIAR	Environmental Impact Assessment report
European site	Natura 2000 site
FCS	Favourable conservation status
IROPI	Imperative reasoning of overriding public interest
Natura 2000	Network of nature protection areas, Including the SACs and SPA designated under the Habitats Directive and the Birds Directive
NPWS	National Parks and Wildlife Service
QIs	Qualifying Interest(s)
SAC	Special Area(s) of Conservation
SCI	Special Conservation Interest(s)
SPA	Special Protected Area(s)
t	Tonne (1,000kg)

1. Introduction

This is an Appropriate Assessment Screening document supporting the Appropriate Assessment of extensive aquaculture activities in the Glengarriff Harbour and Woodland SAC. The report assesses the potential for the proposed aquaculture activities to have likely significant effects on the Qualifying Interests (QIs) or Special Conservation Interests (SCIs) of connected or adjacent Natura 2000 sites, individually or in combination with existing or planned aquaculture activities.

Extensive aquaculture is defined in Regulation 3(iii) of the Aquaculture (Licence Application) Regulations, 1998 (as amended[1]) as "*aquaculture activities where there is no external supply of feed, and the culture depends entirely on natural processes for production and supply of feed*". Shellfish (molluscs, echinoderms, bivalves and gastropods) and seaweed aquaculture fall within this definition.

This report is to consider if the proposed aquaculture activities are likely to significantly affect the QIs or SCIs of Natura 2000 sites in view of their Conservation Objectives (COs). This is achieved by following the screening process in Section 4. If there is potential for the activities considered to likely, significantly affect QIs and their conservation features, they will be carried forward for full assessment and considered on a cumulative basis with other aquaculture activities and other potentially disturbing activities.

This report applies specially to the proposed activities described in this document in Section 2. It does not constitute a full assessment of the potential environmental effects of all finfish aquaculture activities on conservation features as defined by Natura 2000 designations, as any live aquaculture applications and active finfish operations are only considered in the instance that they have the potential to have in-combination or cumulative effects with aspects of the existing extensive aquaculture, and other likely disturbing activities.

The information upon which this assessment is based is a list of applications and extant licences for aquaculture activities administered by the Department of Agriculture Food and Marine (DAFM) and supplied to the Marine Institute; as well as information provided by the applicants. The spatial extent of aquaculture licences is derived from a database managed by the DAFM[2].

1.1. Structure of AA Reports

This screening report provides:

- **Introduction -** an outline of the legislative context and the processes.
- **Appropriate Assessment Screening -** providing details of the AA screening undertaken.
- **Stage I Conclusions** - provides an outline of the findings from the screening process.

1.2. Legislative Context

Articles 3 - 16 of the European Community (EC) Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna (the Habitats Directive[2]) provide the legislative means to

[1] Aquaculture (Licence Applications) (Amendment) Regulations 2018 Regulation 3(iii) Link
[2] The Habitats Directive https://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

protect habitats and species of Community interest through the conservation of an EU-wide network of protected sites, known as Natura 2000 sites [3].

The Habitats Directive was originally transposed into Irish law by the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94 of 1997). The 1997 Regulations were subsequently replaced by the European Communities (Birds and Natural Habitats) Regulations 2011[4], as amended (referred to as the 2011 Birds and Natural Habitats Regulations). Natura 2000 sites are referred to as European sites in these Regulations. The terms Natura 2000 sites and European sites are synonymous - the term Natura 2000 sites is used in this report. Natura 2000 sites in Ireland form part of the Natura 2000 European network of protected sites, include Special Areas of Conservation (SACs) and Special Protection Areas (SPAs).

SACs are designated due to their significant ecological importance for habitats and for species protected under Annex I and Annex II respectively of the Habitats Directive. SPAs are designated for the protection of populations and habitats of bird species protected under the Birds Directive, EC 79/409/EEC[5]. The specific named habitats and/or (non-bird) species for which an SAC or SPA are selected are called the Qualifying Interests (QI), of the site. The specific named bird species for which a SPA is selected is called the 'Special Conservation Interests' (SCI). However, in practice, the common terminology of QI applies also to SCI. The term QI is used throughout this report.

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

DAFM is the aquaculture licensing authority under the Fisheries (Amendment) Act (1997)[6] and has responsibility for foreshore licensing functions in respect of activities wholly or primarily for the use, development or support of aquaculture under the Foreshore Act (1933)[7]. They determine applications for new, renewal or review of, aquaculture and foreshore licences. They are also the competent authority responsible for undertaking AA of aquaculture licence applications. As part of the licensing process DAFM must determine if the proposed aquaculture activities, individually or in-combination with other activities, are likely to significantly impact the Conservation Status of QIs and the integrity of the Natura 2000 site. DAFM must base its determination on an AA and is also responsible for ensuring that an AA is carried out.

If the AA process finds that the possibility of significant adverse effect cannot be discounted or that there is a likelihood of negative consequence for the conservation features for which a site is designated, then such activities will need to be mitigated further if they are allowed to continue. The

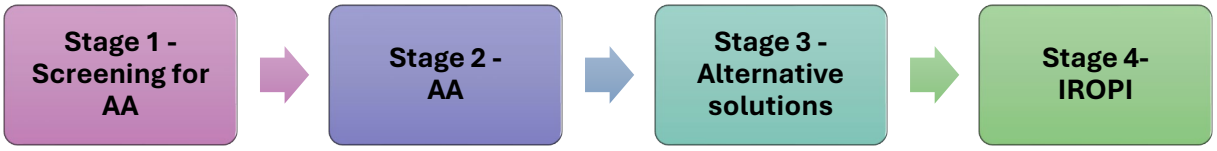
[3] Natura 2000 https://ec.europa.eu/environment/nature/natura2000/index_en.htm
[4] European Communities (Birds and Natural Habitats) Regulations 2011 NPWS Link
[5] The Birds Directive https://ec.europa.eu/environment/nature/legislation/birdsdirective/index_en.htm
[6] Fisheries (Amendment) Act, 1997 Lawreform.ie
[7] Foreshore Act 1933 Revised Acts (lawreform.ie)

assessment reports are not always explicit on how this mitigation might be achieved but rather indicate whether mitigation is required or not and what results should be achieved. This report supporting the AA, informs part of the assessment process – Stage 1 Screening.

1.3. Appropriate Assessment (AA) Process

The requirement for an AA derives directly from Article 6(3), which outlines the decision-making tests for considering plans and projects that may have a significant effect on a Natura 2000 site. No definition of the content or scope of AA is given in the Habitats Directive, but the concept and approach are set out in EC guidance[8]. The Guidance on Appropriate Assessment of Plans and Projects in Ireland document [9]published by the Department of Environment, Heritage and Local Government (DEHLG) in 2009, sets out how an AA of plans or proposals in Natura 2000 sites in Ireland should be carried out in alignment with EC guidance. In 2021, the Office of the Planning Regulator (OPR) published a practice note on AA Screening[10], which provides guidance on how a planning authority should screen an application for planning permission for AA.

The *Guidance on Appropriate Assessment of Plans and Projects in Ireland* document promotes a four-stage process to complete the AA. The four stages are:



The key procedures involved in completing the first two stages of the AA process are described below. Stage 3 and Stage 4 (Imperative reasoning of overriding public interest) are not applicable here.

1.3.1. Stage 1: Appropriate Assessment Screening

Stage 1 AA Screening is the process that addresses and records the reasoning and conclusions in relation to whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a Natura 2000 site in view of the site's COs. If any effects, on the basis of objective information, are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 Appropriate Assessment. Screening should be undertaken without the inclusion of mitigation. The triggers during an Appropriate Assessment screening are based on the 'likelihood' of a potential significant effect occurring and not on certainty. A high degree of evidence and justification is needed in circumstances when the process ends at screening stage on grounds of no likely significant effect.

1.3.2. Stage 2: Appropriate Assessment

This stage considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a Natura 2000 site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. This stage requires a targeted scientific examination of the plan or project and the relevant Natura 2000 sites, to identify and characterise any

[8] EC 2018. Guidance on Aquaculture and Natura 2000 Sustainable aquaculture activities in the context of the Natura 2000 Network Link
[9] DEHLG, 2009. Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities. Link
[10] OPR - Office of Planning Regulator (2021). Appropriate Assessment Screening for Development Management. March 2021. 43pp Link

possible implications for the site in view of the site's QIs and COs, taking account of in combination effects.

The sensitivity of identified QIs in relation to the proposed activities is assessed and the significance of any identified adverse effects is then determined. If adverse effects are determined to be likely, then their scale, magnitude, intensity, and duration are considered in light of the COs and relevant guidance documents. If the assessment is negative, then recommendations on mitigation measures or on licensing decisions will be made.

1.4. Data sources

This process and report rely on data and information from a broad and diverse range of sources. Some of the key sources of information that are generally viewed, consulted and/or utilised to inform the screening and AA processes are listed below. Others are consulted as required, and significant sources are cited in the reports.

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

- The Application
- DAFM Aquaculture & Foreshore Management website
- DAFM - Aquaculture viewer – AquaMIS
- National Parks & Wildlife (NPWS) protected site information for NPWS website, including conservation objectives
- NPWS development applications guidance documents
- BIM aquaculture profiling reports
- Targeted scientific studies
- Primary research literature
- Grey literature, reviews and report documents
- Expert opinion
- Direct queries to applicants through DAFM
- Fisheries (Amendment) Act 1997
- Aquaculture (Licence Application) Regulations, 1998, as amended
- Ireland's Marine Atlas, Marine Institute
- MI/BIM Inshore fishing reports (from websites)
- DHPLG Foreshore licencing database
- National Biodiversity Data Centre
- EPA GeoHive
- EPA maps tool
- Maritime Area Regulatory Authority (MARA)
- NPWS Article 17 Reports - Status of EU Protected Habitats and Species in Ireland
- Birdwatch Ireland website
- Irish Wetland Bird Survey (I-WeBS)
- EC Article 12 web tool on population status and trends of birds
- Marine Life Information Network - Marlin.ac.uk
- EPA Catchments.ie dashboard
- Ordnance Survey of Ireland (OSI)
- European Environmental agency
- OPR, 2021. Appropriate Assessment Screening for Development Management. March 2021; Office of Planning Regulator.
- Official Journal of the EU. 2021. Assessment of plans and projects in relation to Natura 2000 sites – Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive.
- DEHLG, 2009. Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities. NPWS, 2009 – updated in 2010 with reference to Natura Impact Statement.
- NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 1: Summary Overview. Edited by: Deirdre Lynn and Fionnuala O'Neill
- NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 2: Habitat Assessments. Edited by: Deirdre Lynn and Fionnuala O'Neill

- NPWS (2019). The Status of EU Protected Habitats and Species in Ireland. Volume 3: Species Assessments. Edited by: Deirdre Lynn and Fionnuala O'Neill
- Möckel, S., 2017. The European ecological network "Natura 2000" and the appropriate assessment for projects and plans under Article 6 (3) of the Habitats Directive. Nature Conservation, 23.
- EC Article 6 - Managing and protecting Natura 2000 sites
- EC Management of Natura 2000 sites: Best Practice
- EC 2000. Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Office for Official Publications of the European Communities, Luxembourg.
- EC 2002. Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Luxembourg.
- EC 2006. Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg.
- EC 2018. Guidance on Aquaculture and Natura 2000 Sustainable aquaculture activities in the context of the Natura 2000 Network.
- EC 2012. Common methodology for assessing the impact of fisheries on marine Natura 2000. Service Contract No. 070307/2010/578174/SER/B. DGEnv Brussels.
- Poelman *et al.*, 2022. Study on state-of-the-art scientific information on the impacts of aquaculture activities in Europe.
- Federal Agency for Nature Conservation for the FFH impact assessment
- MI 2023 a-h, ABPMer. Tools for Appropriate Assessment of Fishing and Aquaculture Activities in Marine and Coastal Natura 2000 Sites
- AMBI Sensitivity Scale
- MarESA
- Marine Institute. 2013. A risk assessment framework for fisheries in Natura 2000 sites in Ireland: with case study assessments. Version 1.3. Galway, 31pp.
- Open Street Maps, Google Earth, and Bing aerial photography

1.5. Assumptions made for Appropriate Assessment Reports

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

- Aquaculture sites considered in this assessment report are assumed to be fully operational and that the operations (as well as environmental impacts) are occurring across the entire area of the site, unless otherwise specified.
- Any aquaculture applications which were submitted prior to those being considered here, but still pending decisions (e.g., in process, under appeal, etc.), are also assumed to be fully operational across the entire area of the relevant sites. This ensures a conservative approach and that it assumes these activities will be operational to the maximum extent possible when considering cumulative effects.
- Where multiple species are proposed to be cultured at a site, and in the absence of specific details, the assessment assumes that culture species most probable to result in likely significant effects on the surrounding ecosystem or Natura 2000 QIs will be the primary culture species considered, and that it is cultured throughout the entire area of the proposed site. This ensures that the report considers the highest potential impact in relation to the prospective culture species interaction with the surrounding environment.
- Other assumptions may be identified on a case-by-case basis and are communicated in any AA report.

2. Appropriate Assessment Screening

2.1. Details of Proposed Activities

The MI has been requested to assess 2 renewal and 4 renewal and review applications for shellfish aquaculture licenses in the Glengarriff Harbour and Woodland SAC (Table 1).

Table 1 Extensive aquaculture applications within Glengarriff Harbour and Woodland SAC.

Site No.	Site Status	Aquaculture Type	Species	Area (ha)
T05-058N8	Renewal	Longlines	Blue Mussel (*Mytilus Edulis*)	2.10
T05-276N1	Renewal	Longlines	Blue Mussel (*Mytilus Edulis*)	1.60
T05-058N1	Renewal and Review	Longlines	Blue Mussel (*Mytilus Edulis*)	4.60
T05-058N2	Renewal and Review	Longlines	Blue Mussel (*Mytilus Edulis*)	17.25
T05-058N6	Renewal and Review	Longlines	Blue Mussel (*Mytilus Edulis*)	10.36
T05-276N2	Renewal and Review	Longlines	Blue Mussel (*Mytilus Edulis*)	3.81

*Areas sourced from AquaMIS (based on production units).

The sites (indicated in Figure 1 and Figure 2) have applied to culture Blue Mussel (*Mytilus edulis*). Production will be carried out using longlines, operating across both subtidal zones.

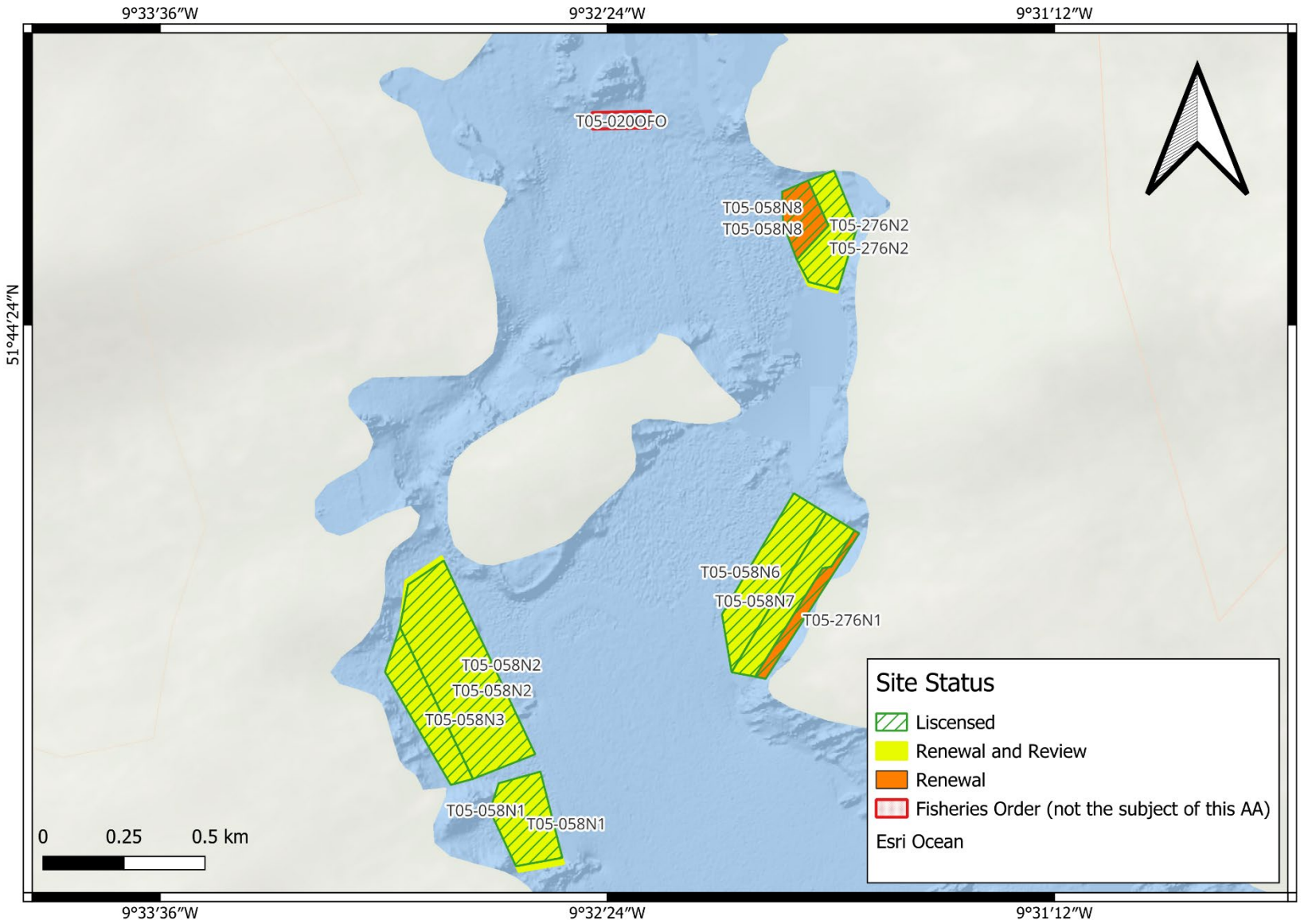


Figure 1 The status of aquaculture sites in Glengarriff Harbour and Woodland SAC.

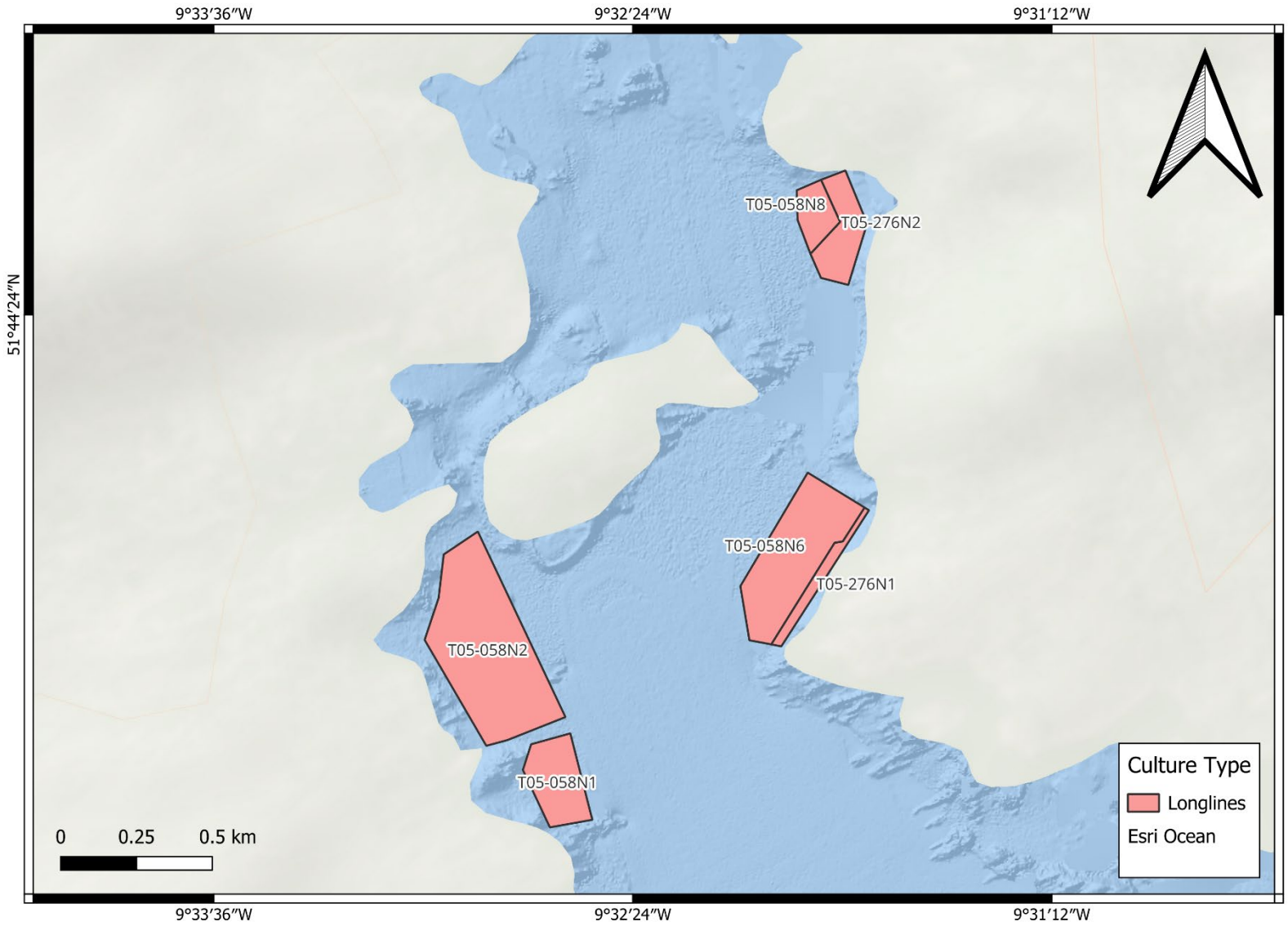


Figure 2 Primary culture type at each application site in Glengarriff Harbour and Woodland SAC.

2.2. Application Detail

2.2.1. Blue Mussel Culture

The Blue Mussel, *Mytilus edulis*, forms the basis of mussel aquaculture operation in the Glengarriff Harbour and Woodland SAC.

Two renewal license applications (**T05-058N8** and **T05-276N1**) include application for the cultivation of Blue Mussel (*Mytilus edulis*). The source of seed will be locally sourced from natural spat fall and will be collected onsite using a continuous rope system.

T05-058N1- Renewal and review license application for the continued cultivation of Blue Mussel (*Mytilus edulis*). The application is to amend the existing boundary from 4.3 hectares to 4.6 hectares (Table 2). One line is 110 metres in length, while the remaining four lines are each 220 metres in length, with 24 metres spacing between lines. Lines are suspended 6m below the water surface. Seed for sites will be sourced from natural spat fall and will be collected onsite using a continuous rope system. Each line is secured to the seabed by an anchor system consisting of polypropylene ropes, trawl ball, anchor chain and concrete anchor blocks.

T05-058N2- Renewal and review license application for the continued cultivation of Blue Mussel (*Mytilus edulis*). The application is to amend the existing site boundary, which involves merging the T05-058N2 and the T05-058N3 sites. This will result the new T05-058N2 being 17.25 hectares with 23 longlines. The current licensed site T05-058N2 is 12.9 hectares with 18 longlines, and the current licensed site T05-058N3 site is 4 ha with 6 longlines. The overall difference is 0.35 hectares and an additional longline present at the site. Longlines will be arranged into a formation of three blocks. The northern block will contain 1 x 100 metre longline and 4 x 110 metre longlines. The central block will contain 1 x 110m line, 2 x 180 metre lines and 5 x 220 metre lines. The southern block will contain 3 x 110m lines and 7 x 220 metre lines. Blocks will be spaced 20 metres apart with 30 metre spacing between longlines. Seed for sites will be sourced from natural spat fall and will be collected onsite using a continuous rope system. Each line is secured to the seabed by an anchor system consisting of polypropylene ropes, trawl ball, anchor chain and concrete anchor blocks.

T05-058N6- Renewal and review license application for the continued cultivation of Blue Mussel (*Mytilus edulis*). The application is to amend the existing site boundary, which involves merging the T05-058N6 and the T05-058N7 sites. This will result the new T05-058N6 being 10.36 hectares with 15 longlines. The current licensed site T05-058N6 is 5.9 hectares with 8 longlines, and the current licensed site T05-058N7 site is 4.4 hectares with 7 longlines. The overall difference is 0.06 hectares. Longlines will be arranged into a formation of two blocks. The northern block will contain 3 x 110 metre longlines; 1 x 180 metre longline and 4 x 220 metre longlines. The southern block will contain 7 x 220m lines. Blocks will be spaced 20 metres apart with 20-30 metre spacing between longlines. Seed will be sourced from natural spat fall and will be collected onsite using a continuous rope system. Each line is secured to the seabed by an anchor system consisting of polypropylene ropes, trawl ball, anchor chain and concrete anchor blocks.

T05-276N2- Renewal and review license application for the continued cultivation of Blue Mussel (*Mytilus edulis*). Application to expand existing site boundary from 3.7 hectares to 3.81 hectares. Longlines will be arranged into a formation of three blocks. The northern block will contain 4 x 80

metre longlines. The central block will contain 3 x 80m longlines. The southern block will contain 5 x 110 metres longlines with 20 metre spacing between longlines. Seed for sites will be sourced from natural spat fall and will be collected onsite using a continuous rope system. Each line is secured to the seabed by an anchor system consisting of polypropylene ropes, trawl ball, anchor chain and concrete anchor blocks.

Each site proposes an inbuilt St. Andrews Cross and radar reflector. Sites will be harvested using a harvesting vessel. All sites will be accessed by boat from Glengarriff pier, which is accessed by the N71 national road.

Table 2 Proposed site changes in relation to Blue Mussel culture

Site code	Boundary size		Other proposed changes
	Current (ha)	Proposed (ha)	
T05-276N2	3.7	3.81	-
T05-058N2	12.9	17.25	Application to amend the existing site boundary to include site T05-058N3.
T05-058N1	4.3	4.6	-
T05-058N6	5.9	10.36	Application to amend the existing site boundary to include site T05-058N7.

3. Pressures and Impacts

3.1. Habitats and Species QIs

3.1.1. Physico-Chemical Effects

The introduction of shellfish alters the surrounding environment, both physically and biologically, not only due to the presence of the culture organisms (e.g. increased deposition, disease, shading, fouling, alien species) but also due to the activities associated with the culture mechanisms (e.g. structures resulting in current alteration, sediment compaction).

Filter feeding organisms, for the most part, feed at the lowest trophic level, usually relying primarily on the ingestion of phytoplankton. The process is extractive in that it does not rely on the input of feedstuffs to produce growth. Suspension feeding bivalves such mussels can modify their filtration to account for increasing loads of suspended matter in the water and can increase the production of faeces and pseudofaeces (non-ingested material) which result in the transfer of both organic and inorganic particles to the seafloor. This process is a component of benthic-pelagic coupling. Faeces and pseudofaeces can accumulate on the seafloor beneath aquaculture installations and can alter the local sedimentary habitat type in terms of organic content and particle size which has, in certain circumstances, been shown to alter the resident faunal communities.

Moderate enrichment due to deposition can lead to increased diversity due to increased food availability; however further enrichment can lead to a change in sediment biogeochemistry (e.g. oxygen levels decrease, and sulphide levels increase) which can result in a reduction in species richness and abundance resulting in a community dominated by specialist species. In extreme cases of protracted organic enrichment, anoxic conditions may occur where no fauna survives, and the sediment may become blanketed by bacterial mats.

The depth of the longlines may have an impact on the seabed by means of changing water velocity in and around the site, sediment deposition, change in water turbidity and irradiance. Suspended shellfish can exert these pressures on the benthos.

Additionally, placement of aids to navigation may have the potential to impact the benthic seafloor environment in their placement. Access to extensive culture sites, particularly using vehicles over the foreshore, can also present a potential risk of impact on marine species and communities[11] on foot of compaction of sediment.

3.1.2. Shading

Shading may be an issue as a consequence of the structures associated subtidal shellfish culture. Size and length of longline aquaculture may shade species underneath the aquaculture site depending on the depth of the seafloor below the longlines.

[11] Forde, J., F.X. O'Beirn, J.P.J. O'Carroll, A. Patterson, R. Kennedy. 2015. Impact of intertidal oyster trestle cultivation on the Ecological Status of benthic habitats. Marine Pollution Bulletin 95: 223–233

3.1.3. Non-native Species

Non-native (alien) species may be introduced to environments accidentally or deliberately. Aquaculture is considered a vector for the introduction of alien species. Aquaculture is responsible for the introduction of alien species intended for culture and as a result of unintended transmissions arising from imports or movements of aquaculture stock.

The use of locally sourced seed, poses a potential biosecurity risk whereby non-native species may be inadvertently transported alongside cultured stock. These “hitch-hiking” organisms may facilitate the unintended introduction of non-native species into the Glengarriff Harbour and Woodland SAC. There is potential that alien species may spread or proliferate to a degree that can result in environmental damage.

3.1.4. Pathogens

As a generalisation, marine farmed organisms are affected by a range of disease, much as other domesticated agriculture stock. Due to the nature (high density) of the shellfish culture methods there is potential for risk of transmission of disease within the cultured stock, and between the stock and wild populations. All aquaculture activities have the potential to introduce disease risk to the surrounded environment.

3.2. Ornithology QIs

The main pressures which are likely to be exerted on bird species from the proposed extensive aquaculture activities are:

3.2.1. Disturbance

Disturbance on marine birds can be either visual (e.g. lights from machinery on a site, aids to navigation, etc.). Some species are more sensitive to disturbance than others[12]. Both types of disturbance can cause birds to flush (escape) from the direct area to another area. Flushing causes birds to move from a high-quality foraging habitat to a lower quality foraging habitat potentially resulting in reduced body condition. In addition, the energy expended flying away from a region can also have an effect on body condition. Persistent levels of disturbance can cause population level effects on bird species[13].

3.2.1.1. Exclusion from foraging habitats

Exclusion from foraging habitats occurs when physical structures take up space in areas which birds would otherwise use for foraging. Exclusion affects different birds in different ways. Exclusion from foraging habitats decreases the available foraging habitat and prey for that species. It makes foraging conditions more challenging and can lead to increases in intraspecific competition for resources. If enough habitat is removed this can have population level effects. Suspended shellfish culture can exert exclusion pressure on marine birds.

[12] Gittings, T. & O’Donoghue, P.D. (2012). *The effects of intertidal oyster culture on the spatial distribution of waterbirds*. Report prepared for the Marine Institute. Atkins, Cork

[13] Fliessbach, Katharina Leonia, et al. "A ship traffic disturbance vulnerability index for Northwest European seabirds as a tool for marine spatial planning." *Frontiers in Marine Science* 6 (2019): 192.

3.2.2. Prey competition

Direct or indirect competition occurs when prey consumed by a species is targeted by aquaculture (or catches them as bycatch). The subsequent harvesting removes a potential food source, both the mussel itself and potentially other bivalve and polychaete species as bycatch.

3.2.3. Entanglement or collision

Entanglement or collision has the potential for direct mortality or indirectly through causing injury or debilitation which later results in reduced fitness or mortality. If this effects sufficient individuals in a short time frame, then there can be significant population decline. Entanglement or collision is not thought to be a major issue for aquaculture however the potential pressure is exerted by suspended mussel culture.

4. Methods for Screening QIs

A key consideration as to whether or not an activity is likely to adversely affect Natura 2000 QIs, is if there is a pathway of connectivity between the QI and the source(s) of potential impacts associated with the activity. The QIs could be at risk of negative effects where a Source-Pathway-Receptor (S-P-R) link exists between the proposed activities and the conservation features of the site, and the risk cannot be dismissed.

The S-P-R model considers potential ecological links between the proposed activity and the qualifying interest of Natura 2000 site. The link can be direct and facilitated by terrestrial, aquatic and airborne transfer of a particular pressure, or the nature and location of the activity may be indirect and interact at a functional level, and impact on behaviour or resource acquisition of a qualifying interest[14].

The screening for the presence of a S-P-R link and any potential adverse effects of the proposed aquaculture activities on the QIs of the Natura will be presented in this Section. A screening assessment is an initial evaluation of the existence of S-P-R links between the proposed activities and any likely adverse effects on the QIs. In this assessment, screening of the QIs against the proposed activities is, in the first instance, considered on the basis of direct spatial overlap. Indirect effects are also considered whereby the likely impact of the activity on behaviour or resources required by mobile species (mammals and birds, among others) is considered. Also considered are indirect effects facilitated by hydrological or other potential links (e.g. foraging range).

Aquaculture pressures on a given habitat are related to its vulnerability to the pressures induced by culture activities. Vulnerabilities consider the likely interactions measured by spatial overlap or exposure of the habitat to the equipment, activities or culture organism, combined with the sensitivity of the habitat. To this end, the location and orientation of structures associated with the culture organism, the density of culture organisms, the duration of the culture activity, and the type of activity are all important considerations when considering risk of disturbance to habitat features and species.

The process of determining likely significant effects for bird SCIs is based on impacts/pressures from the proposed activities and the conservation objectives outlined by NPWS. All SPAs with a 15 km range of the proposed activities are considered for screening. The foraging range or breeding site location (depending upon the conservation objectives) of the SCI is considered before determining if there is likely to be spatial overlap with the proposed activities. If there is no spatial overlap, then there is not likely to be an S-R-P pathway for interaction, and the SCI is therefore screened out. If it is deemed that

[14] OPR, 2021. Appropriate Assessment Screening for Development Management. March 2021; Office of Planning Regulator.

there is spatial overlap, then the pressures exerted by the proposed activities are considered e.g. disturbance, exclusion from foraging grounds. If these pressures are not deemed to interact with the SCI and associated conservation objectives, then the SCI can be screened out. If it is deemed likely to be interaction between the pressures and the SCI, the population trends at the site are considered. If there is evidence that the population has declined or if no such data is available, then the SCI is screened in. Where there is no evidence of population decline then consideration is given to the species resilience to the pressure based on scientific literature. If there is sufficient evidence that the species has the ability to resist the pressure to the extent that likely significant effects can be ruled out, then that SCI is screened out. If no such evidence is available, it is screened in. At all stages a precautionary approach is used in the absence of reliable data.

While the guide value of 15 km range can inform habitats and species with defined ranges, it may not apply effectively to migratory or mobile species or to those with large foraging ranges (e.g. some birds and mammals). Such species may interact with the proposed activity as a result of the structures along their migratory route or impacting on their foraging behaviour. This report has therefore extended this screening to a defined list of 22 bird species and 4 mammal species with large foraging ranges, based on the Annex II species list and from the literature[15,16]. Bird species have been identified based on their foraging ranges. The Bottlenose Dolphin (*Tursiops truncatus*) [1349] and Harbour Porpoise (*Phocoena phocoena*) [1351] are considered for screening as they are a wide-ranging species but for which a specific foraging range in Ireland could not be established[17]. The Grey Seal (*Halichoerus grypus*) [1364] is considered as its foraging range extends up to 448 km. Harbour Seal (*Phoca vitulina*) [1365] is considered as its foraging range extends up to 273 km[18], both of these foraging ranges are well beyond the boundary of their designated Natura sites.

The following Annex II species have the potential to overlap the proposed site, and are considered further as long-ranging species in this screening:

- Bottlenose Dolphin (*Tursiops truncatus*) [1349]
- Harbour Porpoise (*Phocoena phocoena*) [1351]
- Grey Seal (*Halichoerus grypus*) [1364]
- Harbour Seal (*Phoca vitulina*) [1365]

The list of long-ranging birds to be considered are:

- Arctic tern (*Sterna paradisaea*) [A194]
- Atlantic Puffin (*Fratercula arctica*) [A204]
- Black-headed Gull (*Larus ridibundus*) [A197]
- Black-legged Kittiwake (*Rissa tridactyla*) [A188]
- Common Gull (*Larus canus*) [A182]
- Common Tern (*Sterna hirundo*) [A193]

[15] Thaxter, C.B., Lascelles, B., Sugar, K., Cook, A.S.C.P., Roos, S., Bolton, M., Langston, R.H.W. and Burton, N.H.K Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas (2012). Biological Conservation 156: 53-61.

[16] Woodward, I., Thaxter, C.B., Owen, E. & Cook, A.S.C.P. 2019. Desk-based revision of seabird foraging ranges used for HRA screening, Report of work carried out by the British Trust for Ornithology on behalf of NIRAS and The Crown Estate, ISBN 978-1-912642-12-0.

[17] IAMMWG. 2023. Review of Management Unit boundaries for cetaceans in UK waters (2023). JNCC Report 734, JNCC, Peterborough, ISSN 0963-8091. https://hub.jncc.gov.uk/assets/b48b8332-349f-4358-b080-b4506384f4f7

[18] Carter MID, Boehme L, Cronin MA, Duck CD, Grecian WJ, Hastie GD, Jessopp M, Matthiopoulos J, McConnell BJ, Miller DL, Morris CD, Moss SEW, Thompson D, Thompson PM and Russell DJF (2022) Sympatric Seals, Satellite Tracking and Protected Areas: Habitat-Based Distribution Estimates for Conservation and Management. Front. Mar. Sci. 9:875869. doi: 10.3389/fmars.2022.875869

- Cormorant (*Phalacrocorax carbo*) [A683]
- Eider (*Somateria mollissima*) [A063]
- European Storm-petrel (*Hydrobates pelagicus*) [A014]
- Great Black-backed Gull (*Larus marinus*) [A187]
- Guillemot (*Uria aalge*) [A887]
- Herring Gull (*Larus argentatus*) [A184]
- Leach's Storm Petrel (*Hydrobates leucorhous*) [A854]
- Lesser Black-backed Gull (*Larus fuscus*) [A489]
- Manx Shearwater (*Puffinus puffinus*) [A013]
- Mediterranean Gull (*Larus melanocephalus*) [A176]
- Northern Fulmar (*Fulmarus glacialis*) [A009]
- Northern Gannet (*Morus bassanus*) [A016]
- Razorbill (*Alca torda*) [A200]
- Red-throated Diver (*Gavia stellata*) [A001]
- Roseate Tern (*Sterna dougallii*) [A192]
- Sandwich Tern (*Thalasseus sandvicensis*) [A863]
- Shag (*Gulosus aristotelis*) [AB03]

Where there are spatial overlap and reasonable potential for likely significant effects on QIs to arise, a Stage 2 Appropriate Assessment is warranted. In the instance where there is no spatial overlap between an activity and a QI, and no likely direct or indirect interactions apparent, then potential significant effects may be screened out. If there is marginal spatial overlap but no reasonable potential for likely significant effects on QIs to arise then adverse effects may also be screened out.

5. Appropriate Assessment Screening

5.1. Identification of Relevant Natura 2000 Sites and QIs

A key consideration as to whether an activity is likely to significantly affect Natura 2000 QIs is if there is a pathway of connectivity between the QI and the sources of potential impacts associated with the activity. The proposed licenced sites overlap with Glengarriff Harbour and Woodland SAC and is within a guide distance of 15 km from the boundaries of a number of other Natura sites (Table 3 and Figure 3).

The characteristic features of these sites are identified, where a preliminary screening is carried out on the likely interaction with aquaculture activities based primarily upon the likelihood of spatial overlap for conservation objectives within 15km of SACs and SPAs. Additionally, the listed long ranging species with the proposed activities within foraging range, are considered. The screening assessment of aquaculture in relation to the Conservation Objectives for the Glengarriff Harbour and Woodland SAC is based on Version 1.0 of the objectives[19] and supporting documentation. The spatial data for conservation features was provided by NPWS. No SPAs were identified within the zone of influence for the proposed aquaculture activities.

Table 3 SACs and SPAs within the zone of influence (15 km).

Site Code	Site Name	Area (Ha)	Distance (Km)	URL
SACs				
000090	Glengarriff Harbour and Woodland SAC	1295.18	0	Link
000093	Caha Mountains SAC	6881.61	0.8	Link
001873	Derryclogher (Knockboy) Bog SAC	1712.16	5.52	Link
001881	Maulagowna Bog SAC	424.86	8.95	Link
001342	Cloonee and Inchiquin Loughs, Uragh Wood SAC	1150.82	9.39	Link
000102	Sheep's Head SAC	3149.68	10.76	Link
002280	Dunbeacon Shingle SAC	43.02	13.38	Link
002281	Reen Point Shingle SAC	7.01	14.22	Link
002158	Kenmare River SAC	43498.86	13.57	Link

[19] NPWS (2015) Conservation Objectives Series Glengarriff Harbour and Woodland SAC 000090. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

SACs

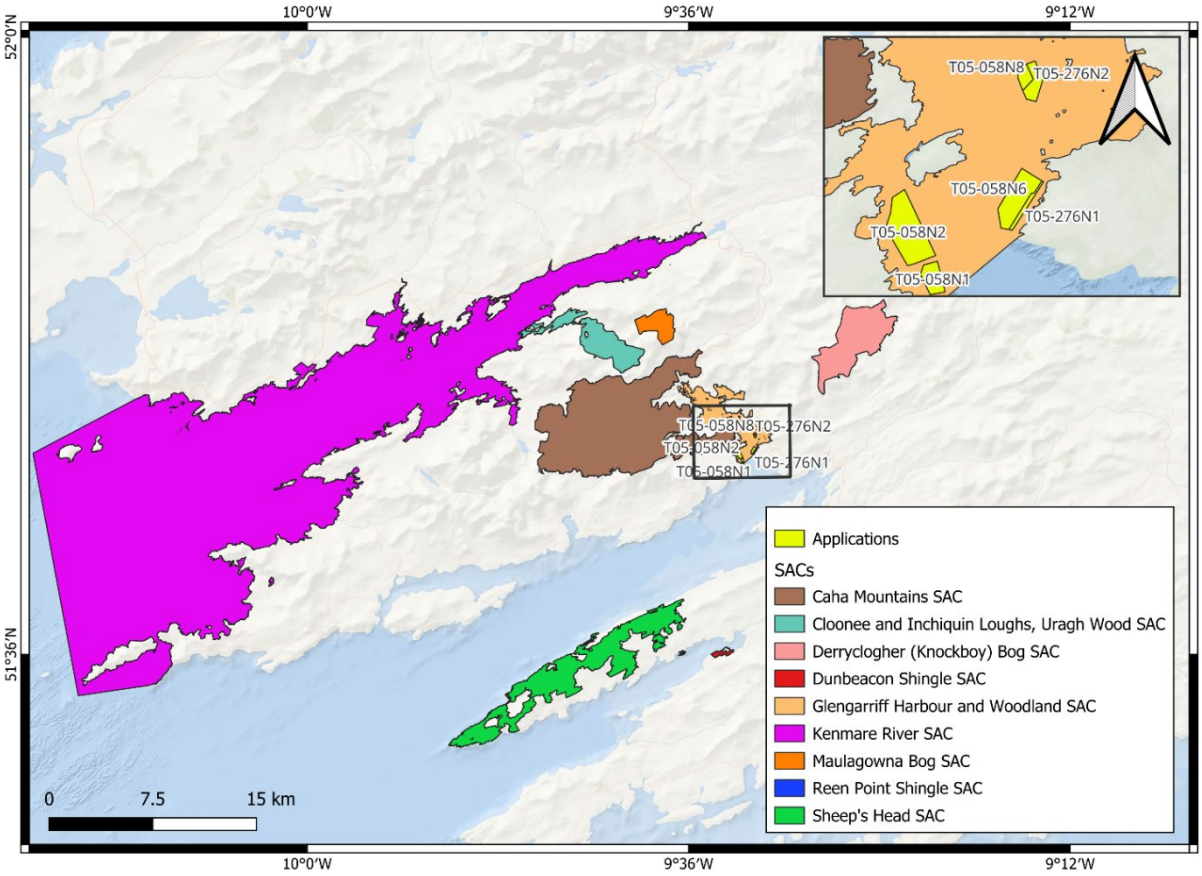


Figure 3 Special Areas of Conservation (SACs) adjacent to the proposed aquaculture sites in Glengarriff Harbour and Woodland SAC.

5.1.1.1. Glengarriff Harbour and Woodland SAC [000090]

Located to the south and north-west of Glengarriff Village in west Cork, this site consists of a glacial valley opening out into a sheltered bay with rocky islets. The valley contains old oak woodland and alluvial forest. Glengarriff woodland consists of a sizeable area of broadleaved semi-natural woodland comprised of Oak (*Quercus sp*.) and Holly (*Ilex aquifolium*), with much Downy Birch (*Betula pubescens*) and Rowan (*Sorbus aucuparia*). Wet woodland occurs along parts of the Canrooska and Glengarriff rivers. The rocky islets in the harbour support the largest colony of Common Seals in the south-west of Ireland (maximum count of 151 in the all-Ireland survey of 2003). The woods, and the river flowing through it, are home to a range of other mammal species, including Otter (listed in Annex II of the E.U. Habitats Directive), Stoat, Red Squirrel, Badger and Sika Deer. Bird life is also diverse, with species such as Sparrowhawk, Peregrine, Long-eared Owl, Woodcock, Heron, Jay, Dipper, Willow Warbler, Chiffchaff and Wood Pigeon. This site is of importance because it is the only sizeable area of old oak woodland remaining in west Cork and is considered second only to Killarney as an example of Oceanic Sessile Oak/Holly woodlands.

There are six QIs listed under Glengarriff Harbour and Woodland SAC the objectives and targets of which are listed in Table 4.

Table 4 Conservation objectives and targets for habitats and species in Glengarriff Harbour and Woodland SAC (NPWS, 2015)[20].

Feature	Objective	Target
Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]	To maintain favourable conservation condition	
Habitat area		Area stable or increasing, subject to natural processes.
Habitat distribution		No decline in habitat distribution.
Woodland size		Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size.
Woodland structure: cover and height		Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi mature trees and shrubs; and well-developed herb layer.
Woodland structure: community diversity and extent		Maintain diversity and extent of community types.
Woodland structure: natural regeneration		Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy.
Woodland structure: dead wood		At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter.
Woodland structure: veteran trees		No decline.
Woodland structure: indicators of local distinctiveness.		No decline.
Vegetation composition: native tree cover		No decline. Native trees cover not less than 95%.
Vegetation composition: typical species		A variety of typical native species present, depending on woodland type, including oak (*Quercus petraea*) and birch (*Betula pubescens*).
Vegetation composition: negative indicator species		Negative indicator species, particularly non-native invasive species, absent or under control.
Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]	To maintain favourable conservation condition	
Habitat area		Area stable or increasing, subject to natural processes.
Habitat distribution		No decline.
Woodland size		Area stable or increasing. Where topographically possible, "large" woods at least 25ha in size and “small” woods at least 3ha in size.
Woodland structure: cover and height		Diverse structure with a relatively closed canopy containing mature trees; subcanopy layer with semi mature trees and shrubs; and well-developed herb layer.
Woodland structure: community diversity and extent		Maintain diversity and extent of community types.
Woodland structure: natural regeneration		Seedlings, saplings and pole age-classes occur in adequate proportions to ensure survival of woodland canopy.
Hydrological regime: Flooding depth/ height of water table		Appropriate hydrological regime necessary for maintenance of alluvial vegetation.
Woodland structure: dead wood		At least 30m³/ha of fallen timber greater than 10cm diameter; 30 snags/ha; both categories should include stems greater than 40cm diameter (greater than 20cm diameter in the case of alder).
Woodland		No decline.

[20] NPWS. Glengarriff Harbour and Woodland SAC (000090). Conservation Objectives. Link

Feature	Objective	Target
structure: veteran trees		
Woodland structure: indicators of local distinctiveness		No decline.
Vegetation composition: native tree cover		No decline. Native tree cover not less than 95%.
Vegetation composition: typical species		A variety of typical native species present, depending on woodland type, including alder (*Alnus glutinosa*), willows (*Salix spp.*), ash (*Fraxinus excelsior*) and birch (*Betula pubescens*).
Vegetation composition: negative indicator species		Negative indicator species, particularly non-native invasive species, absent or under control.
Kerry Slug (*Geomalacus maculosus*) [1024]	To maintain favourable conservation condition	
Distribution		Number of occupied 1km squares at least stable.
Habitat extent: woodland area		Stable or increasing, subject to natural processes.
Habitat quality: woodland		Proportion of sessile oak (*Quercus petraea*) in canopy at least stable.
Habitat quality: non-native invasive species		Rhododendron (*Rhododendron ponticum*) in woodland absent or under control.
Lesser Horseshoe Bat (*Rhinolophus hipposideros*) [1303]	To maintain favourable conservation condition	
Population per roost		Minimum number of 252 bats for the summer roost (roost id. 194 in NPWS database); minimum number of 266 for the artificial hibernaculum (roost id. 204) and minimum number of 111 for the paired winter roosts (roost ids. 200 and 205).
Winter roosts		No decline.
Summer roosts		No decline.
Number of auxillary roosts		No decline.
Extent of potential foraging habitat		No significant decline.
Linear features		No significant loss, within 2.5km of qualifying roosts.
Light pollution		No significant increase in artificial light intensity adjacent to named roosts or along commuting routes within 2.5km of those roosts.
Otter (*Lutra lutra*) [1355]	To maintain favourable conservation condition	
Distribution		No significant decline.
Extent of terrestrial habitat		No significant decline. Area mapped and calculated as 56ha. Areas mapped to include 10m terrestrial buffer along shoreline (above HWM and along riverbanks).
Extent of marine habitat		No significant decline. Area mapped and calculated as 137ha.
Extent of freshwater (river) habitat.		No significant decline. Length mapped and calculated as 2 ha.
Couching sites and holts		No significant decline.
Fish biomass available		No significant decline.
Barriers to connectivity		No significant increase.
Habour Seal (*Phoca vitulin*) [1365]	To maintain favourable conservation condition	
Access to suitable habitat		Species range within the site should not be restricted by artificial barriers to site use.
Breeding behaviour		The breeding sites should be maintained in a natural condition.

Feature	Objective	Target
Moulting behaviour		The moult haul-out sites should be maintained in a natural condition.
Resting behaviour		The resting haul-out sites should be maintained in a natural condition.
Disturbance		Human activities should occur at levels that do not adversely affect the grey seal population at the site.

5.1.1.2. Caha Mountains SAC [000093]

The Caha Mountains consist of Old Red Sandstone and form part of the dramatic backbone of the Beara Peninsula, between Turner's Rock (on the Glengarriff- Kenmare Road) and the Healy Pass. Within the site there are a series of peaks and ridges up to 630 m high, radiating out from Caha Mountain itself. The southerly directed ridge forms a broad boggy plateau studded with small lakes - at about 420 m. The area also features glacial valleys and corries, such as the one within which Barley Lake occurs. Generally, the terrain is rocky with many of the slopes featuring rock faces interspersed with grassy shelves. Substantial cliffs are present in the north- western half of the site. The best examples of blanket bog in the site occur on the Glenlough plateau and in the saddle to the east of Knockastumpa. Plant species of alpine heath, and the rocky slopes and screes, are associated with the summits. Wet heath is frequent at the site and occurs as a mosaic, often in association with blanket bog and upland grassland. The upland grassland is dominated by Purple Moor-grass (*Molinia caerulea*) but other grasses present include Mat Grass (*Nardus stricta*), *Festuca spp*. and *Agrostis spp*. Lakes are frequent throughout the site and especially on the Glenlough Mountain plateau. Most of the small lakes which occur within the bog and wet heath habitats are dystrophic in character. These have peat bottoms and often peat-stained water. The site contains Killarney Fern (*Trichomanes speciosum*). It also supports the only known population of Recurved Sandwort within Ireland and Britain. Kerry Slug (*Geomalacus maculosus*) and Otter, species listed on Annex II of the E.U. Habitats Directive, are found within the site. Other important species present within the site include the Irish Hare, Common Lizard and Frog. Brown Trout occurs within some of the lakes of the plateau. A number of bird species listed in Annex I of the E.U. Birds Directive occur: Peregrine Falcon, Hen Harrier and Chough. The Peregrine breeds within the site, while the others probably breed.

5.1.1.3. Derryclogher (Knockboy) Bog SAC [001873]

Derryclogher (Knockboy) Bog SAC has been designated as a candidate Special Area of Conservation under the EU Habitats Directive. The site has been designated as a SAC due to the presence of Blanket Bog (active), a priority habitat listed in Annex I of the EU Habitats Directive. Derryclogher (Knockboy) Bog SAC has been designated as a candidate Special Area of Conservation under the EU Habitats Directive. The site has been designated as a SAC due to the presence of Blanket Bog (active), a priority habitat listed in Annex I of the EU Habitats Directive. There are two main areas of active blanket bog within the site, to the south of Curramore Lough and to the north-east of Knockboy summit. Wet and dry heath covers the majority of the site where the slope is steeper than 3 degrees. These areas are dominated by well-grazed Heather and Cross-leaved Heath, with Bilberry, Sheep's Fescue, Tormentil and Heath Bedstraw. The site supports breeding pairs of three Annex I bird species, Peregrine Falcon, Merlin and Chough. Other notable species include Red Grouse, Snipe and Woodcock. The Annex II species Otter and Kerry Slug and the internationally important Red Data Book Species Irish Hare are present on the site. The Red Data Book species Arctic Char may occur in Lough Nambrackderg.

5.1.1.4. Maulagowna Bog SAC [001881]

Maulagowna Bog is located in Co. Kerry on the north-western slopes of the Caha Mountains, overlooking the Kenmare River inlet. The underlying geology of the area is Old Red Sandstone. The site consists of a blanket bog located on a flat ridge north of Knocknagorravela mountain, and a corrie lake, Cummer Lough, located in an amphitheatre of high cliffs. Cummer Lough is an oligotrophic lake, also a habitat type which is listed on Annex I of the E.U. Habitats Directive. The lake is at an altitude of 140-150 m, while the cliffs to the south and west of the lake rise to over 350 m. The lake supports a typical flora of Pipewort (*Eriocaulon aquaticum*), Shoreweed (*Littorella uniflora*), Water Lobelia (*Lobelia dortmanna*) and Bulbous Rush (*Juncus bulbosus*). The outflow stream from the lake is fast flowing with a series of small waterfalls. The main land use within the site is sheep grazing, and signs of over-grazing are evident through most of the site. Overall, however, this is a good example of a small headwater bog, a type of blanket bog which is scarce in the south-west. The presence of a range of other upland habitats, including an oligotrophic corrie lake, adds to the diversity and interest of the site.

5.1.1.5. Cloonee and Inchiquin Loughs, Uragh Wood SAC [001342]

Cloonee and Inchiquin Loughs, Uragh Wood SAC is located in a large U-shaped glacial valley on the northern side of the Caha Mountain range, to the west of Kenmare, Co. Kerry. It encompasses a series of four large lakes, some smaller mountain lakes, several inter-connecting rivers and streams, and the oak woodlands at Uragh Wood. The Cloonee Lough system comprises three lowland oligotrophic lakes. The lowest of these is situated close to the Kenmare River estuary and is connected to the middle and upper lakes via the Beal-na-Shannin River. Uragh Wood is a fine example of an oceanic, semi-natural oak woodland. This site is of international importance for its hyper-oceanic woodland bryophytes. The surrounding lands are generally a mixture of exposed sandstone rock, with extensive areas of wet or dry heath communities, with deeper peat areas of blanket bog. Uragh Wood supports a diverse fauna and is especially rich in invertebrates.

5.1.1.6. Sheep's Head SAC [000102]

Sheep's Head in Co. Cork is a narrow peninsula with a north-east to south-west orientation, bounded on the northern side by Bantry Bay and on the southern side by Dunmanus Bay. The rocky parts of the peninsula are covered by dry heath, where Western Gorse (*Ulex gallii*), Heather (*Calluna vulgaris*) and some Bell Heather (*Erica cinerea*) form a compact canopy moulded by the wind. On ledges with some trapped soil, Common Bent (*Agrostis capillaris*), Red Fescue (*Festuca rubra*) and Heath-grass (*Danthonia decumbens*) are more common, with some Wild Thyme (*Thymus praecox*), Common Dog-violet (*Viola riviniana*) and, locally, Burnet Rose (*Rosa pimpinellifolia*) - species that are characteristic of this community over much of the south coast. The Pale Dog violet (*Viola lactea*), a rare and legally protected (Flora (Protection) Order, 1999) species listed in the Irish Red Data Book, has also been recorded from this area. Sheep's Head is an important ornithological site and much of it is a Special Protection Area (SPA) under the E.U. Birds Directive. It supports an important population of Chough, a species that is listed on Annex I of this Directive. The birds are found in pairs and flocks, and the main concentration of the species at Sheep's Head is near the tip of the peninsula, where an estimated 12-13 pairs were recorded in a survey in 2002/03. Roosting is confined to the southern side of the end of the peninsula, with small numbers (up to eight birds) gathering occasionally. The site overlaps with the breeding territory of a pair of Peregrine, a species that is also listed on Annex I of the E.U. Birds Directive. Black Guillemot nest on the coast and the population found on Sheep's Head and the nearby

Mizen Head Peninsula is of national importance; several other seabird species also use the site, but in small numbers, including Fulmar, Shag, Great Black-backed Gull and Herring Gull.

5.1.1.7. Dunbeacon Shingle SAC [002280]

This coastal site is located at the head of Dunmanus Bay in Dunbeacon townland, 5 km south-west of Durrus village, Co. Cork. The site comprises a diverse and complex mosaic of habitat types in a relatively small area. As well as supporting an example of 'perennial vegetation of stony banks', Dunbeacon Shingle SAC also contains areas of saltmarsh, rush pasture, lake, freshwater marsh, tidal estuarine creeks, scrub woodland, Alder (*Alnus glutinosa*) and willow (*Salix spp*.) dominated wet woodland, wet heath and dry heath. The site provides useful feeding habitat for several bird species including the uncommon Little Egret, Curlew, Snipe, Oystercatcher, Cormorant and Mallard.

5.1.1.8. Reen Point Shingle SAC [002281]

Reen Point Shingle SAC is located in Dunmanus Bay, 4 km north-west of Durrus village, in Reencappul townland, Co. Cork. The site covers a relatively small area and consists of a headland shaped like a hammer. The 'handle' of the hammer shape consists of two vegetated shingle bars, one at each side, with a marshy/lagoonal area in between. At Reen Point Shingle SAC the shingle bar or stony bank habitat on the eastern side of the headland has Sea Mayweed (*Matricaria maritima*), Ribwort Plantain (*Plantago lanceolata*) and Common Ragwort (*Senecio jacobaea*). The shingle vegetation on the western side is more diverse and supports species such as Sea Beet (*Beta vulgaris subsp. maritima*), Common Scurvygrass (*Cochlearia officinalis*), Red Fescue (*Festuca rubra*), Sea Mayweed, Rock Samphire (*Crithmum maritimum*), Ribwort Plantain, sea lavender (*Limonium sp*.) and lichens. The lagoon, which is fringed with Common Reed (*Phragmites australis*) and some Common Club-rush (*Scirpus lacustris*), provides habitat for several bird species including Curlew, Cormorant and Mute Swan. Other habitats which occur at the site include saltmarsh, marsh/scrub and heath.

5.1.1.9. Kenmare River SAC [002158]

Kenmare River SAC in Co. Kerry, is a long, narrow, south-west facing bay. It is a deep, drowned glacial valley and the bedrock is mainly Old Red Sandstone which forms reefs along the middle of the bay throughout its length. Exposure to prevailing winds and swells at the mouth diminishes towards the head of the bay. Numerous islands and inlets along the length of the bay provide further areas of additional shelter in which a variety of habitats and unusual communities occur. In the more exposed areas within Kenmare River SAC the sublittoral sediment is composed mainly of coarse shelly sand and gravel forming small dunes frequently with sparse bivalves, including *Lutraria* sp. In sheltered areas the muddy sand has communities characterised by burrowing megafauna. Beaches in outer parts of Kenmare River SAC are composed of coarse, mobile sand and have sand hoppers in the high shore and polychaete worms in the low shore. More sheltered coves, sometimes backed by sand dunes, have sand hoppers in the upper shore, Lugworm (*Arenicola marina*) in the mid shore and Razor Shell (*Ensis arcuatus*) and the burrowing sea-urchin (*Echinocardium cordatum)* in the lower shore. Midway along the south coast of Kenmare River SAC, a series of sea caves stretch back into the cliff. They typically support encrusting sponges, ascidians and bryozoans. Within the Derrynane Bay area on the south side of the Iveragh Peninsula there are good examples of a number of habitats listed on Annex I of the E.U. Habitats Directive including dry heath, fixed dunes, Marram dunes, sea cliffs and salt meadows (both Atlantic and Mediterranean types). Salt meadows are well distributed in sheltered areas from Derrynane Bay to Kilmakilloge Harbour. Heath also occurs along the extensive coastal strips within the

site, from sea level to the higher slopes. Dry heath is especially well represented, and occurs in association with wet heath, coastal grassland and exposed rock. Sea cliffs occur in places along the length of the site and are often well vegetated. Common/Arctic Tern (95+ pairs in 2008) have been recorded breeding on rocky islands in Derrynane Bay and on other islands within the site including Eyeries Island, Spanish Island and Brennel Island.

5.2. Screening of QIs

5.2.1. Glengarriff Harbour and Woodland SAC [000101]

The initial factor for determining likely significant effects and therefore a potential S-P-R link is to establish the spatial overlap between the QI and associated Marine Community Types (MCT) and the proposed activities.

5.2.1.1. Terrestrial Habitat Features

The following QIs of this SAC are considered to be terrestrial habitats:

- Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]
- Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]
- Kerry Slug (*Geomalacus maculosus*) [1024]
- Lesser Horseshoe Bat (*Rhinolophus hipposideros*) [1303]

The proposed and existing activities considered in this report are located in the subtidal marine environment – the sites and likely access points do not significantly spatially overlap with terrestrial habitats and species and therefore, there are no likely direct impacts. It is concluded there are no apparent S-P-R links between the proposed extensive aquaculture activities and these qualifying interests listed, therefore **likely significant effects on all above mentioned terrestrial habitats can be ruled out.**

At the time of writing, there are no recorded marine community types within Glengarriff Harbour and Woodland SAC. On this basis, marine community types are not screened in for further consideration.

5.2.1.2. Harbour Seal (Phoca vitulina) [1365]

The conservation objectives for the Harbour Seal (*Phoca vitulina*) [1365] are to maintain the species favourable conservation condition through:

- Access to suitable habitat: number of artificial barriers
- Breeding behaviour
- Moulting behaviour
- Resting behaviour
- Disturbance

These attributes are focused on the habitat quality and the level of disturbance of the harbour seal. This QI has a wide foraging range. The National Biodiversity Data Centre indicates that harbour seal has been sighted within Glengarriff Harbour and Woodlands SAC itself with recorded sightings as

recently as 2018 and recorded sightings reported within Bantry Bay as recently as 2019[21] (Figure 5). Harbour Seal (*Phoca vitulina*) [1365] is considered as its foraging range extends up to 273 km[22].The rocky inlets located within Glengarriff Harbour support the largest harbour seal colony in the south-west of Ireland[23] (Figure 4). Therefore, the possibility of overlap with the proposed activities cannot be ruled out. **The QI Harbour Seal is therefore, screened in as likely significant effects cannot be ruled out.**

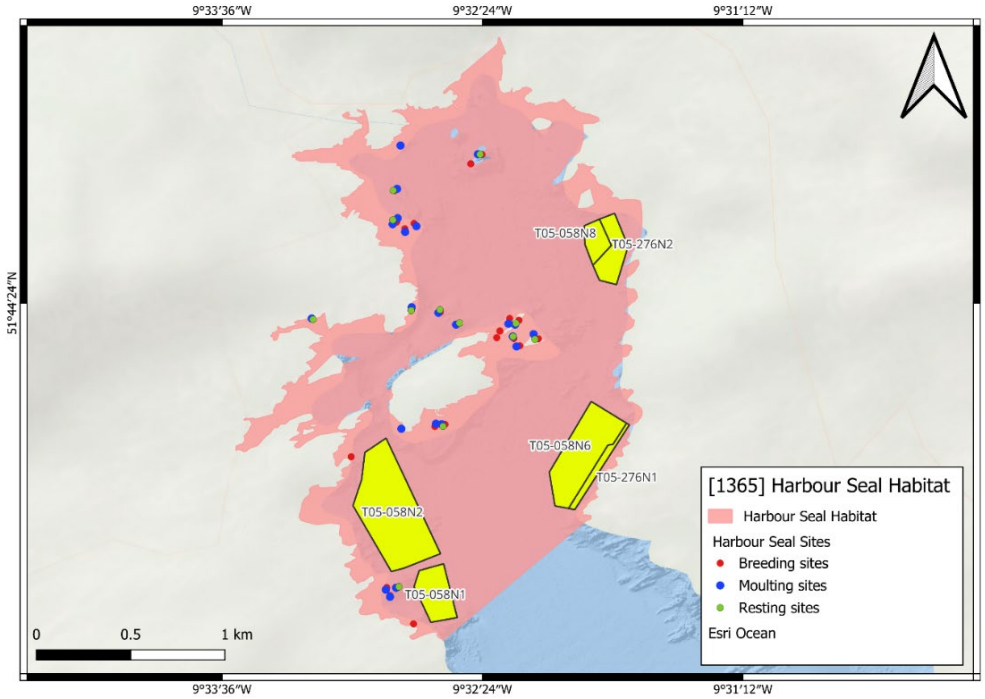


Figure 4 Harbour Seal habitat within Glengarriff Harbour and Woodlands SAC

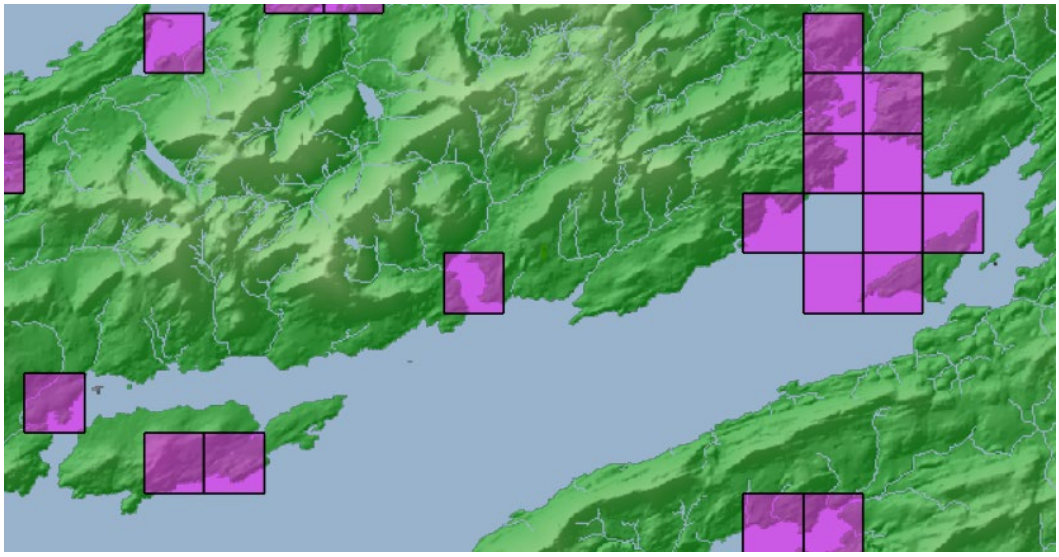


Figure 5 Harbour Seal sightings around the Glengariff Harbour and Woodlands SAC. Data from the National Biodiversity Data Centre accessed April 2026.

[21] Biodiversity Maps Ireland,2026. Link

[22] Carter MID, Boehme L, Cronin MA, Duck CD, Grecian WJ, Hastie GD, Jessopp M, Matthiopoulos J, McConnell BJ, Miller DL, Morris CD, Moss SEW, Thompson D, Thompson PM and Russell DJF (2022) Sympatric Seals, Satellite Tracking and Protected Areas: Habitat-Based Distribution Estimates for Conservation and Management. Front. Mar. Sci. 9:875869. doi: 10.3389/fmars.2022.875869

[23] NPWS. Glengarriff Harbour and Woodland SAC (000090). Site Synopsis. Link

5.2.1.3. Otter (Lutra lutra) [1355]

The conservation objectives for the otter (*Lutra lutra*) [1355] are to maintain the favourable conservation condition through:

- Distribution: percentage positive survey sites
- Extent of terrestrial habitat
- Extent of marine habitat
- Extent of freshwater (river) habitat
- Couching sites and holts
- Fish biomass available
- Barriers to connectivity

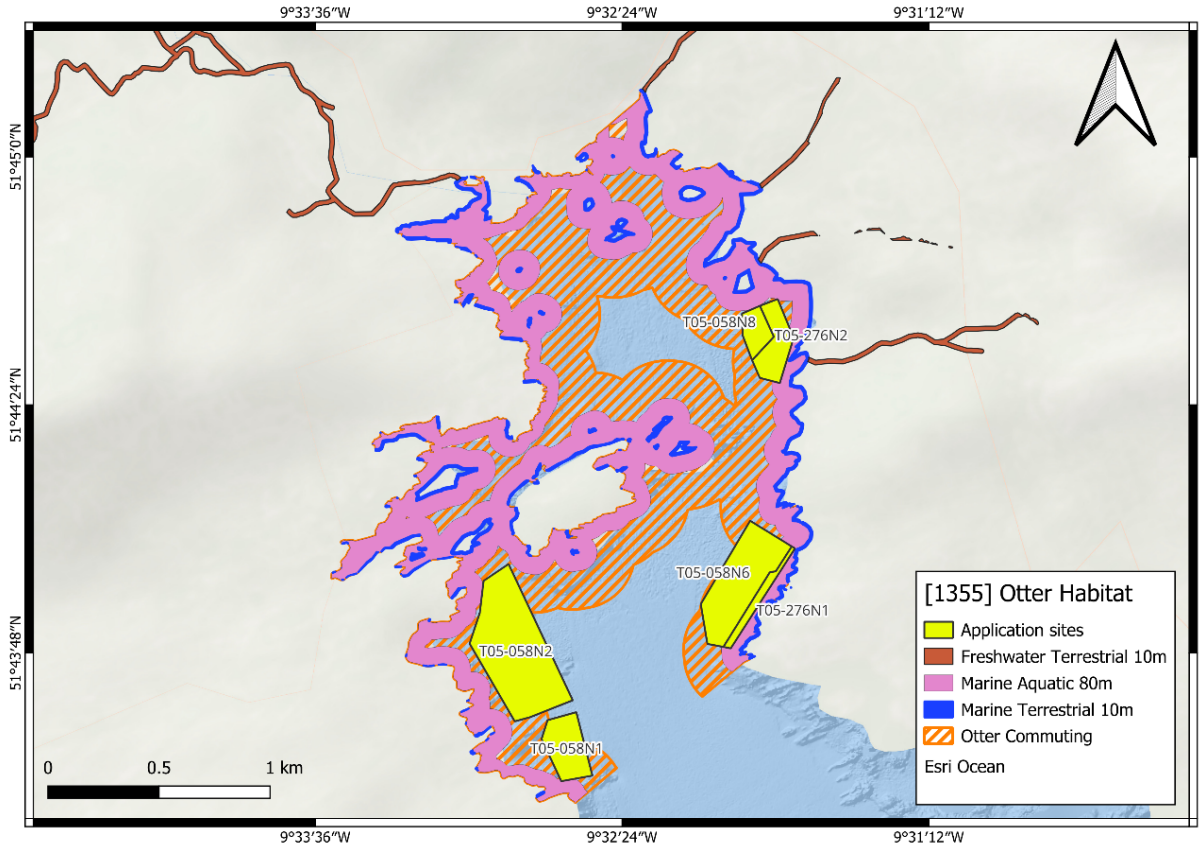


Figure 6 Otter foraging habitats within Glengarriff Harbour and Woodland SAC.

This SAC encompasses freshwater habitats, marine habitats and the immediate coastline. The Otter is a qualifying interest for the Glengarriff Harbour and Woodlands SAC. Otter forages c. 80m from the coastline and generally travel distances of up to 500 m between islands and across estuaries[24] . A recent otter survey published by NPWS states that the highest occurrence of otter distribution was recorded in the southwestern district of the republic of Ireland with 77% of sightings in the region of county Cork [25]. The proposed aquaculture activities occur within Glengarriff Harbour and Woodland SAC and therefore are within potential otter habitat, commuting areas and foraging grounds (Figure 6). Given this spatial overlap and the reasonable potential for otter to interact with the proposed

24 DeJongh, A. & O'Neill, L. 2010. Otter tracking study of Roaringwater bay. Unpublished draft report to NPWS
25 Otter Survey of Ireland 2023-24. Link

activities, a significant effect on otter cannot be ruled out and therefore, **QI Otter is carried forward for further consideration**.

5.3. Screening of Adjacent Natura 2000 Sites

The screening of adjacent Natura sites is carried out to determine if the proposed activity is likely to impact on the QIs of nearby sites. It is primarily based upon indirect links between the proposed activity and those QIs. Guidance has indicated that a screening exercise might consider the likely interactions between the QIs of Natura 2000 sites within a standard distance of 15 km and a potential S-P-R link from the proposed activity[26].

Screening outcomes in relation to QIs of adjacent Natura 2000 SAC sites by the proposed activities are outlined in Table 5 which highlights the QIs and conservation objectives for each of the adjacent SAC Natura 2000 sites.

Table 5 QIs of SACs within 15 km of proposed aquaculture activities.

Site Name	QI	Conservation Objective	Rationale	Screening Outcome
Caha Mountains SAC [000093]	Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]	Maintain	Caha Mountains SAC is approximately 1 km from the boundary of the closest proposed aquaculture site. There is no clear link between the terrestrial and freshwater habitats that are QIs for the Caha Mountains SAC and the proposed extensive aquaculture operations in Glengariff Harbour and Woodlands SAC. There is no spatial overlap or likely significant interaction with aquaculture activities within the potential site. **As there is no S-P-R link these QIs are excluded from further analysis.**	Out
	Natural dystrophic lakes and ponds [3160]	Maintain		
	Northern Atlantic wet heaths with *Erica tetralix* [4010]	Restore		
	European dry heaths [4030]	Restore		
	Alpine and Boreal heaths [4060]	Maintain		
	Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe)	Restore		
	Blanket bogs (* if active bog) [7130]	Restore		
	Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*) [8110]	Restore		
	Calcareous rocky slopes with *chasmophytic* vegetation [8210]	Restore		
	Siliceous rocky slopes with chasmophytic vegetation [8220]	Restore		
	Kerry Slug (*Geomalacus maculosus)* [1024]	Maintain		

[26] NPWS. 2009 Threat Response Plan: Otter (2009-2011). National Parks & Wildlife Service, Department of the Environment, Heritage & Local Government, Dublin.

	Killarney Fern (*Trichomanes speciosum*) [1421]	Maintain		
Derryclogher (Knockboy) Bog SAC [001873]	Blanket bogs (* if active bog) [7130]	Restore	Derryclogher (Knockboy) Bog SAC is approximately 5 km from the boundary of the closest proposed aquaculture site. There is no clear link between the terrestrial habitats that is a QI for the Derryclogher (Knockboy) Bog SAC and the proposed extensive aquaculture operations in Glengariff Harbour and Woodlands SAC. There is no spatial overlap or likely significant interaction with aquaculture activities within the potential site. **As there is no S-P-R link these QIs are excluded from further analysis.**	Out
Maulagowna Bog SAC [001881]	Blanket bogs (* if active bog) [7130]	Restore	Maulagowna Bog SAC is approximately 9 km from the boundary of the closest proposed aquaculture site. There is no clear link between the terrestrial habitats that is a QI for the Maulagowna Bog SAC and the proposed extensive aquaculture operations in Glengariff Harbour and Woodlands SAC. There is no spatial overlap or likely significant interaction with aquaculture activities within the potential site. **As there is no S-P-R link these QIs are excluded from further analysis.**	Out
Cloonee and Inchiquin Loughs, Uragh Wood SAC [001342]	Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]	Maintain	Cloonee and Inchiquin Loughs, Uragh Wood SAC is approximately 9 km from the boundary of the closest proposed aquaculture site. There is no clear link between the terrestrial and freshwater habitats that are QIs for the Clonee and Inchiquin Loughs,Uragh Wood SAC and the proposed extensive aquaculture operations in Glengariff Harbour and Woodlands SAC. There is no spatial overlap or likely significant interaction with aquaculture activities within the potential site. **As there is no S-P-R link these QIs are excluded from further analysis.**	Out
	Northern Atlantic wet heaths with *Erica tetralix* [4010]	Maintain		
	European dry heaths [4030]	Maintain		
	Siliceous rocky slopes with *chasmophytic* vegetation [8220]	Maintain		
	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	Restore		
	Kerry Slug (*Geomalacus maculosus) [*1024]	Maintain		
	Lesser Horseshoe Bat (*Rhinolophus hipposideros*) [1303]	Restore		
	Slender Naiad (*Najas flexilis*) [1833]	Maintain		
	Killarney Fern *Vandenboschia speciosa* [6985]	Maintain		
Sheep's Head SAC [000102]	Northern Atlantic wet heaths with *Erica tetralix* [4010]	Maintain	Sheep's Head SAC is approximately 10 km from the boundary of the closest proposed aquaculture site. There is no clear link between the terrestrial habitats that are QIs for the Sheep's Head SAC and the proposed extensive aquaculture operations in Glengariff Harbour and Woodlands SAC. There is no spatial overlap or likely significant interaction with aquaculture activities within the potential site. **As there is no S-P-R link these QIs are excluded from further analysis.**	Out
	European dry heaths [4030]	Maintain		
	Kerry Slug *Geomalacus maculosus* [1024]	Maintain		
	Perennial vegetation of stony banks [1220]	Maintain		

Reen Point Shingle SAC [002281]	Perennial vegetation of stony banks [1220]	Maintain	Reen Point Shingle SAC is approximately 13 km from the boundary of the closest proposed aquaculture site. There is no clear link between the terrestrial habitats that are QIs for the Reen Point Shingle SAC and the proposed extensive aquaculture operations in Glengariff Harbour and Woodlands SAC. There is no spatial overlap or likely significant interaction with aquaculture activities within the potential site. **As there is no S-P-R link these QIs are excluded from further analysis.**	Out
Kenmare River SAC [002158]	Large shallow inlets and bays [1160]	Maintain	Kenmare River SAC is approximately 15 km, straight line distance, from the boundary of the closest proposed aquaculture site, and much further hydrologically. There is no clear link between the terrestrial or marine and costal habitats that are QIs for Kenmare River SAC and the proposed extensive aquaculture operations in Glengariff Harbour and Woodlands SAC. There is no spatial overlap or likely significant interaction with aquaculture activities within the potential site. **As there is no S-P-R link these QIs are excluded from further analysis.**	Out
	Reefs [1170]	Maintain		
	Perennial vegetation of stony banks [1220]	Maintain		
	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	Maintain		
	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]	Maintain		
	Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	Maintain		
	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	Maintain		
	Fixed coastal dunes with herbaceous vegetation (grey dunes)* [2130]	Maintain		
	European dry heaths [4030]	Maintain		
	Juniperus communis formations on heaths or calcareous grasslands [5130]	Restore		
	Calaminarian grasslands of the *Violetalia calaminariae* [6130]	Maintain		
	Submerged or partially submerged sea caves [8330]	Maintain		
	Narrow-mouthed Whorl Snail (*Vertigo angustior*) [1014]	Maintain		
	Lesser Horseshoe Bat (*Rhinolophus hipposideros*)[1303]	Maintain		
	Harbour Porpoise (*Phocoena Phocoena)* [1351]	Maintain	Harbour porpoises are highly mobile and therefore the possibility of overlap with the proposed activities cannot be ruled out. The Biodiversity Data Centre indicates that harbour porpoises have been sighted within Kenmare River SAC itself. **The QI Harbour Porpoise is therefore, screened in as likely significant effects cannot be ruled out.**	In
	Otter (*Lutra lutra*) [1355]	Restore	These QIs are carried forward for further consideration as QIs for the Glengarriff Harbour and Woodland SAC.	In
	Harbour Seal (*Phoca vitulina*) [1365]	Maintain		

5.4. Screening of long-ranging species QIs

A search was carried out for any SAC or SPA which had one of the long-ranging species listed in Section 4 as a protected feature for which Glengarriff Harbour and Woodland SAC sites were within its foraging range. The Black Guillemot (*Cepphys grylle*) is not an SCI for any SPA; but it is a species listed in the NPWS Site Synopsis reports and is assessed if recorded at an SPA within its foraging range.

5.4.1. Bottlenose Dolphin (*Tursiops truncatus*) [1349]

Bottlenose dolphin is included in this screening as it is deemed to have a wide foraging range which has yet to be documented in literature within Irish waters. Data from The National Biodiversity Data Centre do not show specific records of bottlenose dolphin recorded within Glengarriff Harbour and Woodland SAC, however Bottlenose Dolphin sightings have been sighted within Bantry Bay with sightings recorded as recently as 2023[27] (Figure 7). Bottlenose dolphins are highly mobile and therefore the possibility of overlap with the proposed activities cannot be ruled out. **The QI Bottlenose Dolphin is therefore, screened in as likely significant effects cannot be ruled out.**

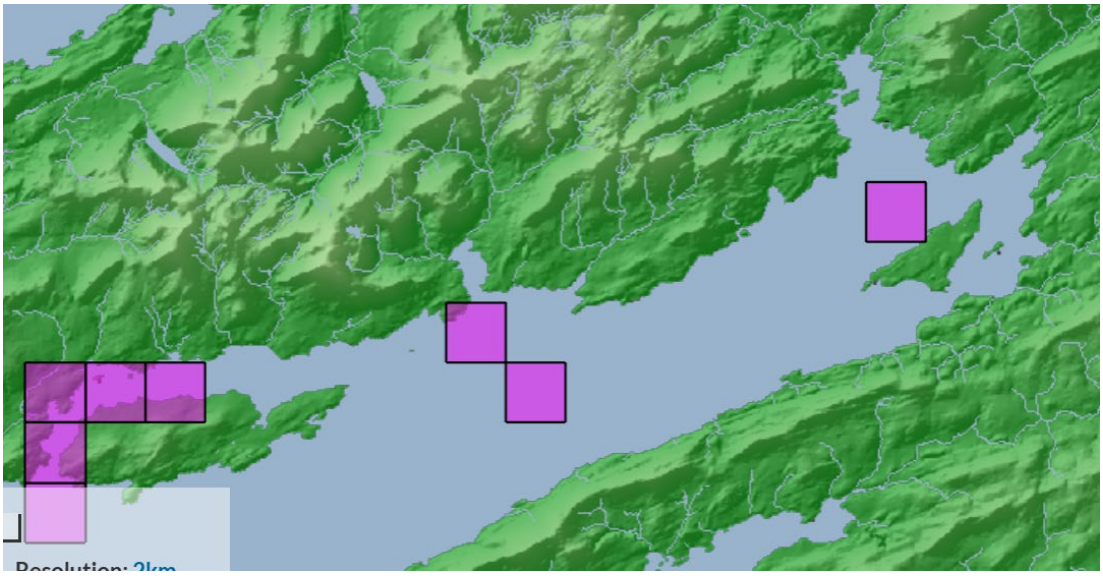


Figure 7 Bottlenose dolphin reports in Glengarriff Harbour and Woodland SAC. Data from the National Biodiversity Data Centre accessed April 2026.

[27] Biodiversity Maps Ireland,2026. Link

5.4.2. Grey Seal (*Halichoerus grypus*)

Grey Seal is included in the screening as it is deemed to have a wide foraging range. The closest SAC for Grey Seal is Roaringwater Bay and Islands SAC [000101] is located approximately 19 km from Glengarriff Harbour and Woodland SAC and is within the foraging range of this species. The Biodiversity Data Centre indicates that grey seal has been sighted within Glengarriff Harbour and Woodland SAC itself with sightings last recorded in 2021 (Figure 8). Therefore, the possibility of overlap with the proposed activities cannot be ruled out. **The QI Grey Seal is therefore, screened in as likely significant effects could not be ruled out.**

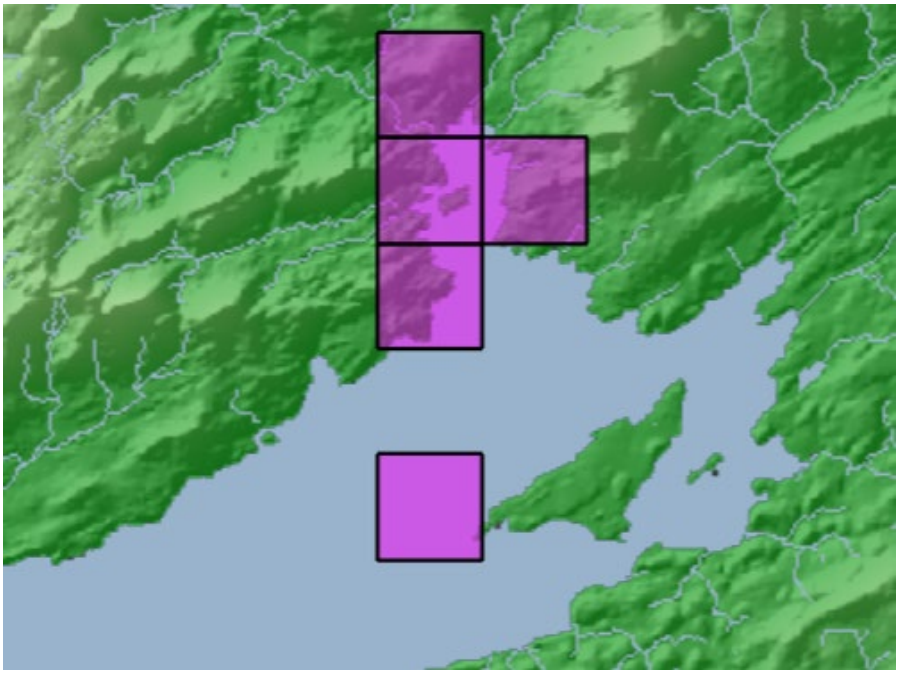


Figure 8 Grey seal reports in Glengarriff Harbour and Woodland SAC. Data from the National Biodiversity Data Centre accessed April 2026.

5.4.3. Long Ranging Bird species

Table 6 Long Ranging Birds Screening

Species	Stage	Maximum foraging range (km)	Global Mean foraging range (km)	Distance to nearest SPA (km)	Site Name (nearest SPA)	Rationale	Screening Outcome
Atlantic Puffin (*Fratercula arctica*)	Breeding	383	62.4	49.80	The Bull and The Cow Rocks SPA [004066]	Due to puffin's preference for foraging offshore and the lack of overlap of breeding grounds and the proposed activities, likely significant effects on puffin can be ruled out.	Out
Black- legged kittiwake (*Rissa tridactyla*)	Breeding	770	54.7	38.05	Iveragh Peninsula SPA [004154]	Due to the black-legged kittiwake's preference for foraging marine pelagic fish offshore and the lack of overlap of breeding grounds and the proposed activities, likely significant effects on the black-legged kittiwake can be ruled out.	Out
Herring Gull (*Larus argentatus*)	Winter/Year-round	92	14.9	77.27	Blasket Islands SPA [004008]	Foraging distance of herring gull is 92km and likely overlaps with the proposed activities. There is a possibility of disturbance and exclusion from the proposed activities.	In
European Storm Petrel (*Hydrobates pelagicus*)	Breeding	468.7	227.7	45.36	Deenish Island and Scariff Island SPA [004175]	Due to the European storm petrel's preference for foraging offshore and the lack of overlap of breeding grounds and the proposed activities, likely significant effects on storm petrel can be ruled out.	Out
Guillemot (*Uria aalge*)	Winter/Year-round	338	73.2	38.05	Iveragh Peninsula SPA [004154]	Breeds on cliffs and is almost entirely offshore marine. No spatial overlap between the proposed activities and this QI.	Out
Leach's Storm Petrel (*Hydrobates leucorhous*)	Breeding	657 (Used the global mean for the max)	657	291.59	Stags of Broad Haven SPA [04072]	Due to Storm Petrel's preference for foraging offshore and the lack of overlap of breeding grounds and the proposed activities, it is not likely that there will be significant effects on storm petrel.	Out
Lesser black- backed gull (*Larus fuscus*)	Winter/Year-round	533	43.3	45.36	Deenish Island and Scariff Island SPA [004175]	Foraging distance of Lesser black-backed gull is 533km and likely overlaps with the proposed activities. There is a possibility of disturbance and exclusion from the proposed activities.	In
Manx Shearwater (*Puffinus puffinus*)	Breeding	2,890	136.1	45.36	Deenish Island and Scariff Island SPA [004175]	Due to Manx Shearwater's preference for foraging offshore and the lack of overlap of breeding grounds and the proposed activities, likely significant effects on Manx Shearwater can be ruled out.	Out

Species	Stage	Maximum foraging range (km)	Global Mean foraging range (km)	Distance to nearest SPA (km)	Site Name (nearest SPA)	Rationale	Screening Outcome
Northern Fulmar (*Fulmarus glacialis*)	Winter/Year-round	2,736	134.6	21.81	Beara Peninsula [004155]	Due to Fulmar's preference for foraging offshore and the lack of overlap of breeding grounds and the proposed activities, likely significant effects on fulmar can be ruled out.	Out
Northern Gannet (*Morus bassanus*)	Winter/Year-round	709	120.4	49.80	The Bull and The Cow Rocks SPA [004066]	Due to Northern Gannet's preference for foraging offshore and the lack of overlap of breeding grounds and the proposed activities, likely significant effects on the Northern Gannet can be ruled out.	Out
Razorbill (*Alca torda*)	Breeding	313	61.3	59.37	Puffin Island [004003]	Foraging range from any SPA for this species does not overlap with the proposed site, therefore there is no SPR link.	Out

5.5. Screening of Potential Effects of Introduction of Non-native Species

The establishment of non-native species as a wild population in an area can be a potential risk associated with aquaculture and can occur due to the moving of stock (seed, juvenile or adults) into aquaculture sites. This may occur if the culture organism[s] become established as a wild, non-native population, or, if non-native species 'hitch-hike' along with the cultured organisms and then become established as a wild population owing to favourable environmental conditions.

Mussel seed will be obtained from natural spat-fall collection within each applicants' licensed site. **Therefore, the potential for the increased presence of wild populations is not screened in**. **Non-native species, therefore, is not carried forward for further consideration in Stage 2 AA.**

5.6. Aids to Navigation

Subtidal mussel applications will require Aids to Navigation (AtoNs), i.e. marker buoys at each of the four corners of the sites. The suspended mussel aquaculture sites proposed an inbuilt St. Andrews Cross and radar reflector.

The subtidal markers pose potential entanglement risk particularly for diving species. The marker buoys will be in a depth of approximately (12 metres). The buoy will be moored with chain rope which should provide sufficient visual reference for diving species and reduces the likelihood of entanglement. **Likely significant effects of entanglement on diving birds can therefore be ruled out.**

Lighted structures pose a visual disturbance to species foraging at night-time. However, the stationary nature and synchronization of the majority of lights will allow species particularly seals to become habituated**. Likely significant effects on SAC species can be ruled out.**

The lights may present a visual disturbance which can affect nesting birds, particularly those that nest in burrows[28].There are no breeding bird populations within impact distance of the proposed AtoNs. Markers may act as a perching site for birds, primarily species such as Cormorant or Shag which will have a positive or neutral effect on bird SCIs. They can also act as fish aggregating devices which will redistribute fish species and attract piscivorous feeding birds. These will be small and very localised. **Likely significant effects of the lights used on AToNs on bird SCIs can therefore be ruled out.**

5.7. In-combination effects

It is important to consider, for those QIs that may screen out during the initial AA screening exercise, if the pressures deriving from the proposed activities acts in-combination with other activities such that additive or synergistic effects are realised on the QIs. It is possible that such combined effect may cause the QI, therefore, to screen in and be considered further in the AA process. It should be noted that, interactions are additive when their combined effect is the sum of each independently, synergistic

[28] Atchoi, E., Mitkus, M., Machado, B., Medeiros, V., Garcia, S., Juliano, M., Bried, J., Rodríguez, A., 2024. Do seabirds dream of artificial lights? Understanding light preferences of Procellariiformes. Journal of Experimental Biology 227, jeb247665. https://doi.org/10.1242/jeb.247665

when the combined effect is greater than the sum of each independently, and antagonistic when the combined effect is less than the sum of each independently.

5.7.1. Aquaculture Activities

All aquaculture activities (shellfish, finfish and aquatic plant) located in Bantry Bay may have a potential an in-combination effect on aquaculture activities based within Glengarriff Harbour and Woodlands SAC. Therefore, in-combination effects of all aquaculture activities must be considered.

5.7.1.1. Extensive aquaculture

At the time of writing, a total of 63 licensed (and application) sites for shellfish aquaculture are recorded within Bantry Bay (Figure 9 and Figure 10). The main species grown in the bay are the Blue Mussel, Pacific Oyster, Native Oyster Great Atlantic Scallop, Seaweeds and Echinoderms.

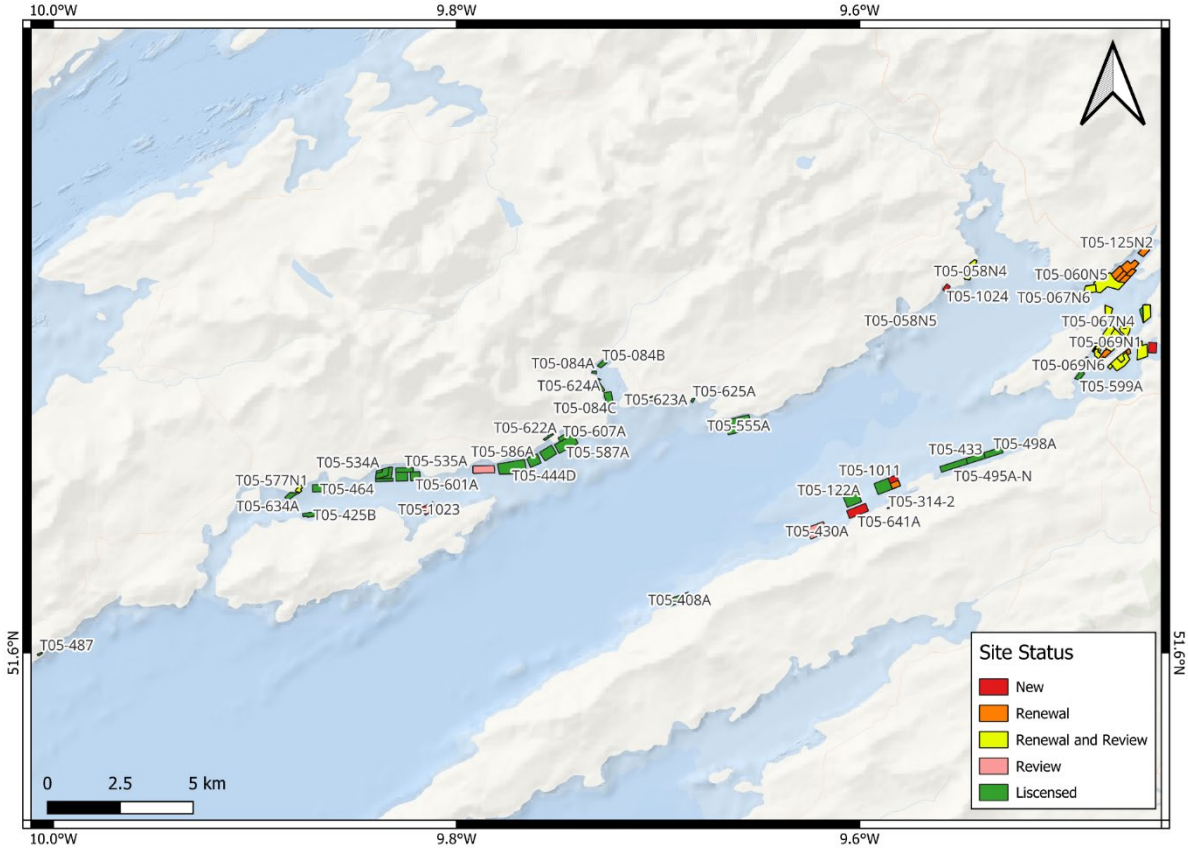


Figure 9 New, renewal, renewal and review, review and licensed aquaculture sites in Bantry Bay.

5.7.1.2. Intensive Aquaculture

There are, at the time of writing, 4 finfish licenses covering 6 sites within Bantry Bay for the culture of Atlantic Salmon (*Salmo salar*) and one license for the culture of Rainbow Trout (*Oncorhynchus mykiss*) within Bantry Bay (Figure 10).

There are potential cumulative effects posed from intensive and extensive aquaculture activities occurring in Bantry Bay. Therefore, intensive and extensive aquaculture activities are carried forward for further consideration in Stage 2 AA.

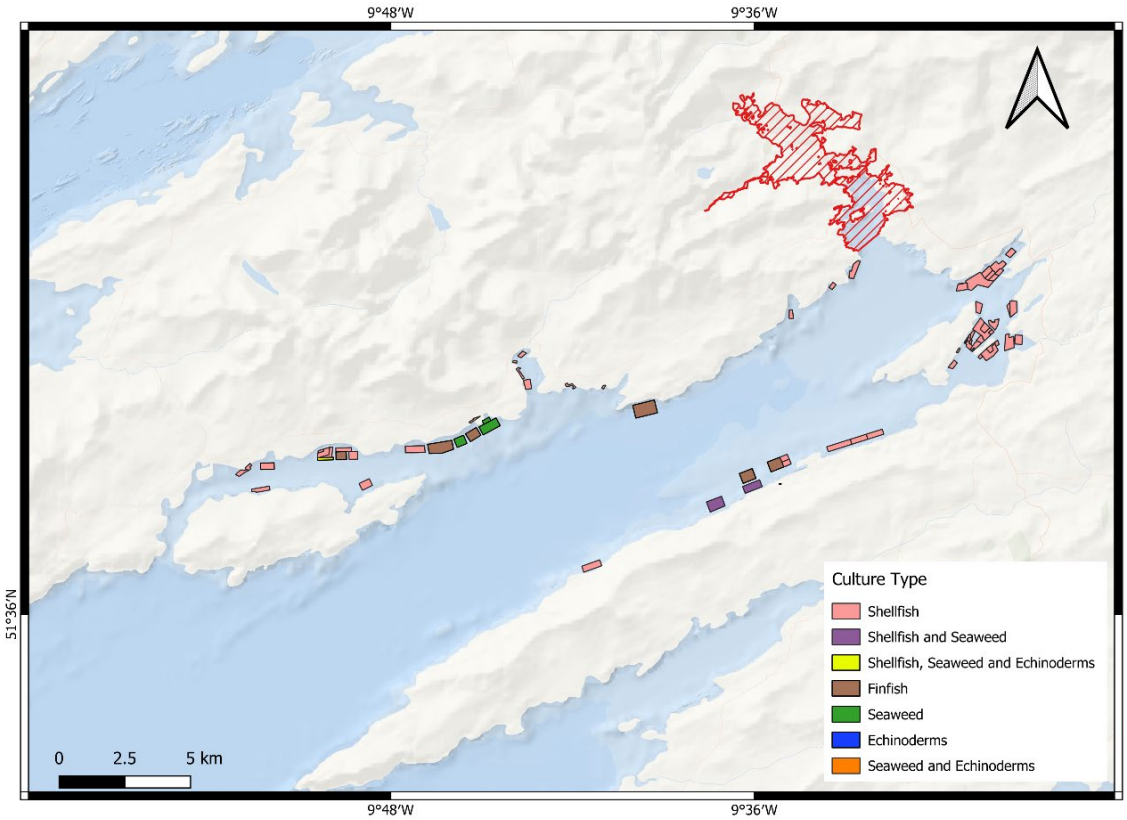


Figure 10 Primary culture type at each application site in Bantry Bay.

5.7.1.3. Landbased Aquaculture

There are currently, at the time of writing, two licensed landbased sites for the culture of multiple species within to Bantry Bay (Figure 9 and Table 7).

Table 7 Currently licensed landbased aquaculture activities which are not being considered for renewal in Bantry Bay.

License	Aquaculture Type	Culture Type	Species	Area (ha)
T05-314-2	Landbased	Shellfish, finfish, crustacean, echinoderm and algae	Atlantic Salmon (*Salmo Salar*), Abalone (*Haliotis Spp*), Ballan Wrasse (*Labrus Bergylta*), Black Sea Cucumber (*Holothuria Forskali*), Blue Mussels (Mytilus Edulis), Brill (*Scophthalmus Rhombus*), Brown Trout (*Salmo Trutta*), Char (*Salvelinus Alpinus*), Cockles (*Cerastoderma Edule*), Cod (*Gadhus Morhua*), Common Sole (*Solea Solea*), Crayfish (*Astacas Spp,Austropotamobius spp*), Dab (*Limanda Limanda*), European Eel (*Anguilla Anguilla*), European Flounder (*Platichthys Flesus*), Flat Oysters (*Ostrea Edulis*) Goldsinny Wrasse (*Ctenolabrus Rupestris*), Haddock (*Melanogrammus aeglefinus*), Halibut (*Hippoglossus Hippoglossus*),Lobsters (*Homarus Gammarus*), Lumpsucker (*Cyclopterus Lumperus*), Periwinkles (*Littorina Spp*), Prawns (*Palemon Spp.*), Rainbow Trout (*Oncorhynchus Mykiss),* Scalllops (*Pecten Maximus*), Sea Bass(*Dicentrarchus Labrax*), Sea Urchins (*Paracentrotus Lividus*), Shrimps (*Crangon*	0.22

License	Aquaculture Type	Culture Type	Species	Area (ha)
			crangon), Soft-shell Clams (*Mya Arenraia*), Turbot (*Scophthalmus Maximus*), Whelks (*Buccinum Undatum, Nuvella Lapillus*), Wolffish (*Anarhichas Lupus*), Microalgae, Native indigenous macroalgae, Zooplankton and other native species.	
T05-487	Landbased	Shellfish, Echinoderms, Finfish and cleaner fish	Red and Green Abalone (*Discus Hannai* and *Tuberculata*),Sea Urchin (*Phylum Echinodermata*), Red Seaweeds (*Phylum Rhodophyta*),Tilapia (*Genus Tillapia*),Salmon (*Salmo salar*), Lump Sucker (*Cyclopterus Lumpus L.*),Wrasse (*Labridae*), Pacific Oyster (*Magallana gigas*), Native Oyster(*Ostrea Edulis*), all Native and Naturalised Indigenous Seaweed species and Sea Grass found in Irish Waters.	1.06

Effluent generated from the landbased aquaculture activities is filtered via a rotating drum filter and settlement tank; therapeutic prophylactic chemical treatments are used to treat discharges. All discharges from the rotating drum filter and settlement tank will pass through a designated sewer discharging via a manhole and pipe to the sea.

There are no anticipated pressures associated with wastewater discharge from land-based aquaculture activities within Bantry Bay, as the effluent is subject to filtration and chemical treatment prior to release. Therefore, the potential for in-combination effects from land-based aquaculture activities is screened out.

5.7.2. Fisheries Order Areas

In combination with these activities, abrasion pressures may also be exerted on the surrounding benthic habitats, and disturbance to birds may arise from the aquaculture activities. Therefore, these pressures **should be screened in for further consideration.**

Table 8 Fisheries order areas within Glenngarriff Harbour and Woodlands SAC

Fisheries Order Number	Area (ha)	Species
T05-020OFO	0.92	European Flat Oyster (*Ostrea edulis*)

5.7.3. Fishing

Pelagic trawls are occurring within the Glengarriff Harbour and Woodlands SAC [29]. The physical pressures associated with the fishing activities may have a potential disturbance effect on birds. In combination with these activities, abrasion pressures may also be exerted on the surrounding benthic habitats, and disturbance to birds may arise from the aquaculture activities. Therefore, at the time of writing, **the physical pressures of fishing may have disturbance effects on birds in-combination with the effects from the aquaculture activities and therefore should be screened in for further consideration.**

[29] Ireland's marine Atlas https://atlas.marine.ie/#?c=53.9108:-15.8972:6

5.7.4. Vessel Movement

Glengarriff Harbour has a national ferry route which runs through the area (Figure 10). Multiple tourist vessels are known to operate within Glengarriff Harbour, including vessels providing marine wildlife tour services. Vessel movement in the surrounding areas may potentially overlap with the access routes of the proposed aquaculture activities**. Therefore, vessel movement is screened in for further assessment as likely significant effects cannot be ruled out.**

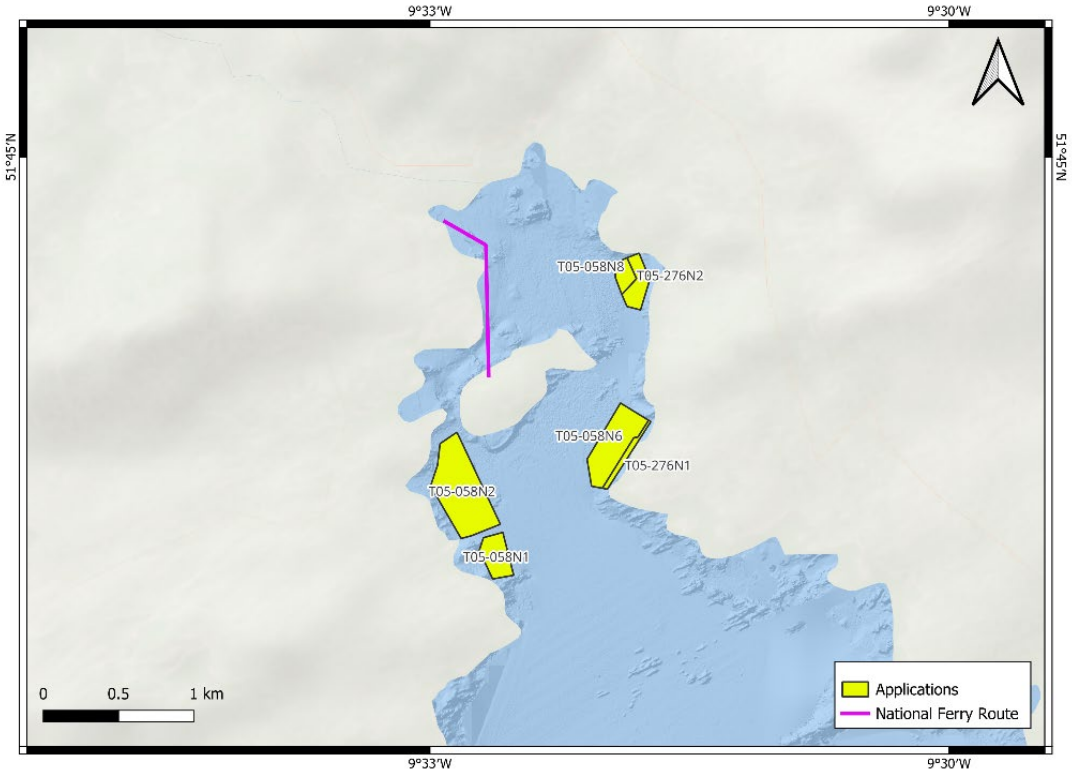


Figure 11 National ferry routes within Glenngarriff Harbour and Woodland SAC.

5.7.5. Other activities

Existing and proposed licensing activities in the vicinity of the proposed extensive shellfish culture activities have been reviewed. Those activities reviewed are:

- EPA pressures maps (Link - accessed 22/04/2026)
- MARA Consent Determinations (Link -accessed 17/04/2026)
- MARA Foreshore Licencing (MAC) (Link – accessed 17/04/2026)
- MARA planning (MUL) (Link – accessed 17/04/2026)
- Cork County Council planning (Link Map Viewer - accessed 17/04/2026)

Based on these searches these were the projects (Table 8) in the Glengarriff Harbour and Woodland SAC that may have in-combination effects:

Table 9 Other activities assessed in the vicinity of Glengarriff Harbour and Woodland SAC.

Application Ref.	Project Description	Project status	Reasoning	Screening for Significant Cumulative Effects
MUL240045	To install a series of sculptures on the seabed for a sub-marine sculpture garden accessible from Glengarriff Harbour and Bantry Pier.	Application Returned-03/12/2024	No spatial overlap. Considering the distance and the likely distribution of any potential impacting factors, it is considered that the proposed works would have no potential to significantly act in-combination with the proposed aquaculture activities.	Out

No additional activities will have significant in-combination interactions with aquaculture such that there would be in-combination effects on the SAC features.

6. Conclusions

This screening exercise for the Glengarriff Harbour and Woodland SAC and surrounding Natura 2000 sites have indicated that likely significant effects of the proposed aquaculture activities cannot be ruled out for a number of QIs within and in the surrounding area of Glengarriff Harbour and Woodland SAC area. Table 9 presents a summary of the screening outcome for each of the aquaculture application sites. The table identifies sites that have a likely significant effect on QI for a relevant Natura Site (SAC/SPA) that cannot be excluded at this stage of the assessment.

Table 10 Summary of screening conclusions by aquaculture site.

Site No.	Status	Activity/Species	Habitat (QI)	Species (QI)	Non-native species
T05-058N8	A	Blue Mussel – *Mytilus edulis*,	N	P	N
T05-276N1	A	Blue Mussel – *Mytilus edulis*,	N	P	N
T05-058N1	A	Blue Mussel – *Mytilus edulis*,	N	P	N
T05-058N2	A	Blue Mussel – *Mytilus edulis*,	N	P	N
T05-058N6	A	Blue Mussel – *Mytilus edulis*,	N	P	N
T05-276N2	A	Blue Mussel – *Mytilus edulis*,	N	P	N

A=Application

N - No significant effect

P - Likely significant effect cannot be excluded

It is recommended, therefore, that the proposed activities are carried forward for a Stage 2 Appropriate Assessment, for consideration of interactions with Qualifying Interests and Conservation Features, as outlined below.

- Harbour Seal (*Phoca vitulina*) [1365]
- Otter (*Lutra lutra*) [1355]
- Harbour Porpoise (*Phocoena phocoena*) [1351]
- Bottlenose Dolphin (*Tursiops truncatus*) [1349]
- Grey Seal (*Halichoerus grypus)* [1364]
- Herring Gull (*Larus argentatus*) [A184]
- Lesser black- backed gull (*Larus fuscus*) [A489]

Finally, in-combination effects of disturbance on QIs with licensed intensive and extensive aquaculture, fishing activity, vessel movement and fisheries order areas will also be brought forward to Stage 2 Appropriate Assessment.

It is concluded beyond reasonable scientific doubt and in view of best scientific knowledge, on the basis that likely significant effects of the proposed activity on the European sites cannot be excluded, these QIs are brought forward for Stage 2 Appropriate Assessment.