



**Oyster and Clam Aquaculture Sites in Ballyness Bay,
Falcarragh, Co. Donegal.**

Risk Assessment for Annex IV Species

Produced by

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On behalf of

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1. Introduction

1.1. Background

This report has been prepared by AQUAFAC – APEM Group to provide information to inform the assessment of potential effects on Annex IV species in relation to the proposed oyster and clam aquaculture licence appeal sites in Ballyness Bay, Co. Donegal.

The proposed project ('the Project') comprises 10 aquaculture sites within Ballyness Bay. The sites are proposed for the cultivation of Pacific oysters, *Magallana gigas* formerly *Crassostrea gigas*, using bags and trestles on the intertidal foreshore, and Manila clams, *Ruditapes philippinarum*, using wooden trays under mesh on the intertidal/subtidal foreshore. The current NIS identifies Pacific oyster cultivation at 9 of the 10 sites and Manila clam cultivation at 3 of the 10 sites.

The sites currently under appeal are T12/407B, T12/409A, T12/409B1&2, T12/441A, T12/441B, T12/441C, T12/500A, T12/502A, T12/515A and T12/516A.

Figure 1-1 and **Table 1-1** below illustrates the proposed aquaculture sites currently under appeal with ALAB (Aquaculture Licences Appeals Board) and are the focus of this report. Originally 20 aquaculture sites were applied for in Ballyness Bay and a subset of these were granted or granted with variation under the Ministers decision. Subsequently, the granted sites were then quashed during judicial review and remitted to ALAB for reconsideration. The appeals are currently back with ALAB at Stage 3: Information Gathering.

Table 1-1: List of appealed aquaculture sites granted by the Minister for Agriculture, Food and the Marine.

Site Ref.	Cultivation licence	Estimated Production Tonnage	Applicant	Ministers Decision
T12/407B	Cultivation of Pacific Oysters (<i>Crassostrea gigas</i>) using bags and trestles on the inter-tidal foreshore on site ref T12/407B in Ballyness Bay, Co. Donegal.	3	Joseph Coll	Grant
T12/409A	Cultivation of clams (<i>Ruditapes philippinarum</i>) on wooden trays under mesh on the inter-tidal/sub-tidal foreshore on site ref T12/409A in Ballyness Bay, Co. Donegal.	10	Edward & Paul O'Brien	Grant with variation
T12/409B (1&2)	Cultivation of Pacific Oysters (<i>Crassostrea gigas</i>) using bags and trestles and cultivation of clams (<i>Ruditapes philippinarum</i>) on wooden trays under mesh on the inter-tidal/sub-tidal foreshore on site ref T12/409B in Ballyness Bay, Co. Donegal.	3 (clams) 15 (oyster)	Edward & Paul O'Brien	Grant with variation
T12/441A	Cultivation of Pacific Oysters (<i>Crassostrea gigas</i>) using bags and trestles and cultivation of clams (<i>Ruditapes philippinarum</i>) on wooden trays under mesh on the foreshore on site ref T12/441A in Ballyness Bay, Co. Donegal.	< 1 (clam) 3 (oyster)	Anthony McCafferty	Grant
T12/441B	Cultivation of Pacific Oysters (<i>Crassostrea gigas</i>) using bags and trestles on the foreshore on site ref T12/441B in Ballyness Bay, Co. Donegal.	4	Anthony McCafferty	Grant
T12/441C	Cultivation of Pacific Oysters (<i>Crassostrea gigas</i>) using bags and trestles on the foreshore on site ref T12/441C in Ballyness Bay, Co. Donegal.	4	Anthony McCafferty	Grant
T12/500A	Cultivation of Pacific Oysters (<i>Crassostrea gigas</i>) using bags and trestles on the inter-tidal foreshore on site ref T12/500A in Ballyness Bay, Co. Donegal.	5	Joseph Coll	Grant
T12/502A	Cultivation of Pacific Oysters (<i>Crassostrea gigas</i>) using bags and trestles on the inter-tidal foreshore on site ref T12/502A in Ballyness Bay, Co. Donegal.	12	Joseph Coll	Grant with variation
T12/515A	Cultivation of Pacific Oysters (<i>Crassostrea gigas</i>) using bags and trestles on the inter-tidal foreshore on site ref T12/515A in Ballyness Bay, Co. Donegal.	2	Joseph Coll	Grant
T12/516A	Cultivation of Pacific Oysters (<i>Crassostrea gigas</i>) using bags and trestles on the inter-tidal foreshore on site ref T12/516A in Ballyness Bay, Co. Donegal.	1	Joseph Coll	Grant

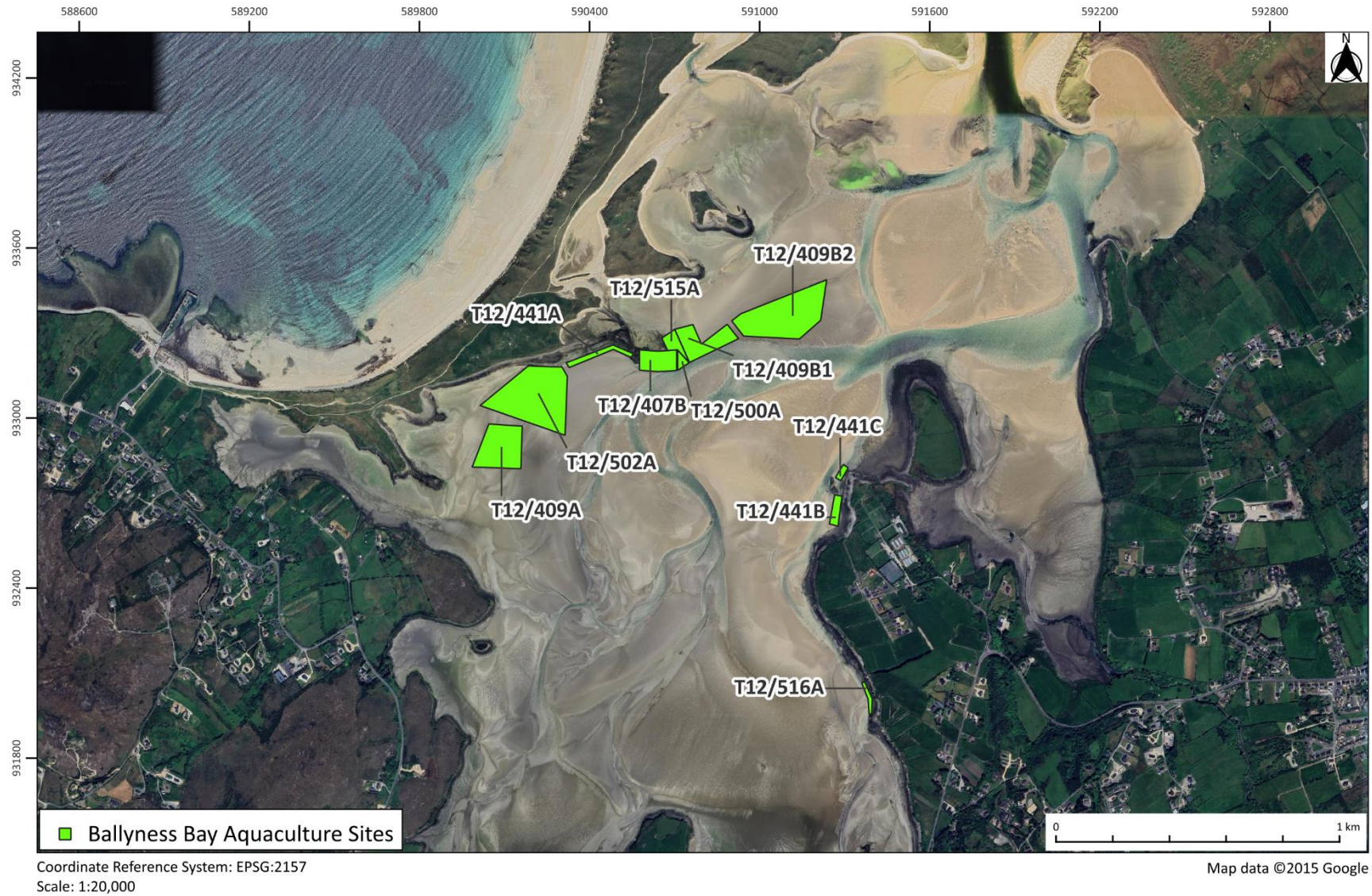


Figure 1-1: Proposed aquaculture sites under appeal in Ballyness Bay.

1.2. Purpose of this report

This report has been prepared to assess the impacts of the Project on relevant Annex IV species identified as having potential to be present in the Project area, under Article 12 of the European Community (EC) Directive (92/43/EEC) on the conservation of natural habitats and of wild flora and fauna (commonly known as the Habitats Directive).

1.3. Ballyness Bay

Ballyness Bay is located in north-west Donegal, adjacent to Gortahork and Falcarragh, between Tramore Bay and Inishbofin Bay. It is a large, shallow estuarine complex with extensive intertidal sandflats exposed at low tide. The bay is sheltered by the Dooey Peninsula, with a narrow opening to the sea, and is predominantly characterised by intertidal sand and mud sediments.

The proposed aquaculture sites are located within Ballyness Bay, primarily along the south-western and central intertidal areas, in proximity to the low water channels associated with the Gleanna River. The proposed sites lie within Ballyness Bay SAC, and the bay is located approximately 0.8 km from Falcarragh to Meenlaragh SPA.

Ballyness Bay SAC is designated for the marine Annex I habitats Estuaries [1130] and Mudflats and sandflats not covered by seawater at low tide [1140], which support soft sediment communities and community complexes. The SAC is also designated for coastal dune habitats, including Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]. Conservation objectives for the marine habitats and constituent communities within Ballyness Bay SAC relate primarily to maintaining habitat distribution, structure and function, as defined by characterising species.

The receiving environment is predominantly intertidal and sedimentary. Ballyness Bay is mainly composed of sand and mud sediments, with limited stable hard substrate. The intertidal nature of the bay means that large areas dry at low water, while water is retained within tidal channels. This physical setting is relevant to the Annex IV assessment, as it limits the suitability of the inner bay for regular use by cetaceans, while retaining potential for use by otter along shoreline, estuarine and intertidal margins.

The proposed aquaculture footprint is limited relative to the wider bay. The combined area occupied by the proposed aquaculture sites is approximately 14.69 ha, representing approximately 2.47% of the Ballyness Bay Water Framework Directive (WFD) waterbody. The sites are spatially dispersed and do not form a continuous area of development.

Local observations and NBDC records indicate that harbour seal and grey seal occur within Ballyness Bay, with a haul-out zone identified on a sandbank within the bay. The current aquaculture sites are separated from this haul-out sandbank by a tidal channel. Although seals are not Annex IV species, their presence is relevant to the wider protected species context and is considered separately in this report.

2. Legislation

2.1. *Legislative Background*

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (commonly known as the Habitats Directive) is European Community legislation regarding nature conservation established to ensure biodiversity is conserved through the conservation of natural habitats and wild fauna and flora in Europe.

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).

A network of sites of conservation importance hosting habitats and species as needing to be either maintained at or restored to favourable conservation status have been identified by each Member State. These sites are known as European sites within the Natura 2000 network.

European sites in Ireland that form part of the Natura 2000 network of protected sites comprise Special Area of Conservation (SAC) sites designated due to their significant ecological importance for habitats and species protected under Annex I and Annex II respectively of the Habitats Directive, and Special Protection Areas (SPA) sites designated for the protection of populations and habitats of bird species protected under the EU Birds Directive (Council Directive 2009/409/EEC). The sites are formally designated by the relevant minister under a statutory instrument. Candidate SAC and candidate SPA sites (*i.e.*, cSAC or cSPA) have the same level of protection as fully designated sites under Irish Law¹. The specific named habitats and/or (non-bird) species for which an SAC are selected are called the 'Qualifying Interests' (QIs), of the site. The specific named bird species for which a SPA is selected is called the 'Special Conservation Interests' (SCIs). QIs and SCIs are collectively referred to as conservation features (OPR, 2021).

The Habitats Directive requirements are divided in two group chapters. The first includes Articles 3 to 11, designated as 'Conservation of natural habitats and habitats of species'. The second group includes Articles 12 to 16, designated as 'Protection of Species', which focus on establishing a system of strict protection for the animal species listed under Annex IV(a) of the Habitats Directive.

¹ Candidate sites are those that have been submitted to the European Commission, but not yet formally adopted under Ministerial Statutory Instrument (S.I.). Legal protection, and therefore, the requirement for AA, arises from the date that the Minister gives notice of his/her intention to designate the site.

Article 12 of the Habitats Directive, under Regulation 51 of the 2011 Birds and Natural Habitats Regulations states:

1. *Member States shall take the requisite measures to establish a system of strict protection for the animal species listed in Annex IV(a) in their natural range, prohibiting:*
 - (a) *all forms of deliberate capture or killing of specimens of these species in the wild;*
 - (b) *deliberate disturbance of these species, particularly during the period of breeding, rearing, hibernation and migration;*
 - (c) *deliberate destruction or taking of eggs from the wild;*
 - (d) *deterioration or destruction of breeding sites or resting places.*
2. *For these species, Member States shall prohibit the keeping transport and sale or exchange, and offering for sale or exchange, of specimens taken from the wild, except for those taken legally before this Directive is implemented.*
3. *The prohibition referred to in paragraph 1(a) and (b) and paragraph 2 shall apply to all stages of life of the animals to which this Article applies.*
4. *Member States shall establish a system to monitor the incidental capture and killing of the animal species listed in Annex IV(a). In the light of the information gathered, Member States shall take further research or conservation measures as required to ensure that incidental capture and killing does not have a significant negative impact on the species concerned.*

Additionally, protection measures implemented under Article 12 of the Habitats Directive should ensure or contribute to the maintenance or restoration, at favourable conservation status, of Annex IV species of Community Interest. In the marine environment, Annex IV animal species of the Habitats Directive include all cetaceans (whales and dolphins), the otter and some marine turtles.

2.2. Guidance

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

- DAHG (2014) Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters
- EC (2021) Guidance document on the strict protection of animal species of Community interest under the Habitats Directive. Commission Notice (2021) and
- JNCC *et al.* (2010) The protection of marine European Protected Species from injury and disturbance: Guidance for the marine area in England and Wales and the UK offshore marine area' published by the Joint Nature Conservation Committee (JNCC), Natural England and Countryside Council for Wales (now Natural Resources Wales).

An overview of the previous literature regarding the Annex IV species baseline in Irish waters, included the following sources:

- Baseline desk studies and field surveys carried out for the Project area,
- Site Synopsis, Conservation Objective Reports and Natura 2000 Forms available from NPWS,
- Published and unpublished NPWS reports on protected habitats and species including Irish Wildlife Manual reports, Species Action Plans, and Conservation Management Plans and
- Existing relevant mapping and databases *e.g.* waterbody status, species and habitat distribution *etc.* (sourced from the Environmental Protection Agency - <http://gis.epa.ie/>, the National Biodiversity Data Centre - <http://maps.biodiversityireland.ie> and the NPWS - <http://www.npws.ie/mapsanddata/>).

3. Annex IV species in the Project area

All cetacean species are listed under Annex IV of the Habitats Directive, which affords them strict protection within Irish waters. To date, 27 species of cetaceans have been recorded in Ireland (NBDC, 2024), ranging from resident populations to wide-ranging migratory species, including the recently confirmed whale species (narwhal) recorded in Ireland for the first time in November 2025.

The proposed aquaculture sites are located within Ballyness Bay, a large, shallow and predominantly intertidal estuarine complex. This physical setting is important in determining the likelihood of interaction with Annex IV species. The extensive drying of the bay at low tide, the predominance of sand and mud sediments, and the location of the proposed aquaculture sites on intertidal/subtidal foreshore habitats limit the potential for regular use by cetaceans or marine turtles. Otter is therefore the Annex IV species with the clearest potential pathway for interaction with the proposed activities.

The assessment of Annex IV species has been informed by the current Ballyness Bay NIS, available NPWS and NBDC information, published literature, and recent national survey data, including the NPWS Otter Survey of Ireland 2023–24 and the 2024 national aerial thermal-imaging survey of seals.

Within the Zone of Influence (ZoI) of the proposed project, there are two SACs with Annex IV animal species as conservation features:

- Gweedore Bay and Islands SAC (Site code: 001141) (4.1 km from Project area) – Otter (*Lutra lutra*) [1355] and *Phocoena phocoena* (Harbour Porpoise) [1351]
- Cloghernagore Bog and Glenveagh National Park SAC (Site code: 002047) (6.9 km from the Project area) – Otter (*Lutra lutra*) [1355].

Overview of the Annex IV species distribution and abundance estimations are summarised in **Section 3.1** and **Section 3.2**, while **Section 3.4** provides a brief summary of other (non-Annex IV) species.

3.1. Otter (*Lutra lutra*)

The Eurasian otter is a top predator in freshwater and marine systems, thus its presence has a significant role in the well-being of these ecosystems (Reid *et al.*, 2013a). Aquatic prey and shelter availability are two basic requirements in the growth of otter populations. This species is strictly protected under Annex II and IV of the Habitats Directive, thus requires Member States to designate SACs for their protection. Otters have also been designated as species of conservation concern and high priority, due to major decline in numbers because of alterations in water quality chemistry (eutrophication) in river and estuaries habitats, habitat destruction, and introduction of alien invasive species (Reid *et al.*, 2013a;

Gutleb & Kranz 1998; Leppakoski *et al.*, 2002). Consequently, otters have been designated as ‘sentinel species’ for the dynamics and diversity of pesticides in aquatic food webs (Reid *et al.*, 2013a; Lemarchand *et al.*, 2011).

In Ireland, there are 44 SACs with otter as a QI, with associated habitats ranging from estuaries, lakes, coastal lagoons, dunes and alluvial forests (Bailey and Rochford 2006). For the proposed Project area, two SACs include otters as a QI: Gweedore Bay and Islands SAC and Cloghernagore Bog and Glenveagh National Park SAC.

The most recent national otter survey, the NPWS Otter Survey of Ireland 2023–24, confirms that otter remains widespread throughout Ireland (Reid *et al.*, 2025). During the 2023–24 survey, otters were recorded at 65% of surveyed sites in the Republic of Ireland, with occurrence at coastal sites recorded at 54%. The survey also notes that the highest densities in 2023–24 were in the south and north-west.

Within Ballyness Bay, potential interactions between otter and the proposed aquaculture activities would be limited to temporary disturbance from personnel, tractors, boats, access movements, husbandry, harvesting and site servicing. The current NIS notes that aquaculture activities are most likely to be carried out during daylight hours, whereas otter foraging is primarily during early morning, late evening and night-time. It also notes that otters are relatively tolerant of human disturbance.

On this basis, otter is retained as a relevant Annex IV species for assessment. The potential impact pathway is temporary disturbance only; no direct works to otter holts, couches or other resting/breeding places are proposed.

3.2. Harbour porpoise (*Phocoena phocoena*)

Harbour Porpoises are one of the most widely distributed and observed cetacean species in European waters (Hammond *et al.*, 2002), inhabiting shallow waters around the northern hemisphere (Todd *et al.*, 2020). This species is strictly protected under Annex II of the Habitats Directive, thus requires Member States to designate SACs for their protection. There are sixteen SACs designated for harbour porpoises in Ireland: additionally, Broadhaven Bay located in the northwest of Ireland was also identified as a site of high diversity for cetacean species, including harbour porpoises, and has the longest marine mammal monitoring programme in Ireland (Anderwald *et al.*, 2012; Todd *et al.*, 2020).

The current NIS identifies harbour porpoise as a marine mammal species considered in the screening process. Gweedore Bay and Islands SAC is identified within the wider area and includes harbour porpoise as a relevant conservation feature. However, the NIS states that harbour porpoise is highly unlikely to utilise Ballyness Bay due to its shallow and tidal nature. It also notes that harbour porpoise records at the mouth of the bay relate to stranding events, and that the bathymetric characteristics of Ballyness Bay

mean there is no realistic pathway for sustained interaction between the proposed aquaculture sites and harbour porpoise.

Harbour porpoise is therefore considered unlikely to interact with the proposed aquaculture activities. Any occurrence would be expected to be rare, transient and associated with deeper waters outside the intertidal site footprints.

3.3. Other Annex IV Species

Other marine mammal species under Annex IV of the Habitats Directive include:

- Common bottlenose dolphin (*Tursiops truncatus*) [1349]
- Short-beaked common dolphin (*Delphinus delphis*)
- Leatherback turtle (*Dermochelys coriacea*)
- Loggerhead turtle (*Caretta caretta*)

These species are not listed as QIs for any of the SACs located in the ZOI, however, they are known for their foraging range which makes them a potential species to occur in the Project area.

3.3.1. Common bottlenose dolphin (*Tursiops truncatus*)

Bottlenose dolphins are one of the most studied delphinid species and are widely distributed in both temperate and tropical marine waters worldwide (Wells and Scott, 2009). This species is strictly protected under Annex II and IV of the Habitats Directive, thus requires Member States to designate SACs for their protection, with twelve SACs designated for this QI in Ireland.

The current NIS identifies bottlenose dolphin as one of the marine mammal species with potential to occur within the wider ZOI. However, Ballyness Bay is a shallow, largely intertidal system that drains extensively at low tide. The NIS states that Ballyness Bay provides limited suitable habitat for harbour porpoise and bottlenose dolphin, which are associated with deeper coastal and offshore waters, and that there is no realistic pathway for sustained interaction between the proposed aquaculture sites and these species.

Bottlenose dolphin is therefore considered a potential transient species in the wider coastal environment, but not a species expected to regularly enter or utilise the intertidal aquaculture site areas. It is retained for brief consideration in the risk assessment, but the likelihood of interaction is considered very low.

3.3.2. Short-beaked common dolphin (*Delphinus delphis*)

Short-beaked common dolphins (referred to as common dolphins) are one of the most abundant dolphin species around the Irish coast, inhabiting both continental shelf and offshore waters (Murphy *et al.*, 2013). This species is strictly protected under Annex II and IV of the Habitats Directive, thus requiring Member

States to designate SACs for their protection. To this day, there are no SACs designated for common dolphins in Ireland, however previous literature has assessed that they are mostly sighted in water temperatures above 15°C at depths of 400-1000 meters (m) (Cañadas *et al.*, 2009).

The species may occur in wider Irish coastal waters, including the north-west region, but Ballyness Bay does not provide suitable habitat for regular use by common dolphin. The proposed aquaculture sites are located on intertidal/subtidal foreshore within a shallow estuarine bay that dries extensively at low tide. No regular use of the aquaculture site areas by common dolphin is predicted.

Short-beaked common dolphin is therefore retained only as a precautionary Annex IV receptor. There is no credible pathway for significant interaction with the proposed intertidal aquaculture activities.

3.3.3. Leatherback turtle (*Dermochelys coriacea*)

Leatherback turtle is the most frequently sighted marine turtle species in Irish waters (King & Berrow, 2009), with a wide distribution throughout temperate waters during summer and autumn months (Houghton *et al.*, 2006). This species is strictly protected under Annex II and IV of the Habitats Directive, thus requires Member States to designate SACs for their protection, however there are no SACs designated for leatherback turtles in Ireland. King & Berrow (2009) have collected a total of 1069 records of marine turtles in Irish waters, which calculated a total of 863 records for this species. Leatherback turtles were found to mostly occur in summer months between June and September representing 90.8% of all recorded sightings.

3.3.4. Loggerhead turtle (*Caretta caretta*)

Loggerhead turtle is the second most frequently recorded marine turtle species around the coast of Ireland (King & Berrow, 2009), occurring throughout the temperate and tropical regions of the Atlantic, Pacific and Indian oceans. This species is strictly protected under Annex II and IV of the Habitats Directive, thus requires Member States to designate SACs for their protection, however there are no SACs designated for loggerhead turtles in Ireland. King & Berrow (2009) have collected a total of 1069 records of marine turtles in Irish waters, which calculated a total of 56 records for Loggerhead turtles. This species has recorded in every month, showing a peak in March representing 23.6% of all records and, 60% occurring between January to April.

Marine turtles were found to occur more frequently along the south coast and off the headlands in west Cork representing 41.5% of all records, north Dingle Peninsula in Co. Kerry (13.2%), Killala Bay in north Co. Mayo, and off Arranmore and Malin Head in the northwest off Donegal (11.9%) (King & Berrow, 2009). Distribution of these marine turtle species by county in Ireland can be seen in **Table 3-1**.

Table 3-1: Distribution of turtle species recorded around Ireland, adapted from Table 2. in King & Berrow (2009).

County/Sea	Turtle species				
	Leatherback	Loggerhead	Kemp's Ridley	Hawksbill	Green
Derry	4	1	0	0	0
Antrim	10	0	0	0	0
Down	12	0	0	0	0
Louth	3	0	0	0	0
Dublin	10	1	1	0	0
Wicklow	4	0	0	0	0
Wexford	25	1	0	0	0
Waterford	63	3	0	0	0
Cork	378	12	1	1	1
Kerry	113	15	2	0	0
Clare	18	3	1	0	0
Galway	21	11	2	0	0
Mayo	49	5	1	0	0
Sligo	14	2	0	0	0
Leitrim	1	0	0	0	0
Donegal	109	2	2	0	0
Celtic Sea	9	0	0	0	0
Irish Sea	4	0	0	0	0
Offshore	16	0	0	0	0
Total	863	56	10	1	1

3.3.5. Other Cetaceans

Other cetacean species, including minke whale (*Balaenoptera acutorostrata*) and other large whales or dolphins, may occur in wider Irish coastal waters. However, the shallow, enclosed and predominantly intertidal nature of Ballyness Bay makes regular occurrence within the proposed aquaculture site areas highly unlikely.

The current NIS notes that Ballyness Bay provides limited suitable habitat for cetacean species associated with deeper coastal and offshore waters, and screens cetaceans out from further assessment due to the absence of a realistic pathway for sustained interaction with the proposed aquaculture sites.

The proposed aquaculture activities do not include piling, blasting, dredging, geophysical survey, MBES, high-energy acoustic sources or other activities that would generate significant underwater noise. Consequently, other cetacean species are not expected to be affected by the Project.

3.3.6. Bat Species

All bat species resident in Ireland are listed under Annex IV of the Habitats Directive. Bats may occur within the wider terrestrial landscape around Ballyness Bay, particularly where suitable roosting, foraging or commuting habitat occurs, including buildings, trees, woodland edges, hedgerows, watercourses and sheltered coastal margins.

The proposed aquaculture activities are confined to intertidal/subtidal foreshore areas and comprise shellfish cultivation, access, husbandry, harvesting and site servicing. The proposed activities do not involve tree removal, building works, demolition, artificial lighting of terrestrial habitats, or works to structures with bat roost potential.

Bats are therefore not considered likely to interact with the proposed aquaculture activities. There is no pathway for injury, disturbance or deterioration/destruction of bat breeding or resting sites.

3.4. Other (Non-Annex IV) Species

The species included in this section are:

- Harbour seal (*Phoca vitulina*) [1365]
- Grey seal (*Halichoerus grypus*) [1364]
- Basking shark (*Cetorhinus maximus*)

Although these species are not listed in Annex IV of the Habitats Directive, they are known for their foraging range which makes them a potential species to occur in the Project area. An overview of the distribution abundance of these species is summarised in the **Section 3.4.1** through **Section 3.4.3**.

3.4.1. Harbour seal (*Phoca vitulina*)

Harbour seal is listed under Annex II of the Habitats Directive. It is not an Annex IV species but is relevant to the protected species assessment due to known use of Ballyness Bay by seals and the presence of an identified haul-out area within the bay.

The current NIS records local observations of grey and harbour seals in Ballyness Bay and identifies a haul-out zone on a sandbank in the bay. The proposed aquaculture sites are not located on the same sandbank and are separated from the identified haul-out sandbank by a tidal channel.

The most recent national seal survey is NPWS Irish Wildlife Manual No. 158, based on an August 2024 aerial thermal-imaging survey of harbour seal and grey seal numbers and distribution around Ireland (Morris *et al.*, 2025). The survey recorded a total harbour seal count of 3,981 for Ireland and estimated the national harbour seal population at approximately 5,500 individuals. In the North region, 1,020 harbour seals were counted in 2024. Within North Area 4, which is the local subdivision previously represented in the Ballyness Bay seal baseline, the 2024 harbour seal count was 10 individuals.

The NIS notes that Marine Institute guidance suggests maintaining a 200 m buffer between aquaculture activities and seals. The current mitigation requires a strict 200 m distance buffer between any aquaculture activities and any seal species present in the bay

3.4.2. Grey seal (*Halichoerus grypus*)

Grey seal is listed under Annex II of the Habitats Directive and is a Qualifying Interest of Horn Head and Rinclevan SAC. The current NIS notes that proposed aquaculture production activities within Ballyness Bay SAC are more than 10 km from documented grey seal breeding, moulting and resting sites within Horn Head and Rinclevan SAC.

Grey seals are nevertheless known to occur within Ballyness Bay, and local observations identify the same haul-out sandbank discussed above. The proposed aquaculture sites are separated from this haul-out sandbank by a tidal channel.

The 2024 national aerial thermal-imaging survey recorded a national grey seal count of 3,880, the highest national total since these surveys began, and estimated the summer grey seal population at approximately 15,400 individuals. In the North region, 869 grey seals were counted in 2024. Within North Area 4, the 2024 grey seal count was 42 individuals (Morris *et al.*, 2025).

Although grey seal is not an Annex IV species, it remains a key protected marine mammal receptor for the proposed Project. The proposed 200 m buffer from any seals present in the bay is therefore retained as an important avoidance measure.

3.4.3. Basking shark (*Cetorhinus maximus*)

Basking sharks are the second-largest fish species, most frequently sighted between April and September in shallow coastal areas in the northern Atlantic (Doherty *et al.*, 2017). Basking sharks are protected under Section 23(2)(a) of the Irish Wildlife Act 1976, entitled the “Wildlife Act 1976 (Protection of Wild Animals) Regulations 2022”. They are listed under international legislation, such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the United Nations Convention on the Law of the Sea (UNCLOS) and they are also listed in the International Union for Conservation of Nature (IUCN) Red List, classified as endangered in 2019.

Distribution patterns of basking sharks show inter-annual site-fidelity in areas around the Isle of Man (Dolton *et al.*, 2019), with the Irish Sea being identified as a migratory corridor for this species (Lieber *et al.*, 2020). Due to their primary prey (zooplankton), basking shark abundance peaks have been shown to be positively correlated with peaks in plankton density, which can explain this species abundance during summer months (Sims and Quayle, 1998). Previous literature suggests that basking sharks go through extensive migrations from September to May (Doherty *et al.*, 2017), as an alternative to hibernation periods (Parker and Boseman, 1954).

Basking shark may occur in wider north-west Irish coastal waters but is not expected to regularly use the shallow intertidal aquaculture site areas within Ballyness Bay. The proposed activities are localised, intermittent and confined to routine intertidal aquaculture operations. No realistic pathway for significant interaction with basking shark is identified.

Basking shark is therefore noted as a protected species that may occur in the wider marine environment, but it is not considered a likely receptor for the proposed aquaculture activities.

4. Potential Environmental Impacts

A detailed description of the Project is provided in **Section** Error! Reference source not found. above. Given the nature of the Project, the potential impact mechanisms identified to potentially have an impact on Annex IV species in the Project area are:

- **Potential Impact Mechanism 1:** Physical disturbance and habitat loss, associated with aquaculture structures and activities, including trestles and bags used in oyster cultivation, wooden trays used in clam cultivation, harvesting, servicing, vehicles on shore, traffic and access routes. This mechanism is relevant to Annex IV species insofar as such activities could result in temporary disturbance of intertidal or shoreline areas used by otter for foraging or commuting.
- **Potential Impact Mechanism 2:** Visual disturbance and above water noise disturbance, associated with aquaculture activities including installation of structures, harvesting, servicing, vehicles on shore, human traffic and traffic on access routes. This mechanism is the principal Annex IV pathway and is relevant primarily to otter, with consideration also given to other protected marine fauna occurring within Ballyness Bay.

The remaining potential impact mechanisms identified in the Revised NIS are not carried forward as relevant Annex IV impact mechanisms, as they do not provide a credible pathway for injury, killing, deliberate disturbance, or deterioration/destruction of breeding sites or resting places of Annex IV species. The overview of the potential impact mechanisms described above are summarised below.

4.1. *Physical disturbance and habitat loss*

Potential Impact Mechanism 1: Physical disturbance and habitat loss relates to the physical presence of aquaculture structures and the activities required to install, maintain and operate them. For the proposed Ballyness Bay aquaculture sites, this includes oyster bags and trestles, wooden trays and mesh used for clam cultivation, harvesting activities, site servicing, vehicle movements across the shore, traffic on access routes and other ancillary operational activities.

This mechanism has potential relevance to Annex IV species where physical activity within intertidal, estuarine or shoreline areas could temporarily disturb areas used by otter for foraging or commuting. It is not expected to result in direct loss of known Annex IV breeding or resting places.

4.2. *Visual disturbance and above water noise disturbance*

Potential Impact Mechanism 2: Visual disturbance and above water noise disturbance relates to the presence and movement of people, vehicles, boats and equipment during aquaculture activities. For the proposed Ballyness Bay aquaculture sites, this includes the installation of structures, husbandry, harvesting, site servicing, vehicles on shore, human presence and traffic on access routes.

This mechanism has potential relevance to Annex IV species where visual disturbance or above-water noise could cause temporary behavioural responses, principally in otter using shoreline, intertidal or estuarine areas. It is also considered on a precautionary basis for Annex IV marine species that may occur in the wider bay, although regular interaction with the proposed intertidal aquaculture sites is unlikely.

5. Mitigation

The accompanying NIS identifies mitigation measures including best-practice husbandry and harvesting, restriction of access to defined routes, avoidance of Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130], a strict 200 m buffer from seals, avoidance of early morning/evening activity to minimise contact with otter, predictable working patterns, no deviation from access routes, regular site maintenance and biosecurity controls.

5.1. *Physical Disturbance and Habitat Loss*

Best-practice measures will be followed during husbandry, harvesting and site servicing to minimise physical disturbance of intertidal habitats.

Access to the western sites will be restricted to the DAFM-suggested southern access route identified in the Revised NIS. No access will occur through Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]. Operators will follow defined access routes, with no deviations, to limit the spatial extent of disturbance and allow local fauna to acclimatise to predictable activity patterns.

Regular site maintenance will be undertaken to keep aquaculture infrastructure in good condition and avoid heavy build-up of organic material where possible.

5.2. *Visual Disturbance and Above Water Noise Disturbance*

Aquaculture activities will follow predictable and consistent working patterns to minimise disturbance to protected fauna using Ballyness Bay.

Activities will avoid early morning and evening periods where practicable to minimise the chance of interaction with otter. A strict 200 m buffer will be maintained between aquaculture activities and any seal species present in the bay.

5.3. *Biosecurity and General Controls*

Although biosecurity does not function as specific Annex IV mitigation, it forms part of the overall environmental management framework for the proposed aquaculture activities. A biosecurity plan will be compiled, introduced stock will be screened before transfer to on-growing sites, and good animal husbandry will be implemented.

These mitigation measures are taken into account in the risk assessment in **Section 6**.

6. Risk Assessment

A number of Annex IV species and other protected fauna may occur in or near Ballyness Bay on a resident, transient or occasional basis. The Annex IV species/groups considered in this assessment are otter, cetaceans, marine turtles and bats. Harbour seal, grey seal and basking shark are also considered as other protected or ecologically relevant non-Annex IV species.

The risk assessment is structured around the two impact mechanisms carried forward from **Section 4**, namely:

- Potential Impact Mechanism 1: Physical disturbance and habitat loss; and
- Potential Impact Mechanism 2: Visual disturbance and above water noise disturbance.

6.1. *Physical disturbance and habitat loss*

Physical disturbance and habitat loss as arising from aquaculture structures and activities has been considered as an impact mechanism. This includes trestles and bags used in oyster cultivation, wooden trays used in clam cultivation, harvesting, servicing, vehicles on shore, human traffic and access routes. These activities may cause localised sediment compaction, changes to benthic communities, effects on burrowing organisms, and shading beneath intertidal oyster culture structures.

For the purposes of this Annex IV Risk Assessment, this mechanism is relevant principally to otter (*Lutra lutra*). Otter may use shoreline, estuarine and intertidal areas within Ballyness Bay for commuting and foraging. Physical disturbance from aquaculture access, servicing, harvesting or site maintenance could result in temporary localised disturbance of areas used by otter for foraging or movement through the bay.

The proposed activities are located on intertidal/subtidal aquaculture sites and associated access routes. They do not involve excavation of riverbanks, coastal banks, buildings, mature trees or other features that would typically support Annex IV breeding or resting places. No direct works to known otter holts, couches or other resting/breeding sites are proposed. Accordingly, this mechanism is not predicted to result in deterioration or destruction of otter breeding or resting places.

For cetaceans, including harbour porpoise, bottlenose dolphin, short-beaked common dolphin and other wider-ranging species, this mechanism does not provide a credible impact pathway. The proposed aquaculture areas are shallow, intertidal/subtidal foreshore sites. The Revised NIS notes that Ballyness Bay is a shallow, largely intertidal system that drains at low tide and provides limited suitable habitat for harbour porpoise and bottlenose dolphin. It further states that there is no realistic pathway for sustained interaction between the proposed aquaculture sites and these species.

For marine turtles, no physical disturbance or habitat-loss pathway is identified. Ballyness Bay does not provide marine turtle breeding habitat, and the proposed aquaculture activities do not affect any feature that could constitute a marine turtle breeding or resting place.

For bats, no physical disturbance or habitat-loss pathway is identified. The proposed activities are marine/intertidal in nature and do not involve tree removal, building works, demolition, lighting of terrestrial habitats, or works to structures with bat roost potential.

For harbour seal and grey seal, which are not Annex IV species, no direct physical loss of haul-out habitat is predicted. The Revised NIS identifies a potential seal haul-out area towards the north-east of Ballyness Bay and states that the proposed aquaculture sites are not located on that sandbank and are separated from it by a tidal channel.

For basking shark, no physical disturbance or habitat-loss pathway is identified. The species is not expected to use the shallow intertidal aquaculture areas in any regular or functionally important manner.

Overall, Potential Impact Mechanism 1: Physical disturbance and habitat loss presents a low risk to otter and a negligible risk to other Annex IV species. No injury, killing, or deterioration/destruction of Annex IV breeding or resting places is predicted.

6.2. Visual disturbance and above water noise disturbance

Visual disturbance and above water noise disturbance as arising from aquaculture activities including installation of structures, harvesting, servicing, vehicles on shore, human presence and traffic on access routes has been considered as an impact mechanism. The Revised NIS identifies marine mammals, otters and seabirds as receptors potentially affected by this pathway.

For the purposes of this Annex IV Risk Assessment, this is the principal mechanism with a credible pathway to Annex IV species, particularly otter. Otter may be temporarily disturbed by the presence and movement of personnel, tractors, trailers, boats and other equipment during aquaculture operations. Such disturbance could result in short-term avoidance of active working areas.

The likelihood of significant disturbance to otter is limited by the nature and timing of the activities. The Revised NIS states that aquaculture activities are most likely to be carried out during daylight hours, while otter foraging is primarily during early morning, late evening and night-time. It also notes that otters are relatively tolerant of human disturbance and are often recorded in urban areas.

Any disturbance to otter is therefore predicted to be temporary, localised and reversible. It is not expected to result in sustained displacement from Ballyness Bay or to affect the ecological function of the bay for otter. No deterioration or destruction of otter breeding or resting places is predicted.

For cetaceans, visual disturbance and above-water noise disturbance are considered on a precautionary basis. However, Ballyness Bay is shallow, intertidal and of limited suitability for regular cetacean use. The Revised NIS states that harbour porpoise records at the mouth of the bay relate to stranding events and that there is no realistic pathway for sustained interaction between the proposed aquaculture sites and harbour porpoise or bottlenose dolphin.

The proposed aquaculture activities do not include piling, blasting, dredging, geophysical survey, MBES or other high-energy underwater noise sources. Any vessel activity would be associated with routine aquaculture access and servicing and would be localised and intermittent. Significant disturbance to cetaceans is therefore not predicted.

For marine turtles, visual disturbance and above-water noise disturbance are not considered to provide a credible significant-impact pathway. Any turtle occurrence in Ballyness Bay would be expected to be rare and incidental, and the proposed activities are not of a type or scale likely to affect marine turtles.

For bats, no credible disturbance pathway is identified. The proposed activities are located in intertidal/subtidal foreshore areas and do not involve night-time lighting of terrestrial habitats, tree removal, building works or disturbance to roost features.

For harbour seal and grey seal, visual and above-water noise disturbance is relevant because both species are known to occur in Ballyness Bay. The Revised NIS notes that seal responses to disturbance can vary from increased alertness to movement towards the water and entering the water. It also identifies previous Marine Institute guidance recommending a 200 m buffer between aquaculture activities and seals. Subject to adherence to the recommended 200 m separation from seals and predictable working patterns, significant disturbance to harbour seal or grey seal is not predicted.

For basking shark, no significant disturbance pathway is identified. The species is not expected to overlap regularly with the shallow intertidal aquaculture areas, and the proposed activities are localised, intermittent and confined to routine aquaculture access, husbandry and servicing operations..

Overall, Potential Impact Mechanism 2: Visual disturbance and above water noise disturbance presents a low risk to otter, a low risk to seals as non-Annex IV protected marine mammals, and a negligible risk to cetaceans, marine turtles, bats and basking shark.

Table 6-1: Risk Assessment

Species / group	Potential Impact Mechanism 1: Physical disturbance and habitat loss	Potential Impact Mechanism 2: Visual disturbance and above water noise disturbance	Overall risk
Otter (<i>Lutra lutra</i>)	Low. Otter may use intertidal and shoreline areas for foraging and commuting. Physical disturbance from access, servicing or harvesting may cause temporary localised disturbance, but no loss of known breeding or resting places is predicted.	Low. Otter may temporarily avoid active working areas during aquaculture operations. Effects are predicted to be localised, intermittent and reversible.	Low
Harbour porpoise (<i>Phocoena phocoena</i>)	Negligible. No physical habitat-loss pathway is identified within the intertidal aquaculture areas.	Negligible. Ballyness Bay is shallow and largely intertidal, with no realistic pathway for sustained interaction with the proposed sites.	Negligible
Common bottlenose dolphin (<i>Tursiops truncatus</i>)	Negligible. No physical habitat-loss pathway is identified.	Negligible. Occurrence within the proposed aquaculture site areas is unlikely and would be transient if it occurred.	Negligible
Short-beaked common dolphin (<i>Delphinus delphis</i>)	Negligible. No physical habitat-loss pathway is identified.	Negligible. The species is wide-ranging and not expected to regularly use shallow intertidal Ballyness Bay.	Negligible
Other cetaceans, including minke whale	Negligible. No physical habitat-loss pathway is identified.	Negligible. Occurrence within the aquaculture site areas is highly unlikely; no high-energy underwater noise source is proposed.	Negligible

Species / group	Potential Impact Mechanism 1: Physical disturbance and habitat loss	Potential Impact Mechanism 2: Visual disturbance and above water noise disturbance	Overall risk
Marine turtles	Negligible. No breeding or resting-place pathway is identified; marine turtles do not breed in Ireland.	Negligible. Any occurrence would be rare and incidental; the proposed activities are not expected to cause significant disturbance.	Negligible
Bats	Negligible. No tree removal, building works, demolition or roost disturbance is proposed.	Negligible. No night-time lighting or disturbance to commuting, foraging or roosting habitat is proposed.	Negligible
Harbour seal and grey seal	Negligible–Low. No direct loss of haul-out habitat is predicted; the identified haul-out sandbank is separated from the proposed sites by a tidal channel.	Low. Temporary behavioural disturbance is possible, but adherence to a 200 m buffer from seals is expected to avoid significant disturbance.	Low
Basking shark	Negligible. No physical habitat-loss pathway is identified.	Negligible. Regular overlap with shallow intertidal aquaculture areas is not expected.	Negligible

7. Conclusion

This Annex IV Risk Assessment has considered the proposed Ballyness Bay aquaculture activities in relation to Annex IV species that may occur in or near the Project area. The assessment has been aligned with the potential impact mechanisms identified in the Revised NIS, with only those mechanisms considered to provide a credible Annex IV pathway carried forward.

The impact mechanisms assessed are Physical disturbance and habitat loss and Visual disturbance and above water noise disturbance. These mechanisms were assessed in relation to otter, cetaceans, marine turtles and bats. Harbour seal, grey seal and basking shark were also considered as other protected or ecologically relevant non-Annex IV species.

The principal Annex IV receptor is otter. Potential effects on otter are limited to temporary and localised disturbance of intertidal, estuarine or shoreline areas that may be used for foraging or commuting. The Revised NIS notes that aquaculture activities are most likely to occur during daylight hours, while otter foraging is primarily during early morning, late evening and night-time.

For cetaceans, marine turtles and bats, no credible pathway for significant effects is identified. Ballyness Bay is a shallow, largely intertidal system that drains at low tide and provides limited suitable habitat for harbour porpoise and bottlenose dolphin. The Revised NIS identifies no realistic pathway for sustained interaction between the proposed aquaculture sites and these species.

The mitigation measures set out in **Section 5** further reduce the potential for disturbance. These include adherence to best-practice aquaculture measures, use of defined access routes, no access through Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130], avoidance of early morning/evening activity where practicable to minimise contact with otter, predictable working patterns, regular site maintenance, biosecurity controls and a strict 200 m buffer from any seal species present in the bay.

On the basis of the assessment undertaken, the proposed aquaculture activities are **not predicted to result in injury, killing, significant disturbance, or deterioration/destruction of breeding sites or resting places of Annex IV species**. The overall risk to Annex IV species is assessed as low to negligible, subject to implementation of the mitigation measures identified in this report and in the Revised NIS.

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