



**Report Supporting Appropriate Assessment of Extensive
Aquaculture in Dunmanus Bay, Co Cork**

**Marine Institute
Rinville
Oranmore, Co. Galway**

Version: June 2022

Table of Contents

1. INTRODUCTION	1
1.1. OVERVIEW	1
1.2. LEGISLATIVE CONTEXT	2
1.3. APPROPRIATE ASSESSMENT PROCESS	4
1.4. STRUCTURE OF THIS REPORT	5
2. STAGE 1: APPROPRIATE ASSESSMENT SCREENING	5
2.1. DETAILS OF PROPOSED AQUACULTURE ACTIVITIES	5
2.2. IDENTIFICATION OF RELEVANT NATURA 2000 SITES AND QUALIFYING INTERESTS	6
2.3. SCREENING OF QUALIFYING INTERESTS OF ADJACENT SACs	7
2.3.1. <i>Annex I Habitats</i>	11
2.3.2. <i>Annex II Species</i>	12
2.4. SCREENING OF QUALIFYING INTERESTS OF ADJACENT SPAs	14
2.4.1. <i>Fulmar (Fulmarus glacialis)</i>	15
2.4.2. <i>Peregrine (Falco peregrinus)</i>	15
2.4.3. <i>Chough (Pyrrhocorax pyrrhocorax)</i>	15
2.5. SCREENING OF POTENTIAL EFFECTS OF INTRODUCTION OF NON-NATIVE SPECIES	15
2.5.1. <i>Screening of Risk of Establishment of Wild Populations of Non-native Species</i>	16
3. SCREENING CONCLUSION	16

List of Figures

Figure 1-1: Application Site in Dunmanus Bay with other aquaculture sites and Adjacent Natura 2000 sites. Corresponding Natura site names for codes provided in Table 1 below..... 2

List of Tables

Table 1-1 Adjacent Natura 2000 site names with codes provided in Figure 1-1..... 2
Table 2-1. List of adjacent Natura 2000 sites with qualifying interests and screening conclusion. 8

1. Introduction

1.1. Overview

The following species are currently licenced for culture in Dunmanus Bay - blue mussels, the Pacific oysters, sea urchins, and seaweeds. Some sites represent licences for multiple species and therefore there are currently 6 licenced sites in the bay, in addition to one site for rope mussel culture which is currently under review with the Aquaculture Licence Appeals Board (ALAB).

The MI has been requested to review one application (T05/640A) for extensive aquaculture activities within Dunmanus Bay (Figure 1-1). The proposed activities at the site are as follows:

- Longline culture of multiple native seaweed species – T05/640A, new application for a licence to include the following culture species;
 - *Alaria esculenta*;
 - *Ulva lactuca*;
 - *Palmaria palmata*;
 - *Aspragopsis armata*;
 - *Saccharinea latissimi*;
 - *Laminaria digitata*; and
 - *Fucus serratus*.

The application does not overlap with Natura 2000 sites but due to their proximity to a number of SPAs and SACs (see **Section 2.2**) they are being subject to the Appropriate Assessment (**AA**) process, the first stage of which is screening (see **Section 1.3** for full details of the AA process).

The purpose of this report is to consider if the proposed aquaculture activity is likely to significantly adversely affect the conservation features of Natura 2000 sites in view of their conservation objectives. If the proposed activity is considered likely to adversely affect conservation features, they would have to be carried forward for full AA and considered on a cumulative basis with other aquaculture activities and other likely disturbing activities (e.g. fisheries).

Figure 1-1: Application Site in Dunmanus Bay with other aquaculture sites and Adjacent Natura 2000 sites.
Corresponding Natura site names for codes provided in Table 1 below.

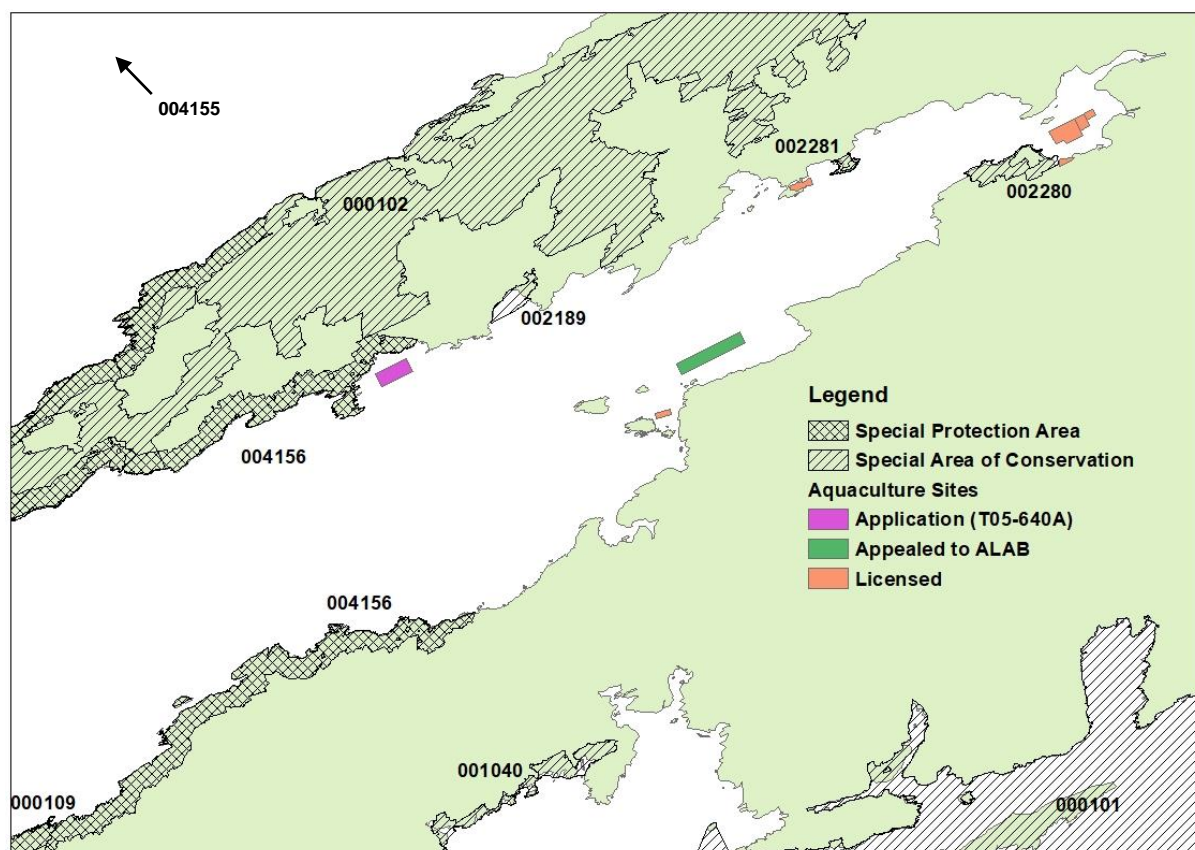


Table 1-1 Adjacent Natura 2000 site names with codes provided in Figure 1-1.

Site Code	Site Name
000101	Roaringwater Bay and Islands SAC
000102	Sheep's Head SAC
000109	Three Castle Head to Mizen Head SAC
001040	Barley Cove to Ballyrisode Point SAC
002189	Farranamanagh Lough SAC
002281	Dunbeacon Shingle SAC
002281	Reen Point Shingle SAC
004156	Sheep's Head to Toe Head SPA
004155	Beara Peninsula SPA

1.2. Legislative Context

Articles 3 - 11 of the European Community (EC) Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna (**Habitats Directive**) provide the legislative means to protect habitats and species of Community interest through the conservation of an EU-wide network of protected sites known as Natura 2000 sites.

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

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

Under Article 6(3) of the Habitats Directive any plan or project likely to significantly affect the integrity of a Natura 2000 site must be subject to an AA. 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. Every Natura 2000 site has Conservation Objectives which are set out by the National Parks and Wildlife Service (**NPWS**), a competent authority for the management of Natura 2000 sites in Ireland. The AA process also must 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) and determines applications for new aquaculture licences and applications for renewal of existing aquaculture licences. DAFM is also the competent authority responsible for undertaking AA of aquaculture licence applications. The AA in this report is part of an ongoing programme of AA of aquaculture activities in Ireland, as agreed with the EU Commission in 2009, and currently covers all extensive aquaculture activities in Ireland. As part of this 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 Qualifying Interests and the integrity of relevant Natura 2000 sites. DAFM is responsible for ensuring that an AA is carried out. DAFM must take due consideration of the outcomes of the AA process when determining an aquaculture licence application.

1.3. ***Appropriate Assessment Process***

The requirements for AA derive directly from Article 6(3) of the HD. Article 6(3) 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 (EC, 2018). The Guidance on *Appropriate Assessment of Plans and Projects in Ireland* document published by the Department of Environment, Heritage and Local Government (**DEHLG**) in 2009 (DEHLG, 2009) sets out how 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 (OPR, 2021). The practice note provides guidance on how a planning authority should screen an application for planning permission for appropriate assessment

DEHLG (2009) promotes a four stage process to complete the AA. The four stages are:



Stage 3 and Stage 4 are not applicable here. The key procedures involved in completing the first two stages of the AA process are described in below.

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 Conservation Objectives.

If the effects 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 AA. Screening should be undertaken without the inclusion of mitigation. The greatest level of evidence and justification will be needed in circumstances when the process ends at screening stage on grounds of no effect.

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 possible implications for the site in view of the site's Conservation Objectives, taking account of

in-combination effects. If the assessment is negative, then recommendations on mitigation measures or on licensing decisions will be made.

1.4. *Structure of this Report*

The AA process followed in this report adheres closely with DEHLG (2009) and OPR (2021) guidance and follows worst-case scenario principles as it is assumed that cultivation activities are ongoing at all of the existing licenced sites and that the entirety of each existing aquaculture site in Bantry. See **Figure 1-1** for a map of all aquaculture sites considered active in Bantry Bay as of March 2022.

The report considers the following:

- **Section 2 - Stage 1: Appropriate Assessment Screening**

AA Screening is undertaken to identify potential likely significant effects on Qualifying Interests of Natura 2000 sites. Where the screening exercise cannot exclude likely significant effects on the basis of objective information, the Qualifying Interest would have to be brought forward for further consideration in a Stage 2 AA.

This AA screening process which has followed relevant DEHLG (DEHLG, 2009) and OPR (OPR, 2021) guidance has drawn on information from a number of sources associated with relevant SACs and SPAs (see **Section 2.2**) as well as scientific literature.

2. Stage 1: Appropriate Assessment Screening

2.1. *Details of Proposed Aquaculture Activities*

Longline Culture of Seaweeds

Longline culture of Seaweed is the proposed activity for site T05/640A. This is a new application. This site is located along the north shore of Dunmanus Bay at Dooneen Point, Kilcrohane (see Figure 1-1).

The site area is 15.74 ha and it is proposed, at full capacity, to deploy 50 x 220m longlines. The maximum proposed total tonnage of algae to be produced at this site is approximately 110 T per annum. The harvest method will be hand-cutting into 1 T bins. All species of algae to be cultured are native and algae will be sourced from the Bantry Marine Research Station Hatchery. The site will be accessed from Dooneen Pier, approximately 350 m to the west of the site.

2.2. Identification of Relevant Natura 2000 Sites and Qualifying Interests

A key consideration as to whether or not an activity is likely to adversely affect Natura 2000 Qualifying Interest is whether or not there is a pathway of connectivity between the Qualifying Interest and the sources of potential impacts associated with the activity.

The likelihood of the proposed activities having an adverse effect on the qualifying interests of an SPA or SAC is greatly reduced given that the activities would not be carried out within any SAC or SPA. However, the proposed activities are proximal to a number of SAC and SPAs and so the potential for *ex-situ* adverse effects of the proposed activities on the Qualifying Interests of these adjacent SACs and SPAs must be assessed.

The Qualifying Interest of a Natura 2000 site could be at risk of negative *in situ* (within the site) and *ex situ* (beyond the site) effects where a Source-Pathway-Receptor (S-P-R) link exists between the activity and the Qualifying Interest[s] of the site.

The following are the adjacent SACs with Qualifying Interests that the proposed aquaculture activities may potentially adversely affect (see Figure 1-1):

- Roaringwater Bay and Islands SAC¹
- Sheep's Head SAC²
- Three Castle Head to Mizen Head SAC³
- Barley Cove to Ballyrisode Point SAC⁴
- Farranamanagh Lough SAC⁵
- Dunbeacon Shingle SAC⁶
- Reen Point Shingle SAC⁷

The following are the adjacent SPAs with Qualifying Interests that the proposed aquaculture activities may potentially adversely affect (see Figure 1-1):

¹ <https://www.npws.ie/protected-sites/sac/000101>

² <https://www.npws.ie/protected-sites/sac/000102>

³ <https://www.npws.ie/protected-sites/sac/000109>

⁴ <https://www.npws.ie/protected-sites/sac/001040>

⁵ <https://www.npws.ie/protected-sites/sac/002189>

⁶ <https://www.npws.ie/protected-sites/sac/002280>

⁷ <https://www.npws.ie/protected-sites/sac/002280>

-
- Beara Peninsula SPA⁸
 - Sheep's Head to Toe Head SPA⁹

The assessment of the likelihood of proposed aquaculture activities adversely affecting the Qualifying Interests of adjacent SACs and SPAs are presented in **Sections 2.3.**and **2.4** respectively.

2.3. *Screening of Qualifying Interests of Adjacent SACs*

Upon review of the qualifying interests of the 7 adjacent SACs, it is clear that, on the basis of lack of physical overlap or hydrological link or other potential interaction, no likely significant effect clearly presents to number of the Qualifying interests for each (see Table 2-1).

⁸ <https://www.npws.ie/protected-sites/spa/004155>

⁹ <https://www.npws.ie/protected-sites/spa/004156>

Table 2-1. List of adjacent Natura 2000 sites with qualifying interests and screening conclusion.

Site Code	Site Name	Qualifying Interest (QI)	Aquaculture AA Screening
000101	Roaringwater Bay and Islands SAC	Vegetated sea cliffs of the Atlantic and Baltic coasts	The proposed aquaculture site is located approximately 9.5km from the closest boundary of the Roaringwater Bay SAC. The culture of seaweed is reliant upon ambient nutrient levels in the water column and solar illumination. The production of seaweed does not use any resources required by the qualifying features of adjacent Natura sites. For these QIs, there is no spatial overlap or likely interactions with the proposed aquaculture activities in Dunmanus Bay – excluded from further analysis
		European dry heaths	
		Large shallow inlets and bays	
		Reef	See Section 2.3.1
		<i>Phocoena phocoena</i> (Harbour Porpoise)	See Section 2.3.2
		<i>Lutra lutra</i> (Otter)	
		<i>Halichoerus grypus</i> (Grey Seal)	
000102	Sheep's Head SAC	Northern Atlantic wet heaths with <i>Erica tetralix</i>	The proposed aquaculture site is located approximately 0.5km from the closest boundary of the Sheep's Head SAC. The culture of seaweed is reliant upon ambient nutrient levels in the water column and solar illumination. The production of seaweed does not use any resources required by the qualifying features of adjacent Natura sites. For these QIs, there is no spatial overlap or likely interactions with the proposed aquaculture activities in Dunmanus Bay – excluded from further analysis
		European dry heaths	
		<i>Geomalacus maculosus</i> (Kerry Slug)	
000109	Three Castle Head to Mizen Head SAC	Vegetated sea cliffs of the Atlantic and Baltic coasts	The proposed aquaculture site is located approximately 9.5km from the closest boundary of the Three Castle Head to Mizen Head SAC. The culture of seaweed is reliant upon ambient nutrient levels in the water column and solar illumination. The production of seaweed does not use any resources required by the qualifying features of adjacent Natura sites. For these QIs, there is no spatial overlap or likely interactions with the proposed aquaculture activities in Dunmanus Bay – excluded from further analysis
		European dry heath	
001040	Barley Cove to Ballyrisode Point SAC	Mudflats and sandflats not covered by seawater at low tide	See Section 2.3.1
		Perennial vegetation of stony banks	The proposed aquaculture site is located approximately 7.3 km from the closest boundary of the Barley Cove to Ballyrisode Point SAC. The culture of seaweed is reliant upon ambient nutrient

Site Code	Site Name	Qualifying Interest (QI)	Aquaculture AA Screening
		Salicornia and other annuals colonising mud and sand Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) Mediterranean salt meadows (<i>Juncetalia maritimi</i>) Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) Fixed coastal dunes with herbaceous vegetation (grey dunes) European dry heaths <i>Petalophyllum ralfsii</i> (Petalwort)	levels in the water column and solar illumination. The production of seaweed does not use any resources required by the qualifying features of adjacent Natura sites. For these QIs, there is no spatial overlap or realistic hydrological link and hence likely interactions with the proposed aquaculture activities in Dunmanus Bay – excluded from further analysis
002189	Farranamanagh Lough SAC	Perennial vegetation of stony banks Coastal lagoons	The proposed aquaculture site is located approximately 1.6km from the closest boundary of the Farranamanagh Lough SAC. The culture of seaweed is reliant upon ambient nutrient levels in the water column and solar illumination. The production of seaweed does not use any resources required by the qualifying features of adjacent Natura sites. For this QIs, there is no spatial overlap or likely interactions with the proposed aquaculture activities in Dunmanus Bay – excluded from further analysis See Section 2.3.1
002281	Dunbeacon Shingle SAC	Perennial vegetation of stony banks	The proposed aquaculture site is located approximately 10.5km from the closest boundary of the Dunbeacon Shingle SAC. The culture of seaweed is reliant upon ambient nutrient levels in the water column and solar illumination. The production of seaweed does not use any resources required by the qualifying features of adjacent Natura sites. For these QIs, there is no spatial overlap or likely interactions with the proposed aquaculture activities in Dunmanus Bay – excluded from further analysis

Site Code	Site Name	Qualifying Interest (QI)	Aquaculture AA Screening
002281	Reen Point Shingle SAC	Perennial vegetation of stony banks	The proposed aquaculture site is located approximately 8.5km from the closest boundary of the Reen Point Shingle SAC. The culture of seaweed is reliant upon ambient nutrient levels in the water column and solar illumination. The production of seaweed does not use any resources required by the qualifying features of adjacent Natura sites. For these QIs, there is no spatial overlap or likely interactions with the proposed aquaculture activities in Dunmanus Bay – excluded from further analysis
004155	Beara Peninsula SPA	Fulmar (<i>Fulmarus glacialis</i>) Chough (<i>Pyrrhocorax pyrrhocorax</i>)	See Section 2.4
004156	Sheep's Head to Toe Head SPA	Peregrine (<i>Falco peregrinus</i>) Chough (<i>Pyrrhocorax pyrrhocorax</i>)	

The following are the adjacent SACs along with the Qualifying Interests that could potentially be affected by the proposed activities:

- Roaringwater Bay and Islands SAC
 - Large shallow inlets and bays [1160]
 - Reef [1170]
 - *Phocoena phocoena* (Harbour Porpoise) [1351]
 - *Lutra lutra* (Otter) [1355]
 - *Halichoerus grypus* (Grey Seal) [1364]
- Barley Cove to Ballyrisode Point SAC
 - Mudflats and sandflats not covered by seawater at low tide [1140]

2.3.1. Annex I Habitats

Of the adjacent SACs there are a number of Annex I Habitats that occur in the marine environment, including:

- Mudflats and sandflats no covered by seawater at low tide;
- Large shallow inlets and bays; and
- Reefs
- Coastal Lagoons

In general, habitats may be impacted by subtidal aquaculture activities via direct physical disturbance from installation of structures, by shading or altering the hydrodynamic regime. Direct effects can also arise due to organic enrichment from fall out from feeding practices or faecal material produced by the cultured organisms^{10,11}. For a habitat to be subjected to this type of disturbance the activities would need to directly overlap with or be immediately adjacent to it. Given that the nearest Annex I Habitat (Coastal Lagoon in Farranamanagh Lough SAC) to the proposed activities are located approx. 2.4 km (straight line distance), it is extremely unlikely that the proposed activities will directly adversely affect Annex I Habitats. Furthermore, the culture of seaweed is reliant upon ambient nutrient levels in the water column and solar illumination and no waste is produced. None of these

¹⁰ Forde, J., Francis, X.O., O'Carroll, J.P., Patterson, A. and Kennedy, R., 2015. Impact of intertidal oyster trestle cultivation on the Ecological Status of benthic habitats. *Marine Pollution Bulletin*, 95(1), pp.223-233.

¹¹ O'Carroll, J.P., Quinn, C., Forde, J., Patterson, A., Francis, X.O. and Kennedy, R., 2016. Impact of prolonged storm activity on the Ecological Status of intertidal benthic habitats within oyster (*Crassostrea gigas*) trestle cultivation sites. *Marine Pollution Bulletin*, 110(1), pp.460-469.

resources are considered limiting. The aquaculture site in Dunmanus Bay will be accessed by boat from Dooneen Pier. As a consequence, noise and pollution e.g. as a result of a fuel spill may present a risk to features of adjoining Natura sites. The risks are, however, not considered significant. Furthermore, it is considered that impacts would be localised and minor.

Adverse effects on Annex I habitats can be **screened out**.

2.3.2. Annex II Species

Marine Mammals

The risk of negative effects of aquaculture activities on aquatic mammal species is a function of:

1. The location and type of structures used in the culture operations – is there a risk of entanglement or physical harm to the animals from the structures?
2. The schedule of operations on the aquaculture sites – is the frequency such that they can cause disturbance to the animals?

Otter (*Lutra lutra*)

A pathway for negative effects on otters from the proposed activities can be ruled out on the basis that:

- The activities are located at significant distance (by a combination of land and water) from SACs designated for Otter.
- The activities will not lead to any modification of the extent of habitat (terrestrial, marine and/or freshwater habitat).
- The activities involve net input rather than extraction of biomass so that no negative impact on the essential food base (fish biomass) is expected
- The number of couching sites and holts or, therefore, the distribution, will not be directly affected by activities.
- Suspended algal production structures are oriented in rows (10m apart), thus allowing free movement through and within the site. As such, the activities are unlikely to pose any risk to otter through entrapment or direct physical injury, and
- Disturbance associated with vessel traffic at the site could potentially disturb otter. On the basis, however, that access to the site will occur during daylight hours only and that otter are active primarily during evening and early morning hours, i.e., crepuscular, it is concluded that encounter rates and hence, disturbance is likely to be very low.

For the reasons listed, likely significant effects on otter from the proposed activities can be **screened out**.

Grey Seal (*Halichoerus grypus*)

The proposed activities must be considered in light of the following important conservation measures for the Grey Seal, *Halichoerus grypus*:

- Access to suitable habitat – artificial barriers should not restrict access;
- Disturbance – frequency and level of impact; and
- Seal Sites – Breeding sites, Moulting sites, Resting sites must not be obstructed or disturbed.

Restriction or modification of suitable habitats and locations considered important to the maintenance of healthy populations must be avoided when possible. These important areas are categorised according to various life history stages (important to the maintenance of the population) during the year. Specifically, they are breeding, moulting and resting sites. It is important that seal access to these sites is not restricted and that disturbance, when at these sites, is kept to a minimum especially within SACs. It is important to note that the influence of the suspended aquaculture on the seabird and seal community in Bantry Bay (Glengarrif Harbour) has generally been found to be positive or neutral^{12, 13}.

Given the distance between seal sites (in Roaringwater Bay SAC) and the proposed activity there is no pathway for interaction between the two which could result in negative *in-situ* effects. On this basis, likely significant effects on Grey Seal (*Halichoerus grypus*), can be **screened out**.

Harbour Porpoise (*Phocoena phocoena*)

Available data on the Harbour porpoise *Phocoena phocoena* is for within the Roaringwater Bay and Island SAC. There is potential that this species could forage in the vicinity of the proposed aquaculture activities and will potentially interact with the algal longline activities.

It should be noted, however, that the overall footprint of the specified longline aquaculture operations is small (i.e., approx. 15.74 ha) and represents a very small proportion of potential harbour porpoise habitat in Dunmanus Bay. In addition, this activity is located 9.5 km (straight line distance) from the Roaringwater Bay and Island SAC that is designated for the harbour porpoise. Given the relatively small footprint of the suspended aquaculture locations and the depth of the structures (i.e., shallow)

¹² Roycroft, D., Kelly, T.C. & Lewis, L.J. 2004. Birds, seals and the suspension culture of mussels in Bantry Bay, a non-seaduck area in Southwest Ireland. *Estuarine Coastal and Shelf Science* 61, 703-712.

¹³ Roycroft, D., Kelly, T.C. & Lewis, L.J. 2007. Behavioural interactions of seabirds with suspended mussel longlines. *Aquaculture International*. 15:25–36

the likelihood of interaction and potential adverse effects is very small. In addition, the locations of the structures are relatively close to the shoreline, and as such, they do not present a barrier to movement of this species. Furthermore, the structures are such that echolocating species, such as harbour porpoise and dolphin, can easily avoid the structures/sites^{14, 15, 16} and therefore, avoid any risk of entanglement.

It is also important to note that there are no persistent energy sources (e.g., light, noise etc.) likely to result from activities at the sites that pose a risk to harbour porpoise.

Finally, research has demonstrated that cetaceans such as dolphin and harbour porpoise may be attracted to structures similar to those used in longline culture operations^{17,18}, presumably on the basis that they act as fish attraction devices and therefore act as a food source aggregation area. Given these observations potential adverse effects on harbour porpoise can be **screened out**.

2.4. Screening of Qualifying Interests of Adjacent SPAs

The following are the adjacent SPAs along with the Qualifying Interests that could potentially be affected by the proposed activities:

- Beara Peninsula SPA;
 - Fulmar (*Fulmarus glacialis*)
 - Chough (*Pyrrhocorax pyrrhocorax*)
- Sheep's Head to Toe Head SPA;
 - Peregrine (*Falco peregrinus*)
 - Chough (*Pyrrhocorax pyrrhocorax*)

¹⁴ Watson-Capps JJ, Mann J (2005) The effects of aquaculture on bottlenose dolphin (*Tursiops* sp.) ranging in Shark Bay, Western Australia. *Biological Conservation* 124: 519–526.

¹⁵ Heinrich, S. (2006) Ecology of Chilean dolphins and Peale's dolphins at Isla Chiloe, southern Chile (PhD dissertation). University of St Andrews, 239 p.

¹⁶ Ribeiro S, Viddi FA, Cordeiro JL, Freitas TRO (2007) Fine-scale habitat selection of Chilean dolphins (*Cephalorhynchus eutropia*): interactions with aquaculture activities in southern Chiloe Island, Chile. *Journal of the Marine Biological Association of the United Kingdom* 87: 119–128.

¹⁷ Díaz López, B. & Methion, S. (2017) The impact of shellfish farming on common bottlenose dolphins' use of habitat. *Marine Biology* 164: 83. doi:10.1007/s00227-017-3125-x

¹⁸ Callier M, Byron C, Bengtson D, Cranford P, Cross S, Focken U, Jansen H, Kamermans P, Kiessling A, Landry T., O'Beirn F., Petersson E., Rheault, RB., Strand, O., Sundell, K., Svasand, T., Wikfors, GH., McKindsey, CW. (2018) Attraction and repulsion of mobile wild organisms to finfish and shellfish aquaculture: a review. *Rev Aquac* 10:924-949

2.4.1. Fulmar (*Fulmarus glacialis*)

Fulmar are considered as marine species as they forage solely in the marine environment and roost on marine cliffs¹⁹. The Fulmar population in Ireland has increased significantly over the last 30 years with a reported 68% increase in the population size from 1985 – 2018¹⁸. While certain individuals of the fulmar population in Dunmanus Bay and surrounds may be partially displaced by the proposed aquaculture activities, the proposed sites are small. It is extremely unlikely that the proposed activities would adversely affect the fulmar population of the Beara Peninsula SPA to the extent that it's conservation objectives could not be met. For this reason, the potential for adverse effects on Fulmar can be **screened out**.

2.4.2. Peregrine (*Falco peregrinus*)

The foraging ranges of the Peregrine Falcon are extensive and largely encompass terrestrial habitats, but Peregrine are known to forage on intertidal areas also but not over subtidal areas. The proposed activity does not directly overlap with the Sheep's Head to Toe Head SPA and therefore cannot directly affect the protected habitat of this species. For these reasons, potential adverse effects of the proposed activities on Peregrine can be **screened out**.

2.4.3. Chough (*Pyrrhocorax pyrrhocorax*)

Chough are largely considered a terrestrial species as they roost in coastal cliffs and forage on coastal grasslands. The proposed activity is located in areas (subtidal waters) where Chough are unlikely to roost or forage. For this reasons, the potential for the proposed activities on Chough can be **screened out**.

2.5. ***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 largely due to the moving of stock (seed, juvenile or adults) into aquaculture sites. There is the potential that the culture organisms could become established as a wild non-native population and that non-native species may 'hitch-hike' along with the cultured organisms and then become established as a wild population. In this instance, there are two potential causes of non-native introduction and establishment; the movement of non-native algal species into Site

¹⁹ <https://www.npws.ie/sites/default/files/publications/pdf/IWM114.pdf>

T05/640A, and the movement of other species that might 'hitchhike' as sporophytes or with target algal species at the site.

2.5.1. Screening of Risk of Establishment of Wild Populations of Non-native Species

Algae

The algae proposed for use at this site (T05/640) are all native species and plantlets are sourced from the hatchery in Bantry Bay. There is no movement of stock from other areas. On this basis, the potential adverse effects from the introduction of non-native species due to seaweed culture can be **screened out**.

3. Screening Conclusion

The screening assessment has determined, in light of best available scientific data, that there is no potential for likely significant effects on the conservation features of Natura 2000 sites from the proposed aquaculture activity (T05/640A) within Dunmanus Bay. All potential adverse effects on conservation features of Natura 2000 sites can be **screened out**.