Proposed Oyster Cultivation Activities at Braade Strand, Gweedore Bay, Co Donegal

Screening Statement for Appropriate Assessment and Natura Impact Statement

Produced by

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On behalf of

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October 2020

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Document Control/ Approval Sheet

Client	Thierry Gillardeau
Report Title	Oyster Cultivation Activities at Oyster Cultivation Activities at Braade Strand, Gweedore Bay, Co Donegal - Screening Statement for Appropriate Assessment and Natura Impact Statement
Job Number	JN1616
Report Status	Final
Issue Date	27/10/20

Rev	Status	Issue Date	File Name	Author(s)	Approved By
1	Draft	23/10/2020	JN1616 - Gweedore Bay NIS	James Forde	Brendan O'Connor
2	Final	27/10/2020	JN1616 - Gweedore Bay NIS	James Forde	Brendan O'Connor

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1. Introduction

1.1. Background

This '*Screening Statement for Appropriate Assessment and Natura Impact Statement*' report has been prepared by AQUAFACT to support an application submitted on 10/02/2010 to the Department of Agriculture, Food and the Marine (DAFM) for approval to undertaken cultivation of oysters on trestles at intertidal sites at Braade Strand, Gweedore Bay, Co. Donegal.

The proposed sites are situated in the middle of Gweedore Bay within the Gweedore Bay and Islands Special Area of Conservation (SAC) (Site code: 001141) (see **Figure 1-1**). The reference number of the site is T12/410A and T12/410B. Respectively the spatial extent of the T12/410A and T12/410B sites is 12.60ha and 4.80ha (combined spatial extent of 17.40ha).

1.2. Purpose of this Report

Specifically, this report has been prepared to address Article 6(3) obligations under the European Community (EC) Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (commonly known the Habitats Directive), which is transposed into Irish legislation under the European Communities (Birds and Natural Habitats) Regulations 2011 (as amended).

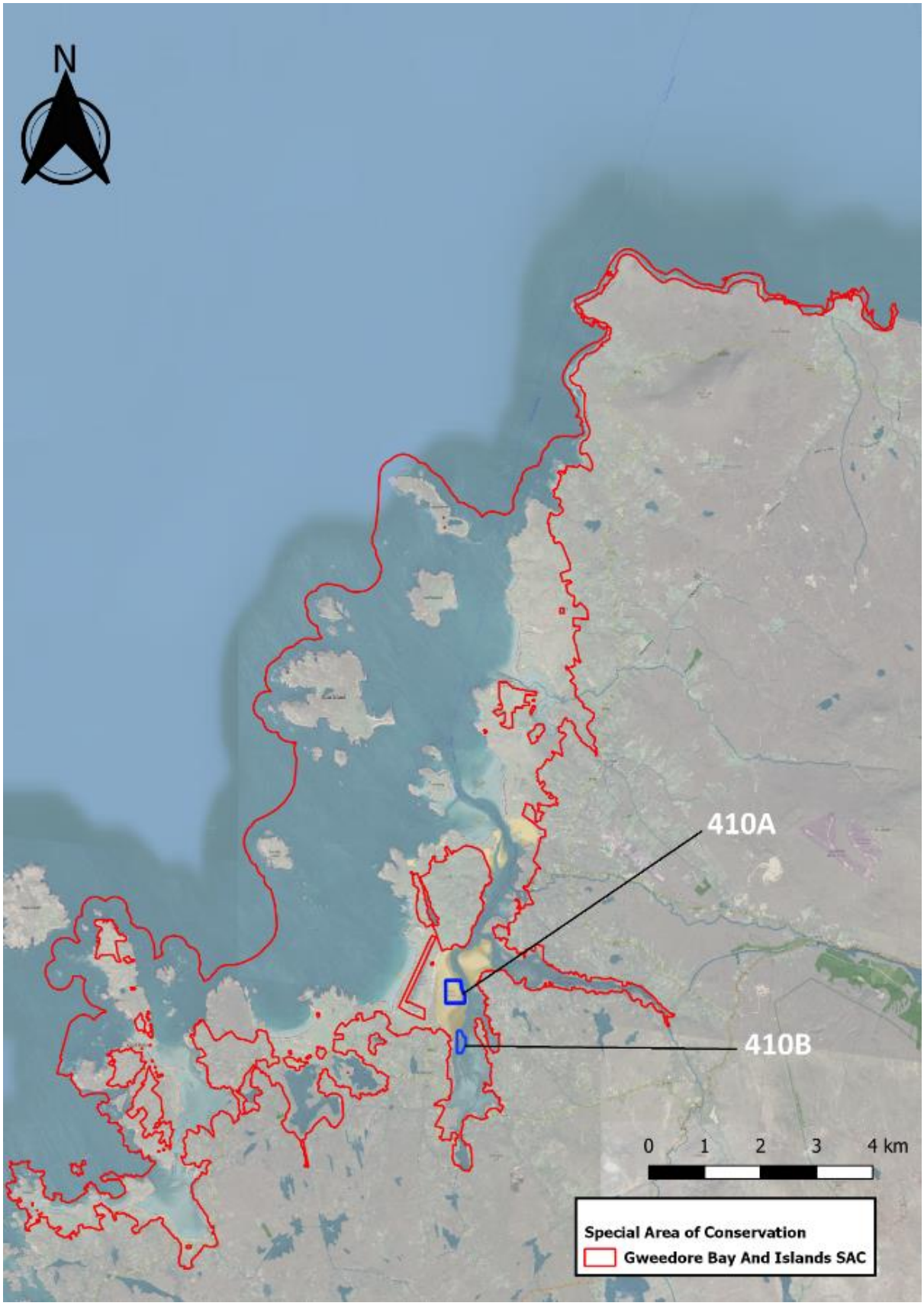

Figure 1-1: Location of T12/410A&B at Braade Strand within the Gweedore Bay and Island SAC (Site code: 001141)

1.3. Appropriate Assessment Process

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.

A network of sites of conservation importance hosting habitats and species as needing to be either maintained at or returned 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 SACs designated due to their significant ecological importance for habitats and species protected under Annex I and Annex II respectively of the Habitats Directive, and SPAs designated for the protection of populations and habitats of bird species protected under the EU Birds Directive (Council Directive 2009/409/EEC). Features for which SACs and SPAs are designated are called Qualifying Interests (QIs) and Special Conservation Interests (SCIs) respectively. QIs and SCIs are collectively referred to herein as Conservation Features.

The Habitats Directive was originally transposed into Irish law by the *European Communities (Natural Habitats) Regulations, 1997* (S.I. No. 94 of 1997). The 1997 Regulations were subsequently revoked and replaced by the *European Communities (Birds and Natural Habitats) Regulations 2011*, as amended (herein referred to as the 2011 Birds and Natural Habitats Regulations).

Under Regulation 42 of the 2011 Birds and Natural Habitats Regulations all competent authorities are required to conduct a screening for Appropriate Assessment (AA) and, if necessary, an AA on any plan or project on the foreshore for which it receives an application for consent, or which the authority itself wishes to undertake or adopt. This obligation derives from Article 6(3) and 6(4) of the Habitats Directive.

Following the requirements of Article 6(3) of the Habitats Directive, under Regulation 42 of the 2011 Birds and Natural Habitats Regulations, if a plan or project is not connected with, or necessary for the management of a European site and is likely to have a significant effect on the feature for which the site is designated either individually or in combination with other plans or projects, an AA is required to assess whether a plan or project will have any adverse effect on the integrity of a European site(s) in view of the Conservation Objectives set for the designated features.

This *Screening Statement for AA and NIS* has been prepared to address Article 6(3) obligations under the Habitats Directive and to inform the AA determination of the competent authorities. Specifically, this

Screening Statement for AA and NIS focuses on the potential effects of the proposed oyster cultivation activities at T12/410A&B at Braade Strand, Gweedore Bay to European sites.

The staged assessment process undertaken to meet Article 6 (3) obligations is described in **Section 1.3.1** and **Section 1.3.2** below.

1.3.1. Stage 1 - Screening for Appropriate Assessment

At the Screening for AA stage, all potential impacts resulting from the plan or project which might have a likely significant effect on a European site are considered both in isolation and in combination with impacts from other plans and projects.

The Stage 1 assessment comprises four steps:

1. Determining whether the project or plan is directly connected with or necessary to the management of European sites;
2. Describing the project/ plan and other projects/ plans occurring in the area that in combination have the potential for having significant effects on European sites;
3. Identifying the potential effects on European sites; and
4. Assessing the significance of any effects on European sites.

Where significant effects of the plan or project on Conservation Feature (habitat and/or species) can be excluded, a clear, reasoned and scientifically rational explanation is to be provided. A Screening Statement should be provided to reflect this outcome (*i.e.* the Screening Statement should conclude that significant effects can be excluded as the Stage 1 Screening for AA stage).

Where the likelihood of a significant effect cannot be excluded (screened out) for a Conservation Feature for which a site is designated on the basis of the objective scientific information, the Screening Statement should reflect this. A precautionary approach to the assessment of potential likely significant effects is fundamental and, in cases of uncertainty, it should be assumed the effects could be significant.

The competent authority carries out the Screening for AA (see **Section 1.3.1.1** below).

1.3.1.1. Screening for Appropriate Assessment Determination

The Screening for AA is performed by the competent authority based on the information included in the Screening for AA and any other information considered necessary to reach a conclusion regarding likely significant effects associated with the proposed plan or project.

In the light of the conclusions of the screening assessment of the implications for the site(s), the competent authorities shall agree to the plan or project only after having ascertained that it will not result in likely significant effect to the site(s) concerned.

1.3.2. Stage 2 - Natura Impact Statement

Where the likelihood of a significant effect of a plan or project cannot be screened out, the plan or project must proceed to Stage 2 AA and requires the preparation of a 'Natura Impact Statement' (NIS) to enable the competent authority in carrying out the AA. An NIS is a report comprising the scientific examination of a plan or project and the relevant Conservation Features of European sites, to identify and characterise any possible implications of the project individually or in combination with other plans or projects in view of the Conservation Objectives of the site or sites, and any further information including, but not limited to, any plans, maps or drawings, scientific information or data required to enable the carrying out of an AA by the competent authority.

The NIS must include information that addresses the following:

- Identify the likely impacts of the proposed activity; and,
- Assess whether the project would adversely affect the integrity of a European site, and where necessary identify mitigation to avoid, reduce or offset adverse effects.

The competent authority carries out the AA (see **Section 1.3.2.1** below).

1.3.2.1. Appropriate Assessment Determination

An AA is performed by the competent authority based on the information included in the NIS and any other information considered necessary to ascertain whether or not the project will have an adverse effect on the integrity of European site(s). This process and the conclusions should be clearly documented.

In the light of the conclusions of the assessment of the implications for the site(s) and subject to the provisions of Habitats Directive Article 6(3), the competent authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site(s) concerned.

1.3.3. Purpose of this Report

The purpose of this *Screening Statement for AA and NIS* report is to provide the competent authority the necessary information required to conduct the AA and determine in view of best scientific knowledge, and in the view of the Conservation Objectives of European sites, whether the proposed project, either individually or in combination with other plans and projects is likely to have a significant effect on a European site and, where necessary, to ascertain whether any such effect would adversely affect the integrity of European sites.

The integrity of a European site is defined as the coherence of the site's ecological structure and function, across the whole of its area, which enable it to sustain the habitat, complex of habitats and/ or populations of species for which the site has been designated. An adverse effect on integrity is likely to be one which prevents the site from making the same contribution to Favourable Conservation Status (FCS) for the relevant Qualifying Feature (habitat or species) as it did at the time of designation.

1.4. Structure of this Report

The content of this report is as follows:

- **Section 2**: Screening for Appropriate Assessment
  - **Section 2.1** Management of the European site(s)
  - **Section 2.2** Description of the Proposed Development
  - **Section 2.3** Characteristics of the European site(s)
  - **Section 2.4** Screening Outcome
- **Section 3**: Natura Impact Statement
  - **Section 3.1** Summary of Screening Outcome
  - **Section 3.2** Description of the Proposed Development
  - **Section 3.3** Description of Receiving Environment
  - **Section 3.4** Impact Prediction
  - **Section 0** Potential for Adverse Effects on Site Integrity
  - **Section 3.6** Outcomes

1.5. Guidance

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

- EC (2018) Managing Natura 2000 sites. The provisions of Article 6 of the Habitats Directive 92/43/EEC Commission Notice (2018);
- DEHLG (2009) Appropriate Assessment of Plans and Projects in Ireland Guidance for Planning Authorities (Revised 2010);
- EC (2001) Managing Natura 2000 Sites: The provisions of Article 6 of the Habitats Directive 92/43/EEC;
- Department of Arts, Heritage and the Gaeltacht – National Parks and Wildlife Service DAHG - NPWS (2012) Marine Natura Impact Statements in Ireland Special Areas of Conservation, A Working Document.

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

- Conservation Status Assessment Reports, Backing Documents and Maps prepared to inform national reporting[1] required under Article 17 of the Habitats Directive;
- Site Synopsis, Conservation Objective Reports and Natura 2000 Standard Data 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 (NBDC) - http://maps.biodiversityireland.ie and the NPWS - http://www.npws.ie/mapsanddata/.

A key factor in the consideration as to whether or not a QI of a SAC or a SCI of a SPA is likely to be affected by a proposed project is the existence of connectivity (or interaction/ or impact pathway) between the designated feature and the impact mechanisms associated with the project.

National guidance (DEHLG 2009) states that screening for AA should be carried out for any European site within the likely 'Zone of Influence' of a plan or project. For projects, the guidance outlines that the Zone of Influence must be evaluated on a case-by-case basis.

Here the evaluation of the Zone of Influence considered potential effects within (*in-situ*) and outside (*ex-situ*) the development area and European sites, with reference to the nature, size and location of the project, its location in relation to individual European sites and the Conservation Objectives defined for their conservation features, while taking into account hydrological connectivity, and with reference to the sensitivities of the receptors, and the potential for in-combination effects.

As a starting point, the screening assessment of potential effect considered connectivity to European sites within a 15km[2] radius of the proposed development (as measured using the shortest linear distance[3]). The screening assessment also considered potential effects to highly mobile protected conservation features species of more distant European sites that may occur in the development

[1] The most recent Article 17 report (2019) is available at https://www.npws.ie/publications/article-17-reports/article-17-reports-2019

[2] A distance of 15 km is currently recommended in the case of plans, as a potential zone of influence, and this distance is derived from UK guidance (Scott Wilson *et al*., 2006 referenced in DEHLG, 2009).

[3] Distances are the shortest straight-line distance (i.e. as the 'crow flies').

area and thereby be affected. The assessment also considered potential effects to habitats and species of European sites as a result hydrological connectively between the development and conservation features.

1.6. Previous Appropriate Assessments undertaken for Activities in Gweedore Bay

1.6.1. Marine Institute – Stage 2 Natura Impact Statement

In 2016 the Marine Institute undertook a Stage 2 NIS of aquaculture, seaweed harvesting and fishing activities at Gweedore Bay and Islands SAC on behalf of DAFM (Marine Institute 2016; see **Appendix 1**). At the time of the assessment there were a total of 25 aquaculture sites (licenced and applications) within the SAC (see **Figure 1-2**). The likely interaction and impact of aquaculture activities at these sites on the Conservation Features (Annex I habitats and Annex II species) of SACs was considered.

The assessment concluded that the level of aquaculture activity (both existing and proposed) at the time of the assessment (2016) were consistent with the Conservation Objectives for the Annex I Habitats and Annex II Species of the SAC. Furthermore, it was concluded that the activities in the Bay would not give rise to significant in-combination disturbance effects.

The location of T12/410A and T12/410B relative to application and licensed sites that were considered in the 2016 Stage 2 NIS are shown in **Figure 1-3**.

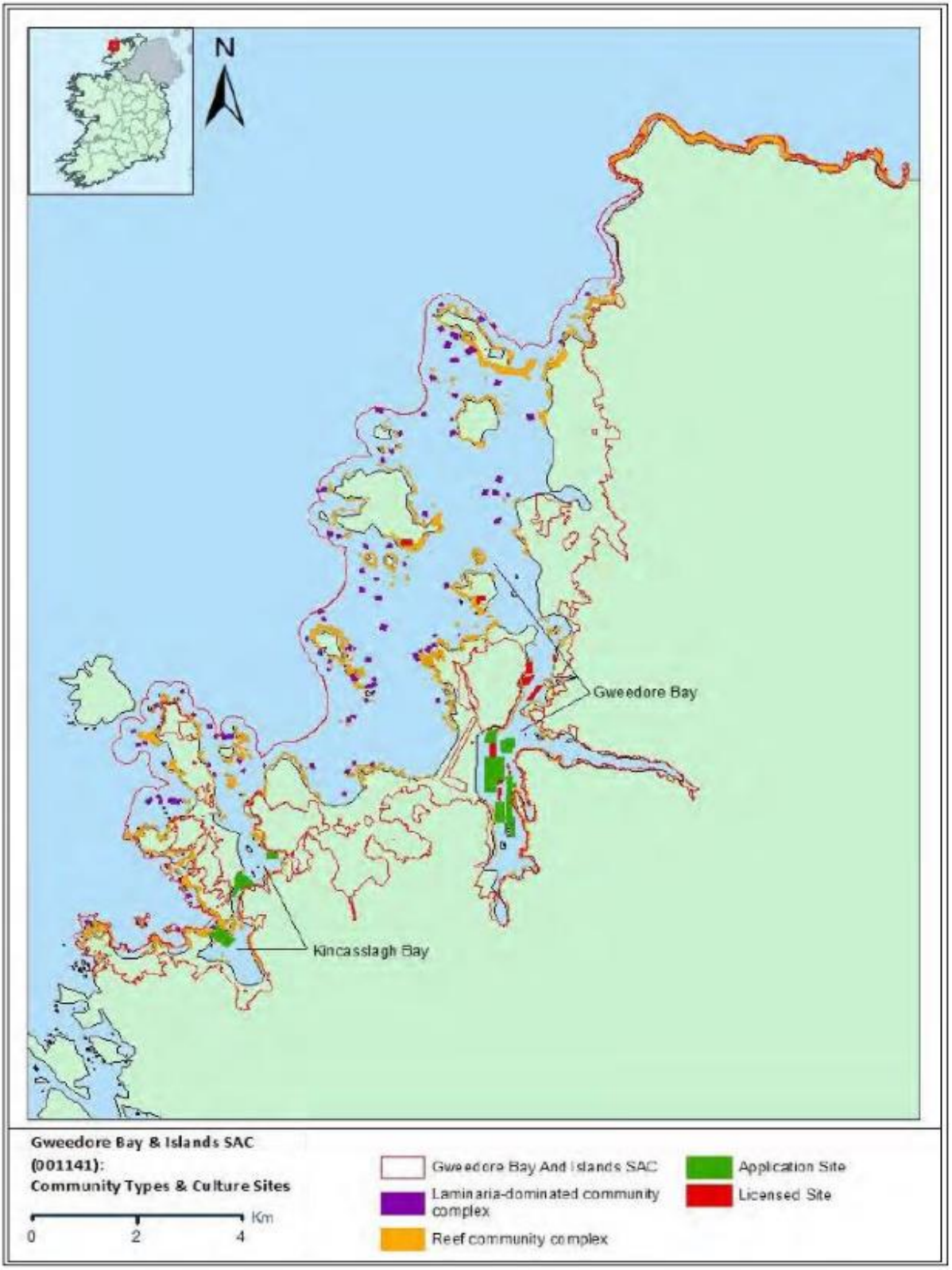

Figure 1-2: Aquaculture sites considered in Marine Institute AA undertaken in 2016 (image from Marine Institute 2016).

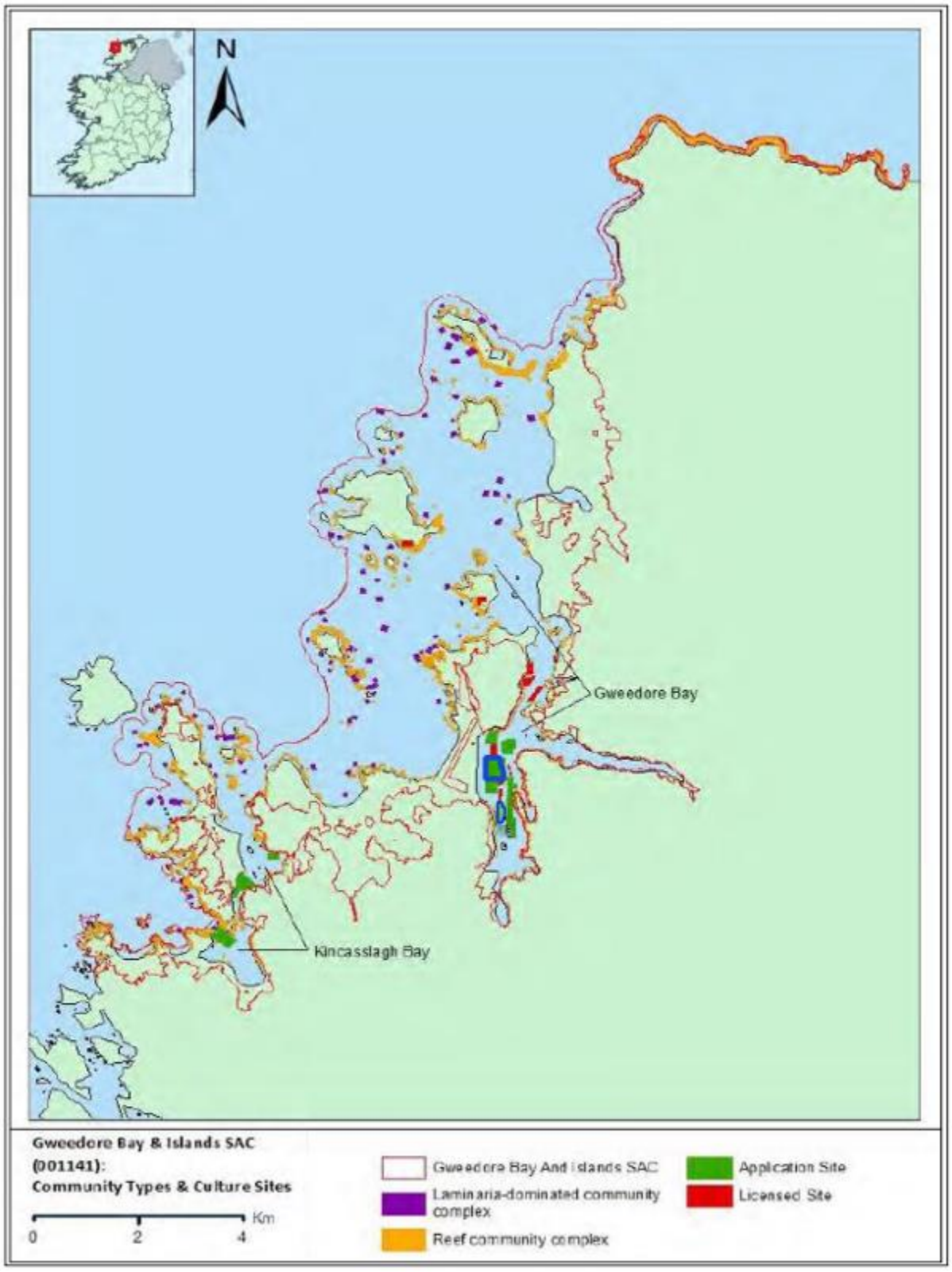

Figure 1-3: T12/410A&B relative to aquaculture sites considered in Marine Institute AA undertaken in 2016 (image modified from Marine Institute 2016).

1.6.2. Aquaculture Licence Appeals Board – Stage 1 Screening for Appropriate Assessment

In April 2019, a Screening for AA of aquaculture sites within Gweedore Bay & Islands SAC (Site Code: 001141) was undertaken by Dr Olivia Crowe on behalf of the Aquaculture Licence Appeals Board (ALAB) (Crowe 2019; see **Appendix 2**). At the time of writing the there were a total of 25 existing and proposed aquaculture sites within the Bay with an estimated spatial overlap of 58 hectares of intertidal habitats; all of the sites were considered in the Screening for AA.

The Screening for AA considered bird Conservation Features of nearby European sites. The report concluded that:

> '*it was possible to rule out the possibility that usage by the Common Gull SCIs of the West Donegal Islands and Inishbofin, Inishdooey and Inishbeg SPAs and the Lesser Black-backed Gull SCI of the Inishbofin, Inishdooey and Inishbeg SPA of the proposed aquaculture development area at Gweedore Bay for feeding and/ or roosting will not be negatively affected. Therefore, it is recommended that the assessment progress to a stage 2 Appropriate Assessment*'.

The reasons for the conclusions were as follows:

1. The proposed development of aquaculture sites within Gweedore Bay will result in the loss of 58 ha of intertidal habitats potentially used by the abovementioned SCIs for feeding and/ or roosting.
2. Several cumulative impacts have been identified that may, in combination with the above development, exacerbate further the impacts on the SCIs. They include:
    a. Additional proposals for aquaculture development (largely oyster cultivation) elsewhere and in relatively close proximity to the Gweedore Bay aquaculture sites.
    b. High levels of recreational disturbance which if not regulated may temporarily or even permanently displace the SCIs from the area.
    c. Sea and river angling which could potentially affect prey availability, especially for Lesser Black-backed Gull which is reliant on fish prey.

The Screening for AA assessment undertaken in April 2019 considered T12/410A&B (see **Figure 1-4**).

Figure 1-4: Aquaculture sites considered in Screening for AA undertaken in April 2019 (image from Crowe 2019).

2. Screening for Appropriate Assessment

2.1. Management of European Site(s)

Regulation 42 (1) of the 2011 Birds and Natural Habitats Regulations requires that:

> *A screening for Appropriate Assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which* ***is not directly connected with or necessary to the management of the site as a European Site****, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or in combination with other plans or projects is likely to have a significant effect on the European site*.

The proposed project activities are not associated with the 'management' of European sites within the Natura 2000 Network having regard to Article 6 of the Habitats Directive, and as such it is appropriate that the proposed project is subject to a screening for AA.

This screening assessment investigates, in view of best scientific knowledge, whether the proposed project, individually or in combination with other plans and projects, would be likely to have a significant effect on European sites.

As outlined in **Section 1.1** this *Screening Statement for AA and NIS*, which has been prepared to address Article 6(3) obligations of the Habitats Directive and associated national regulations, focuses on the potential effect to European sites associated with the proposed project activities.

Section 2.2 below describes the proposed project activities while **Section 2.3** considers the likelihood of significant effects of the project on European sites both in isolation and in combination with other projects.

2.2. Description of Project

This assessment considers the potential effect of aquaculture activities at T12/410A&B on European sites (*i.e.* SACs and SPAs).

Gweedore Bay is tidal and shallow, and completely drains during low spring tides exposing extensive sandflats.

Gweedore Bay is important for the on-growing of Pacific Oyster *Crassostrea gigas*. Current oyster cultivation within Gweedore Bay and Islands SAC is a form of intensive culture with oyster seed

cultivated using the bag and trestle method within the intertidal zone, either to half grown or fully-grown size. The spatial extent of site T12/410A&B is approximately 17.4Ha.

The following description of aquaculture activities within Gweedore Bay is adapted from Marine Institute (2016).

> *The bag and trestle method uses steel table-like structures which rise from the shore to just above knee height on the middle to lower intertidal zone, arrayed in double rows with wide gaps between the paired rows to allow for access.*
>
> *Trestles used are made from steel and typically between 3 in length, are approximately 1 metre in width and stand between 0.5 and 0.7 metre in height. In general, oyster farms are positioned between mean Low Water Spring and mean Low Water Neap, allowing on average between 2 and 5 hours exposure depending on location, tidal and weather conditions. The trestles hold typically hold six HDPE mesh bags approximately 1m by 0.5m by 10cm, using rubber and wire clips to close the mesh bags and to fasten them to the trestles.*
>
> *The production cycle begins in Gweedore Bay when oyster seed is brought to the service site either in spring or late summer of each year. The majority of oyster seed is bought in from oyster nurseries in France, most notably France Nissian. Oysters are thinned out and graded as the oysters grow. As the oysters grow, they will be taken to the handling / sorting facility twice per year for grading and re-packing, and returned to the trestles. In the final stage they will be 'hardened' in the upper intertidal area, before removal, grading, bagging and delivery. Time to harvest, depending on intake size, ranges from 2 to 3 years, where they will have reached 60 – 70g. At reaching market size oysters are in bags of about 120. In 2015, the combined production at the licenced sites was estimated to be 100 tonnes.*
>
> *Farms on the intertidal area are typically accessed during spring tides (at low tide) using vans or tractors. Preparatory work is always conducted in the service areas in the intervening periods, including grading and packing, preparation of bags and trestles and general maintenance work which includes shaking and turning of bags, and hand removal of fouling and seaweed to ensure maintenance of water flow through the bags when submerged.*

The following, adapted from Gittings and O'Donoghue (2012), provides further detail of typical intertidal oyster aquaculture practices in Ireland:

> *Oyster trestles vary in height but are typically do not exceed 0.5 m height and their height above the sediment is often less as they sink into the sediment. The trestles are usually arranged in single or paired rows with a separation of around 4 m between rows and with wider (10-20 m) access*

lanes. Where the trestles occur on open sandflats the rows are usually orientated more or less perpendicularly to the tideline.

Oyster spat is supplied by hatcheries and is placed in mesh bags. Generally, only a proportion of the trestles hold oyster bags at any one time. The bags are placed on top of the trestles, where they are on-grown until they are ready for harvesting. The function of the trestles is to keep the animals off the seabed, preventing grit getting inside the oysters, providing increased water flow and allowing suitable shell growth. The mesh bags facilitate stock handling and prevent predation.

Oyster husbandry activities mainly take place during spring low tides. Workers usually access the trestles by driving tractors across the beach and will often drive through shallow water on the receding tide to make the most use of the time available. Husbandry activities involve turning the mesh bags every spring tide to rid the bags of any settled silt, stop the growth of oyster shell into the mesh and destroy fouling organisms.

2.3. Characteristics of European Site(s)

2.3.1. Source-Pathway-Receptor and Impact Assessment

2.3.1.1. Overview

As outlined in **Section 1.3** above, this *Screening Statement for AA and NIS* has been prepared to address Article 6(3) obligations under the Habitats Directive and focuses on the potential effects of the project to European sites.

In order to establish the Zone of Influence of the proposed development, the assessment of connectivity between impact mechanisms (or source) and a Conservation Feature (*i.e.* QIs of SACs and SCIs of SPAs) considers the location of the development relative to habitats and non-mobile species, species foraging distances and migration routes, and the proximity of the development to foraging and breeding areas, and potential changes in species behaviour, potential hydrological connectivity between the development and Conservation Features, effects on prey species resulting in alteration in interactions and associated impacts.

To inform the assessment of risk to European sites, nationally available data on protected habitats and species was mapped using a Geographic Information System (GIS) and interrogated to identify for source-pathway-receptor connectivity. The source (potential impact mechanisms), pathways (hydrological, physical or ecological connectivity) and receptors (QIs and SCIs of the European sites) were identified using GIS software, and through the examination of aerial photography.

The assessment of project impact sources (or mechanisms) considers all relevant aspects of the proposed development that have the potential to directly or indirectly effect Conservation Feature.

2.3.1.2. Methodology

Guidance outlines that the potential zone of impact of a project must be evaluated on a case-by-case basis with reference to the nature, size and location of the project, the sensitivities of the ecological receptors, and the potential for in combination effects.

In order to establish the zone of impact of the proposed project, the assessment of connectivity between project impact mechanisms (or source) and a conservation feature (*i.e.* QIs of SACs and SCIs of SPAs) considers the location of the project relative to habitats and non-mobile species, species foraging distances and migration routes, and the proximity of the project to foraging and breeding areas, and potential changes in species behaviour, effects on prey species resulting in alteration in interactions and associated impacts.

To inform the assessment, nationally available data on protected habitats and species was mapped using a Geographic Information System (GIS) and interrogated to identify for source-pathway-receptor connectivity. The source (potential project impact mechanisms), pathways (hydrological, physical or ecological connectivity) and receptors (conservation features) were identified using GIS software, and through the examination of aerial photography and a review of ecological surveys undertaken in the area. Any conservation feature identified to have a viable source pathway-receptor link to the proposed project were then examined further to determine the potential for significant effects. The assessment of project impact sources (or mechanisms) considers all relevant aspects of the proposed project that have the potential to directly or indirectly effect conservation features.

2.3.1.3. Assessment of Potential Significant Effects

This section presents screening assessments of the potential effects (direct or indirect) of impact mechanisms associated with the development to Conservation Features of European sites.

Where the risk of a significant effect to a designated Conservation Feature from activities can be **excluded** on the basis of objective evidence, the Conservation Feature and impact mechanism combination is **screened out** of further assessment.

In contrast, where a significant effect to a designated Conservation Feature from activities **cannot be excluded** on the basis of objective evidence, the designated feature and the impact mechanism combination is screened in as requiring further detailed consideration of the potential for adverse effects.

2.3.1.4. Identification of Relevant SACs and SPAs

Adopting a precautionary principle, the assessment considered European sites within a 15km buffer area of the proposed development site were included in this assessment (see **Figure 2-1** and **Figure 2-2**). The European sites within 15km of the area are:

- Gweedore Bay and Islands SAC (Site code: 001141) (0km from site)
- Fawnboy Bog/Lough Nacung SAC (Site code: 000140) (2.56km from site)
- Cloghernagore Bog and Glenveagh National Park SAC (Site code: 002047) (5.71km from site)
- Rutland Island and Sound SAC (Site code: 002283) (8.06km from site)
- Aran Island (Donegal) Cliffs SAC (Site code: 000111) (11.95km from site)
- Gannivegil Bog SAC (Site code: 000142) (14.55km from site)
- Termon Strand SAC (Site code: 001195) (13.20km from site)
- Ballyness Bay SAC (Site code: 001090) (14.38km from site)
- West Donegal Coast SPA (Site code: 004150) (0.43km from site)
- Derryveagh and Glendowan Mountains SPA (Site code: 004039) (2.57km from site)
- West Donegal Islands SPA (Site code: 004230) (3.97km from site)
- Illancrone and Inishkeeragh SPA (Site code: 004132) (13.37km from site)
- Falcarragh to Meenlaragh SPA (Site code: 004149) (14.63km from site)
- Inishbofin, Inishdooey and Inishbeg SPA (Site code: 004083) (17.13km from site)

In addition, to those sites within 15km of the site, the assessment also considered the Inishbofin, Inishdooey and Inishbeg SPA (Site code: 004083) which is located approximately 17.13km from the site (see **Figure 2-2**).

The QIs and SCIs of the above listed SACs and SPAs are listed in **Table 2.1** and

Table 2.2. In **Table 2.1** and

Table 2.2 the QIs and SCIs are assigned to broad ecological groups and feeding guilds respectively.

A preliminary assessment of potential pathways of effect existing between the project activities and the European sites is presented in **Section 2.3.1.5** below.

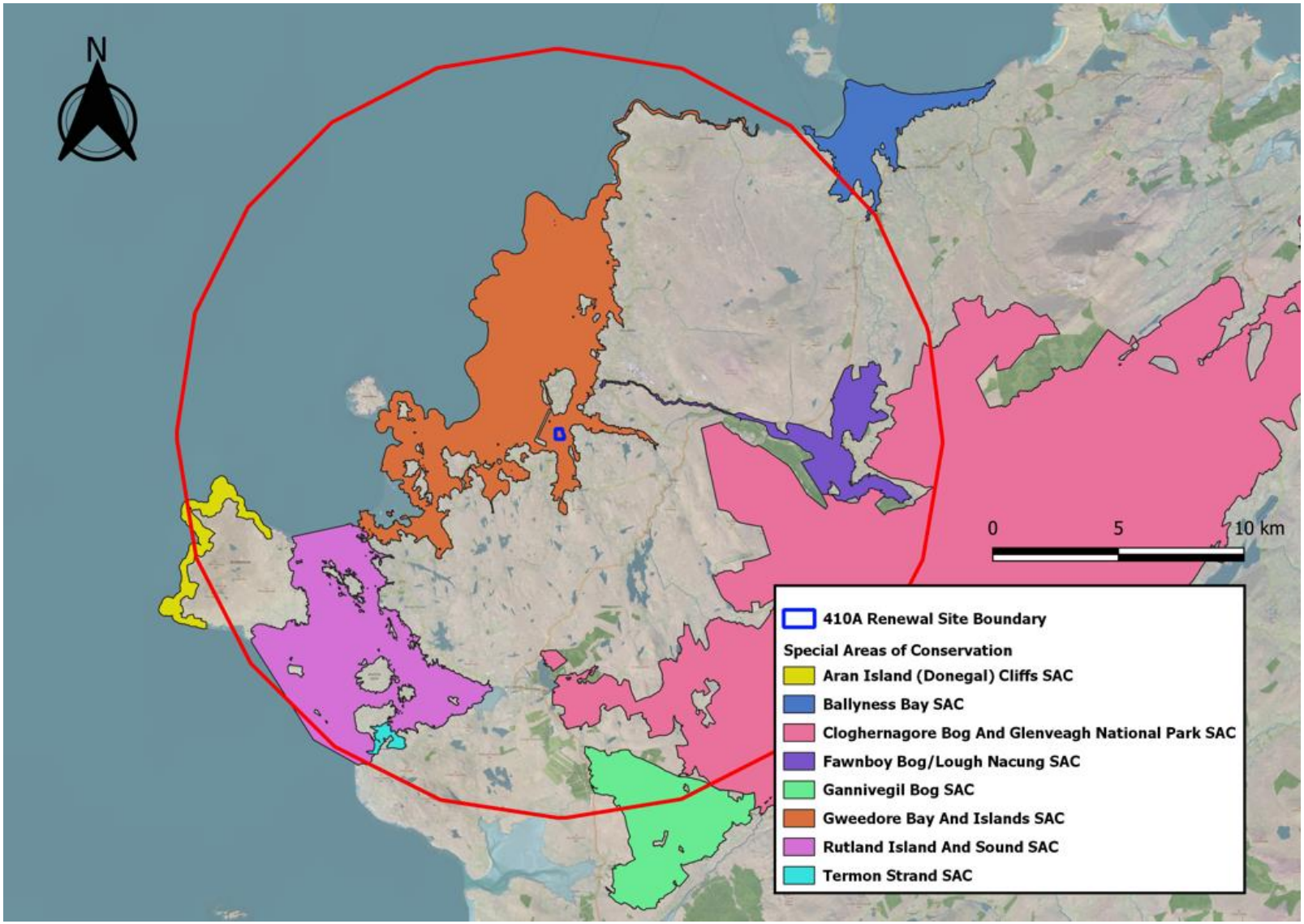

Figure 2-1: SACs.

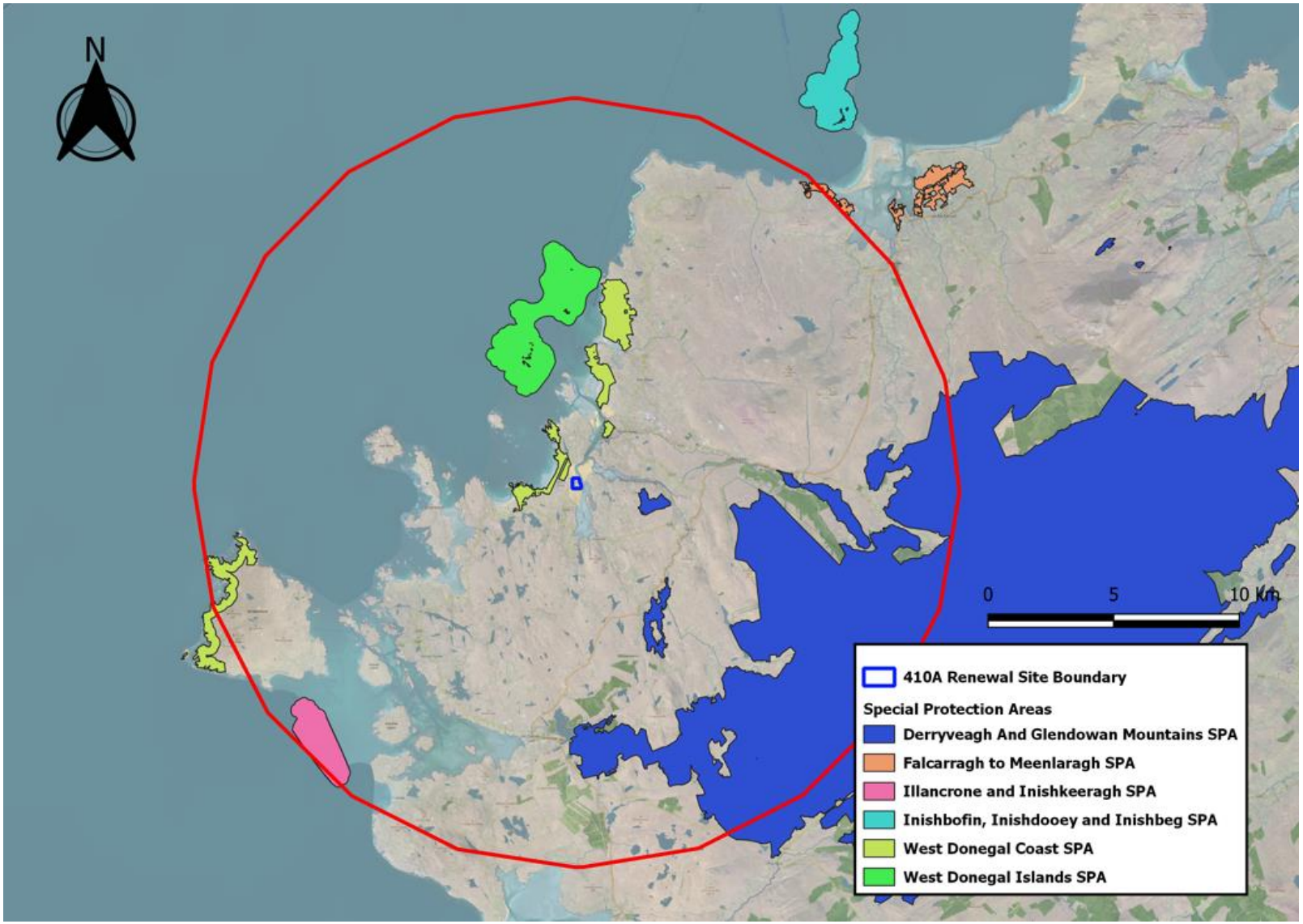

Figure 2-2: SPAs.

Table 2.1: Qualifying Interests of SACs

Gweedore Bay and Islands SAC (NPWS, 2015[4])		
Qualifying Interest Ecological Group (NPWS 2011)	**Qualifying Interest (*=Priority Habitat)**	**Conservation Objective**
Annex I marine/ estuarine/ coastal habitats	Reefs [1170]	To maintain the favourable conservation condition
	Coastal lagoons [1150]	To restore the favourable conservation condition
	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]	To maintain the favourable conservation condition
	Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	To maintain the favourable conservation condition
	Perennial vegetation of stony banks [1220]	To maintain the favourable conservation condition
	Embryonic shifting dunes [2110]	To maintain the favourable conservation condition
	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	To maintain the favourable conservation condition
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	To restore the favourable conservation condition
	Decalcified fixed dunes with *Empetrum nigrum* [2140]	To maintain the favourable conservation condition
	Dunes with Salix repens ssp. argentea (*Salicion arenariae*) [2170]	To maintain the favourable conservation condition
	Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150]	To maintain the favourable conservation condition
	Humid dune slacks [2190]	To maintain the favourable conservation condition
	Machairs (* in Ireland) [21A0]	To restore the favourable conservation condition
Annex I terrestrial/ freshwater aquatic habitats	European dry heaths [4030]	To maintain the favourable conservation condition
	Alpine and Boreal heaths [4060]	To maintain the favourable conservation condition

[4] NPWS 2011 Conservation Objectives Gweedore Bay and Islands SAC 001141 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001141.pdf

Gweedore Bay and Islands SAC (NPWS, 2015[4])		
Qualifying Interest Ecological Group (NPWS 2011)	**Qualifying Interest (*=Priority Habitat)**	**Conservation Objective**
	Juniperus communis formations on heaths or calcareous grasslands [5130]	To restore the favourable conservation condition
Annex II terrestrial species	*Euphydryas aurinia* (Marsh Fritillary) [1065]	To restore the favourable conservation condition
Annex II plant species	*Petalophyllum ralfsii* (Petalwort) [1395]	To maintain the favourable conservation condition
	Najas flexilis (Slender Naiad) [1833]	To maintain the favourable conservation condition
Annex II aquatic mammal species	*Lutra* (Otter) [1355]*	To maintain the favourable conservation condition

Fawnboy Bog/Lough Nacung SAC (NPWS 2017[5])		
Qualifying Interest Ecological Group (NPWS 2019)	**Qualifying Interest (*=Priority Habitat)**	**Conservation Objective**
Annex I terrestrial habitats	Northern Atlantic wet heaths with *Erica tetralix* [4010]	To restore the favourable conservation condition
	Blanket bogs (* if active bog) [7130]	To restore the favourable conservation condition
	Depressions on peat substrates of the Rhynchosporion [7150]	To restore the favourable conservation condition
Annex II mollusc species	*Margaritifera* (Freshwater Pearl Mussel) [1029]	No conservation Objective defined 2016

[5] NPWS 2014 Conservation Objectives Fawnboy Bog/Lough Nacung SAC 000140 https://www.nhttps://www.npws.ie/sites/default/files/publications/pdf/Fawnboy%20Bog,%20Lough%20Nacung%20SAC%20(000140)%20Conservation%20objectives%20supporting%20document%20-%20Upland%20habitats%20[Version%201].pdf

Cloghernagore Bog and Glenveagh National Park SAC (NPWS 2011[6])		
Qualifying Interest Ecological Group (NPWS 2019)	**Qualifying Interest (*=Priority Habitat)**	**Conservation Objective**
Annex I aquatic/ terrestrial habitats	Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]	To maintain the favourable conservation condition
	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]	To maintain the favourable conservation condition
	Northern Atlantic wet heaths with *Erica tetralix* [4010]	To restore the favourable conservation condition
	European dry heaths [4030]	To restore the favourable conservation condition
	Alpine and Boreal heaths [4060]	To restore the favourable conservation condition
	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) [6410]	To maintain the favourable conservation condition
	Blanket bogs (* if active bog) [7130]	To restore the favourable conservation condition
	Depressions on peat substrates of the *Rhynchosporion* [7150]	To restore the favourable conservation condition
	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	To restore the favourable conservation condition
Annex II freshwater invertebrate /diadromous fish /aquatic mammal species	*Margaritifera* (Freshwater Pearl Mussel) [1029]	To restore the favourable conservation condition
	Salmo salar (Salmon) [1106]	To maintain the favourable conservation condition
	Lutra (Otter) [1355]	To maintain the favourable conservation condition

[6] NPWS 2017 Conservation Objectives Cloghernagore Bog and Glenveagh National Park SAC 002047 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002047.pdf

Rutland Island and Sound SAC (NPWS 2013[7])		
Qualifying Interest Ecological Group (NPWS 2019)	**Qualifying Interest (*=Priority Habitat)**	**Conservation Objective**
Annex I marine/ estuarine/ coastal habitats	Coastal lagoons [1150]	To maintain the favourable conservation condition
	Large shallow inlets and bays [1160]	To maintain the favourable conservation condition
	Reefs [1170]	To maintain the favourable conservation condition
	Annual vegetation of drift lines [1210]	To maintain the favourable conservation condition
	Embryonic shifting dunes [2110]	To maintain the favourable conservation condition
	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	To maintain the favourable conservation condition
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	To maintain the favourable conservation condition
	Humid dune slacks [2190]	To maintain the favourable conservation condition
Annex II marine mammal species	*Phoca vitulina* (Common Seal) [1365]	To maintain the favourable conservation condition

Ballyness Bay SAC (NPWS 2013[8])		
Qualifying Interest Ecological Group (NPWS 2019)	**Qualifying Interest (*=Priority Habitat)**	**Conservation Objective**
Annex I marine/ estuarine/ coastal habitats	Estuaries [1130]	To maintain the favourable conservation condition
	Mudflats and sandflats not covered by seawater at low tide [1140]	To maintain the favourable conservation condition
	Embryonic shifting dunes [2110]	To maintain the favourable conservation condition

[7] NPWS 2013 Conservation Objectives Rutland Island and Sound SAC https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002283.pdf

[8] NPWS 2014 Conservation Objectives Ballyness Bay SAC https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001090.pdf

Ballyness Bay SAC (NPWS 2013[8])		
Qualifying Interest Ecological Group (NPWS 2019)	**Qualifying Interest (*=Priority Habitat)**	**Conservation Objective**
	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	To maintain the favourable conservation condition
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	To restore the favourable conservation condition
	Humid dune slacks [2190]	To maintain the favourable conservation condition
Annex II terrestrial species	*Vertigo geyeri* (Geyer's Whorl Snail) [1013]	To maintain the favourable conservation condition

Aran Island (Donegal) Cliffs SAC (NPWS 2016[9])		
Qualifying Interest Ecological Group (NPWS 2019)	**Qualifying Interest (*=Priority Habitat)**	**Conservation Objective**
Annex I marine/ estuarine/ coastal habitats	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	To maintain the favourable conservation condition
	Submerged or partially submerged sea caves [8330]	To maintain the favourable conservation condition
	Siliceous rocky slopes with chasmophytic vegetation [8220]	To maintain the favourable conservation condition
	Calcareous rocky slopes with chasmophytic vegetation [8210]	To maintain the favourable conservation condition
Annex I terrestrial habitats	Alpine and Boreal heaths [4060]	To maintain the favourable conservation condition
	European dry heaths [4030]	To restore the favourable conservation condition

[9] NPWS 2016 Conservation Objectives Aran Island (Donegal) Cliffs SAC 000111 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000111.pdf

Gannivegil Bog SAC (NPWS 2017[10])		
Qualifying Interest Ecological Group (NPWS 2019)	**Qualifying Interest (*=Priority Habitat)**	**Conservation Objective**
Annex I terrestrial habitats	Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) [3110]	To maintain the favourable conservation status
	Northern Atlantic wet heaths with *Erica tetralix* [4010]	To restore the favourable conservation status
	Blanket bogs (* if active bog) [7130]	To restore the favourable conservation status

Termon Strand SAC (NPWS 2016[11])		
Qualifying Interest Ecological Group (NPWS 2019)	**Qualifying Interest (*=Priority Habitat)**	**Conservation Objective**
Annex I coastal habitats	Coastal lagoons [1150]	To maintain or restore the favourable conservation status

[10] NPWS 2016 Conservation Objectives Gannivegil Bog SAC 000142 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000142.pdf

[11] NPWS 2016 Conservation Objectives Termon Strand SAC 001195 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001195.pdf

Table 2.2: Special Conservation Interest Species of SPA

West Donegal Coast SPA (NPWS 2012[12]).		
Foraging Guild (after Weller 1999[13] and NPWS 2011[14])	**Special Conservation Interest Species**	**Conservation Objective**
Water column diver (deeper)	A017 Cormorant (*Phalacrocorax carbo*) A018 Shag (*Phalacrocorax aristotelis*) A188 Razorbill (*Alca torda*)	To maintain or restore the favourable conservation condition
Surface swimmer/ Water column diver (shallow)	A188 Kittiwake (*Rissa tridactyla*)	To maintain or restore the favourable conservation condition
Surface swimmer/ Water column diver (shallow)/ Intertidal walker (out of and in water) / Terrestrial walker	A184 Herring Gull (*Larus argentatus*)	To maintain or restore the favourable conservation condition
Terrestrial walker	A346 Chough (*Pyrrhocorax pyrrhocorax*)	To maintain or restore the favourable conservation condition
Water column diver (shallow and deeper)	A009 Fulmar (*Fulmarus glacialis*)	To maintain or restore the favourable conservation condition
Bird of prey	A103 Peregrine (*Falco peregrinus*)	To maintain or restore the favourable conservation condition

[12] NPWS 2020. Conservation Objectives West Donegal Coast SPA 004150 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004150.pdf

[13] Weller, M. W. (1999) Wetland Birds: habitat resources and conservation implications. Cambridge University Press. UK.

[14] NPWS 2011. Wexford Harbour and Slobs SPA & The Raven SPA Conservation Objectives Supporting Document https://www.npws.ie/sites/default/files/publications/pdf/4076_4019_Wexford%20Harbour%20and%20Slobs%20&%20The%20Raven%20SPAs%20Supporting%20Doc_V1.pdf

Falcarragh to Meenlaragh SPA (NPWS 2012[15]).		
Foraging Guild (after Weller 1999[11] and NPWS 2011[12])	**Special Conservation Interest Species**	**Conservation Objective**
Terrestrial walker	A122 Corncrake (*Crex crex*)	To maintain or restore the favourable conservation condition

Inishbofin, Inishdooey and Inishbeg SPA (NPWS 2020[16]).		
Foraging Guild (after Weller 1999[11] and NPWS 2011[12])	**Special Conservation Interest Species**	**Conservation Objective**
Terrestrial, walker (e.g. grassland/marsh)	A045 Barnacle Goose (*Branta leucopsis*) A122 Corncrake (*Crex crex*)	To maintain or restore the favourable conservation condition
Surface swimmer, Water column diver – shallow, Intertidal walker, out of water, Intertidal walker in water, Terrestrial, walker (e.g. grassland/marsh)	A182 Common Gull (*Larus canus*) A183 Lesser Black-backed Gull (*Larus fuscus*)	To maintain or restore the favourable conservation condition
Water column diver (shallow)	A194 Arctic Tern (*Sterna paradisaea*)	To maintain or restore the favourable conservation condition

[15] NPWS 2020. Conservation Objectives Falcarragh to Meenlaragh SPA 004149 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004149.pdf

[16] NPWS 2020. Conservation Objectives Inishbofin, Inishdooey and Inishbeg SPA 0004083 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004083.pdf

Illancrone and Inishkeeragh SPA (NPWS 2020[17]).		
Foraging Guild (after Weller 1999[11] and NPWS 2011[12])	**Special Conservation Interest Species**	**Conservation Objective**
Terrestrial walker (e.g. grassland/marsh)	A045 Barnacle Goose (*Branta leucopsis*)	To maintain or restore the favourable conservation condition
Water column diver (deeper)	A193 Common Tern (*Sterna hirundo*) A194 Arctic Tern (*Sterna paradisaea*) A195 Little Tern (*Sternula albifrons*[18])	To maintain or restore the favourable conservation condition

Derryveagh and Glendowan Mountains SPA (NPWS 2020[19]).		
Foraging Guild (after Weller 1999[11] and NPWS 2011[12])	**Special Conservation Interest Species**	**Conservation Objective**
Bird of Prey	A103 Peregrine (*Falco peregrinus*) A098 Merlin (*Falco columbarius*)	To maintain or restore the favourable conservation condition
Intertidal walker (out of water)	A140 Golden Plover (*Pluvialis apricaria*) A466 Dunlin (*Calidris alpina schinzii*)	To maintain or restore the favourable conservation condition
Water column diver (deeper)	A001 Red-throated Diver (*Gavia stellata*)	To maintain or restore the favourable conservation condition

[17] NPWS 2020. Conservation Objectives Illancrone and Inishkeeragh SPA 004132 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004132.pdf

[18] Little tern was previously assigned to the genus *Sterna*

[19] NPWS 2020. Conservation Objectives Derryveagh and Glendowan Mountains SPA 004039 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004039.pdf

West Donegal Islands SPA (NPWS 2020[20]).		
Foraging Guild (after Weller 1999[11] and NPWS 2011[12])	**Special Conservation Interest Species**	**Conservation Objective**
Water column diver (deeper)	A018 Shag (*Phalacrocorax aristotelis*)	To maintain or restore the favourable conservation condition
Terrestrial walker (e.g. grassland/marsh)	A045 Barnacle Goose (*Branta leucopsis*) A122 Corncrake (*Crex crex*)	To maintain or restore the favourable conservation condition
Surface swimmer, Water column diver – shallow, Intertidal walker, out of water, Intertidal walker in water, Terrestrial, walker (e.g. grassland/marsh)	A182 Common Gull (*Larus can*us) A184 Herring Gull (*Larus argentat*us)	To maintain or restore the favourable conservation condition

[20] NPWS 2020. Conservation Objectives West Donegal Islands SPA 004230 https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO004230.pdf

2.3.1.5. Preliminary Screening

2.3.1.5.1. SAC Sites

Gweedore Bay and Islands SAC

The proposed site is located within the Gweedore Bay and Islands SAC. The site is designated for Annex I marine/ estuarine/ coastal habitats and Annex I terrestrial/ freshwater aquatic habitats; the proposed site does not overlap the Annex I habitat, consequently potential significant effects are excluded. The proposed site is located a significant distance from areas supporting Annex II terrestrial and plant species; consequently, there it is concluded that there is no potential pathway for significant effects and the Conservation Features are excluded from further assessment.

The site is also designated for the Annex II aquatic mammal species Otter. As there is potential that otter may occur at the proposed site and thereby be affected by operations, this QI is brought forward to the assessment of potential significant effects in Section 2.3.1.6.

Fawnboy Bog/Lough Nacung SAC

The SAC is located 2.56km north of the project and is designated for Annex I terrestrial habitats and Annex II mollusc species. The QIs are located upstream of the project and there is no potential pathway for effect; the SAC is excluded from further assessment.

Cloghernagore Bog and Glenveagh National Park SAC

The SAC is located 5.71km south east of the project. Given the distance of the sites from the SAC, potential significant effects to Annex I aquatic/ terrestrial habitats and Annex II freshwater invertebrate /diadromous fish are excluded.

In contrast, there is potential that Annex II aquatic species otter may occur at the proposed site, consequently there are potential for *ex-situ* effects. This QI is brought forward to the assessment of potential significant effects in Section 2.3.1.6.

Rutland Island and Sound SAC

The site is located 8.06km north of the proposed site. The SAC is designated for a range of Annex I habitats. Given the significant distance of the SAC from the proposed site, potential significant effects are excluded.

The site is also designated for the Annex II marine mammal species *Phoca vitulina* (Common Seal) [1365]. There is potential that *Phoca vitulina* (Common Seal) [1365] of the SAC may occur in the project area; consequently, there is potential for *ex-situ* effects. This QI is brought forward to the assessment of potential significant effects in Section 2.3.1.6.

Aran Island (Donegal) Cliffs SAC

The Aran Island (Donegal) Cliffs SAC is located 11.95km north west of the proposed cultivation site. The site is designated for Annex I coastal habitats. There is no potential pathway for significant effect between the project site and the Annex I coastal habitats of the SAC; this SAC is excluded.

Gannivegil Bog SAC

Gannivegil Bog SAC is located 14.55km south of the proposed oyster cultivation site. The site is designated for aquatic/terrestrial habitats. There is no potential pathway for significant effect between the project site and the Annex I coastal habitats of the SAC; this SAC is excluded.

Termon Strand SAC

The SAC is located 13.20km south of the proposed site. The SAC is designated for Annex I coastal habitat Coastal lagoons [1150]. There is no potential pathway for significant effect between the project site and the Annex I coastal habitats of the SAC; this SAC is excluded from further assessment.

Ballyness Bay SAC

The SAC is located 14.38km north of the proposed site. The SAC is designated for Annex I marine and coastal habitats and terrestrial species; there is no potential pathway for significant effect between the project site and the Annex I coastal habitats of the SAC; this SAC is excluded.

2.3.1.5.2. SPA Sites

The SPAs considered in this assessment are:

- West Donegal Coast SPA (Site code: 004150) (0.43km from site)
- Derryveagh and Glendowan Mountains SPA (Site code: 004039) (2.57km from site)
- West Donegal Islands SPA (Site code: 004230) (3.97km from site)
- Illancrone and Inishkeeragh SPA (Site code: 004132) (13.37km from site)
- Falcarragh to Meenlaragh SPA (Site code: 004149) (14.63km from site)
- Inishbofin, Inishdooey and Inishbeg SPA (Site code: 004083) (17.13km from site)

Given the mobile nature of the bird SCI species for which the SPAs are designated, there is potential that the species may occur at the site and thereby be affected by the proposed activities.

Section 2.3.1.6 below presents the screening of potential significant effects to the SCI species of these SPAs undertaken in April 2019 (Crowe 2019).

2.3.1.6. Assessment of Potential Significant Effects to QIs of SACs

This section describes the screening assessments of the potential effects to:

- Annex II aquatic mammal species *Lutra* (Otter) [1355]
    - Gweedore Bay and Islands SAC (Site code: 001141)
    - Cloghernagore Bog and Glenveagh National Park SAC (Site code: 002047)
- Annex II marine mammal species *Phoca vitulina* (Common Seal) [1365].
    - Rutland Island and Sound SAC (Site code: 002283)

2.3.1.6.1. Lutra (Otter) [1355]

The site synopsis report for Gweedore Bay and Islands SAC indicates that *Lutra* (Otter) at the site are considered to be common and breeding (NPWS 2015). Given the common occurrence and widespread distribution of otter within the SAC there is potential that the species may occur at the proposed site.

The Cloghernagore Bog and Glenveagh National Park SAC which is also designated for Otter is hydrologically connected Gweedore Bay and Islands SAC. As otters utilise freshwater habitats from estuary to headwaters there is potential that otter from Cloghernagore Bog and Glenveagh National Park SAC may occur at the proposed site.

Cultivation operations at the site including the presence of workers on the site, will result in some level of disturbance to otters using the area.

Given this potential for disturbance effects **potential significant effects cannot be excluded. The species is bought forward in the assessment for a detailed consideration of the potential for adverse effects (see Section 3 NIS).**

2.3.1.5.5 Phoca vitulina (Common Seal) [1365]

The Rutland Island and Sound SAC located 8.06km from the proposed site is designated for Annex II species Common seal. Common Seal have been reported to take foraging trips of up 220km (Sharples *et al.,* 2016). Given the wide ranging behaviour in the species there is potential that individuals from other SACs may occur in the project area during operations, and thereby be affected by operations.

As potential significant effects to the above Annex II species cannot be excluded, this species is bought forward in the assessment for a detailed consideration of the potential for adverse effects (see Section 3 NIS).

2.3.1.7. Assessment of Potential Significant Effects to SCI Bird Species of SPAs

This section presents the screening assessment undertaken by Crowe (2019) on behalf of ALAB.

The SPAs in the vicinity of Gweedore Bay have been designated for a diversity of bird species with varying habitat requirements. Gittings (2018) neatly grouped species for which SPAs close to Gweedore Bay are designated in terms of their broad habitat requirements, and a summary of the review of SCIs (Table 2) presents these species within these groups. This assessment shows the possible occurrence of seven species in the aquaculture area (highlighted in green in Table 2), and Gittings (2018) provides additional information and research that supports these findings. These species are Common Gull, Lesser Black-backed Gull, Herring Gull, Red-throated Diver, Golden Plover, Merlin and Peregrine. However, of these, there is potential negative impact on Common Gull and Lesser Black-backed Gull only. Of the remaining species:

- *Herring Gull: There is a high likelihood of spatial overlap with aquaculture activities, and previous studies have actually demonstrated positive impacts of trestles (Gittings & O'Donoghue 2016).*
- *Red-throated Diver: The specific breeding locations are unavailable due to the sensitivity of this species to disturbance and extremely low remaining population in Ireland (up to 6 pairs). They feed mostly in open waters, and it is expected that the likelihood of spatial overlap between breeding individuals and the aquaculture sites would be very low.*
- *Golden Plover: The SPA has been designated for breeding population, which remains largely in uplands habitats. There are no known records from the breeding season. It is expected that the likelihood of spatial overlap between breeding birds and the aquaculture sites would be very low.*
- *Merlin: Intertidal habitats are of known importance to foraging Merlin in winter, where large flocks of wintering waders occur. During the breeding months, their distribution is more confined to their inland breeding areas (Balmer et al. 2013), and they are less frequently reported from coastal locations, presumably at least in part because the availability of waders is very low outside the winter period. While Gweedore Bay is within the foraging range of breeding sites used by Merlin, it does not typically support large numbers of waders, and the likelihood of spatial overlap is expected to be very low.*
- *Peregrine: The locations of suitable breeding habitat within the SPAs for which Peregrine is listed (Derryveagh and Glendowan Mountains SPA and West Donegal Coast SPA) are some distance from the aquaculture sites, and based on their known foraging ranges it is expected that spatial overlap would be very low.*

The following SPAs are designated in part for Common Gull and/ or Lesser Black-backed Gull, and the aquaculture sites are within the known foraging ranges of both species:

- *West Donegal Islands SPA (004230): Three colonies of Common Gull, 4-7 km from the nearest aquaculture site at Gweedore Bay.*
- *Inishbofin, Inishdooey and Inishbeg SPA (004083): Common Gull and Lesser Black-backed Gull colonies located 17 km from the nearest aquaculture site at Gweedore Bay.*

Both species are regularly found in intertidal habitats for feeding and/ or roosting, and both species have been recorded in close proximity to the aquaculture sites (Bird Atlas 2007-2011 details presented on the website of the National Biodiversity Data Centre1, accessed 25/03/19). There is no available information that demonstrates that there is no effect of oyster trestles on either species and a precautionary assumption is made that the trestles will have a negative effect on the availability of foraging habitat. Furthermore, Gittings (2018) identified that the trestles are possibly located in the intertidal areas that are most productive within Gweedore Bay and in areas most likely to be used for feeding. Therefore it cannot be ruled out that the development of aquaculture sites within Gweedore Bay will have a negative effect on the Common Gull SCI of the West Donegal Islands SPA and on both the Common Gull and the Lesser Black-backed Gull SCIs of Inishbofin, Inishdooey and Inishbeg SPA.

***Table 2.** Qualifying interests of nearby SPAs, indicating the proximity of the proposed development to the nearest SPA for which the species is listed, as well as ecological characteristics that would reflect the occurrence of these species within the proposed development area (known usage of intertidal habitats and foraging range)*

Group	**Species**		**Distance to closest SPA**	**Regular usage of intertidal habitats**	**Within foraging range***
Geese	Barnacle Goose	Branta leucopsis	2.7	N	Y
	Greenland White-fronted Goose	Anser albifrons flavirostris	21	Y	N
Breeding seabirds	Fulmar	Fulmarus glacialis	0	N	Y
	Cormorant	Phalacrocorax carbo	0	Y	N
	Shag	P. aristotelis	0	N	Y
	Puffin	Fratercula arctica	21	N	Y
	Razorbill	Alca torda	0	N	Y
	Guillemot	Uria aalge	21	N	Y
	Little Tern	Sternula albifrons	12.8	Y	N
	Common Tern	Sterna hirundo	12.8	Y	N
	Arctic Tern	S. paradisaea	12.8	Y	N
	Kittiwake	Rissa tridactyla	0	N	Y
	Common Gull	Larus canus	2.7	Y	Y
	Lesser Black-	L. fuscus	14.5	Y	Y

Group	*Species*		*Distance to closest SPA*	*Regular usage of intertidal habitats*	*Within foraging range**
	backed Gull				
	Herring Gull	*L. argentatus*	*0*	*Y*	*Y*
Upland breeding birds	*Red-throated Diver*	*Gavia stellata*	*2*	*Y*	*Y*
	Golden Plover	*Pluvialis apricaria*	*2*	*Y*	*Y*
	Dunlin	*Calidris alpina*	*2*	*Y*	*Y*
	Merlin	*Falco columbarius*	*2*	*Y*	*Y*
Peregrine	*Peregrine*	*F. peregrinus*	*0*	*Y*	*Y*
Terrestrial species	*Chough*	*Pyrrhocorax pyrrhocorax*	*0*	*N*	*N*
	Corncrake	*Crex crex*	*2.7*	*N*	*N*

2.3.5 Plans or Projects That Might Act In Combination

Regulation 42 (1) of the 2011 Regulations requires that:

> *A screening for Appropriate Assessment of a plan or project for which an application for consent is received, or which a public authority wishes to undertake or adopt, and which is not directly connected with or necessary to the management of the site as a European Site, shall be carried out by the public authority to assess, in view of best scientific knowledge and in view of the conservation objectives of the site, if that plan or project, individually or* ***in combination with other plans or projects*** *is likely to have a significant effect on the European site*.

It is therefore required that the potential impacts of the proposed project be considered in combination with other relevant plans or projects.

The impact mechanism associated with the proposed activities that may result in significant effects to European sites is disturbance. The proposed oyster trestle cultivation requires intensive husbandry activity and this may cause disturbance effects to Common Gull SCI of the West Donegal Islands SPA, and, Common Gull and Lesser Black-backed Gull SCIs of the Inishbofin, Inishdooey and Inishbeg SPA using intertidal and/or shallow subtidal habitats at Gweedore bay through disturbance. Cultivation operations at the site including the presence of workers on the site, will result in some level of disturbance to Otter (*Lutra lutra*) territory and Common Seal (*Phoca vitulina*) using the area.

The assessment of potential in-combination effects considers the above potential impact mechanism associated with the proposed project that in-combination with other plans and project may result in significant effects.

To inform the assessment of potential in combination effects a review of consent applications for projects in the vicinity of the proposed project included on the following web-sites was completed in October 2020:

- DHPLG - EIA Portal https://www.housing.gov.ie/planning/environmental-assessment/environmental-impact-assessment-eia/eia-portal
- Donegal County Council (http://www.donegalcdb.ie/eplan/internetenquiry/rpt_querybysurforrecloc.asp)
- DAFM aquaculture database https://www.agriculture.gov.ie/seafood/engineering/publications/gisdata/

The assessment of potential in combination effects also considered *negative impacting threats and pressures* and *positive impacting activities/ management* affecting the sites as identified in Natura 2000 forms published for the SPA and SAC sites available through the NPWS website (https://www.npws.ie/protected-sites).

The findings of the review of consent application and assessment of in-combination effects are summarised in **Table 2.3**. It was concluded that there is **no potential likelihood for significant effects from the proposed project in combination with other plans or projects**.

Table 2.3: Screening Assessment of potential in combination effects.

Website	Assessment of Potential Cumulative or In-combination Effects	Conclusion
DHPLG - EIA Portal	Projects listed on the portal were located significant distance for the proposed project at Gweedore Bay. Given this distance, there is no potential for in cumulative effects in-combination with the proposed project.	No potential significant cumulative or in-combination effects
Donegal County Council Planning Applications	Typically, the applications made to Donegal County Council and published on the planning database consisted of extensions and renovations to existing houses, and retention of existing developments. These are small scale developments which do not have the potential to result in cumulative effects in-combination with the proposed project.	No potential significant cumulative or in-combination effects

Website	Assessment of Potential Cumulative or In-combination Effects	Conclusion
DAFM Aquaculture Database	There are currently ten licensed sites within inner Gweedore Bay, for the cultivation of the Pacific Oyster on trestles in intertidal areas (see **Figure 2-3**). The total spatial extent of the licenced areas is approximately 13.0ha. The spatial extent of the proposed T12/410A&B sites is approximately 14.7ha.	There is potential the existing and proposed aquaculture activity within Gweedore Bay may result in cumulative disturbance affects to *Lutra* (Otter) [1355] and *Phoca vitulina* (Common Seal) [1365]. Both A183 Lesser Black-backed Gull (*Larus fuscus*) A182 Common Gull (*Larus canus*) are reasonably tolerant of disturbance activities, but disturbance from existing and proposed aquaculture activity may result in cumulative impacts key roosting or feeding areas of one or both of the SCIs.

The assessment of in-combination effects undertaken by Crowe (2019) considered the following coastal/maritime activities taking pace in Gweedore Bay:

- *The immediate area around Donegal Airport, Carrickfinn Beach and Portarthur Beach are regularly used by walkers and cyclists.*
- *Activities at Gweedore Bay's beaches include swimming, kayaking, boating, windsurfing and other land-based activities such as football and kite flying etc.*
- *Kayaking and some walking also occur in Gweedore Bay itself, particularly around the northern part of the bay. Rock-climbing occurs on Gola and Cruit Islands nearby.*
- *The Gweedore Bay area is also popular for recreational, diving, sailing, and boat tours with views of the sea cliffs, cliff arches and the island coasts.*
- *The nearby Derryveagh Mountains attract thousands of walkers per year mainly to climb Mt Errigal and for views of the nearby Poison Glen.*
- *Sea angling, including boat fishing in the central Gweedore Bay channel, the "Gola Roads" between Gola and Inishinny Islands, and to the west of Gola Island, and shore angling from Bunbeg Harbour.*
- *River angling in the Clady and Gweedore rivers.*
- *Inshore fishing activity, mainly pot fishing for lobster and brown crab, with line and net fishing further offshore.*

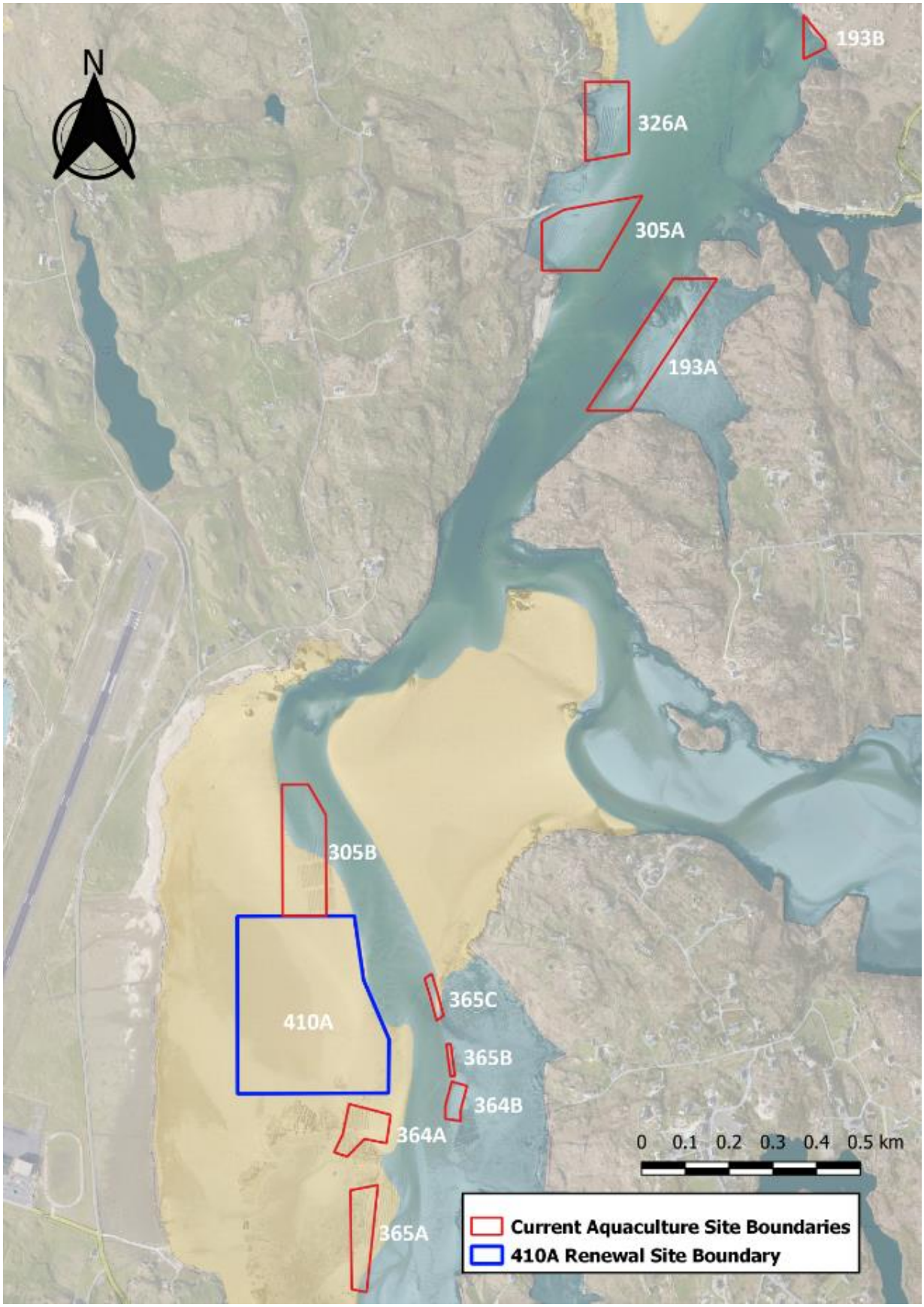

Figure 2-3: Existing (red) and proposed T12/410A&B (blue) oyster cultivation sites at Braade Strand, Gweedore Bay.

2.4 Screening Outcome

The screening assessment investigates the potential for the proposed project to have significant effects on European Sites within the Natura 2000 network. The assessment has determined, in light of best available scientific data, that there is potential for significant effects on:

- Gweedore Bay and Islands SAC (Site code: 001141)
    - Annex II aquatic mammal species *Lutra* (Otter) [1355]
- Cloghernagore Bog and Glenveagh National Park SAC (Site code: 002047)
    - Annex II aquatic mammal species *Lutra* (Otter) [1355]
- Rutland Island and Sound SAC (Site code 002283)
    - Annex II marine mammal species *Phoca vitulina* (Common Seal) [1365].
- Inishbofin, Inishdooey and Inishbeg SPA (Site code: 000408).
    - Lesser Black-backed Gull (*Larus fuscus*) [A183]
    - Common Gull (*Larus can*us) [A182]
- West Donegal Islands SPA (Site code: 004230)
    - Common Gull (*Larus can*us) [A182]

The findings of the assessment are summarised in **Table 2.4**.

Table 2.4: Screening matrix of the proposed project.

Screening Matrix	
Brief description of the project or plan	This *Screening Statement for AA and NIS* report has been prepared by AQUAFACT to support an application submitted on 10/02/2010 to DAFM for approval to undertake intertidal cultivation of oysters on trestles at two sites at Braade Stand, Gweedore Bay, Co. Donegal. The reference numbers for the proposed trestle cultivation sites are T12/410A and T12/410B which are located within Gweedore Bay and Islands Special Area of Conservation (SAC) (Site code: 001141). The combined spatial extent of the proposed sites is approximately 17.4ha. A full description of the project is provided in **Section 2.2** below.
European Site(s)	
Brief description of the European site(s)	The site is located with the Gweedore Bay and Islands SAC (Site code: 001141). Following source-pathway-receptor assessment, potential significant effects were determined to exist for the following QIs and SCI species: • Gweedore Bay and Islands SAC (Site code: 001141) Annex II aquatic mammal species Otter (*Lutra lutra*) [1355] • Cloghernagore Bog and Glenveagh National Park SAC (Site code: 002047) Annex II aquatic mammal species Otter (*Lutra lutra*) [1355]

	• Rutland Island and Sound SAC (Site code 002283) Annex II marine mammal species Common Seal (*Phoca vitulina*) [1365]. • Inishbofin, Inishdooey and Inishbeg SPA (Site code: 000408). Lesser Black-backed Gull (*Larus fuscus*) [A183] Common Gull (*Larus canus*) [A182] • West Donegal Islands SPA (Site code: 004230) Common Gull (*Larus canus*) [A182] Further descriptions of the European sites are provided in **Section 2.3** above. The likelihood of significant effects on all other European sites has been ruled out.
Assessment Criteria	
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the European site.	Given the nature of the proposed activities, and the SCIs and QIs in the area (the receptors), the potential project impact mechanism (or source of impact to the environment) is disturbance. The likelihood of significant effects of other impact types to all other European sites has been ruled out.
Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by virtue of Size and scale, Land-take.	The proposed oyster trestle cultivation requires intensive husbandry activity and this may cause impacts to Common Gull SCI of the West Donegal Islands SPA, and Common Gull and the Lesser Black-backed Gull SCIs of Inishbofin, Inishdooey and Inishbeg SPA using intertidal and/or shallow subtidal habitats at Gweedore bay through disturbance. Cultivation operations at the site including the presence of workers on the site, will result in some level of disturbance to Otter (*Lutra lutra*) territory and Common Seal (*Phoca vitulina*) using the area. Likely direct, indirect or secondary impacts of the project to QI and SCI species of Gweedore Bay and Islands SAC, Rutland Island and Sound SAC, Inishbofin, Inishdooey and Inishbeg SPA and West Donegal Islands SPA are assessed in **Section 3 NIS.**
Distance from the Natura 2000 site or key interests of the site;	The proposed project is located within the Gweedore Bay and Islands SAC. The location of the project relative to SACs and SPAs is shown in **Figure 2-1** and **Figure 2-2**. Other European site of interest are: • Cloghernagore Bog and Glenveagh National Park SAC (Site code: 002047) (5.71km from site) • Rutland Island and Sound SAC (Site code: 002283) (8.06km from site) • West Donegal Islands SPA (Site code: 004230) (3.97km from site) • Inishbofin, Inishdooey and Inishbeg SPA (Site code: 004083) (17.13km from site)
Resource requirements (water abstraction *etc.*):	Trestle oyster cultivation is a form of intensive culture with oyster seed cultivated using the bag and trestle method within the intertidal zone, either to halfgrown or fully-grown size. Other material used include steel trestles, HDPE mesh bags and rubber and wire clips to close the mesh bags and to fasten them to the trestles. During operations, tractors will be in operation. The fuel used by the tractors, will be diesel.

Emissions (disposal to land, water or air);	Atmospheric and noise emissions from tractors.
Excavation requirements; Transportation requirements;	Trucks and tractors will be used to take material to and from site.
Duration of construction, operation, Decommissioning Other.	Subject to obtaining approval, cultivation activity is expected to commence in Quarter (Q) 2 of 2022. Cultivation activity will be continuous over this period of the licence. All equipment and trestle will be removed from the shore at the end or termination of the licence.
Describe any likely changes to the site arising as a result of: Reduction in habitat area; Disturbance to key species; Habitat or species fragmentation; Reduction in species density; Changes in key indicators of conservation value (water quality *etc*.); Climate change	The proposed activities are located in the Gweedore Bay and Islands SAC. The site is small in size (4.8ha) and is situated in the middle of Gweedore Bay. The operations at the site will lead to a loss of intertidal that may be used for feeding by the SCI species under consideration, namely Common Gull and Lesser Black-backed Gull, and Otter and Common Seal. Disturbance activities caused during the servicing of the site may affect both gull species and both Otter and Common Seal. An increase in recreational disturbance in the area may impact on gull numbers, otter and Common Seal using the site for roosting and/ or feeding. The project impact mechanism is disturbance - activities associated with the works may result in disturbance to bird, otter and seal. Following source-pathway-receptor assessment potential significant effects were determined to exist for the following QI species of: • Gweedore Bay and Islands SAC (Site code: 001141) Annex II aquatic mammal species Otter (*Lutra lutra*) [1355] • Cloghernagore Bog and Glenveagh National Park SAC (Site code: 002047) Annex II aquatic mammal species Otter (*Lutra lutra*) [1355] • Rutland Island and Sound SAC (Site code 002283) Annex II marine mammal species Common Seal (*Phoca vitulina*) [1365]. • Inishbofin, Inishdooey and Inishbeg SPA (Site code: 000408). Lesser Black-backed Gull (*Larus fuscus*) [A183] Common Gull (*Larus canus*) [A182] • West Donegal Islands SPA (Site code: 004230) Common Gull (*Larus canus*) [A182] The potential effect of disturbance on the Conservation Features species are assessed in **Section** 3 **NIS**.
Describe any likely impacts on the Natura 2000 site as a whole in terms of: Interference with the key relationships that define the structure of the site; Interference with key relationships that define the function of the site.	Behavioural changes and/ or injury to QIs could have knock on effects to the wider function of the SAC in particular predator/ prey relationships and foraging opportunities.

Provide indicators of significance as a result of the identification of effects set out above in terms of: Loss; Fragmentation; Disruption; Disturbance; Change to key elements of the site.	Indicators of significance are loss of QI and SCI species. Indicators of significance are behavioural changes QI and SCI species.
Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.	At the Screening for AA stage, it was not possible to exclude potential significant effects to QI and SCI species associated with project disturbance. The potential effect to QI and SCI species are assessed in **Section** 3 **NIS**.

3. Natura Impact Statement

3.1. Summary of Screening Outcome

The Screening for AA determined that the proposed project has the potential to result in significant effects on following QI and SCI species of:

- Gweedore Bay and Islands SAC (Site code: 001141)
    - Annex II aquatic mammal species Otter (*Lutra lutra*) [1355]
- Cloghernagore Bog and Glenveagh National Park SAC (Site code: 002047)
    - Annex II aquatic mammal species Otter (*Lutra lutra*) [1355]
- Rutland Island and Sound SAC (Site code 002283)
    - Annex II marine mammal species Common Seal (*Phoca vitulina*) [1365].
- Inishbofin, Inishdooey and Inishbeg SPA (Site code: 000408).
    - Lesser Black-backed Gull (*Larus fuscus*) [A183]
    - Common Gull (*Larus canus*) [A182]
- West Donegal Islands SPA (Site code: 004230)
    - Common Gull (*Larus canus*) [A182]

This Natura Impact Statement (NIS) has been produced to inform the AA of the proposed project to be undertaken by the competent authority.

The NIS considers in greater detail the aspects of the proposed project with potential for significant effects and further examines the impacts of the proposed project on the integrity of the sites with respect to the Conservation Objectives established for the site.

3.2. Description of the Proposed Project

This assessment focuses specifically on aquaculture activities proposed at T12/410A&B which is located within the Gweedore Bay and Islands SAC. A full description of the project is provided in **Section 2.2** above. In summary, the project involves the cultivation of oysters cultivated using the bag and trestle method within the intertidal zone. The bag and trestle method uses steel table-like structures which rise from the shore to just above knee height on the middle to lower intertidal zone, arrayed in double rows with wide gaps between the paired rows to allow for access.

Given the nature of the proposed activities, and the potential receptors present in the area, the potential project impact mechanism (source of impact) is:

1. Disturbance - activities associated with the works may result in disturbance to birds, and marine and aquatic mammals.

3.3. Description of Receiving Environment

3.3.1. *Lutra* (Otter) [1355]

The proposed project is located in the Gweedore Bay and Islands SAC and approximately 5.71km from Cloghernagore Bog and Glenveagh National Park SAC (Site code: 002047). The Natura 2000 Standard Data Form for the SACs lists the *negative impacting threats and pressures* and *positive impacting activities/ management* affecting the sites (see **Table 3.1** and **Table 3.2**).

Table 3.1: Threat, pressures and activities affecting Gweedore Bay and Islands SAC (Natura 2000 - Standard Data Form)

Rank	Threats and pressure	Inside /Outside/ Both (i/o/b)
H	Grazing (A04)	o
M	Grazing (A04)	i
M	Paths, tracks, cycling tracks (D01.01)	o
M	Paths, tracks, cycling tracks (D01.01)	i
M	Dispersed habitation (E01.03)	o
M	Gold Course (G02.01)	o
M	Camping and caravans (G02.08)	i

Table 3.2: Threat, pressures and activities affecting Cloghernagore Bog and Glenveagh National Park SAC (Natura 2000 - Standard Data Form)

Rank	Threats and pressure	Inside /Outside/ Both (i/o/b)
M	Grazing (A04)	o
M	Biocides, hormones and chemicals (A07)	I
M	Grazing (A04)	i
M	Peat extraction (C01.03)	i
H	Peat extraction (C01.03)	o
H	Sylviculture, forestry (B)	o
M	Invasive non-native species (I01)	i
M	Hunting (F03.01)	o
Rank	**Positive Impact Activities Management**	**Inside /Outside/ Both (i/o/b)**
H	Attraction park (G02.06)	i
M	Grazing (A04)	i
M	Grazing (A04)	o

The above pressures, threats or activities impose high and moderate negative threats and pressures impacts on the site, and management activities that impose high and moderate impacts.

Table 3.3 lists the Conservation Objective of the QI Otter at the Gweedore Bay and Islands SAC and, Cloghernagore Bog and Glenveagh National Park SAC at the sites and the national status of the QI. A detailed description of the sites is included in the Site Synopsis reports included in **Appendix 3.**

Table 3.3: Qualifying Interests of the Gweedore Bay and Islands SAC and Cloghernagore Bog and Glenveagh National Park SAC

Species [Species code]		Site Conservation Objective		National Status[21]
		Gweedore Bay and Islands SAC	**Cloghernagore Bog and Glenveagh National Park SAC**	
Annex II aquatic mammal species	*Lutra* (Otter) [1335]	To maintain the favourable conservation condition	To maintain the favourable conservation condition	Overall Conservation Status is assessed as Favourable Overall Trend in Conservation Status is assessed as Improving

The Gweedore Bay and Islands SAC and the Cloghernagore Bog and Glenveagh National Park SAC are designated for Otter (*Lutra lutra*) and are noted as being well used by otters, with vegetation providing lying up spots and holts. Sightings reported through the National Biodiversity Data Centre[22] include a sight of live otter, otter spraint and remains of prey in Inishfree Bay to the west of the proposed works. There is potential that otter from Gweedore Bay and Islands SAC may occur at proposed Braade Strand sites. In addition, as otters utilise freshwater habitats from estuary to headwaters there is potential that otter from Cloghernagore Bog and Glenveagh National Park SAC, including those in the upper reaches of the SAC, may travel to the Braade Strand sites.

3.3.2. *Phoca vitulina* (Common Seal) [1365]

The Rutland Island & Sound SAC (002283), located to the south of the Gweedore Bay and Islands SAC, is designated for the Habitats Directive Annex II Species Common Seal (*Phoca vitulina*).

[21] NPWS 2019 The Status of EU Protected Habitats and Species in Ireland - Species Assessments - Volume 3 https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol3_Species_Article17.pdf

[22] https://maps.biodiversityireland.ie/Map - accessed 14/10/2020

The Natura 2000 Standard Data Form for the Rutland Island & Sound SAC SACs lists the *negative impacting threats and pressures* and *positive impacting activities/ management* affecting the sites (see **Table 3.10**).

Table 3.4: Threat, pressures and activities affecting Rutland Island & Sound SAC (Natura 2000 - Standard Data Form)

Rank	Threats and pressure	Inside /Outside/ Both (i/o/b)
H	Removal of sediments (mud…) (J02.02)	i
H	Shipping lanes (D03.02)	i
M	Grazing (A04) (A04)	i

The above pressures, threats or activities impose high and moderate negative threats and pressures impacts on the site.

Table 3.3 lists the Conservation Objective of the QI at the site and the national status of the QI. A detailed description of the sites is included in the Site Synopsis reports included in **Appendix 3.**

Table 3.5: Qualifying Interests of the Rutland Island & Sound SAC

Species [Species code]		Site Conservation Objective	National Status[23]
		Rutland Island & Sound SAC	
Annex II marine mammal species	*Phoca vitulina* (Common seal) [1365]	To maintain the favourable conservation condition	Overall Conservation Status is assessed as Favourable Overall Trend in Conservation Status is assessed as Stable

Common Seals in Rutland Island and Sound SAC occupy both aquatic habitats and intertidal shorelines that become exposed during the tidal cycle. The species is present at the site throughout the year during all aspects of its annual life cycle which includes breeding (May to July approx.), moulting (August to September approx.) and non-breeding foraging and resting phases. In particular,

[23] NPWS 2019 The Status of EU Protected Habitats and Species in Ireland - Species Assessments - Volume 3 https://www.npws.ie/sites/default/files/publications/pdf/NPWS_2019_Vol3_Species_Article17.pdf

comparatively limited information is available from the last period in the annual cycle spanning the months of October to May. The Rutland Island and Sound SAC located 8.06km from the proposed site is designated for Annex II species Common seal. Common Seal have been reported to take foraging trips of up 220km (Sharples *et al.,* 2016). In acknowledging the limited understanding of aquatic habitat use by the species within the site it should be noted that all suitable aquatic habitat is considered relevant to the species range and ecological requirements at the site and is therefore of potential use by Common Seals.

3.3.3. Lesser Black-backed Gull (*Larus fuscus*) [A183] and Common Gull (*Larus canus*) [A182]

The proposed project is located in the Gweedore Bay and Islands SAC and approximately 3.97km and 17.13 km respectively from the West Donegal Islands SPA (Site code: 004230) and Inishbofin, Inishdooey and Inishbeg SPA (Site code: 004083). The Natura 2000 Standard Data Form for the SACs lists the *negative impacting threats and pressures* and *positive impacting activities/ management* affecting the sites (see **Table 3.1** and **Table 3.2**).

Table 3.6: Threat, pressures and activities affecting West Donegal Islands SPA (Natura 2000 - Standard Data Form).

Rank	**Negative Impact** **Threats and pressure**	**Inside /Outside/ Both (i/o/b)**
M	Antagonism arising from introduction of species (K03.05)	i
Rank	**Positive Impact** **Activities Management**	**Inside /Outside/ Both (i/o/b)**

Table 3.7: Threat, pressures and activities affecting Inishbofin, Inishdooey and Inishbeg SPA (Natura 2000 - Standard Data Form)

Rank	**Threats and pressure**	**Inside /Outside/ Both (i/o/b)**
L	Walking, horse riding and non-motorised vehicles (G01.02)	i
M	Grazing (A04)	i
M	Dispersed habitation (E01.03)	i
Rank	**Positive Impact** **Activities Management**	**Inside /Outside/ Both (i/o/b)**
L	Walking, horse riding and non-motorised vehicles (G01.02)	i

H	Grazing (A04)	i
L	Dispersed habitation (E01.03)	i
H	Mowing / cutting of grassland (A03)	i

The above pressures, threats or activities impose high, moderate and low negative threats and pressures impacts on the site.

Table 3.3 lists the Conservation Objective of the SCI species at the sites. A detailed description of the sites is included in the Site Synopsis reports included in **Appendix 3.**

Table 3.8: Qualifying Interests of the West Donegal Islands SPA and the Inishbofin, Inishdooey and Inishbeg SPA (Natura 2000 - Standard Data Form)

Species [Species code]	Site Conservation Objective	
	West Donegal Islands SPA	**Inishbofin, Inishdooey and Inishbeg SPA**
Lesser Black-backed Gull (*Larus fuscus*) [A183]	To maintain or restore the favourable conservation condition	To maintain or restore the favourable conservation condition
Common Gull (*Larus canus*) [A182]	-	To maintain or restore the favourable conservation condition

Inishbofin, Inishdooey and Inishbeg SPA is designated for Common Gull (*Larus canus*) [A182] and Lesser Black-backed Gull (*Larus fuscus*) [A183]. Inishbofin, Inishdooey and Inishbeg SPA also supports nationally important breeding populations of Common Gull (25 pairs on Inishdooey in 2002), Lesser Black-backed Gull (81 pairs on Inishdooey in 2002). West Donegal Islands SPA is designated for Common Gull (*Larus canus*) [A182]. The SPA supports a breeding population of Common Gull (20 pairs on Gola Island in 1999 and 55 pairs on Inishsirrer and Inishmeane in 2000).

3.4. Impact Prediction

As described in **Section 2.3.1** above, the impact mechanism associated with the proposed project that may result in effects to Annex II marine mammal species, aquatic mammal species and bird species is disturbance.

Detailed consideration of the potential for adverse effects from impact mechanisms are presented in the following:

- **Section 3.4.1**
  - Otter (*Lutra lutra*)
- **Section 3.4.2**
  - Common Seal (*Phoca vitulina*)
- **Section 3.4.3**
  - Common Gull (*Larus canus*)
  - Herring Gull (*Larus argentatus*)

An assessment of potential adverse effects on European site integrity with respect to Conservation Objectives presented in **Section 0**. The assessment of effects to sites integrity is undertaken with respect to site specific Conservation Objectives set for Otter (*Lutra lutra*) at Gweedore Bay and Islands SAC and Cloghernagore Bog and Glenveagh National Park SAC, and Common Seal (*Phoca vitulina*) at Rutland Island and Sound SAC (Site code 002283). For the assessment made with respect to generic Conservation Objective that have been identified for species at the West Donegal Islands SPA and Inishbofin, Inishdooey and Inishbeg SPA.

3.4.1. *Lutra* (Otter) [1355]

As otter may occur at the proposed site the aquaculture production activities may have negative disturbance effects on the species resulting in impact to abundance and distribution of populations of the species.

The risk of negative interactions between aquaculture operations and aquatic mammal species is a function of:

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

Shellfish culture operations are likely to be carried out in daylight hours and on one tidal period of the month during which time trestle are exposed and accessible by framers. Otter is primarily active in the very early morning and/ or late evening. Consequently, given this behaviour it is unlikely that the species will be active in the project area during operations and the interaction with the otter is likely to be minimal and it is unlikely that these culture types pose a risk to otter populations in the Gweedore Bay and Islands SAC and Cloghernagore Bog and Glenveagh National Park SAC. In addition, otters are also quite tolerant of human disturbance and are often recorded in urban areas, so this impact is unlikely to be significant. No *in-situ* or *ex-situ* effects are expected to arise.

In summary, impacts can be discounted on the basis of the points below:

The proposed activities will not lead to any modification of the following attributes for otter:

- Extent of terrestrial habitat,
- Extent of marine habitat or
- Extent of freshwater habitat.
- The number of couching sites and holts or, therefore, the distribution, will not be directly affected by aquaculture and fisheries activities.
- Shellfish production activities are unlikely to pose any risk to otter populations through entrapment or direct physical injury.
- The structures and activities associated this form of oyster culture structures are raised from the seabed (0.5m - 1m) and are oriented in rows, thus allowing free movement through and within the site.
- Disturbance associated with vessel and foot traffic could potentially affect the distribution of otters at the site. However, the level of disturbance is likely to be very low given the likely encounter rates will be low dictated primarily by tidal state and in daylight hours.

Otter are mainly active in the very early morning and/ or late evening. Given this behaviour it is unlikely that the species will be active in the project area during operations. Consequently, **no significant adverse effects to the Annex II otter**.

3.4.2. *Phoca vitulina* (Common Seal) [1365]

The Rutland Island & Sound SAC (002283), located to the south of the Gweedore Bay & Islands SAC, is designated for the Habitats Directive Annex II Species Common Seal (*Phoca vitulina*). Site specific Conservation Objectives for the species within the Rutland Island & Sound SAC were identified by NPWS (2013) (see **Table 3.9**) and relate primarily to the requirement to maintain various attributes of the populations including population size and the distribution of the species.

It is acknowledged in this assessment that the favourable conservation status of the Common Seal has been achieved (NPWS 2019) given current levels of aquaculture production within both the Gweedore Bay and Islands SAC and Rutland Island & Sound SAC.

To date little research has been undertaken to assess the impacts of aquaculture operations on seal species, however, a considerable body of research has focussed on short-term responses of seal to recreational boaters and commercial shipping. This research has focussed on seals at haul-out locations.

Seal responses to disturbance can vary widely depending on the location and nature of the disturbance from increased alertness to movement towards the water and entering the water. Disturbance by small boats and people have been reported to result in flushing responses in seals at distances of between 80m and 1km.

The closest harbour seal haul-out site to the Gweedore Bay is located at Rutland Island and Sound SAC. Given this distance of the haul-out sites from the aquaculture sites, it is unlikely that operations at the site will result in disturbance effects at seal haul-out sites and the likelihood of an impact occurring is remote; it is concluded that there will **no significant adverse effects Annex II Common Seal.**

Table 3.9: Conservation objectives and targets for the Common Seal *Phoca vitulina* in Rutland Island & Sound SAC (Site code 002283) (NPWS 2013).

Species [Species code]	Objective	Target(s)
Common Seal *Phoca vitulina* (1365)	Maintain favourable conservation condition	The range of use within the site should not be restricted by artificial barriers; all sites (*i.e.* breeding, moulting and resting haul-outs sites) should be maintained in a natural condition; human activities should occur at levels that do not adversely affect Common Seal population at the site.

3.4.3. Lesser Black-backed Gull (*Larus fuscus*) [A183] and Common Gull (*Larus canus*) [A182]

Potential disturbance effect to Lesser Black-backed Gull and Common Gull could arise in two ways:

- from avoidance of the trestles and
- from avoidance of activity associated with the oyster trestles

In general, birds seem to use artificial structures as roosting sites when they prove suitable. Birds will avoid artificial structures when they interfere with specific habitat requirements such as flight paths or maintaining open views to detect predators. Considering the design scale of the oyster trestles, this is unlikely to be an issue.

While it is acknowledged that activity at trestle sites may act to disturb the natural foraging behaviour and distribution of Lesser Black-backed Gull and Common Gull, it should be noted that shellfish culture operations at intertidal trestles are carried out in daylight hours and typically on the lowest tidal cycle of the month during which time trestles are exposed and accessible by farmers.

Given this limited time during which activity will be occurring at the trestle sites and considering the limited spatial extent of the trestle sites relative to the greater intertidal area at Gweedore Bay available to the species for foraging, it is reasonable to conclude that the risk of significant adverse *ex-situ* effects to the gull species of other SPAs is low. An assessment of risk posed to Lesser Black-backed Gull and Common Gull by trestle activities is presented below.

With regard to feeding ecology, neither the Lesser Black backed Gull nor the Common Gull feed on sediments; both species are scavengers/opportunistic in their foraging strategies and as likely to be found feeding on *inter alia* freshly ploughed fields, fields where slurry has been spread, around either intertidal or subtidal outfalls or following either commercial trawlers or angling boats. Neither species will target aquaculture sites or areas of sea bed under trestles.

3.4.3.1. Impact Assessment Methodology

A risk assessment[24] to examine the potential impacts on Lesser Black-backed Gull and Common Gull has been carried using criteria for the following:

- species risk of disturbance (as detailed in **Table 3.10**);
- species population sensitivity (**Table 3.12**);

[24] The methods of impact assessment have been adapted from Atkins (2012) and RPS (2016)

- licenced area habitat suitability (**Table 3.13**); and
- species habitat flexibility (**Table 3.14**).

The significance of risk is presented in

Table 3.16.

3.4.3.2. Disturbance Risk

The greatest potential impact from human activity will be the occupation of the foraging habitats by the trestle and the presence of workers and tractors moving to and from on the site. The sensitivity of various high conservation value species to such impacts will vary. A disturbance scale developed by Garthe & Hüppop (2004) and Furness *et al.* (2012, 2013) rated the potential vulnerability of seabirds to disturbance on a scale of 1–5, with 1 representing hardly any escape/avoidance behaviour and/or non/very low fleeing distance and 5 representing strong escape/ avoidance behaviour and/or large fleeing distance. Using the disturbance scale, Lesser Black-backed Gull and Common Gull are assigned to disturbance categories in **Table 3.10**.

Table 3.10: Disturbance risk categories of Qualifying Features (*sensu* Furness *et al*., 2013).

Species [Species code]	Disturbance Category
Common Gull (*Larus canus*) [A182]	2
Lesser Black-backed Gull (*Larus fuscus*) [A183]	2

3.4.3.3. Species Population Sensitivity

The determination of the sensitivity of species population considers the following

- Tolerance to change: the species' ability to accommodate temporary and permanent change
- Recoverability: the ability of the receptor to return to its natural state following cessation of an effect.
- Adaptability: the ability of a receptor to avoid or adapt to an effect
- Value: a measure of the receptor's importance, rarity and worth.

In general, populations with very poor conservation status including species on the BoCCI[25] red list have little capacity to tolerate change and recover following an impact Colhoun and Cummins (2013[26]). In contrast, populations that are not of conservation concern typically exhibit capacity to absorb impacts.

There are five categories on Species Population Sensitivity scale, ranging for Negligible Sensitivity to Very High Sensitivity (see **Table 3.11**). Both Lesser Black-backed Gull and Common Gull are assigned to BoCCI amber list. Using the Species Population Sensitivity scale, Lesser Black-backed Gull and Common Gull are assigned to sensitivity categories in **Table 3.12**.

Table 3.11: Sensitivity criteria

Sensitivity	Definition
Very High	Receptor population has no tolerance of effect. *e.g.* no capacity to absorb change, a population level effect very likely to occur Likely to be limited to populations with very poor conservation status - BoCCI Red List
High	Receptor population has a very limited tolerance of effect. *e.g.* likely to have no capacity to absorb change, so a population level effect likely. Likely to be limited to populations with poor existing conservation status - BoCCI Amber List
Medium	Receptor population has limited tolerance of effect. *e.g.* very minor capacity to absorb change, so a population effect possible. Likely to include but not be limited to populations with poor existing conservation status - BoCCI Green List
Low	Receptor population has some tolerance of effect. *e.g.* likely to have minor capacity to absorb additional mortality or reduction in productivity or habitat loss, so a population level effect unlikely.
Negligible	Receptor population generally tolerant of effect. *e.g.* likely to have moderate capacity to absorb additional mortality or reduction in productivity or habitat loss, so a population effect very unlikely.

Table 3.12: Disturbance risk categories of Qualifying Features (*sensu* Furness *et al*., 2013).

Species [Species code]	Disturbance Category
Common Gull (*Larus canus*) [A182]	2
Lesser Black-backed Gull (*Larus fuscus*) [A183]	2

[25] Birds of Conservation Concern in Ireland (BoCCI)
[26] Colhoun K. and Cummins, S. 2013 Birds of Conservation Concern in Ireland 2014-19. Irish Birds 9:523-544 d

3.4.3.4. Licenced Area Habitat Suitability

The habitat suitability of the licence renewal site is coded as follows:

1. habitat conditions include specific features (substrate type, upwellings, *etc*.) identified as being important for the species;
2. habitat conditions generally suitable (*e.g.* within depth range) but lack specific features identified as being important for the species;
3. habitat conditions include some features identified as unsuitable in some studies;
4. habitat conditions generally unsuitable.

Habitat preference follows that identified for the species in Furness *et al.* (2012, 2013), see **Table 3.13**.

Table 3.13: Habitat Suitability (*sensu* Furness *et al*., 2013).

Species [Species code]	Species Habitat Preference	Suitability Score
Common Gull (*Larus canus*) [A182]	The species has a varied diet. The diet consists of earthworms, insects, aquatic and terrestrial invertebrates (e.g. planktonic crustaceans, crayfish and molluscs) and small fish. During the spring, the species will also take agricultural grain and often scavenges.	2
Lesser Black-backed Gull (*Larus fuscus*) [A183]	The species is an omnivorous, opportunistic feeder that forages extensively at sea. Its diet consists of small fish, aquatic and terrestrial invertebrates (e.g. beetles, flies and larvae, ants, moths, grasshoppers, crustaceans, molluscs, segmented worms and starfish), bird eggs and nestlings, carrion, offal, rodents, berries and grain. It often follows fishing fleets, feeding on discarded bycatch.	2

3.4.3.5. Species Habitat Flexibility

The habitat use flexibility scores are based on Garthe & Hüppop (2004) and Furness *et al.* (2012, 2013). The score value ranges from 1 to 5 with 1 indicating species is very flexible in habitat use and to 5 indicating the species is reliant on specific habitat characteristics.

Species that are coded low occupy large sea areas with no specific habitat preferences while species that are coded high rely on specific habitat features, see **Table 3.14**.

Table 3.14: Habitat Flexibility Scores.

Species [Species code]	Flexibility Scores
Lesser Black-backed Gull (*Larus fuscus*) [A183]	1
Common Gull (*Larus canus*) [A182]	2

3.4.3.6. Assessment of Significance

The level of impact is determined by combining assessments of 1) Disturbance, 2) Population Sensitivity, 3) Licenced Area Habitat Suitability and 4) Habitat Flexibility Scores. The level of impact are described in **Table 3.15**, based on the sensitivity/value of the receptor, the magnitude of effects and the likelihood of occurrence, determines the significance of the impact.

The level of potential impact and significance to species are detailed in

Table 3.16.

Table 3.15: Level of Impact.

Level of Impact	Impact Significance	Definition
Negligible	No change (**NOT SIGNIFICANT**)	No discernible change in the ecology of the affected feature
Negligible	Imperceptible Impact (**NOT SIGNIFICANT**)	An impact capable of measurement but without noticeable consequences
Minor	Slight Impact (**NOT SIGNIFICANT**)	An impact which causes noticeable changes in the character of the environment without affecting its sensitivities
Moderate	Moderate Impact (**SIGNIFICANT**)	An impact that alters the character of the environment that is consistent with existing and emerging trends
Major	Significant Impact (**SIGNIFICANT**)	An impact which, by its character, magnitude, duration or intensity alters a sensitive aspect of the environment

Level of Impact	Impact Significance	Definition
Severe	Profound Impact (**SIGNIFICANT**)	An impact which obliterates sensitive characters.

Table 3.16: Potential impacts on bird populations.

Species [Species code]	Disturbance	Population Sensitivity BoCCI[27]	Licensed Habitat Suitability	Habitat Flexibility Scores	Overall Level of Impact	Impact Significance
Common Gull (*Larus canus*) [A182]	2	**High – BoCCI Amber List**	2	2	Negligible	Imperceptible Impact (**NOT SIGNIFICANT**)
Lesser Black-backed Gull (*Larus fuscus*) [A183]	2	**High – BoCCI Amber List**	2	2	Negligible	Imperceptible Impact (**NOT SIGNIFICANT**)

3.4.3.7. Conclusions

The likelihood of impacts occurring is remote; it is concluded that there will **be no significant adverse effects.**

3.5. Potential for Adverse Effects on Site Integrity

Potential for effect to QI aquatic mammal species, QI marine mammal species and SCI bird species was assessed in **Section 3.4.1** to **Section 3.4.3**. For the QI species, Favourable Conservation Condition is defined by a list of attributes and targets. An assessment of the potential impacts on the integrity of the SAC was undertaken in relation to the attributes and targets set for the species

The assessment of effects to sites integrity is undertaken with respect to site specific Conservation Objectives set for Otter (*Lutra lutra*) at Gweedore Bay and Islands SAC and Cloghernagore Bog and Glenveagh National Park SAC (see **Table 3.17** and **Table 3.18**), and Common Seal (*Phoca vitulina*) at Rutland Island and Sound SAC (Site code 002283) (see).

For the SCI assessment made with respect to generic Conservation Objective that have been identified for species at the West Donegal Islands SPA and Inishbofin, Inishdooey and Inishbeg SPA.

[27] BoCCI - Birds of Conservation Concern in Ireland

Table 3.17: Assessment of potential for adverse effects on the integrity of the Gweedore Bay and Islands SAC– Attributes, measure and targets identified in NPWS (2015)[28].

Species [Species code]	Attribute	Measure	Target	Potential Impact	Potential Adverse Effects on Site Integrity in the Absence of Mitigation
***Lutra lutra* (Otter) [1355]**	Distribution	Percentage positive survey site	No significant decline	None	No negative effect.
	Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 154ha above high water mark (HWM); 40ha along river banks/ around lakes and ponds	None	No negative effect.
	Extent of marine habitat	Hectares	No significant decline. Area mapped and calculated as 1,192ha	None	No negative effect.
	Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 12.1km	None	No negative effect.
	Extent of freshwater (lake/lagoon) habitat	Hectares	No significant decline. Area mapped and calculated as 82ha	None	No negative effect.
	Couching sites and holts	Number	No significant decline	None	No negative effect

[28] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO001141.pdf

Species [Species code]	Attribute	Measure	Target	Potential Impact	Potential Adverse Effects on Site Integrity in the Absence of Mitigation
	Fish biomass available	Kilograms	No significant decline	None	No negative effect
	Barriers to connectivity	Number	No significant increase	Oyster trestles will not block or cause significant difficulties to Otter commuting between islands and the mainland. The structures and activities associated this form of oyster culture structures are raised from the seabed (0.5m - 1m) and are oriented in rows, thus allowing free movement through and within the site.	No negative effect.

Table 3.18: Assessment of potential for adverse effects on the integrity of the Cloghernagore Bog and Glenveagh National Park – Attributes, measure and targets identified in NPWS (2017[29]).

Species [Species code]	Attribute	Measure	Target	Potential Impact	Potential Adverse Effects on Site Integrity in the Absence of Mitigation
***Lutra lutra* (Otter) [1355]**	Distribution	Percentage positive survey site	No significant decline	None	No negative effect.
	Extent of terrestrial habitat	Hectares	No significant decline. Area mapped and calculated as 1,130.1a along river bank/ lake shoreline/ around ponds	None	No negative effect.
	Extent of freshwater (river) habitat	Kilometres	No significant decline. Length mapped and calculated as 490.3km	None	No negative effect.
	Extent of freshwater (lake) habitat	Hectares	No significant decline. Area mapped and calculated as 745.5ha	None	No negative effect.
	Couching sites and holts	Number	No significant decline	None	No negative effect
	Fish biomass available	Kilograms	No significant decline	None	No negative effect

[29] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002047.pdf

Species [Species code]	Attribute	Measure	Target	Potential Impact	Potential Adverse Effects on Site Integrity in the Absence of Mitigation
	Barriers to connectivity	Number	No significant increase	Oyster trestles will not block or cause significant difficulties to Otter commuting between islands and the mainland. The structures and activities associated this form of oyster culture structures are raised from the seabed (0.5m - 1m) and are oriented in rows, thus allowing free movement through and within the site.	No negative effect.

Table 3.19: Assessment of potential for adverse effects on the integrity of the Rutland Island and Sound SAC– Attributes, measure and targets identified in NPWS (2013)[30].

Species [Species code]	Attribute	Measure	Target	Potential Impact	Potential Adverse Effects on Site Integrity in the Absence of Mitigation
***Phoca vitulina lutra* (Common seal) [1365]**	Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use	Oyster trestles will not block or cause significant difficulties to seal movements	No negative effect.
	Breeding behaviour	Breeding sites	Conserve the breeding sites in a natural condition	None	No negative effect.
	Moulting behaviour	Moult haul-out sites	Conserve the moulting sites in a natural condition	None	No negative effect.
	Resting behaviour	Resting haul-out sites	Conserve the resting sites in a natural condition	None	No negative effect.
	Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the harbour seal population at the site	As demonstrated in **Section 3.4.2** the proposed activities will act a source of significant disturbance	No negative effect.

[30] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002283.pdf

3.6. Outcomes

Based on the assessment of the proposed project alone and in combination with other projects and plans, it can be concluded, on the basis of objective scientific information, that no adverse effects on the integrity of European sites will arise, in view of the conservation objectives defined for the sites.

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Appendix 1

Report supporting Appropriate Assessment of Aquaculture in Gweedore Bay & Islands SAC (Site Code: 001141) Marine Institute February 2016

Report supporting Appropriate Assessment of Aquaculture in Gweedore Bay & Islands SAC (Site Code: 001141)

Marine Institute

Rinville

Oranmore, Co. Galway

Version: February 16, 2016

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1 PREFACE

In Ireland, the implementation of Article 6 of the Habitats Directive in relation to aquaculture and fishing projects and plans that occur within designated sites is achieved through sub-Article 6(3) of the Directive. Fisheries not coming under the scope of Article 6.3, i.e. those fisheries not subject to secondary licencing are subject to risk assessment. Identified risks to designated features can then be mitigated and deterioration of such features can be avoided as envisaged by sub-article 6.2.

Fisheries, other than oyster fisheries, and aquaculture activities are licenced by the Department of Agriculture, Food and Marine (DAFM). Oyster fisheries (in fishery order areas) are licenced by the Department of Communications Energy and Natural Resources (DCENR). The Habitats Directive is transposed in Ireland in the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011). Appropriate assessments (AA) of aquaculture against the conservation objectives (COs), and more specifically on the version of the COs that are available at the time of the Assessment, for designated ecological features, within the site, as defined by the National Parks and Wildlife Service (NPWS). NPWS are the competent authority for the management of Natura 2000 sites in Ireland. Obviously, aquaculture and fishing operations existed in coastal areas prior to the designation of such areas under the Directives. Ireland is thereby assessing both existing and proposed aquaculture and fishing activities in such sites. This is an incremental process, as agreed with the EU Commission in 2009, and will eventually cover all fishing and aquaculture activities in all Natura 2000 sites.

The process of identifying existing and proposed activities and submitting these for assessment is, in the case of fisheries projects and plans, outlined in S.I. 290 of 2013. Fisheries projects or plans are taken to mean those fisheries that are subject to annual secondary licencing or authorization. Here, the industry or the Minister may bring forward fishing proposals or plans which become subject to assessment. These Fishery Natura Plans (FNPs) may simply be descriptions of existing activities or may also include modifications to activities that mitigate, prior to the assessment, perceived effects to the ecology of a designated feature in the site. In the case of other fisheries, that are not projects or plans, data on activity are collated and subject to a risk assessment against the COs. Oyster fisheries, managed by DCENR, do not come under the remit of S.I. 290 of 2013 but are defined as projects or plans as they are authorized annually and are therefore should be subject to AA.

In the case of aquaculture, DAFM receives applications to undertake such activity and submits a set of applications, at a defined point in time, for assessment. The FNPs and aquaculture applications are then subject to AA. If the AA process finds that the possibility of significant effects cannot be discounted or that there is a likelihood of negative consequence for designated features then such activities will need to be mitigated further if they are to continue. The assessments are not explicit on how this mitigation should be achieved but rather indicate whether mitigation is required or not and what results should be achieved.

This report considers aquaculture activities occurring within the Gweedore Bay and Islands SAC and was based upon an original draft prepared by RPS Group Limited which has been edited for content.

2 EXECUTIVE SUMMARY

2.1 THE SAC

The Gweedore Bay & Islands SAC is situated on the west Donegal coast and is designated as a Special Area of Conservation (SAC) under the Habitats Directive. The marine area is designated for Reefs (1170) which support a two reef community types namely; *Laminaria*-dominated community complex and Reef community complex. The area is also designated for otter and a range of coastal habitats including saltmarshes and sand dunes, lakes, rivers and heath. Conservation Objectives for marine habitats and constituent communities (within the Gweedore Bay & Islands SAC) were identified by NPWS (2015a) and relate primarily to the requirement to maintain habitat distribution, structure and function, as defined by characterizing (dominant) species in these habitats. For designated species the objective is to maintain various attributes of the populations including population size, habitats quality and the distribution of the species.

2.2 ACTIVITIES IN THE SAC

Current aquaculture activities within the Gweedore Bay & Islands SAC occur at Gweedore Bay and focus on the cultivation of the Pacific oyster *Crassostrea gigas* on trestles in intertidal areas. There are also a number of new (oyster) applicants at Gweedore and Kincasslagh Bay. In addition there is a single application to culture clams/cockles (*Ruditapes philippinarum*/*Cerastoderma edule*) intertidally on the seafloor in Kincasslagh Bay. The profile of the aquaculture industry in the Bay, used in this assessment, was prepared by BIM and is derived from the list of licence applications received by DAFM and provided to the MI for assessment in February 2015.

2.3 THE APPROPRIATE ASSESSMENT PROCESS

The function of an appropriate assessment is to determine if the ongoing and proposed aquaculture are consistent with the Conservation Objectives for the Natura site or if such activities will lead to deterioration in the attributes of the habitats and species over time and in relation to the scale, frequency and intensity of the activities. NPWS (2015a) provide guidance on interpretation of the Conservation Objectives which are, in effect, management targets for habitats and species in the SAC. This guidance is scaled relative to the anticipated sensitivity of habitats and species to disturbance by the proposed activities. Some activities are deemed to be wholly inconsistent with long term maintenance of certain sensitive habitats while other habitats can tolerate a range of activities. For the practical purpose of management of sedimentary habitats a 15% threshold of overlap between a disturbing activity and a habitat is given in the NPWS guidance. Below this threshold disturbance is deemed to be non-significant. Disturbance is defined as that which leads to a change in the characterizing species of the habitat (which may also indicate change in structure and function). Such disturbance may be temporary or persistent in the sense that change in characterizing species may recover to pre-disturbed state or may persist and accumulate over time.

The appropriate assessment process is divided into a number of stages consisting of a preliminary risk identification, and subsequent assessment (allied with mitigation measures if necessary) which are covered in this report. The first stage of the process is an initial screening wherein activities which cannot have, because they do not spatially overlap with a given habitat or have a clear pathway for interaction, any impact on the conservation features and are therefore excluded from further consideration. The next phase is the Natura Impact Statement (NIS) where interactions (or

risk of) are identified. Further to this, an assessment on the significance of the likely interactions between activities and conservation features is conducted. Mitigation measures (if necessary) will be introduced in situations where the risk of significant disturbance is identified. In situations where there is no obvious mitigation to reduce the risk of significant impact, it is advised that caution should be applied in licencing decisions. Overall the Appropriate Assessment is both the process and the assessment undertaken by the competent authority to effectively validate this Screening Report and/or NIS. It is important to note that the screening process is considered conservative in that other activities which may overlap with habitats but which may have very benign effects are retained for full assessment.

2.4 DATA SUPPORTS

Distribution of habitats and species population data are provided by NPWS[1]. Scientific reports on the potential effects of various activities on habitats and species have been compiled by the MI and provide the evidence base for the findings. The profile of aquaculture activities was provided by BIM[2]. The data supporting the assessment of individual activities vary and provides for varying degrees of confidence in the findings.

2.5 FINDINGS

2.5.1 Aquaculture and Habitats/Species:

In the Gweedore Bay & Islands SAC, of the 25 aquaculture sites (licenced and applications) considered within the SAC, there are 4 shellfish culture licenced sites with a further 5 newly applied for sites that have spatial overlap with the habitat conservation feature (Reef 1170). The likely interaction between aquaculture activities in these sites and these conservation features (habitats and species) of the site was considered.

An initial screening exercise resulted in a number of habitat features and species being excluded from further consideration. None of the aquaculture activities (existing and/or proposed) overlaps or likely interacts with the following features or species, and therefore these 15 habitats and 2 species were excluded from further consideration in the assessment:

- 1150 Coastal lagoons*
- 1220 Perennial vegetation of stony banks
- 1395 Petalwort *Petalophyllum ralfsii*
- 1410 Mediterranean salt meadows (*Juncetalia maritimi*)

[1] NPWS Geodatabase Ver: June 2015 - http://www.npws.ie/mapsanddata/habitatspeciesdata/

[2] BIM (2015). APPROPRIATE ASSESSMENT PROFILING-**KINCASSLAGH BAY,** CO. DONEGAL. July 2015. 2 pages
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- 1833 Slender Naiad *Najas flexilis*
- 2110 Embryonic shifting dunes
- 2120 Shifting dunes along the shoreline with *Ammophilia arenaria* (white dunes)
- 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)
- 2140 Decalcified fixed dunes with *Empetrum nigrum**
- 2150 Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)*
- 2170 Dunes with *Salix repen* ssp*. argentea* (*Salicion arenariae*)
- 2190 Humid dune slacks
- 21A0 Machairs (* in Ireland)
- 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- 4030 European dry heaths
- 4060 Alpine and Boreal heaths
- 5130 *Juniperus communis* formations on heaths or calcareous grasslands

A full assessment was carried out on the likely interactions between current and proposed aquaculture operations and the feature Annex 1 habitat Reef (1170). The likely effects of existing and proposed aquaculture activities were considered in light of the sensitivity of the constituent communities of the Annex 1 habitat. Of the two constituent community types recorded within the qualifying interest of Reefs (1170) one (*Laminaria*-dominated community complex) was shown to have no overlap with aquaculture activities and were excluded from further analysis.

The assessment report finds that existing and proposed oyster culture activities do not pose a risk of significant disturbance to the conservation of the designated habitat feature of Reefs (1170) or constituent community of and Reef community complex. Furthermore, the risk posed by intertidal clam/cockle culture can be discounted, due to lack of spatial overlap with conservation features. For both non-native species in culture (*C. gigas* and *R. philippinarum*) the risk of establishment is considered low given a number of factors, including lack of suitable habitat, intertidal culture and short residence times.

Finally, the aquaculture activities did not present a barrier to migration and on the (freshwater) attributes for the Otter (*Lutra lutra*).

3 INTRODUCTION

This document assesses the potential ecological interactions of aquaculture activities within Gweedore Bay & Islands SAC (Site code: 001141) on the Conservation Objectives (COs) of the site. 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 forwarded to the Marine Institute as of May 2015; as well as aquaculture and fishery profiling information provided on behalf of the operators by Bord Iascaigh Mara (BIM). The spatial extent of aquaculture licences is derived from a database managed by the DAFM[3] and shared with the Marine Institute.

4 CONSERVATION OBJECTIVES FOR GWEEDORE BAY & ISLANDS SAC

The appropriate assessment of aquaculture in relation to the Conservation Objectives for Gweedore Bay & Islands SAC is based on Version 1.0 of the objectives (NPWS 2015a - Version 1 March 2015) and supporting documentation (NPWS 2015b - Version 1 February 2015; NPWS 2015c - Version 1 February 2015; NPWS 2015d - Version 1 February 2015;). The spatial data for conservation features was provided by NPWS[4].

4.1 THE SAC EXTENT

The Gweedore Bay & Islands SAC is an extensive coastal site situated on the northwest coast. It extends from Burtonport in the south to Bloody Foreland in the north. It includes a large stretch of coastline, many islands (including Inishsirrer, Inishmeane, Gola, Umfin, Inishfree Lower and parts of Cruit Island) and areas of marine water between the islands and the coast. Gweedore Bay & Islands SAC is designated for a range of Annex I coastal habitats including coastal lagoons, reefs, heaths, vegetated shingle, saltmarsh and sand dunes. The SAC is also designated for the marine Annex I qualifying interest of Reefs (1170). The extent of the SAC is shown in **Figure 4.1** below.

4.2 QUALIFYING INTERESTS (SAC)

The SAC is designated for the following habitats and species (NPWS 2015a), as listed in Annex I and Annex II of the Habitats Directive (* indicates a priority habitat under the Habitats Directive):

- 1150 Coastal lagoons*
- 1170 Reefs
- 1220 Perennial vegetation of stony banks
- 1395 Petalwort *Petalophyllum ralfsii*
- 1410 Mediterranean salt meadows (*Juncetalia maritimi*)

[3] DAFM Aquaculture Database version Aquaculture: May, 2015
[4] NPWS Geodatabase Ver: June 2015 - http://www.npws.ie/mapsanddata/habitatspeciesdata/

- 1833 Slender Naiad *Najas flexilis*
- 2110 Embryonic shifting dunes
- 2120 Shifting dunes along the shoreline with *Ammophilia arenaria* (white dunes)
- 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)
- 2140 Decalcified fixed dunes with *Empetrum nigrum**
- 2150 Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)*
- 2170 Dunes with *Salix repen* ssp*. argentea* (*Salicion arenariae*)
- 2190 Humid dune slacks
- 21A0 Machairs (* in Ireland)
- 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- 4030 European dry heaths
- 4060 Alpine and Boreal heaths
- 5130 *Juniperus communis* formations on heaths or calcareous grasslands
- 1355 Otter *Lutra lutra*

Constituent communities and community complexes recorded within the qualifying interest Annex 1 marine habitats (i.e. 1170 – Reefs) are listed in NPWS (2014c) and illustrated in **Figure 4.2** and consist of:

- Reef community complex
- *Laminaria*-dominated community complex

The Gweedore Bay & Islands SAC is designated for the Otter, *Lutra lutra*. The species is listed in Annex IV(a) of the habitats directive and is afforded strict protection. According to the NPWS (2009) although otter numbers have declined from 88% in 1980/81 to 70% in 2004/05, otters remain widespread in Ireland.

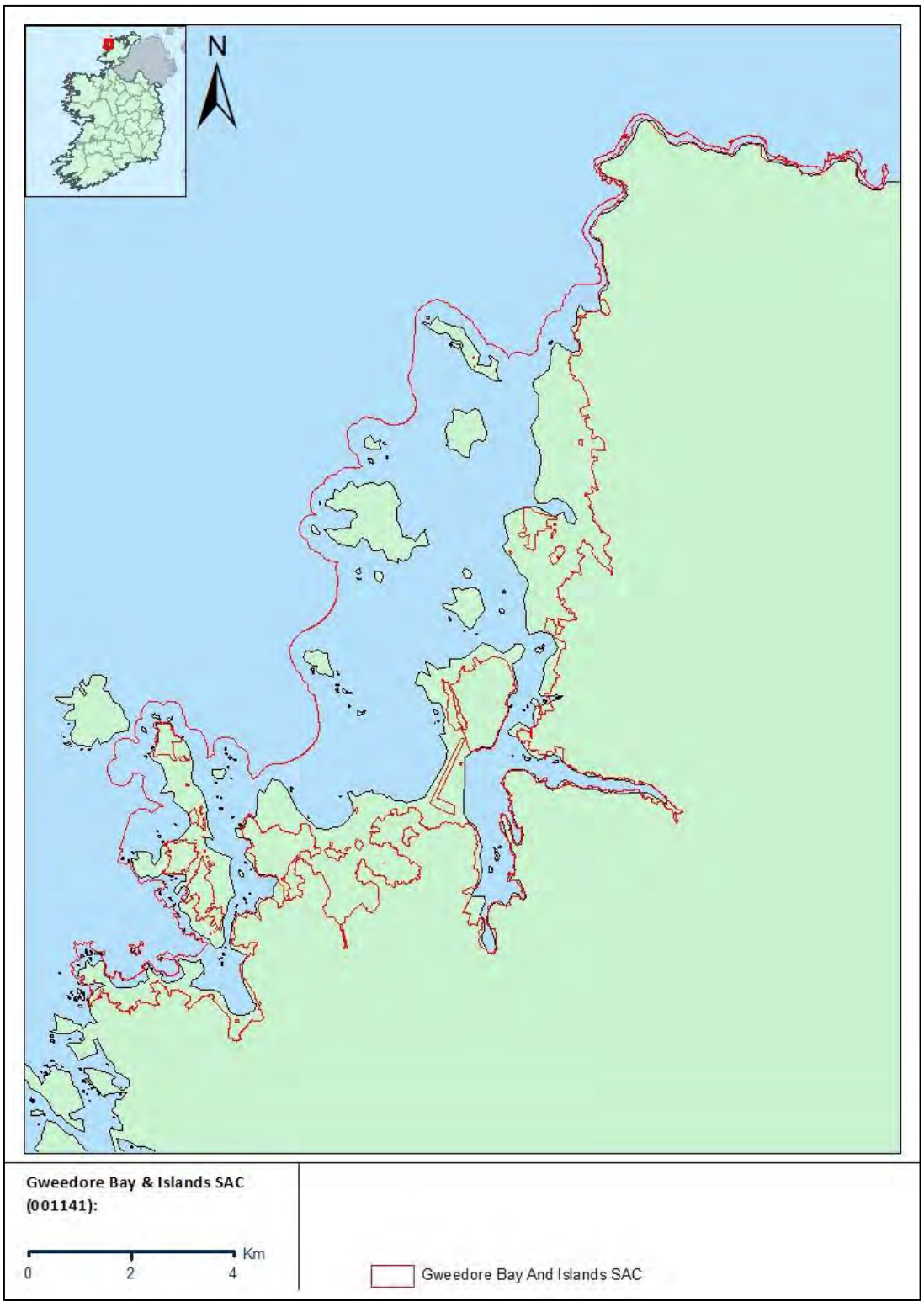

Figure 4.1 - The extent of Gweedore Bay & Islands SAC and the marine Annex I qualifying interest of Reefs (1170) (NPWS 2015c).

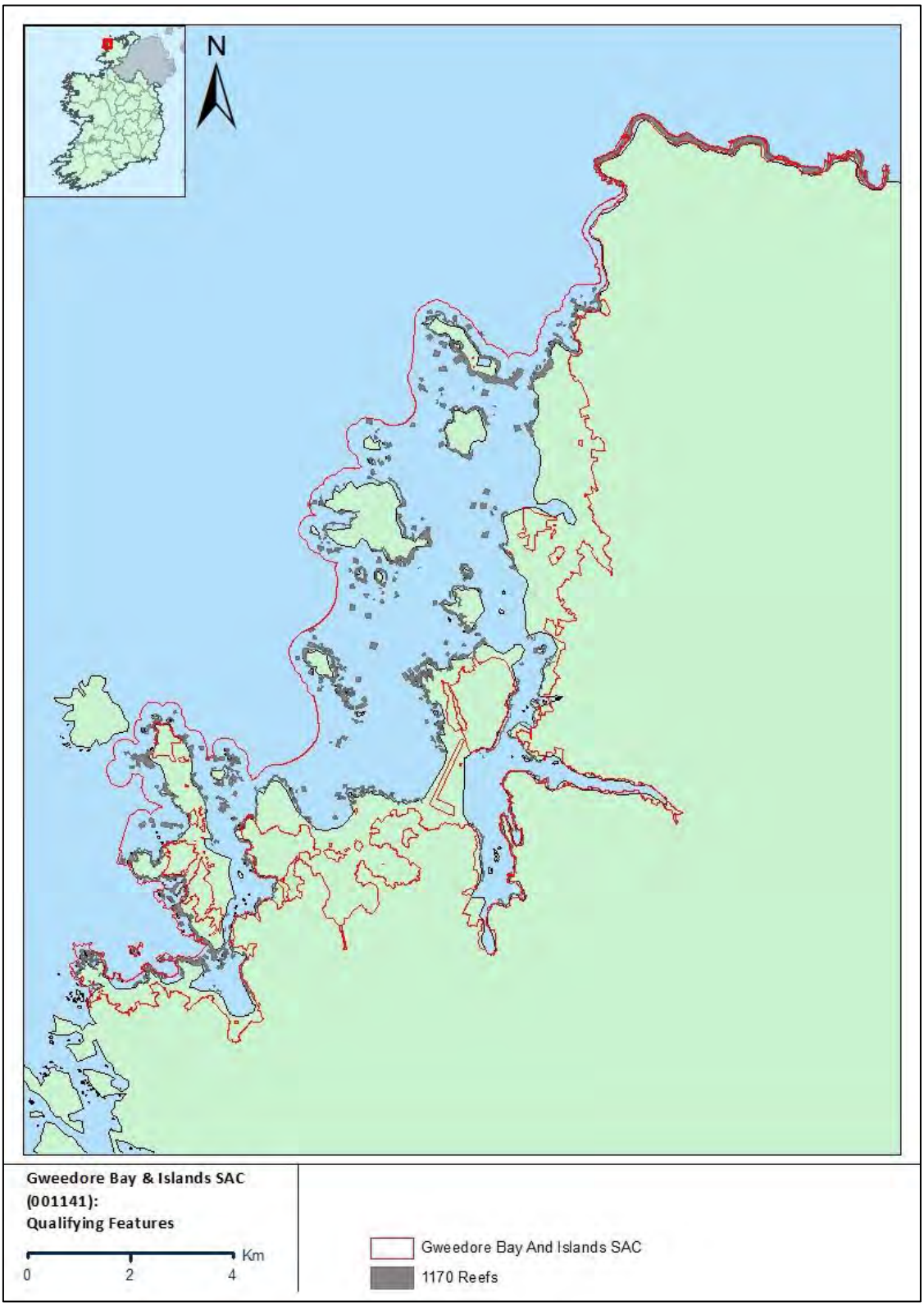

Figure 4.2 - Marine Annex I qualifying interest of Reefs (1170) within the Gweedore Bay & Islands SAC (NPWS 2015c).

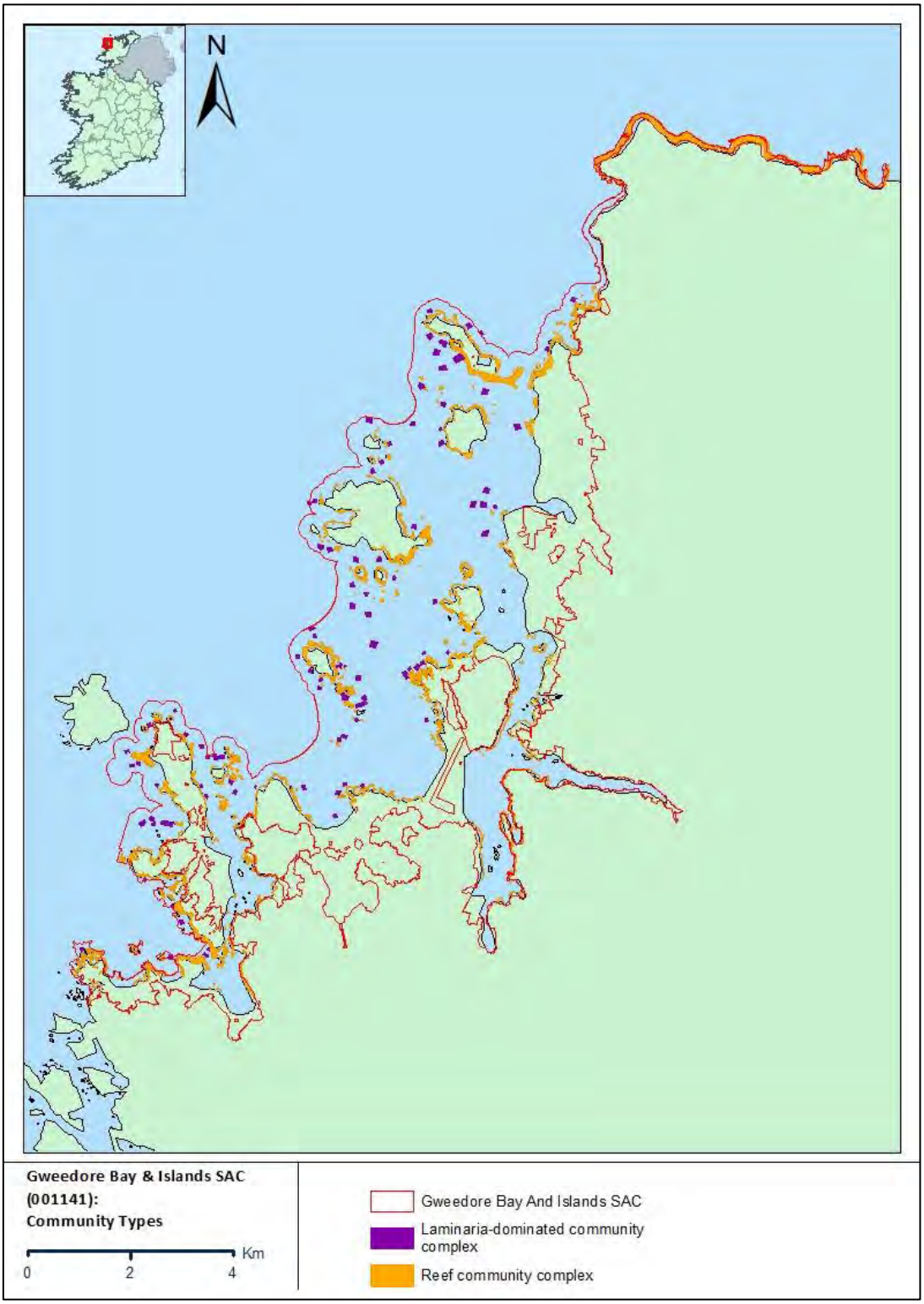

Figure 4.3 - Principal communities recorded within the marine Annex I qualifying interest of Reefs (1170) within Gweedore Bay & Islands SAC (Site Code 001141) (NPWS 2015c).

4.3 CONSERVATION OBJECTIVES FOR GWEEDORE BAY & ISLANDS SAC

The conservation objectives for the qualifying interests (SAC) were identified in NPWS (2015a). The natural condition of the designated features should be preserved with respect to their area, distribution, extent and community distribution. Habitat availability should be maintained for designated species and human disturbance should not adversely affect such species. The features, objectives and targets of each of the qualifying interests within the SAC are listed in **Table 4.1** below.

Table 4.1 - Conservation objectives and targets for marine habitats and species in Gweedore Bay & Islands SAC (Site Code 001141) (NPWS 2015a, 2015b, 2015c, 2015d). Annex I and II features listed in **bold**.

Feature (Community Type)	Objective	Target(s)
Reefs (1170)	Maintain favourable conservation condition	369.01ha; Targets focussed on maintaining habitat area and distribution and the natural condition of constituent community complexes.
(Reef community complex)	Maintain favourable conservation condition	308.44ha; Maintain in a natural condition
(*Laminaria*-dominated community)	Maintain favourable conservation condition	60.66ha; Maintain in a natural condition
Coastal lagoons (1150)	Restore favourable conservation condition	10.0ha (it must be noted that further unsurveyed areas may be present within the SAC); Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species, managing levels of negative species and maintaining water quality
Perennial vegetation of stony banks (1220)	Maintain favourable conservation condition	Area unknown; Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species and managing levels of negative species.
***Petalophyllum ralfsii* (Petalwort) (1395)**	Maintain favourable conservation condition	There are three known sites for this species and targets relate to maintaining population densities and overall habitat quality (e.g. hydrological conditions), and managing levels of negative species.
Mediterranean salt meadows (*Juncetalia maritimi*) (1410)	Maintain favourable conservation condition	One subsite mapped (0.09ha), additional areas of potential MSM habitat (9.66ha) identified from (n.b. further unsurveyed areas maybe present within the SAC); Targets are identified that focus on

Feature (Community Type)	Objective	Target(s)
		a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species and managing levels of negative species.
Slender Naiad *Najas flexilis* (1833)	Maintain favourable conservation condition	Area unknown; Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species, managing levels of negative species and maintaining water and substrate quality.
Embryonic shifting dunes (2110)	Maintain favourable conservation condition	Habitat mapped at five sub-sites to give a total estimated area of 3.97ha (n.b. habitat is very difficult to measure in view of its dynamic nature); Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species and managing levels of negative species.
Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) (2120)	Maintain favourable conservation condition	Habitat mapped at seven sub-sites to give a total estimated area of 14.79ha (n.b. habitat is very difficult to measure in view of its dynamic nature); Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species and managing levels of negative species.
Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130)	Restore favourable conservation condition	Habitat mapped at seven sub-sites to give a total estimated area of 402.46ha; Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species and managing levels of negative species.
Decalcified fixed dunes with *Empetrum nigrum (2140)**	Maintain favourable conservation condition	Habitat recorded at one sub-site, giving a total estimated area of 0.47ha (n.b. habitat is difficult to map as it occurs in a mosaic with fixed dunes, and is likely to be more widespread); Targets are identified that focus on a wide range of attributes with the ultimate goal of

Feature (Community Type)	Objective	Target(s)
		maintaining function and diversity of favourable species and managing levels of negative species.
Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)* (2150)	Maintain favourable conservation condition	Habitat recorded at one sub-site, giving a total estimated area of 3.57ha (n.b. habitat is difficult to map as it occurs in a mosaic with fixed dunes, and is likely to be more widespread); Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species and managing levels of negative species.
Dunes with *Salix repen* ssp. *argentea* (*Salicion arenariae*) (2170)	Maintain favourable conservation condition	Habitat recorded at two sub-sites, giving a total estimated area of 0.97ha (n.b. habitat is difficult to map as it can be confused with humid dune slack): Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species and managing levels of negative species.
Humid dune slacks (2190)	Maintain favourable conservation condition	Habitat mapped at six sub-sites to give a total estimated area of 7.69ha; Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species and managing levels of negative species.
Machairs (*priority habitat in Ireland) (21A0)	Restore favourable conservation condition	Habitat mapped at four sub-sites to give a total estimated area of 169.78ha; Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species, managing levels of negative species and maintaining soil quality and composition.
Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*) (3110)	Maintain favourable conservation condition	The selection of the SAC for this habitat was based on data for Mullaghderg Loughs, however, it is possible that habitat 3110 occurs elsewhere within the SAC; Targets relate to maintaining population densities and overall habitat

Feature (Community Type)	Objective	Target(s)
		quality (e.g. hydrological conditions), and managing levels of negative species.
European dry heaths (4030)	Maintain favourable conservation condition	Total area of this habitat has not been calculated, although it is known to be distributed throughout the SAC, usually occurring in mosaic with other habitats; Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species, managing levels of negative species, maintaining soil quality and composition.
Alpine and Boreal heaths (4060)	Maintain favourable conservation condition	Total area of this habitat has not been calculated; habitat usually occurs in mosaic with other habitats; Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species, managing levels of negative species and maintaining soil quality and composition.
***Juniperus communis* formations on heaths or calcareous grasslands (5130)**	Restore favourable conservation condition	Total area of this habitat has not been calculated; habitat usually occurs in mosaic with other habitats; Targets are identified that focus on a wide range of attributes with the ultimate goal of maintaining function and diversity of favourable species, managing levels of negative species and maintaining soil quality and composition.
Otter *Lutra lutra* (1355)	Maintain favourable conservation condition	Maintain distribution - 88% positive survey sites. Measure based on standard otter survey technique. FCS target, based on 1980/81 survey findings, is 88% in SACs. Current range is estimated at 93.6% (Reid et al., 2013)

4.4 SCREENING OF ADJACENT SACS OR FOR *EX-SITU* EFFECTS

In addition to the Gweedore Bay & Islands SAC there are three other SAC sites proximate to the existing and proposed aquaculture activities (**Figure 4.4**). **Table 4.2** presents the characteristic features of these adjacent sac sites and details the findings of a preliminary screening on the likely interaction with aquaculture activities based primarily upon the likelihood of spatial overlap. With

the exception of the common seal *Phoca vitulina* (which is a designated species for the Rutland Island & Sound SAC) it was deemed that there are no ex situ effects and no effects on features in adjacent SACs and the qualifying features of the adjacent SACs sites were screened out.

It was concluded that the Common Seal may migrate into the Gweedore Bay & Islands SAC and could interact with aquaculture activities; on this basis common seal is included as a feature in the Appropriate Assessment of aquaculture activities - i.e. carried forward to **Section 8.5** and **Section 9.1.2**.

Table 4.2 - SAC sites adjacent to the Gweedore Bay & Islands SAC and qualifying features with initial screening assessment on likely interactions with aquaculture activities.

Natura site (code)	Qualifying features (habitat/species code)	Aquaculture initial Screening
Aran Island (Donegal) Cliffs SAC (000111)	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	European dry heaths [4030]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Alpine and Boreal heaths [4060]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Calcareous rocky slopes with chasmophytic vegetation [8210]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Siliceous rocky slopes with chasmophytic vegetation [8220]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
Rutland Island & Sound SAC (002283)	Coastal lagoons [1150]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Large shallow inlets and bays [1160]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Reefs [1170]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Annual vegetation of drift lines [1210]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Embryonic shifting dunes [2110]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.

Natura site (code)	Qualifying features (habitat/species code)	Aquaculture initial Screening
	Humid dune slacks [2190]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Phoca vitulina (Common Seal) [1365]	**Common Seal may migrate into the Gweedore Bay & Islands SAC and could interact with aquaculture activities – carry forward to Section 8.5 and Section 9.1.2.**
Ballyness Bay SAC (001090)	Estuaries [1130]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Mudflats and sandflats not covered by seawater at low tide [1140]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Embryonic shifting dunes [2110]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Humid dune slacks [2190]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
	Vertigo geyeri (Geyer's Whorl Snail) [1013]	No spatial overlap with aquaculture activities within Gweedore Bay & Islands SAC – excluded from further analysis.
West Donegal SPA (004150)	Fulmar *(Fulmarus glacialis)* Cormorant *(Phalacrocorax carbo)* Shag *(Phalacrocorax aristotelis* Peregrine *(Falco peregrinus)* Herring Gull *(Larus argentatus)* Kittiwake *(Rissa tridactyla)* Razorbill *(Alca torda)* Chough *(Pyrrhocorax pyrrhocorax)*	No spatial overlap with aquaculture activities (including access routes). The foraging range of the species identified in the COs is extensive and while some may utilise the aquaculture areas for feeding (which are proximate to a small portion of the SPA), it is unlikely the activities or structures used will impact on the conservation objectives and targets. For the most part the bird species will range beyond the scope or influence of the shellfish culture operations. Therefore, shellfish culture and associated activities considered in this report does not pose significant risk to the conservation features found in the West Donegal Coast SPA and is excluded from further analysis.

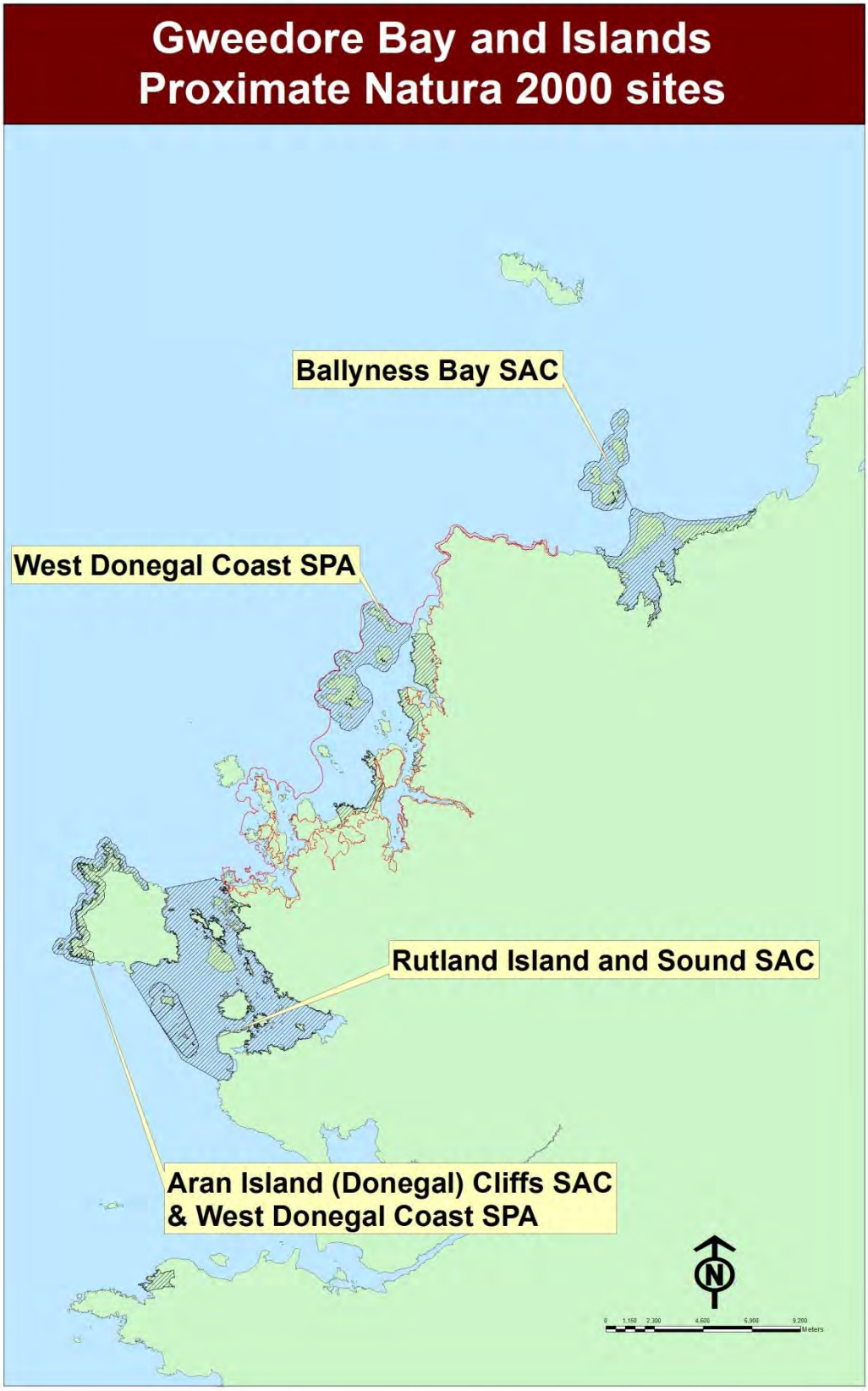

Figure 4.4 – Natura 2000 sites adjacent to the Gweedore Bay & Islands SAC.

5 DETAILS OF THE PROPOSED PLANS AND PROJECTS

5.1 DESCRIPTION OF AQUACULTURE ACTIVITIES

This assessment focuses specifically on aquaculture activities which occur within the qualifying interest Reefs (1170) for which the Gweedore Bay & Islands SAC is designated. In the Gweedore Bay & Islands SAC, of the 25 aquaculture sites (licenced and applications) considered within the SAC, there are 4 licenced sites with a further 5 newly applied for sites that have spatial overlap with the habitat conservation feature. Descriptions of spatial extents of existing and proposed aquaculture activities (including proposed access route activity) within the qualifying interest were calculated using coordinates of activity areas in a GIS (see **Figures 5.1**, **5.2** and **5.3**). The spatial extent of the cultivation activities (current and proposed) overlapping the habitat features is presented in **Table 5.1** (data provided by DAFM).

5.1.1 Intertidal Oyster Cultivation

5.1.1.1 Current Activity

Current oyster cultivation within Gweedore Bay & Islands SAC is a form of intensive culture with oyster seed cultivated using the bag and trestle method within the intertidal zone, either to half-grown or fully-grown size.

The bag and trestle method uses steel table-like structures which rise from the shore to just above knee height on the middle to lower intertidal zone, arrayed in double rows with wide gaps between the paired rows to allow for access.

Trestles used are made from steel and typically between 3 in length, are approximately 1 metre in width and stand between 0.5 and 0.7 metre in height. In general, oyster farms are positioned between mean Low Water Spring and mean Low Water Neap, allowing on average between 2 and 5 hours exposure depending on location, tidal and weather conditions. The trestles hold typically hold six HDPE mesh bags approximately 1m by 0.5m by 10cm, using rubber and wire clips to close the mesh bags and to fasten them to the trestles.

The production cycle begins in Gweedore Bay when oyster seed is brought to the service site either in spring or late summer of each year. The majority of oyster seed is bought in from oyster nurseries in France, most notably France Nissian. Oysters are thinned out and graded as the oysters grow. As the oysters grow, they will be taken to the handling / sorting facility twice per year for grading and re-packing, and returned to the trestles. In the final stage they will be 'hardened' in the upper intertidal area, before removal, grading, bagging and delivery. Time to harvest, depending on intake size, ranges from 2 to 3 years, where they will have reached 60 – 70g. At reaching market size oysters are in bags of about 120. In 2015, the combined production at the licenced sites was estimated to be 100 tonnes.

Farms on the intertidal area are typically accessed during spring tides (at low tide) using vans or tractors. Preparatory work is always conducted in the service areas in the intervening periods, including grading and packing, preparation of bags and trestles and general maintenance work which includes shaking and turning of bags, and hand removal of fouling and seaweed to ensure maintenance of water flow through the bags when submerged.

In the Gweedore Bay, existing producers observe three main access routes from the shore to farm areas (**Figures 5.2**) used by tractors to access each of the main growing areas.

Calculation of area of access routes in the SAC is generated by assigning a putative route width of 10m, which is considered a sufficiently precautionary estimate. The resulting estimates represent the maximium length of travel route to/from and between the culture locations. The spatial coverage of access routes is presented in **Tables 5.1**, **7.1** and **8.4.**

5.1.1.2 Proposed Cultivation Activity

New (oyster) applicants at Gweedore and Kincasslagh Bay have indicated that the source of seed will be from hatcheries currently used by existing farms within the SAC. All new applicants are to use bag and trestles as the method of cultivating their oysters.

New applications for Gweedore Bay are located to the north and south of bay and will be serviced by two main access routes, while applicants at Kincasslagh will observe three main access routes (see **Figure 5.3**).

The spatial coverage of proposed access routes within the SAC is presented in **Tables 5.1**, **7.1** and **8.4**.

5.1.2 Intertidal Clam Cultivation

One application in Kincasslagh Bay is for the culture of clams and cockles. Clams are typically cultured under netting on sea floor in sedimentary habitat. The duration of culture is 2-3 years and net cleaning will be carried out periodically, as required. The applicants have indicated that seed will be sourced from a hatchery in County Sligo.

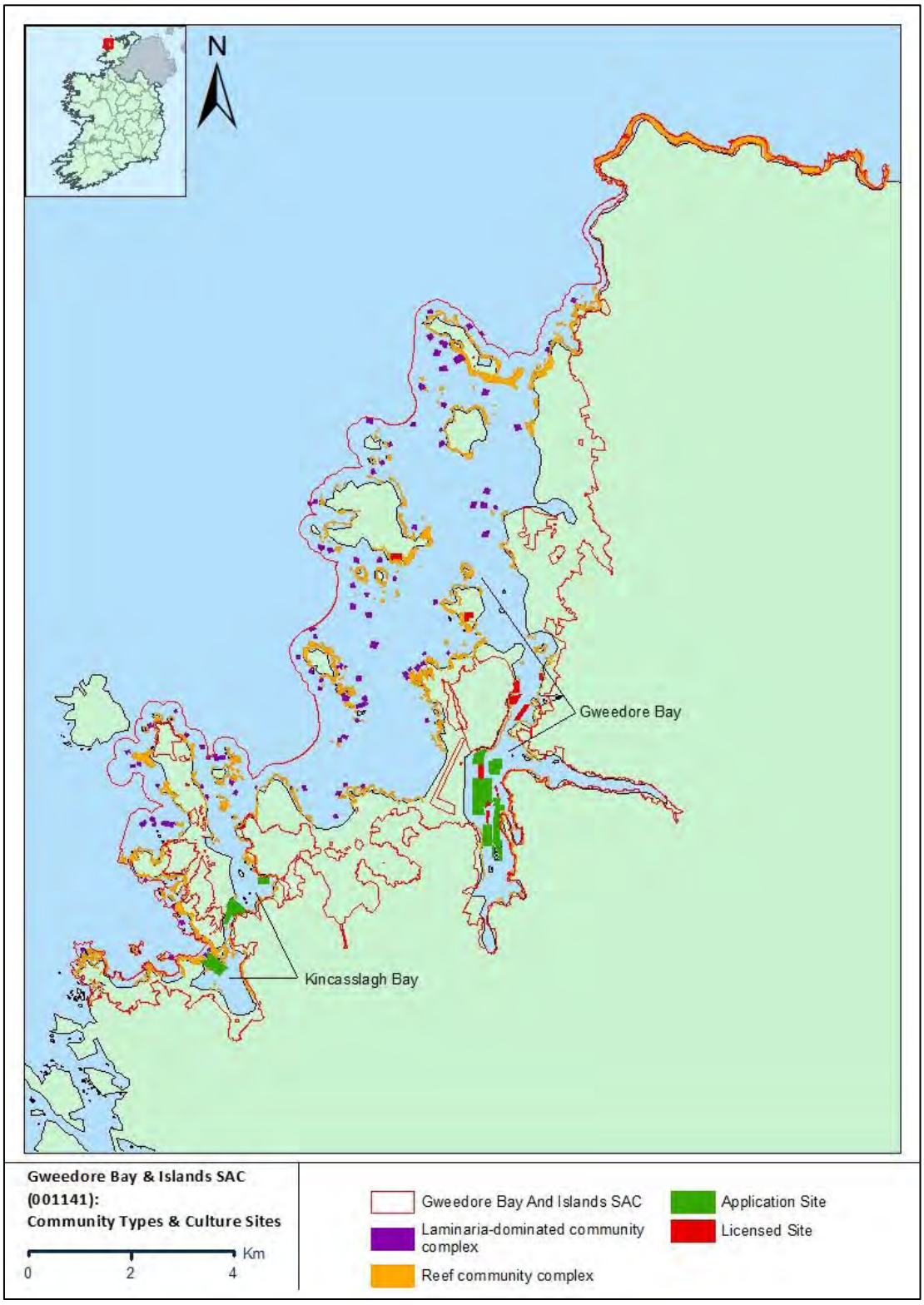

Figure 5.1 - Aquaculture sites (licenced and applications) at Gweedore Bay and Kincasslagh Bay relative to principal benthic communities recorded within the marine Annex I qualifying interest of Reefs (1170) of Gweedore Bay & Islands SAC (NPWS 2014c).

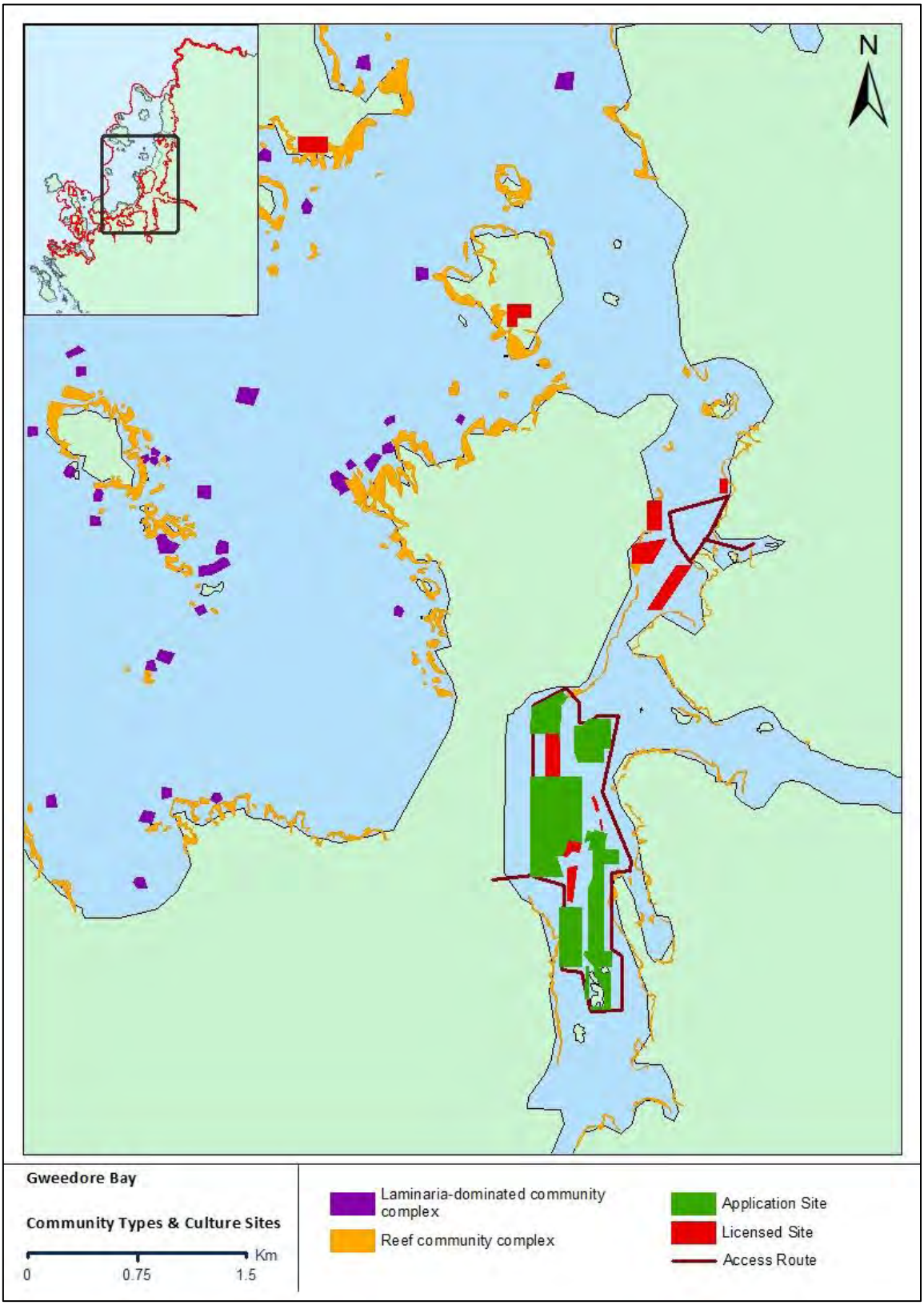

Figure 5.2 - Aquaculture sites (licenced and applications) and access routes at Gweedore Bay relative to principal benthic communities recorded within the marine Annex I qualifying interest of Reefs (1170) of Gweedore Bay & Islands SAC (NPWS 2014c).

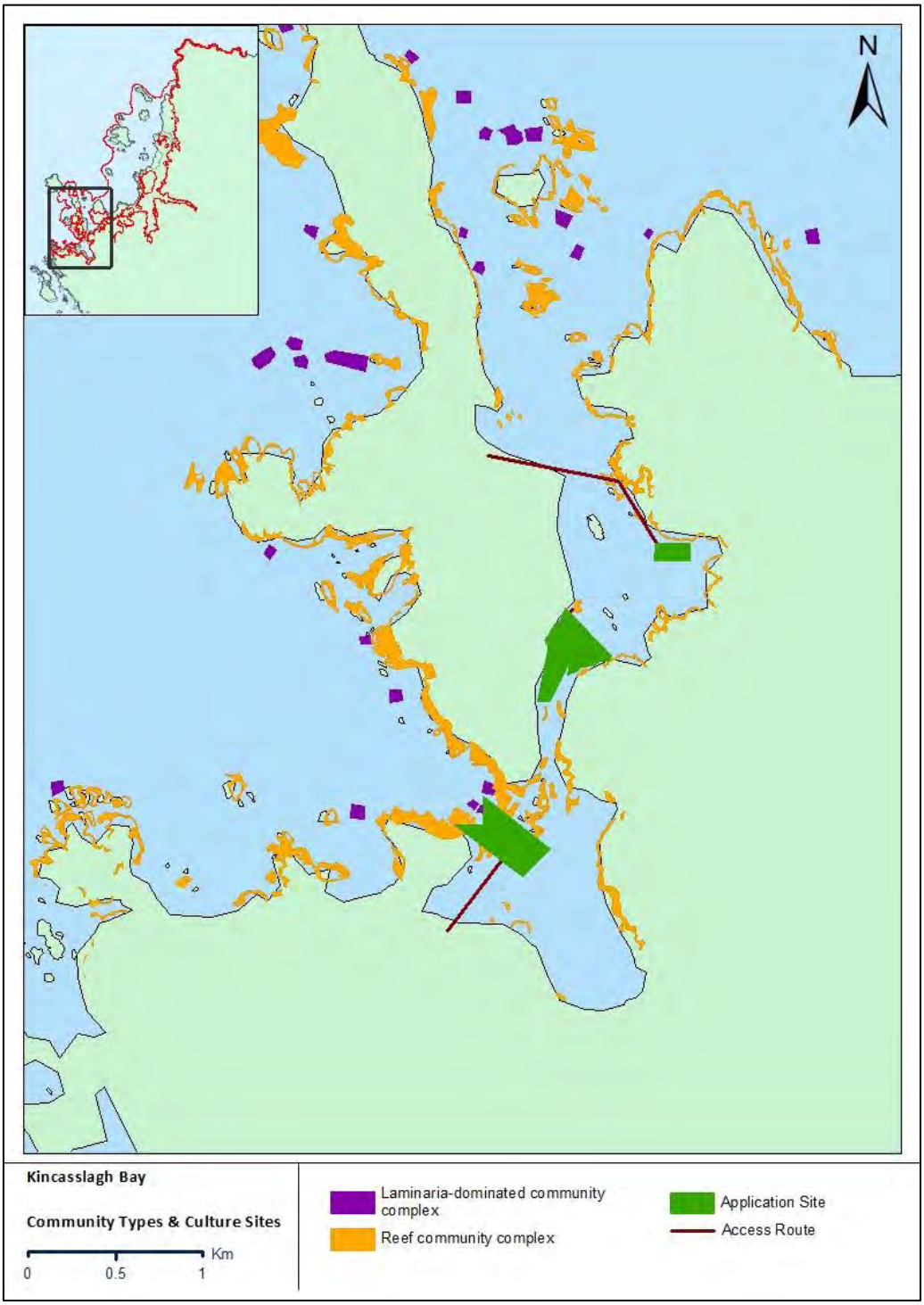

Figure 5.3 - Aquaculture sites (licenced and applications) and access routes at Kincasslagh Bay relative to principal benthic communities recorded within the marine Annex I qualifying interest of Reefs (1170) of Gweedore Bay & Islands SAC (NPWS 2014c).

Table 5.1 - Spatial extent of aquaculture activities overlapping with the qualifying interest of Reefs (1170) within Gweedore Bay & Islands SAC (Site Code 001141), presented according to culture activity and license status.

Culture Activity	Status	Area (ha)	% Feature
Oysters	Licensed	0.35	0.09
Access Routes	In use	0.22	0.06
Sub-total		**0.57**	**0.15**
Oysters	Application	1.95	0.53
Clams/Cockles	Application	0.00	0.00-
Access Routes	Proposed	0.10	0.03
Sub-total		**2.05**	**0.56**
Grand Total		**2.62**	**0.71**

6 NATURA IMPACT STATEMENT FOR THE PROPOSED ACTIVITIES

The potential ecological effects of activities on the conservation objectives for the site relate to the physical and biological effects aquaculture cultivation structures and activities and human activities on designated species, intertidal habitats and invertebrate communities and biotopes within those broad habitat types. The overall effect on the conservation status will depend on the spatial and temporal extent of aquaculture activities during the lifetime of the proposed plans and projects and the nature of each of these activities in conjunction with the sensitivity of the receiving environment.

6.1 AQUACULTURE

Within the qualifying interest of Gweedore Bay & Islands SAC the species cultured is the Pacific oyster *C. gigas* in bags & trestles in the intertidal area.

Details of the potential biological and physical effects of these aquaculture activities on the habitat features, their sources and the mechanism by which the impact may occur are summarised in **Table 6.1** below. The impact summaries identified in the table are derived from published primary literature and review documents that have specifically focused upon the environmental interactions of mariculture (e.g. Black 2001; McKindsey et al 2007; NRC 2010; O'Beirn et al 2012; Cranford et al 2012; ABPMer 2013a-h).

Filter feeding organisms, for the most part, feed at the lowest trophic level, usually relying primarily on ingestion of phytoplankton. The process is extractive in that it does not rely on the input of feedstuffs in order to produce growth. Suspension feeding bivalves such as oysters and 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. The degree of deposition and accumulation of biologically derived material on the seafloor is a function of a number of factors discussed below.

One aspect to consider in relation to the culture of shellfish is the potential risk of alien species arriving into an area among consignments of seed or stock sourced from outside of the area under consideration. When the seed is sourced locally (e.g. mussel culture) the risk is likely zero. When seed is sourced at a small size from hatcheries in Ireland the risk is also small. When seed is sourced from hatcheries outside of Ireland (this represents the majority of cases particularly for oyster culture operations) the risk is also considered small, especially if the nursery phase has been short. When ½-grown stock (oysters and mussels) is introduced from another area (e.g. France, UK) the risk of introducing alien species (hitchhikers) is considered greater given that the stock will have been grown in the wild (open water) for a prolonged period (i.e. ½-grown stock). Furthermore, the culture of a non-native species (e.g. the Pacific Oyster – *C. gigas*) may also presents a risk of establishment of this species in the SAC. Recruitment of *C. gigas* has been documented in a number of bays in Ireland and appears to have become naturalised (i.e. establishment of a breeding population) in two locations (Kochmann et al 2012; 2013) and may compete with the native species for space and food.

Intertidal shellfish culture: Oysters are typically cultured in the intertidal zone using a combination of plastic mesh bags and trestles. Their specific location in the intertidal is dependent upon the level

of exposure of the site, the stage of culture and the accessibility of the site. Any habitat impact from oyster trestle culture is typically localised to areas directly beneath the culture systems. The physical presence of the trestles and bags may reduce water flow and allowing suspended material (silt, clay as well as faeces and pseudo-faeces) to fall out of suspension to the seafloor. The build-up of material will typically occur directly beneath the trestle structures and can result in accumulation of fine, organically rich sediments. These sediments may result in the development of infaunal communities distinct from the surrounding areas. Similar to suspended culture above, whether material accumulates beneath oyster trestles is dictated by a number of factors, including:

- Hydrography – low current speeds (or small tidal range) may result in material being deposited directly beneath the trestles. If tidal height is high and large volumes of water moved through the culture area an acceleration of water flow can occur beneath the trestles and bags, resulting in a scouring effect or erosion and no accumulation of material.

- Turbidity of water – as with suspended mussel culture, oysters have very plastic response to increasing suspended matter in the water column with a consequent increase in faecal or pseudo-faecal production. Oysters can be cultured in estuarine areas (given their polyhaline tolerance) and as a consequence can be exposed to elevated levels of suspended matter. If currents in the vicinity are generally low, elevated suspended matter can result in increased build-up of material beneath culture structures.

- Density of culture – the density of oysters in a bag and consequently the density of bags on a trestle will increase the likelihood of accumulation on the seafloor. In addition, if the trestles are located in close proximity a greater dampening effect can be realised with resultant accumulations. Close proximity may also result in impact on shellfish performance due to competitive interactions for food.

- Exposure of sites - the degree to which the aquaculture sites are exposed to prevailing weather conditions will also dictate the level of accumulated organic material in the area. As fronts move through culture areas increased wave action will resuspend and disperse material away from the trestles.

Shading may be an issue as a consequence of the structures associated with intertidal oyster culture. The racks and bags are held relatively close to the seabed and as a consequence may shade sensitive species (e.g. seagrasses) found underneath.

Physical disturbance caused by compaction of sediment from foot traffic and vehicular traffic. Activities associated with the culture of intertidal shellfish include the travel to and from the culture sites and within the culture sites using tractors and trailers as well as the activities of workers within the site boundaries.

Intertidal culture of clam species is typically carried out in the sediment covered with netting to protect the stock from predators. The high density of the culture organisms can lead to exclusion of native biota and the ground preparation and harvest methods (by mechanical means or by hand) can lead to considerable disturbance of biota characterising the habitat.

Other considerations: Due to the nature of the (high density) of shellfish culture methods the risk of transmission of disease within cultured stock is high. However, given that *C. gigas* does not appear to occur in the wild the risk of disease transmission to 'wild' stock is considered low. The risk of disease transmission from cultured oysters to other species is unknown.

Oyster culture poses a risk in terms of the introduction of non-native species as the Pacific oyster (*C. gigas*) is a non-native species. Recruitment of *C.* gigas has been documented in a number of Bays in Ireland and appears to have become naturalised (i.e. establishment of a breeding population) in two locations (Kochmann et al 2012; 2013) and may compete with the native species for space and food. The culture of large volumes of Pacific oysters may increase the risk of successful reproduction in Gweedore Bay & Islands SAC. The use of triploid (non-reproducing) stock is the main method employed to manage this risk. Furthermore, the introduction of non-native species as 'hitchhikers' on and among culture stock is also considered a risk, the extent of which is dependent upon the duration the stock has spent 'in the wild' outside of Gweedore Bay & Islands SAC. Half-grown stock (15 - 30g oysters) which would have been grown for extended periods in places (in particular outside of Ireland) present a higher risk. Oysters grown in other bays in Ireland and 'finished' in Gweedore Bay & Islands SAC, would not appear to present a risk of introduction of non-native species assuming best practice is applied (e.g. http://invasivespeciesireland.com/cops/aquaculture/).

The Manila clam (*Ruditapes philippinarum*), is a non-native species and has been in culture in Ireland since 1984. This species may present a risk of successfully spawning and establishing reproducing populations. The factors likely to govern successful recruitment are; suitable water temperatures, sufficient spawning stock and availability of suitable habitat.

Table 6.1 - Potential indicative environmental pressures of aquaculture activities within the qualifying interest of Reefs (1170) within the Gweedore & Islands SAC.

Activity	Pressure category	Pressure	Potential effects	Equipment / Gear	Duration (days)	Time of year	Factors constraining the activity
Intertidal shellfish Culture	Physical	Current alteration	Structures may alter the current regime and resulting increased deposition of fines or scouring.	Trestles and bags and service equipment, dredging equipment.	365	All year	At low tide only
		Surface disturbance	Ancillary activities at sites, e.g. servicing, transport increase the risk of sediment compaction resulting in sediment changes and associated community changes. Disturbance to sedimentary communities due to harvest and planting of infaunal clams.				
		Shading	Prevention of light penetration to seabed potentially impacting light sensitive species				
	Biological	Non-native species introduction	Potential for non-native species to reproduce and proliferate in SAC. Potential for alien species to be included with culture stock (hitch-hikers).				
		Disease risk	In event of epizootic the ability to manage disease in uncontained subtidal oyster populations is compromised.				
		Organic enrichment	Faecal and pseudofaecal deposition on seabed potentially altering community composition				

7 SCREENING OF AQUACULTURE ACTIVITIES

A screening assessment is an initial evaluation of the possible impacts that activities may have on the qualifying interests. The screening process, is a filter, which may lead to exclusion of certain activities or qualifying interests from appropriate assessment proper, thereby simplifying the assessments, if this can be justified unambiguously using limited and clear cut criteria. Screening is a conservative filter that minimises the risk of false negatives.

In this assessment screening of the qualifying interests against the proposed activities is based primarily on spatial overlap i.e. if the qualifying interests overlap spatially with the proposed activities then significant impacts due to these activities on the conservation objectives for the qualifying interests is not discounted (not screened out) except where there is absolute and clear rationale for doing so. Where there is relevant spatial overlap full assessment is warranted. Likewise if there is no spatial overlap and no obvious interaction is likely to occur, then the possibility of significant impact is discounted and further assessment of possible effects is deemed not to be necessary.

7.1 SCREENING OF GWEEDORE BAY & ISLANDS SAC

Where the overlap between an aquaculture activity and community habitat type and/or a feature of interest is zero it is screened out and not considered further. Therefore, the following habitats and species are also excluded from further consideration of aquaculture interactions:

- 1150 Coastal lagoons*
- 1220 Perennial vegetation of stony banks
- 1395 Petalwort *Petalophyllum ralfsii*
- 1410 Mediterranean salt meadows (*Juncetalia maritimi*)
- 1833 Slender Naiad *Najas flexilis*
- 2110 Embryonic shifting dunes
- 2120 Shifting dunes along the shoreline with *Ammophilia arenaria* (white dunes)
- 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)
- 2140 Decalcified fixed dunes with *Empetrum nigrum**
- 2150 Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)*
- 2170 Dunes with *Salix repen* ssp*. argentea* (*Salicion arenariae*)
- 2190 Humid dune slacks
- 21A0 Machairs (* in Ireland)

- 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*)
- 4030 European dry heaths
- 4060 Alpine and Boreal heaths
- 5130 *Juniperus communis* formations on heaths or calcareous grasslands

Furthermore, of the two community types (see **Table 4.1**) listed under the habitat features (1170), one (i.e. *Laminaria*-dominated community complex) had no spatial overlap between with any aquaculture activities. On this basis, the community type was excluded from further analysis of aquaculture interactions.

When overlap between aquaculture activity and a community habitat type and/or a feature of interest was observed it was quantified in a GIS application and presented on the basis of coverage of specific activity (representing different pressure types), licence status (licenced or application) intersecting with designated conservation features and/or sub-features (community types). **Table 5.1** highlights the spatial overlap between (existing and proposed) aquaculture activities and qualifying habitat feature of Reefs (1170) while **Table 7.1** below provides an overview of overlap of aquaculture activities and specific marine community type of Reef community complex (identified from Conservation Objectives (i.e. NPWS 2014a)) within the broad habitat feature 1170. A full assessment (see **Section 8**) was carried out on the likely interactions of aquaculture activities with the community type presented in (**Table 7.1**).

Table 7.1 - Habitat utilisation i.e. spatial overlap in hectares and percentage (given in parentheses) of aquaculture activity over Reef community complex within the qualifying interest 1170 (i.e. Reefs) in Gweedore Bay & Islands SAC. Spatial data based on licence database provided by DAFM. Habitat data provided in NPWS 2015c.

			1170 - Reefs; 369.01ha			
Culture Type	**Method**	**Status**	**Reef community complex; 308.44 ha**		***Laminaria*-dominated community complex; 60.66 ha**	
			Area (ha)	**% Feature**	**Area (ha)**	**% Feature**
Oysters	Intensive	Licensed	0.35	0.11	-	-
Access Routes	In use		0.22	0.07	-	-
Sub-total			**0.57**	**0.18**	**-**	**-**
Oysters	Intensive	Application	1.95	0.63	-	-
Clam/Cockle	Intensive	Application	-	-	-	-
Access Routes	Proposed		0.10	0.03	-	-
Sub-total			**2.05**	**0.66**	**-**	**-**
Grand total			**2.62**	**0.84**	**-**	**-**

8 ASSESSMENT OF AQUACULTURE ACTIVITIES

8.1 DETERMINING SIGNIFICANCE

The significance of the possible effects of the proposed activities on habitats, as outlined in the Natura Impact Statement (**Section 6**) and subsequent screening exercise (**Section 7**), is determined here in the assessment. The significance of effects is determined on the basis of Conservation Objective guidance for constituent habitats and species (**Figures 4.2**, **4.3** and NPWS 2015a, 2015b, 2015c, 2015d).

Within the Gweedore Bay & Island SAC the qualifying habitat/species considered subject to potential disturbance and therefore, carried further in this assessment is:

- 1170 Reefs
- 1355 Otter - *Lutra lutra*

For broad habitats and community types (**Figures 4.2, 4.3**) significance of impact is determined in relation to, first and foremost, spatial overlap (see **Section 7**; **Tables 7.1**). Subsequent disturbance and the persistence of disturbance are considered as follows:

1. The degree to which the activity will disturb the qualifying interest. By disturb is meant change in the characterising species, as listed in the Conservation Objective guidance (NPWS 2015c) for constituent communities. The likelihood of change depends on the sensitivity of the characterising species to the activities in question. Sensitivity results from a combination of intolerance to the activity and/or recoverability from the effects of the activity (see **Section 8.2** below).

2. The persistence of the disturbance in relation to the intolerance of the community. If the activities are persistent (high frequency, high intensity) and the receiving community has a high intolerance to the activity (i.e. the characterising species of the communities are sensitive and consequently impacted) then such communities could be said to be persistently disturbed.

3. The area of communities or proportion of populations disturbed. In the case of community disturbance (continuous or ongoing) of more than 15% of the community area it is deemed to be significant. This threshold does not apply to the sensitive habitat *Zostera* where any spatial overlap of activities should generally be avoided.

Effects will be deemed to be significant when cumulatively they lead to long term change (persistent disturbance) in broad habitat/features (or constituent communities) resulting in an impact greater than 15% of the area.

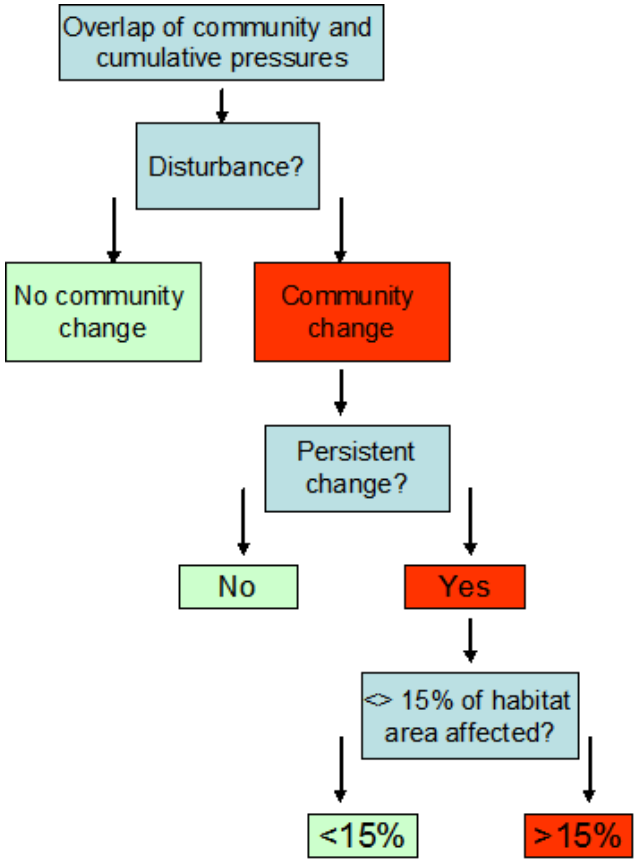

Figure 8.1 - Determination of significant effects on community distribution, structure and function for sedimentary habitats (following NPWS 2014c).

In relation to the designated species Otter *Lutra lutra* the capacity of the population to maintain itself in the face of anthropogenic induced disturbance or mortality at the site will need to be taken into account in relation to the Conservation Objectives (COs) on a case by case basis.

8.2 SENSITIVITY AND ASSESSMENT RATIONALE

This assessment used a number of sources of information in assessing the sensitivity of the species of characterising Reef community complex within the Gweedore Bay & Islands SAC. One source of information is a series of commissioned reviews by the Marine Institute which identify habitat and species sensitivity to a range of pressures likely to result from aquaculture and fishery activities (ABPMer 2013a-h). These reviews draw from the broader literature, including the MarLIN Sensitivity Assessment (Marlin.ac.uk) and the AMBI Sensitivity Scale (Borja et al 2000) and other primary literature. It must be noted that NPWS have acknowledged that given the wide range of community types that can be found in marine environments, the application of conservation targets to these would be difficult (NPWS 2015c). On this basis, they have proposed broad community complexes as management units. These complexes (for the most part) are very broad in their description and do not have clear surrogates which might have been considered in targeted studies and thus reported in the scientific literature. On this basis, the confidence assigned to likely interactions of the community types with anthropogenic activities are by necessity relatively low, with the exception of community types dominated by sensitive taxa, e.g. Mearl and *Zostera*. Other literature cited in the assessment does provide a greater degree of confidence in the conclusions. For example, the output of a recent study has provided greater confidence in terms of assessing likely interactions between intertidal oyster culture and marine habitats (Forde et al 2015). Sensitivity of a species to a given

pressure is the product of the intolerance (the susceptibility of the species to damage, or death, from an external factor) of the species to the particular pressure and the time taken for its subsequent recovery (recoverability is the ability to return to a state close to that which existed before the activity or event caused change). Life history and biological traits are important determinants of sensitivity of species to pressures from aquaculture.

In the case of species, communities and habitats of conservation interest, the separate components of sensitivity (intolerance, recoverability) are relevant in relation to the persistence of the pressure:

- For persistent pressures i.e. activities that occur frequently and throughout the year recovery capacity may be of little relevance except for species/habitats that may have extremely rapid (days/weeks) recovery capacity or whose populations can reproduce and recruit in balance with population damage caused by aquaculture. In all but these cases and if sensitivity is moderate or high then the species/habitats may be negatively affected and will exist in a modified state. Such interactions between aquaculture and species/habitat/community represent persistent disturbance. They become significantly disturbing if more than 15% of the community is thus exposed (NPWS 2015c).

- In the case of episodic pressures i.e. activities that are seasonal or discrete in time both the intolerance and recovery components of sensitivity are relevant. If sensitivity is high but recoverability is also high relative to the frequency of application of the pressure then the species/habitat/community will be in favourable conservation status for at least a proportion of time.

The sensitivities of the community types (or surrogates) found within the Gweedore Bay & Islands SAC to pressures similar to those caused by aquaculture (e.g. smothering, organic enrichment and physical disturbance) are identified in **Table 8.1**. The sensitivities of species which are characteristic (as listed in the Conservation Objective supporting document) of benthic communities to pressures similar to those caused by aquaculture (e.g. smothering, organic enrichment and physical disturbance) are identified, where available, in **Table 8.2**. The following guidelines broadly underpin the analysis and conclusions of the species and habitat sensitivity assessment:

- Sensitivity of certain taxonomic groups such as emergent sessile epifauna to physical pressures is expected to be generally high or moderate because of their form and structure (Roberts et al 2010). Also high for those with large bodies and with fragile shells/structures, but low for those with smaller body size. Body size (Bergman and van Santbrink 2000) and fragility are regarded as indicative of a high intolerance to physical abrasion caused by fishing gears (i.e. dredges). However, even species with a high intolerance may not be sensitive to the disturbance if their recovery is rapid once the pressure has ceased.

- Sensitivity of certain taxonomic groups to increased sedimentation is expected to be low for species which live within the sediment, deposit and suspension feeders; and high for those sensitive to clogging of respiratory or feeding apparatus by silt or fine material.

- Recoverability of species depends on biological traits (Tillin et al 2006) such as reproductive capacity, recruitment rates and generation times. Species with high reproductive capacity, short generation times, high mobility or dispersal capacity may maintain their populations even when faced with persistent pressures; but such environments may become dominated by these (r-selected) species. Slow recovery is correlated with slow growth rates, low fecundity, low and/or irregular recruitment, limited dispersal capacity and long generation

times. Recoverability, as listed by MarLIN, assumes that the impacting factor has been removed or stopped and the habitat returned to a state capable of supporting the species or community in question. The recovery process is complex and therefore the recovery of one species does not signify that the associated biomass and functioning of the full ecosystem has recovered (Anand and Desrocher, 2004 - cited in Hall et al 2008).

8.3 ASSESSMENT OF THE EFFECTS OF AQUACULTURE PRODUCTION ON THE CONSERVATION OBJECTIVES FOR HABITAT FEATURES IN THE GWEEDORE BAY & ISLANDS SAC.

Aquaculture pressures on a given habitat are related to vulnerability (spatial overlap or exposure of the habitat to the equipment/culture organism combined with the sensitivity of the habitat) to the pressures induced by culture activities. 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 habitats and species.

NPWS (2015c) provide lists of species characteristic of **Reef community complex** that are defined in the Conservation Objectives (NPWS 2015a).

The constituent communities identified in the broad Annex 1 feature **1170 - Reefs** are:

- Reef community complex
- *Laminaria*-dominated community complex

For **Reefs (1170)** there are a number of attributes (with associated targets) relating to the following broad habitat features as well as constituent community types;

1. **Habitat Area -** it is unlikely that the activities proposed will reduce the overall extent of permanent habitat within the feature Reefs (1170). The habitat area is likely to remain stable.

2. **Community Distribution - (conserve a range of community types in a natural condition) -** this attribute considered interactions with the two constituent community types listed found within the qualifying interest of Reefs (1170) of the SAC only one of which was shown to have overlap with aquaculture activities (i.e. Reef community complex) (**Table 7.1**).

   Table 8.1 lists the habitats (or surrogates) and **Table 8.2** lists the constituent taxa and both provide a commentary of sensitivity to a range of pressures. The risk scores are derived from a range of sources identified above. The pressures are listed as those likely to result from intertidal oyster culture (bags and trestle) within the SAC.

   Table 8.4 below identifies the likely interactions between the existing and proposed aquaculture activities and the broad habitat feature of Reef (1170) and its constituent community type Reef community complex, with a broad conclusion and justification on whether the activity is considered disturbing to the feature in question. It must be noted that the sequence of distinguishing disturbance is as highlighted above, whereby

activities with spatial overlap on habitat features are assessed further for their ability to cause persistence disturbance on the habitat. If persistent disturbance is likely then the spatial extent of the overlap is considered further. If the proportion of the overlap exceeds a threshold of 15% disturbance of the habitat then any further licencing should be informed by interdepartmental review and consultation (NPWS 2015c).

While intertidal oyster culture might result in long-term change to the community type listed above, existing and/or proposed activity including access route activity (individually or combined) does not extend beyond 15% of the community type. Spatial analysis indicates that combined existing and proposed cultivation activity overlap with approximately 0.71% of the habitat feature (1170) Reefs (see **Table 5.1**) and 0.84% of the constituent community type Reef community complex (**Table 7.1** and **Table 8.4**). Furthermore, given the nature of the habitat, i.e., reef the activities are unlikely to occur on them and that the overlap is an artefact of the mapping. Consequently, adverse impacts of existing and proposed aquaculture activities on the habitat feature Reef 1170 and component community types **can be discounted.**

Introduction of non-native species: As already outlined **o**yster culture may present a risk in terms of the introduction of non-native species as the Pacific oyster (*Crassostrea gigas*) itself is a non-native species. Recruitment of *C. gigas* has been documented in a number of Bays in Ireland and appears to have become naturalised (i.e. establishment of a breeding population) in two locations (Kochmann et al 2012; 2013) and may compete with the native species for space and food. In addition to having large number of oysters in culture, Kochmann et al (2013) identified long residence times and large intertidal areas as factors likely contributing to the successful recruitment of oysters in Irish bays. In addition, a recent study (Kochmann and Crowe, 2014) has identified heavy macroalgal cover as a potential factor governing successful recruitment, with higher cover resulting in lower recruitment. Furthermore, MagAoidh (2011) demostrated that oysters grown subtidally have been shown to mature earlier and have higher condition. Oyster production in the Gweedore Bay & Islands SAC does not fulfil these criteria, i.e., high algal cover allied with a short residence time (i.e. approx 8 days – Dabrowski 2011). Therefore the risk of successful establishment of the Pacific oyster in Gweedore Bay & Islands SAC is considered low.

Clam culture: The proposal to culture clams and cockles does not spatially overlap any feature of interest in Gweedore Bay and Islands SAC. Specifically, in relation to the Manila clam (*Ruditapes philippinarum*), this species is exempt under Annex IV of the aforementioned Alien species in aquaculture regulations. However, this species has been in culture in Ireland since 1984 and, to the best of our knowledge, no recruitment in the wild has been recorded. The risk of establishment of the clams is also considered low in this area give the short residence time in the bay. Furthermore, the operations are totally reliant on hatchery seed and are fully contained at all stages of the production cycle. The risk of naturalisation of this species is considered low, but should be kept under surveillance.

8.3.1 Conclusion Summary

In summary, based upon the spatial overlap and sensitivity analysis it is concluded that existing and proposed aquaculture culture activities (including access route activity) individually and/or in-combination do not pose a risk of significant disturbance to the conservation of the habitat feature of Reefs or the constituent community types of Reef community complex and *Laminaria*-dominated community complex (**Table 8.4**).

Table 8.1 - **Matrix showing the characterising habitats sensitivity scores x pressure categories for habitats (or surrogates) in Gweedore Bay & Islands SAC (ABPMer 2013a-h)** (Table 8.3 provides the code for the various categorisation of sensitivity and confidence.)

Community Type (EUNIS code)	Surface Disturbance	Shallow Disturbance	Deep Disturbance	Trampling – access by foot	Trampling – access by vehicle	Extraction	Siltation (addition of fine sediments, pseudofaeces, fish food)	Smothering (addition of materials biological or non-biological to the surface)	Changes to sediment composition- increased coarseness	Changes to sediment composition- increased fine sediment proportion	Changes to water flow	Increase in turbidity/suspended sediment	Decrease in turbidity/suspended sediment	Organic enrichment-water column	Organic enrichment of sediments-sedimentation	Increased removal of primary production-phytoplankton	Decrease in oxygen levels- sediment	Decrease in oxygen levels-water column	Introduction of non-native species	Removal of Target Species	Removal of Non-target species	Introduction of antifoulants	Introduction of medicines	Introduction of hydrocarbons	Prevention of light reaching seabed/features
Reef community complex (A1.21 - Barnacles and fucoids on moderately exposed shores)	NS (*)	NA	NA	NS (*)	NE	NE	NS (*)	M-VH (*)	NA	NA	NS (*)	NS (*)	NS (*)	NS (*)	NE	NS (*)	NE	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)
Reef community complex (A1.31 - Fucoids on sheltered marine shores)	NS (*)	NA	NA	NS (*)	NE	NE	NS (*)	M-VH (*)	NA	NA	NS (*)	NS (*)	NS (*)	NS (*)	NE	NS (*)	NE	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)
Reef community complex (A3.22 - Kelp and seaweed communities in tide-swept sheltered conditions)	NS (*)	NA	NA	NE	NE	NE	NS (*)	M-VH (*)	NA	NA	NS (*)	NS (*)	NS (*)	NS (*)	NE	NS (*)	NE	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)
Reef community complex (A4.1 - Atlantic & Mediterranean high energy circalittoral rock / A4.2 - Atlantic & Mediterranean moderate energy circalittoral rock)	NS (*)	NA	NA	NE	NE	NE	NS (*)	M-VH (*)	NA	NA	NS (*)	NS (*)	NS (*)	NS (*)	NE	NS (*)	NE	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)

Table 8.2 - **Matrix showing the characterising species sensitivity scores x pressure categories for taxa (or surrogates) in Gweedore Bay & Islands SAC (ABPMer 2013a-h)** (Table 8.3 provides the code for the various categorisation of sensitivity and confidence.)

Community Type (EUNIS code)	Surface Disturbance	Shallow Disturbance	Deep Disturbance	Trampling – access by foot	Trampling – access by vehicle	Extraction	Siltation (addition of fine sediments, pseudofaeces, fish food)	Smothering (addition of materials biological or non-biological to the surface)	Changes to sediment composition- increased coarseness	Changes to sediment composition- increased fine sediment proportion	Changes to water flow	Increase in turbidity/suspended sediment	Decrease in turbidity/suspended sediment	Organic enrichment-water column	Organic enrichment of sediments-sedimentation	Increased removal of primary production-phytoplankton	Decrease in oxygen levels- sediment	Decrease in oxygen levels-water column	Introduction of non-native species	Removal of Target Species	Removal of Non-target species	Introduction of antifoulants	Introduction of medicines	Introduction of hydrocarbons	Prevention of light reaching seabed/features
Fucus spp.	L (*)	NA	NA	L (***)	NE	NE	M (***)	H (*)	NA	NA	NS (*)	L-NS (***)	NS (**)	NS (***)	NE	NS (*)	NE	NS (*)	M (***)	M (***)	NS (*)	NS (*)	NEv	NS (***)	M (***)
Halydrys siliquosa	L (*)	NA	NA	L (*)	NE	NE	NS (*)	H (*)	NA	NA	NS (***)	L-NS (***)	NS (***)	NS (***)	NE	NS (*)	NE	NEv	M (***)	NS (*)	NS (*)	NS (*)	NEv	NS (*)	M (***)
Laminaria digitata	NS (*)	NA	NA	NE	NE	NE	NS (***)	H (*)	NA	NA	NS (***)	M (***)	NS (*)	NS (*)	NE	NS (*)	NE	NEv	M (***)	H (***)	NS (*)	NS (*)	NEv	NS (***)	M (*)
Lichens	H (***)	NA	NA	H (***)	H (***)	VH (*)	H (***)	H (*)	NA	NA	NA	NA	NA	NA	NE	NA	NE	NEv	NS (*)	NS (*)	NS (*)	NE	NEv	L-H (***)	NE
Littorina littorea	L (*)	NA	NA	L (***)	NE	NE	L (***)	M (*)	NA	NA	NS (*)	NS (*)	NS (*)	NS (***)	NE	NS (*)	NE	NS (***)	L-NS (***)	L (***)	NS (*)	NS (***)	NEv	M (*)	NS (*)

Community Type (EUNIS code)	Surface Disturbance	Shallow Disturbance	Deep Disturbance	Trampling – access by foot	Trampling – access by vehicle	Extraction	Siltation (addition of fine sediments, pseudofaeces, fish food)	Smothering (addition of materials biological or non-biological to the surface)	Changes to sediment composition- increased coarseness	Changes to sediment composition- increased fine sediment proportion	Changes to water flow	Increase in turbidity/suspended sediment	Decrease in turbidity/suspended sediment	Organic enrichment-water column	Organic enrichment of sediments-sedimentation	Increased removal of primary production-phytoplankton	Decrease in oxygen levels- sediment	Decrease in oxygen levels-water column	Introduction of non-native species	Removal of Target Species	Removal of Non-target species	Introduction of antifoulants	Introduction of medicines	Introduction of hydrocarbons	Prevention of light reaching seabed/features
Patella vulgata	M (**)	NA	NA	L (***)	NE	NE	M (***)	H (*)	NA	NA	NS (***)	NS (**)	NS (*)	NS (**)	NE	NS (*)	NE	NS (***)	NEv	NS (*)	NS (*)	NS (***)	NEv	M (***)	NS (*)
Pelvetia canaliculata	L (***)	NA	NA	L (***)	NE	NE	M (*)	M (*)	NA	NA	NS (**)	NS (*)	NS (*)	NS (*)	NE	NS (*)	NE	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NEv	NS (*)	M (*)
Semibalanus balanoides	NS (*)	NA	NA	L (***)	NE	NE	H (*)	H (*)	NA	NA	L-M (***)	NEv	NEv	NS (***)	NE	L (*)	NE	NS (***)	NEv	NS (*)	NS (*)	NS (*)	NEv	NS (***)	NS (***)

Table 8.3 - Codes of sensitivity and confidence applying to species and pressure interactions presented in Tables 8.1 and 8.2.

Pressure interaction codes for Table 8.1 and 8.2	
NA	Not Assessed
Nev	No Evidence
NE	Not Exposed
NS	Not Sensitive
L	Low
M	Medium
H	High
VH	Very High
*	Low confidence
**	Medium confidence
***	High Confidence

Table 8.4 - Interactions between the relevant aquaculture activities and the habitat feature Reef (1170) constituent communities with a broad conclusion on the nature of the interactions. L= Licenced; A=Application; I=Intensive.

			1170 - Reef	
Culture Type	**Status**	**Method**	**Reef community complex**	***Laminaria*-dominated community complex**
Oysters	**L**	**I**	**Disturbing: No** **Justification:** The habitat is considered tolerant to pressure from activity. However, some component species are sensitive to smothering and siltation (faeces and pseudofaeces). The risk posed by NIS is minimal as culture stocks are confined in bags, is sourced from hatcheries, is typically diploid/triploid and residence time is short. The greatest spatial extent of exiting aquaculture activities on this constituent habitat type is 0.11% (<15% threshold).	**Disturbing: No** **Justification:** No spatial overlap
Oysters	**A**	**I**	**Disturbing: No** **Justification:** The habitat is considered tolerant to pressure from activity. However, some component species are sensitive to smothering and siltation (faeces and pseudofaeces). The risk posed by NIS is minimal as culture stocks are confined in bags, is sourced from hatcheries, is typically diploid/triploid and residence time is short. The greatest spatial extent of exiting aquaculture activities on this constituent habitat type is 0.63% (<15% threshold).	**Disturbing: No** **Justification:** No spatial overlap
Clams/ Cockle	**A**	**I**	**Disturbing: No** **Justification:** No spatial overlap. The risk posed by NIS is minimal as culture stocks are confined under nets, is sourced from hatcheries and residence time is short.	**Disturbing: No** **Justification:** No spatial overlap
Access Routes	**L**	**-**	**Disturbing: No** **Justification:** While heavy vehicle traffic on access routes can remove and damage of sedentary or encrusting invertebrates long-term disturbance the greatest spatial extent of this activity on the community type is 0.07 % (<15% threshold).	**Disturbing: No** **Justification:** No spatial overlap
Access Routes	**A**	**-**	**Disturbing: No** **Justification:** While heavy vehicle traffic on access routes can remove and damage of sedentary or encrusting invertebrates long-term disturbance the greatest spatial extent of this activity on the community type is 0.03% (<15% threshold).	**Disturbing: No** **Justification:** No spatial overlap
Cumulative Impact of existing and proposed aquaculture activity			**Disturbing: No** **Justification: Spatial overlap of existing and proposed oyster and mussel cultivation sites extends over 0.74% of this community; less than the 15% threshold.** **The pressure of access route activity) on this habitat is 0.10%, less than the 15% threshold.**	**Disturbing: No** **Justification:** No spatial overlap

8.4 ASSESSMENT OF THE EFFECTS OF AQUACULTURE PRODUCTION ON THE CONSERVATION OBJECTIVES FOR OTTER *LUTRA LUTRA* IN THE GWEEDORE BAY & ISLANDS SAC.

As the aquaculture production activities within the SAC spatially overlap with otter (*Lutra lutra*) territory, these activities may have negative effects on the abundance and distribution of populations of the species.

The Gweedore Bay & Islands SAC is designated for the otter (*Lutra lutra*); the conservation objectives for such are listed in **Table 4.1**. The risk of negative interactions between aquaculture operations and 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 site – is the frequency such that they can cause disturbance to the animals?

Shellfish Culture: Shellfish culture operations are likely to be carried out in daylight hours. The interaction with the otter is likely to be minimal given that otter foraging is primarily crepuscular. It is unlikely that these culture types pose a risk to otter populations in the Gweedore Bay & Islands SAC. Impacts can be discounted on the basis of the points below:

The proposed activities will not lead to any modification of the following attributes for otter:

- Extent of terrestrial habitat,
- Extent of marine habitat or
- Extent of freshwater habitat.
- The activity involves net input rather than extraction of fish 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 aquaculture and fisheries activities.
- Shellfish production activities are unlikely to pose any risk to otter populations through entrapment or direct physical injury.
- The structures and activities associated this form of oyster culture structures are raised from the seabed (0.5m -1m) and are oriented in rows, thus allowing free movement through and within the site.
- Disturbance associated with vessel and foot traffic could potentially affect the distribution of otters at the site. However, the level of disturbance is likely to be very low given the likely encounter rates will be low dictated primarily by tidal state and in daylight hours.

8.4.1 Conclusion Summary

The current levels of licenced shellfish culture and applications are considered **non-disturbing** to otter conservation features.

8.5 ASSESSMENT OF THE EFFECTS OF AQUACULTURE PRODUCTION ON THE CONSERVATION OBJECTIVES FOR HARBOUR SEAL *PHOCA VITULINA* MIGRATING IN GWEEDORE BAY & ISLANDS SAC

The Rutland Island & Sound SAC (002283), located to the south of the Gweedore Bay & Islands SAC, is designated for the Habitats Directive Annex II Species Harbour seal (*Phoca vitulina*). Site specific Conservation Objectives for the species within the Rutland Island & Sound SAC were identified by NPWS (2013a) (see **Table 8.5**) and relate primarily to the requirement to maintain various attributes of the populations including population size and the distribution of the species. It is acknowledged in this assessment that the favourable conservation status of the Harbour Seal has been achieved (NPWS 2013b, 2013c) given current levels of aquaculture production within both the Gweedore Bay & Islands SAC and Rutland Island & Sound SAC.

Table 8.5 - Conservation objectives and targets for the Harbour Seal *Phoca vitulina* in Rutland Island & Sound SAC (Site code 002283) (NPWS 2013a).

Species (Species code)	Objective	Target(s)
Harbour Seal *Phoca vitulina* (1365)	Maintain favourable conservation condition	The range of use within the site should not be restricted by artificial barriers; all sites (i.e. breeding, moulting and resting haul-outs sites) should be maintained in a natural condition; human activities should occur at levels that do not adversely affect harbour seal population at the site.

8.5.1 Conclusion Summary

The current levels of licenced shellfish culture and applications within Gweedore Bay & Islands SAC are considered **non-disturbing** to the site specific Conservation Objectives for the Harbour seal (*Phoca vitulina*) within the Rutland Island & Sound SAC

9 IN-COMBINATION EFFECTS OF AQUACULTURE, FISHERIES AND OTHER ACTIVITIES

9.1 FISHERIES

9.1.1 Habitat Interactions

Fisheries activities occurring in the SAC include pot fishing for crustaceans (lobster and crab). **Table 9.1** presents the spatial extent of these fishing activities overlapping the habitat feature Reefs (1170) and the constituent marine community types of Reef community complex and *Laminaria* dominated community complex.

- Fishery overlaps with 5.56% of QI habitat 1170 and with 3.89% and 14.05% of the constituent marine community type Reef community complex and *Laminaria* dominated community complex respectively (see **Table 9.1**).

- The actual footprint of static gear such as creel and pot is expected to be much lower than the percentage of the area over which the fishery might occur.

- Pot fisheries and static net fisheries may cause localized abrasion and disturbance to habitats which may be significant for habitats that are highly sensitive to such pressures (e.g. maërl and seagrass meadows). However, the risk posed by the crustacean pot fishery to reef habitats is deemed to be low and insignificant. The habits and associated species are not sensitive to surface disturbance (ABPMer 2013e).

Table 9.1 - Spatial extent of fisheries activities overlapping within the broad habitat qualifying of 1170 (Reefs) and constituent community types in the Gweedore Bay & Islands SAC. Spatial overlap presented according to equipment used. Annex I feature in **bold**.

Feature (Community Type)	Area (ha) overlap	% Overlap with Feature/ Community Type
Reefs [369.1 ha]	20.51	5.56
(Reef community complex [308.44ha])	11.99	3.89
(*Laminaria*-dominated community [60.66ha])	8.52	14.05

9.1.2 Species Interactions

All fisheries extract target and, to varying extent, non-target species biomass which may reduce habitat quality for the designated species otter. Otters may be caught as by-catch in certain gears such as trammel nets set for bait in shallow water.

Harbour seals are a designated feature of the Rutland Island & Sound SAC which adjoins the Gweedore Bay & Islands SAC. Seals migrating from Rutland Island & Sound SAC into Gweedore Bay may interact with fishing pots and creels.

9.1.3 Conclusion Habitats and Species Interactions

Crustacean potting was shown to occur on the community type of Reef community complex and *Laminaria*-dominated community. Significant interaction between this community type and crustacean potting activity could be discounted based on low level of spatial overlap and the relative resilience of the community type to disturbances emanating from the fishery. Furthermore, it is likely that pot fishing activities will not occur in the aquaculture plots if they are actively maintained. Consequently, in-combination effects with intertidal trestle aquaculture activities on designated habitats (and constituent community types) can be **discounted**.

With respect to the designated species *Lutra lutra* it was concluded that significant negative interactions were unlikely to occur due to fishing gear being deployed outside preferred dive range of otters. Consequently, in-combination effects with intertidal trestle aquaculture activities on the species can be **discounted**

Moore (2003) reported that seals may damage creels to steal bait but are unlikely to be caught in soft-eye creels used in the Irish industry. Consequently, the risk of significant effects of potting on migrating harbours seal can be **discounted**.

9.2 INTERTIDAL SEAWEED HARVESTING

Other activities within the Gweedore Bay & Islands SAC include intertidal harvesting of seaweed. Direct impacts of seaweed harvesting on intertidal habitats and communities can include the removal and damage of sedentary or encrusting invertebrates (Kelly et al. 2001). Direct impacts upon intertidal habitats may also occur as a consequence of travel across the shore to harvest sites. Removal of seaweed cover can alter local hydrodynamic conditions and change wave exposure regimes which, in turn, can modify sedimentation rates.

9.2.1 Conclusion Summary

While intertidal seaweed harvesting generally occurs in reef areas it is not likely that harvesting will occur in the aquaculture plots if they are actively maintained. Consequently, the likely spatial overlap of seaweed harvesting activities and, existing and proposed intertidal shellfish culture (which is limited to 0.74% the QI habitat 1170 constituent community type of Reef community complex (see **Table 7.1**)) is low. Consequently, significant in-combination effects of seaweed harvesting with intertidal trestle aquaculture can be **discounted**.

It should be noted that there may be overlap between intertidal aquaculture and seaweed harvesting activities in terms of access routes used to service the sites. However, given current levels of seaweed extraction and, existing and proposed aquaculture access routes (which overlap (which is limited to 0.1% the QI habitat 1170 constituent community type of Reef community complex (see **Table 7.1**) in potential significant in-combination effects can be **discounted**.

9.3 POLLUTION PRESSURES

There are a number of activities which are terrestrial in origin that might result in impacts on the conservation features of the Gweedore Bay & Islands SAC. Primary among these are point source

discharges from domestic sewage outfalls and on-site-wastewater-treatment systems distributed along the harbour and a single municipal urban waste water treatment plant at Gweedore. The pressure derived from these point sources may impact upon levels of dissolved nutrients, suspended solids and some elemental components e.g. aluminium in the case of water treatment facilities.

9.3.1 Conclusion Summary

Pressures resulting from aquaculture activities are primarily confined to sedimentary habitats; in particular, along access routes where removal and damage can occur to both sedentary and/or encrusting invertebrates. It was, therefore, concluded that given the pressure resulting from point discharge location such as the urban waste-water treatment and/or combined sewer outfalls would likely impact on physico-chemical parameters in the water column, any in-combination effects with aquaculture activities are considered to be **minimal or negligible**. It should be noted however the results of Shellfish Water monitoring[5] do not indicate any water quality issues within/ in the vicinity of this shellfish area.

[5] Revised / Updated Gweedore Bay Pollution Reduction Programme http://www.environ.ie/en/Publications/Environment/Water/PublicConsultations-ShellfishWatersDirective/FileDownLoad,33460,en.pdf

10 SAC AQUACULTURE APPROPRIATE ASSESSMENT CONCLUDING STATEMENT AND RECOMMENDATIONS

Current and proposed aquaculture activity occurring in the Gweedore Bay & Islands SAC is limited to oyster cultivation (using bags and trestles) and a single licence to culture clams intertidally on the seabed. Based upon this and the information provided in the aquaculture profiling carried out (**Section 5**), the likely interaction between these culture methods and conservation features (habitats and species) of the site were considered.

10.1 HABITATS

An initial screening exercise resulted in five features and one species being excluded from further consideration by virtue of the fact that no spatial overlap of the culture activities was expected to occur. The habitats and species excluded from further consideration included 1150 Coastal lagoons, 1220 Perennial vegetation of stony banks, 1395 Petalwort *Petalophyllum ralfsii,* 1410 Mediterranean salt meadows (*Juncetalia maritimi*), 1833 Slender Naiad *Najas flexilis,* 2110 Embryonic shifting dunes, 2120 Shifting dunes along the shoreline with *Ammophilia arenaria* (white dunes), 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes), 2140 Decalcified fixed dunes with *Empetrum nigrum*, 2150 Atlantic decalcified fixed dunes (*Calluno-Ulicetea*), 2170 Dunes with *Salix repen* ssp. *argentea* (*Salicion arenariae*), 2190 Humid dune slacks, 21A0 Machairs, 3110 Oligotrophic waters containing very few minerals of sandy plains (*Littorelletalia uniflorae*), 4030 European dry heaths, 4060 Alpine and Boreal heaths, 5130 *Juniperus communis* formations on heaths or calcareous grasslands.

A full assessment was carried out on the likely interactions between existing and proposed culture operations and the feature of the Annex 1 habitat 1170 (Reefs). The likely effects of the aquaculture activities (species, structures, access routes) were considered in light of the sensitivity of two constituent habitats and species of the Annex 1 habitat Reefs, i.e. Reef community complex and *Laminaria* dominated community complex.

Based upon the scale of spatial overlap of current and proposed oyster culture aquaculture activities and the relatively high tolerance levels of the community types and associated species, the general conclusions is that current activities are non-disturbing to feature (Reef - 1170) and it constituent communities. Furthermore, the existing and proposed clam/cockle and oyster culture operations are also considered a low risk for the establishment of non-native species. However, their recruitment status should be kept under surveillance.

It is recommended that there be strict adherence to any agreed access routes and that density of culture structures within the sites be maintained at current levels. The movement of stock in and out of the Gweedore Bay & Islands SAC should adhere to relevant fish health legislation and follow best practice guidelines (e.g. http://invasivespeciesireland.com/cops/aquaculture/).

10.2 SPECIES

The likely interactions between the proposed aquaculture activities and the Annex II Species Otter were also assessed. The objectives for this species in the SAC focus upon maintaining the good conservation status of the population. The proposed activities will not lead to any modification of the conservation attributes for otter. The current levels of licenced shellfish culture and applications are considered non-disturbing to otter conservation features.

The current levels of licenced shellfish culture and applications within Gweedore Bay & Islands SAC are considered non-disturbing to the site specific Conservation Objectives for the Harbour seal (*Phoca vitulina*) within the Rutland Island & Sound SAC

10.3 IN–COMBINATION EFFECTS

A number of in-combination effects resulting from a range of activities (i.e., fisheries, seaweed harvest and pollution) were considered in this report. The conclusions is that none, when considered in conjunction with shellfish culture activities will result in a significant disturbance to the conservation features of the Gweedore Bay & Islands SAC.

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Appendix 2

Proposed oyster cultivation activities in accordance with the requirements of Article 6(3) of the EU Habitats Directive Screening Stage Assessment

Dr Olivia Crowe April 2019

Proposed oyster cultivation activities in accordance with the requirements of Article 6(3) of the EU Habitats Directive

SCREENING STAGE ASSESSMENT

Prepared for: Aquaculture Licence Appeals Board

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Proposed oyster cultivation activities in accordance with the requirements of Article 6(3) of the EU Habitats Directive

SCREENING STAGE ASSESSMENT WITH RESPECT TO THE SPA NETWORK

Abstract: This Habitats Directive Assessment report has been prepared to consider the potential impacts of the proposed oyster cultivation activities at Braade Strand and nearby intertidal areas near Bunbeg in Gweedore Bay, Co. Donegal, specifically on the bird conservation interests at nearby *Natura* 2000 sites. This includes four site renewals, one variation and five new site licence applications. To inform the assessment a desktop study was completed. Details of the proposed development, including construction plans were further considered in this Habitats Directive Assessment. The potential for impact upon *Natura* 2000 sites and their qualifying interests is evaluated. It is not possible to rule out the possibility that usage by the Common Gull SCIs of the West Donegal Islands and Inishbofin, Inishdooey and Inishbeg SPAs and the Lesser Black-backed Gull SCI of the Inishbofin, Inishdooey and Inishbeg SPA of the proposed aquaculture development area at Gweedore Bay for feeding and/ or roosting will not be negatively affected. Therefore, it is recommended that the assessment progress to a stage 2 Appropriate Assessment.

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1. INTRODUCTION

Olivia Crowe was commissioned by the Aquaculture License Appeals Board (ALAB) to produce a Habitat's Directive Assessment for the proposed oyster cultivation activities at Braade Strand and nearby intertidal areas at Bunbeg, within Gweedore Bay in Co. Donegal, specifically with respect to the bird conservation interests in the area. A screening assessment is undertaken to establish if any proposed plan or project is likely to have a significant effect on any site that has been designated under the E.U. Habitats Directive (92/43/EEC), *i.e.* a Special Area of Conservation (SAC), or the E.U. Birds Directive (2009/147/EC), *i.e.* a Special Protection Area (SPA). Collectively, SACs and SPAs are known as *Natura* 2000 sites. The conservation objectives for *Natura* 2000 sites have been published by the National Parks & Wildlife Service (NPWS) with reference to the habitats and species for which the sites are designated. These conservation objectives are considered when carrying out screening and appropriate assessments for plans and projects that might impact upon *Natura* 2000 sites.

A screening assessment is part of an appropriate assessment process that consists of up to four stages, where each stage follows on from the preceding one. In Stage 1, a screening process is undertaken to identify whether significant impacts on a *Natura* 2000 site are likely to arise from the project or plan in question. If significant impacts are likely to occur, then the process moves on to Stage 2 where an appropriate assessment (AA) considers potential mitigation measures for adverse impacts. If it is considered that mitigation measures will not be able to adequately minimise potential adverse impact on a *Natura* 2000 site then an assessment of alternative solutions is considered in Stage 3. This may then be followed by Stage 4 of the process in the event

that adverse impacts remain and the proposed activity or development is deemed to be of Imperative Reasons of Overriding Public Interest (IROPI), allowing an assessment of compensatory measures to be considered. The outcome of a Stage 2 and higher assessment is presented in a report known as a *Natura* Impact Statement (NIS).

This report presents the outcome of a Stage 1 screening assessment to identify whether significant impacts are likely to arise from the proposed development on the *Natura* 2000 sites in the locality, specifically with respect to the EU Special Protected Areas designated for birds. The following guidelines were used in the completion of this assessment;

- Assessment of Plans and Projects Significantly Affecting *Natura* 2000 Sites – European Commission Methodical Guidance on the provisions of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC (European Commission 2001)

- Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DoEHLG 2009)

2. STAGE 1: SCREENING

2.1 BRIEF DESCRIPTION OF THE PROJECT & SITE

The project involves the renewal of existing aquaculture activity and the licensing of new aquaculture sites at Braade Strand and within intertidal areas near Bunbeg within Gweedore Bay (twenty-five aquaculture sites were applied for in total) in west Donegal (Fig. 1). The area is tidal and shallow, and the bay completely drains during low spring tides exposing extensive sandflats.

Gweedore Bay is important for the on-growing of Pacific Oyster *Crassostrea gigas*. There are currently ten licensed sites within inner Gweedore Bay, for the cultivation of the Pacific Oyster on trestles in intertidal areas. In addition, there are currently ten new, applied for sites for oyster production within this site (Fig. 2). Most of the sites are located in the vicinity of Braade Strand, with a further three applications located slightly further to the north along the channel, near Bunbeg. The total area of proposed and existing aquaculture sites is expected to occupy 58 hectares of intertidal habitats.

Current oyster cultivation within Gweedore Bay is intensive culture, with oyster seed cultivated using the bag and trestle method within the intertidal zone, either to half or fully-grown. This method uses steel table-like structures which rise from the shore to above knee-height, arrayed in double rows and with wide gaps between the paired rows to enable access (Marine Institute 2016). The production cycle begins when seed is brought from France to the site either in spring or late summer each year. Oysters are thinned out and graded as the oysters grow. Farms are accessed typically during low spring tides using vans or tractors, and preparatory works are undertaken on site.

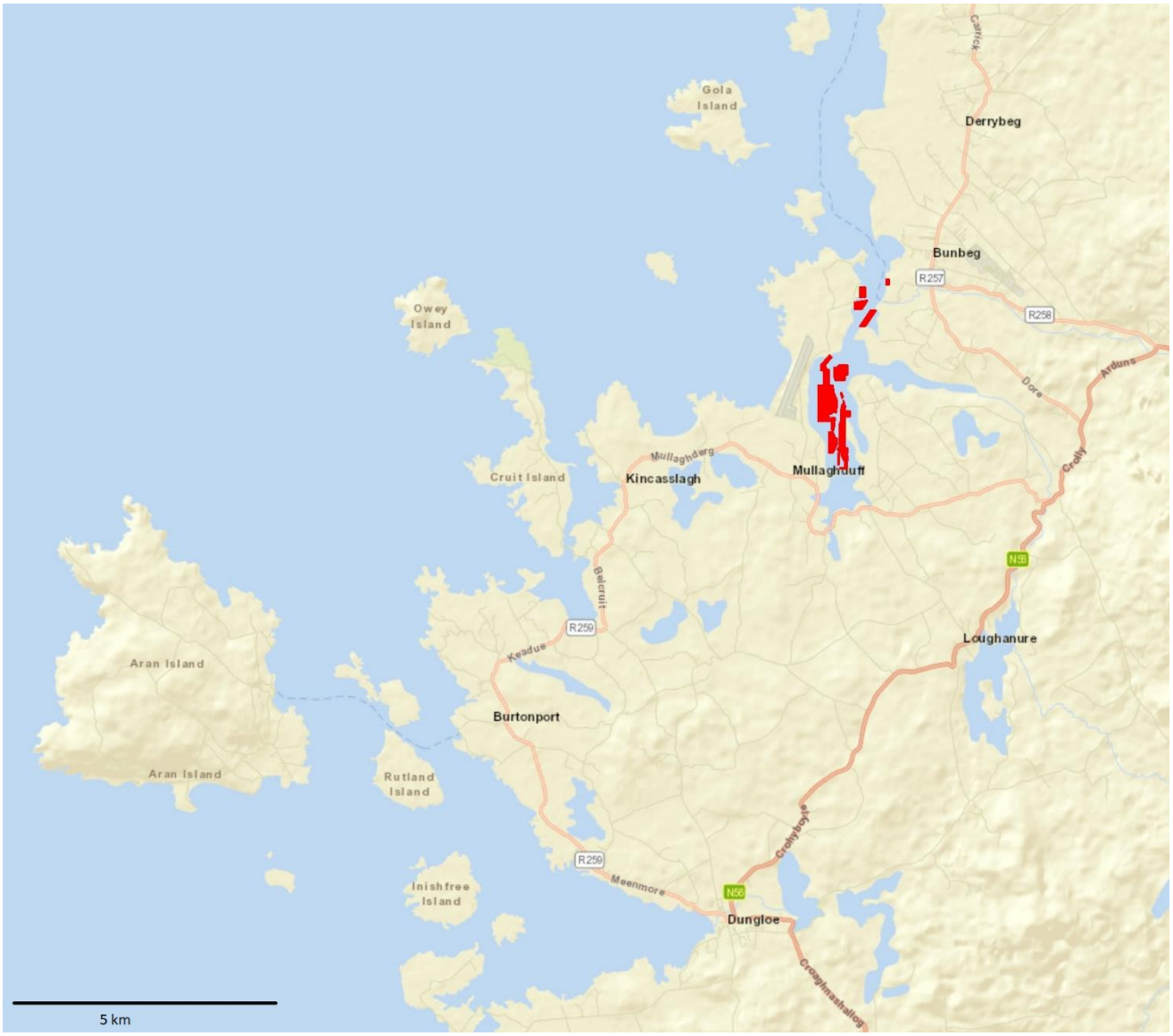

Figure 1. Location of the proposed and existing aquaculture sites at Gweedore Bay in west Donegal.

Figure 2. Proposed (blue) and already existing/renewal (red) oyster cultivation sites in Gweedore Bay.

2.2 BRIEF DESCRIPTION OF THE *NATURA* 2000 SITES

The existing and proposed aquaculture sites occur within the Gweedore Bay and Islands SAC. They also occur in close proximity to the West Donegal Coast SPA, and one of the existing/renewal applications (193B) is within this SPA.

In total, there are eight SACs within 15 km of the aquaculture sites:

- Gweedore Bay & Islands SAC (001141) 0 m
- Fawnboy Bog/Lough Nacung SAC (000140) 467 m
- Cloghernagore Bog And Glenveagh National Park SAC (002047) 4837 m
- Rutland Island And Sound SAC (002283) 7618 m
- Gannivegil Bog SAC (000142) 10996 m
- Aran Island (Donegal) Cliffs SAC (000111) 11771 m
- Ballyness Bay SAC (001090) 11913 m
- Termon Strand SAC (001195) 12276 m

There are six SPAs within 15 km:

- West Donegal Coast SPA (004150) 0 m
- Derryveagh And Glendowan Mountains SPA (004039) 2011 m
- West Donegal Islands SPA (004230) 2675 m
- Falcarragh to Meenlaragh SPA (004149) 12030 m
- Illancrone and Inishkeeragh SPA (004132) 12799 m
- Inishbofin, Inishdooey and Inishbeg SPA (004083) 14482 m

There is one NHA (Corveen Bog) and 12 pNHAs within 15 km:

- Corveen Bog NHA (001108)
- Gweedore Bay And Islands (001141) 0 m
- Fawnboy Bog/Lough Nacung (000140) 467 m
- Cronaguiggy Bog (001176) 3704 m
- Crolly Bridge Woods (001102) 3852 m
- Cloghernagore Bog And Glenveagh National Park (002047) 4837 m
- Gannivegil Bog (000142) 10992 m
- Aran Island (Donegal) Cliffs (000111) 11765 m
- Ballyness Bay (001090) 11917 m
- Termon Strand (001195) 12263 m
- Inishkeeragh (000152) 12801 m
- Illancrone (000148) 13453 m
- Inishbofin (Donegal) (000150) 14482 m

The present assessment is focussed specifically on Special Protection Areas (SPAs) designated under the EU Birds Directive that were identified in that report, and on the potential impacts of this proposed development on their Special Conservation Interests (SCIs).

2.2.1 Special Protection Areas (Birds Directive)

In accordance with guidelines recommended by Department of Environment, Heritage & Local Government (DoEHLG) (2009), *Natura* 2000 sites located within or adjacent to a plan or project area, and those within the zone of the development which is generally recommended as those sites within 15 km of the proposed development, should be considered, and with some exceptions these guidelines are suitable for many developments. However, the guidance also stipulates that *Natura* 2000 sites more than 15 km may need to be considered depending on the likely impacts of the project or plan (e.g. where water quality may affect water-dependent habitats or species).

For the purpose of this assessment, all SPAs located within 15 km of the proposed development site were considered in the first instance, and a total of six SPAs were identified (Table 1). The NPWS site synopses for these sites are presented in the Appendix. A review of *Natura* 2000 sites outside the 15 km limit was also undertaken, given that some sites that have been designated for breeding seabirds, and some of the seabird SCIs of these SPAs have known documented foraging ranges that extend well beyond 15 km of their immediate breeding colonies that could potentially occur in the vicinity of the aquaculture sites. The proposed and existing aquaculture sites are located in a large area of intertidal sandflats.

The SPAs in the vicinity of Gweedore Bay have been designated for a diversity of bird species with varying habitat requirements. Gittings (2018) neatly grouped species for which SPAs close to Gweedore Bay are designated in terms of their broad habitat requirements, and a summary of the review of SCIs (Table 2) presents these species within these groups. This assessment shows the possible occurrence of seven species in the aquaculture area (highlighted in green in Table 2), and Gittings (2018) provides additional information and research that supports these findings. These species are Common Gull, Lesser Black-backed Gull, Herring Gull, Red-throated Diver, Golden Plover, Merlin and Peregrine. However, of these, there is potential negative impact on Common Gull and Lesser Black-backed Gull only. Of the remaining species:

- Herring Gull: There is a high likelihood of spatial overlap with aquaculture activities, and previous studies have actually demonstrated positive impacts of trestles (Gittings & O'Donoghue 2016).
- Red-throated Diver: The specific breeding locations are unavailable due to the sensitivity of this species to disturbance and extremely low remaining population in Ireland (up to 6 pairs). They feed mostly in open waters, and it is expected that the likelihood of spatial overlap between breeding individuals and the aquaculture sites would be very low.
- Golden Plover: The SPA has been designated for breeding population, which remains largely in uplands habitats. There are no known records from the breeding season. It is expected that the likelihood of spatial overlap between breeding birds and the aquaculture sites would be very low.
- Merlin: Intertidal habitats are of known importance to foraging Merlin in winter, where large flocks of wintering waders occur. During the breeding months, their distribution is more confined to their inland breeding areas (Balmer *et al.* 2013), and they are less frequently reported from coastal locations, presumably at least in part because the availability of waders is very low outside the winter period. While Gweedore Bay is within the foraging range of breeding sites used by Merlin, it does not typically support large numbers of waders, and the likelihood of spatial overlap is expected to be very low.
- Peregrine: The locations of suitable breeding habitat within the SPAs for which Peregrine is listed (Derryveagh and Glendowan Mountains SPA and West Donegal Coast SPA) are some distance from

the aquaculture sites, and based on their known foraging ranges it is expected that spatial overlap would be very low.

The following SPAs are designated in part for Common Gull and/ or Lesser Black-backed Gull, and the aquaculture sites are within the known foraging ranges of both species:

- West Donegal Islands SPA (004230): Three colonies of Common Gull, 4-7 km from the nearest aquaculture site at Gweedore Bay.
- Inishbofin, Inishdooey and Inishbeg SPA (004083): Common Gull and Lesser Black-backed Gull colonies located 17 km from the nearest aquaculture site at Gweedore Bay.

Both species are regularly found in intertidal habitats for feeding and/ or roosting, and both species have been recorded in close proximity to the aquaculture sites (Bird Atlas 2007-2011 details presented on the website of the National Biodiversity Data Centre[1], accessed 25/03/19). There is no available information that demonstrates that there is no effect of oyster trestles on either species, and a precautionary assumption is made that the trestles will have a negative effect on the availability of foraging habitat. Furthermore, Gittings (2018) identified that the trestles are possibly located in the intertidal areas that are most productive within Gweedore Bay and in areas most likely to be used for feeding. Therefore it cannot be ruled out that the development of aquaculture sites within Gweedore Bay will have a negative effect on the Common Gull SCI of the West Donegal Islands SPA, and on both the Common Gull and the Lesser Black-backed Gull SCIs of Inishbofin, Inishdooey and Inishbeg SPA.

[1] https://maps.biodiversityireland.ie/Map

Table 1. Summary of designated SPAs and their conservation interests.

Site Name	Designation & Site Code	Key Conservation Reasons and Objectives	Minimum Distance to Site
West Donegal Coast SPA	SPA (004150)	The West Donegal Coast SPA comprises separate sections of the Co. Donegal coastline and extends from Muckros Head in the south, northwards to Slieve League, Malin Beg, Rocky Point, Glen Head, Slieve Tooey, Maghera, Loughros Point, Dunmore Head, Aran Island, Magheradrumman, Carrickfin, Carnboy, Bunbeg, Magheragallan, Lunniagh, as far as Carrick, to the south of Bloody Foreland. The site includes the high coast areas and sea cliffs of the mainland and Aran Island, the land adjacent to the cliff, areas of sand dunes/machair at Maghera, Mullaghderg, Braade/Carrickfin/Carnboy, Magheragallan and Lunniagh/Carrick, and also several areas further inland of the coast at Croaghmuckros and Slieve League, north of Glencolumbkille and south of Dunmore Head. A low-lying area of land on the coast at Bunbeg used by roosting Chough is also included. The high water mark forms the seaward boundary, except at Tormore Island where the adjacent sea area to a distance of 500 m from the cliff base is included. Most of the site is underlain by granite and quartzite, though various other, particularly metamorphic, rock types also occur; rocks of Carboniferous age are found at Muckros Head. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Chough *Pyrrhocorax pyrrhocorax*, Peregrine *Falco peregrinus*, Fulmar *Fulmarus glacialis*, Cormorant *Phalacrocorax carbo*, Shag *P. aristotelis*, Herring Gull *Larus argentatus*, Kittiwake *Rissa tridactyla* and Razorbill *Alca torda*.	Partially located within the proposed development
Derryveagh And Glendowan Mountains SPA	SPA (004039)	Derryveagh and Glendowan Mountains SPA is an extensive upland site in north-west Co. Donegal, comprising Glenveagh National Park, a substantial part of the Derryveagh and Glendowan Mountains and a number of the surrounding lakes. Much of the site is over 300 m above sea level, rising to a peak of 678 m at Slieve Snaght The solid geology is predominantly quartzite. The substrate over much of site is peat, with blanket bog and heath comprising the principal habitats. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Red-throated Diver *Gavia stellata*, Merlin *Falco columbarius*, Peregrine, Golden Plover *Pluvialus apricaria* and Dunlin *Calidris alpina*.	2.0 km from proposed development
West Donegal Islands SPA	SPA (004230)	West Donegal Islands SPA consists of a series of small to moderate-sized islands lying between 700 m and 3.5 km off the north-west coast of Co. Donegal. It includes the islands of Gola, Inishmeane, Inishsirrer (the three largest), Umfin, Go, Allagh, Torglass, Tornacolpagh	2.7 km from proposed

Site Name	Designation & Site Code	Key Conservation Reasons and Objectives	Minimum Distance to Site
		and Tororragaun, as well as a number of smaller rocky islets. The islands are low-lying, the highest point being Knockaculleen on Gola (68 m). The site, which includes the intervening and surrounding seas to 200 m from the shorelines, is highly exposed to Atlantic swells. The predominant habitat of the islands is grassland, with both wet and dry types represented; small areas of dune grassland also occur. Small lakes occur on Inishsirrer and Gola. The rocky shorelines have areas of boulders, shingle and coarse sand, and grade into submarine reefs, which are common in the shallow surrounding seas. The islands are uninhabited other than some summer dwellings on Gola and Inishmeane. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Shag, Barnacle Goose *Branta leucopsis*, Corncrake *Crex crex*, Common Gull *Larus canus* and Herring Gull.	development
Falcarragh to Meenlaragh SPA	SPA (004149)	Falcarragh to Meenlaragh SPA is located on the eastern and western sides of Ballyness Bay on the north-west coast of Co. Donegal. This large site follows the coastline from Falcarragh to Meenlaragh and encompasses three areas of mixed agricultural grassland. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for Corncrake.	12.0 km from proposed development
Illancrone and Inishkeeragh SPA	SPA (004132)	Illancrone and Inishkeeragh are two marine islands situated 8 to 9 km west of the town of Dunglow and south of Aranmore Island, Co. Donegal. Illancrone comprises areas of rock, shingle and short grassland. Inishkeeragh is a medium-sized, low-lying island surrounded by extensive intertidal rocks and, although now uninhabited, previous occupation has resulted in the island being divided into a system of enclosed fields. These fields have now reverted to unimproved dry grassland grazed by sheep. The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Barnacle Goose, Common Tern *Sterna hirundo*, Arctic Tern *S. paradisaea* and Little Tern *Sternula albifrons*.	12.8 km from proposed development
Inishbofin, Inishdooey and Inishbeg SPA	SPA (004083)	Inishbofin, Inishdooey and Inishbeg SPA consists of three small to medium-sized islands located between 1 km and 4 km off the north-west coast of Co. Donegal. Inishbofin is inhabited during the summer months. The marine waters between and around the islands, to a distance of approximately 200 m, are included within the site.	14.5 km from proposed development

Site Name	Designation & Site Code	Key Conservation Reasons and Objectives	Minimum Distance to Site
		The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Barnacle Goose, Corncrake, Common Gull, Lesser Black-backed Gull *Larus fuscus* and Arctic Tern.	

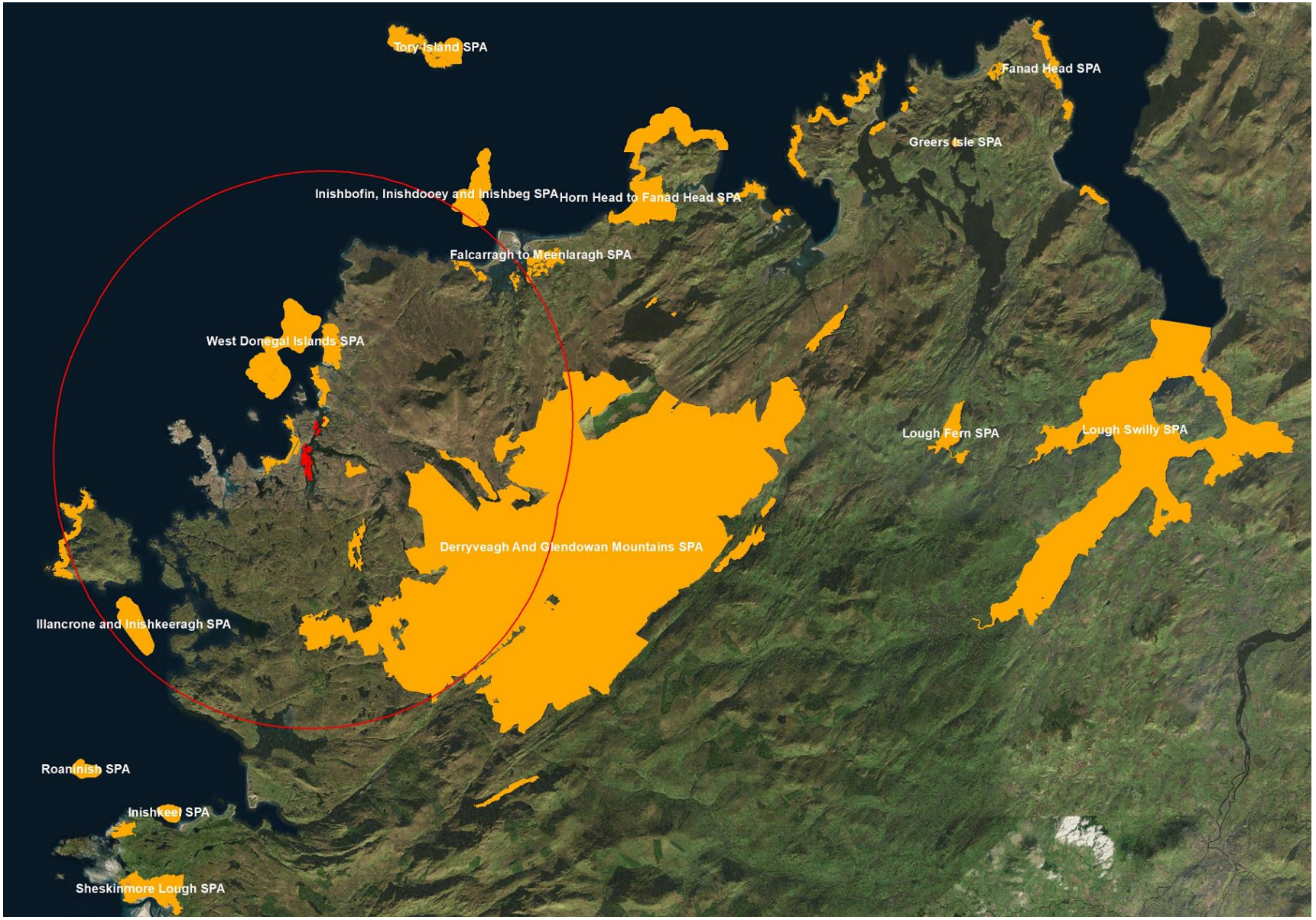

Figure 3 Designated Sites Map, illustrating the location of the proposed and existing aquaculture sites together with the 15 km buffer (red), and the location of nearby SPAs.

Table 2. Qualifying interests of nearby SPAs, indicating the proximity of the proposed development to the nearest SPA for which the species is listed, as well as ecological characteristics that would reflect the occurrence of these species within the proposed development area (known usage of intertidal habitats and foraging range)

Group	Species		Distance to closest SPA	Regular usage of intertidal habitats	Within foraging range*
Geese	Barnacle Goose	*Branta leucopsis*	2.7	N	Y
	Greenland White-fronted Goose	*Anser albifrons flavirostris*	21	Y	N
Breeding seabirds	Fulmar	*Fulmarus glacialis*	0	N	Y
	Cormorant	*Phalacrocorax carbo*	0	Y	N
	Shag	*P. aristotelis*	0	N	Y
	Puffin	*Fratercula arctica*	21	N	Y
	Razorbill	*Alca torda*	0	N	Y
	Guillemot	*Uria aalge*	21	N	Y
	Little Tern	*Sternula albifrons*	12.8	Y	N
	Common Tern	*Sterna hirundo*	12.8	Y	N
	Arctic Tern	*S. paradisaea*	12.8	Y	N
	Kittiwake	*Rissa tridactyla*	0	N	Y
	Common Gull	*Larus canus*	2.7	Y	Y
	Lesser Black-backed Gull	*L. fuscus*	14.5	Y	Y
	Herring Gull	*L. argentatus*	0	Y	Y
Upland breeding birds	Red-throated Diver	*Gavia stellata*	2	Y	Y
	Golden Plover	*Pluvialis apricaria*	2	Y	Y
	Dunlin	*Calidris alpina*	2	Y	Y
	Merlin	*Falco columbarius*	2	Y	Y
Peregrine	Peregrine	*F. peregrinus*	0	Y	Y
Terrestrial species	Chough	*Pyrrhocorax pyrrhocorax*	0	N	N
	Corncrake	*Crex crex*	2.7	N	N

* Based on assessment by Gittings (2018)

3. ASSESSMENT OF SIGNIFICANCE

3.1 IMPACTS ON THE *NATURA* 2000 NETWORK (SPECIFICALLY SPAS)

The potential impacts of the proposed development of the aquaculture sites at Gweedore Bay on nearby *Natura* 2000 sites are assessed using the following factors:

- size and scale;
- land-take;
- distance from the *Natura* 2000 site or key features of the site;
- Likely connectivity/pathways from the proposed development to *Natura* 2000 sites;
- resource requirements (water abstraction etc.);
- emissions (disposal to land, water or air);
- excavation requirements;
- transportation requirements;
- duration/timing of construction, operation, decommissioning, etc;
- reduction of habitat area;
- disturbance to key species;
- habitat or species fragmentation;
- reduction in species density;
- changes in key indicators of conservation value (water quality etc.);
- climate change;
- key relationships that define the structure of the sites; and
- key relationships that define the function of the site.

Brief description of the project or plan	The project involves the renewal of existing aquaculture activity, specifically for the cultivation of the Pacific oyster on trestles, in intertidal areas and the licensing of new aquaculture sites within the Gweedore Bay. Most of the sites are located in the vicinity of Braade Strand, with a further three renewal applications located slightly further to the north along the channel, near Bunbeg. The total area of proposed and existing aquaculture sites is expected to occupy 58.0 ha. This includes: • Ten currently licensed sites within both the channel and inner Gweedore Bay . • In addition, there are currently ten new, applied for sites for oyster production, all within inner Gweedore Bay.
Brief description of the *Natura* 2000 sites	The development occurs within the Gweedore Bay & Islands SAC (001141). It also occurs in close proximity to the West Donegal Coast SPA (004150), and one of the existing/renewal applications (193B) is located within this SPA. The SPAs occurring within a 15km radius of the site are as described above in **Table 1**.
Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the *Natura* 2000 sites	• Development of aquaculture sites within the intertidal zone • Use of vehicles while servicing the site
Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the *Natura* 2000 site by virtue of: • **size and scale;** • **land-take;** • **distance from the *Natura* 2000 site or key features**	• Part of the proposed development (0.5 ha) is located within the West Donegal Coast SPA A number of indirect risks were identified by Marine Institute (2016), some of which may eventually impact on the abovementioned SCIs, including: • Risk of alien species arriving in seed or stock sourced from outside Ireland, and also the risk from the oyster culture itself in terms of the risk of non-native *Crassostrea gigas*. • Altered hydrology in the vicinity of the trestles caused by reduced water flow and allowing suspended material (including faeces) to fall

of the site; • **resource requirements (water abstraction etc.);** • **emissions (disposal to land, water or air); excavation requirements;** • **transportation requirements;** • **duration of construction, operation, decommissioning, etc.;** • **other**	out onto the sea floor, and these sediments could result in the development of infaunal communities distinct from the rest of the site. • Compaction of sediment caused by vehicular traffic during operations.
Describe any likely changes to the site arising as a result of: • **reduction of habitat area** • **disturbance to key species;** • **habitat or species fragmentation;** • **reduction in species density;** • **changes in key indicators of conservation value (water quality etc.);** • **climate change**	The proposed development will result in the potential loss of 58.0 ha of intertidal habitat that may be used for feeding by the SCI species under consideration, namely Common Gull and Lesser Black-backed Gull. Disturbance activities caused during the servicing of the site may affect the both gull species. An increase in recreational disturbance in the area may impact on gull numbers using the site for roosting and/ or feeding.
Describe any likely impacts on the *Natura* 2000 site as a whole in terms of: • **interference with the key relationships that define the structure of the site** • **interference with key relationships that define the function of the site**	The proposed development will alter the nature of the benthic habitats due to changes in hydrology and possible increased siltation in parts, and possibly also due to the loss of sediment (including faeces) from the trestle areas. These changes may result in altered usage by waterbirds generally, which may in turn affect the distributions of the SCI gull species.
Provide indicators of significance as a result of the identification of effects set out above in terms of: • **Loss** • **Fragmentation** • **Disruption** • **Disturbance** • **Change to key elements of the site (e.g. water quality etc.)**	The development will potentially result in a loss of foraging habitat used by Common and Lesser Black-backed Gulls, and may thereby impact on nearby colonies that are designated as SPAs.
Describe from the above those elements of the project or plan, or combination of elements, where the above impacts are likely to be significant or where the scale or magnitude of impacts is not known.	• Very little information exists about the precise movements of the abovementioned species when away from their breeding colonies (foraging etc.). • So the extent of impacts likely to be caused by the loss of available foraging habitat and the disturbance caused by increased activities at the site on the SCIs of nearby SPAs is largely unknown.

3.2 CUMULATIVE AND IN-COMBINATION EFFECTS

Perhaps the greatest effects are caused by other aquaculture developments along the Donegal coastline[*]. There are applications for Manila Clam cultivation in nearby Kinclassagh Bay. There are currently applications for oyster cultivation in Ballyness Bay located approximately 10-15 km (straight-line distance) to the northeast of the aquaculture sites at Gweedore Bay, and at Loughros Beg, approximately 30 km to the south, as well as at several other locations elsewhere along the Donegal coastline (Mulroy Bay, Lough Swilly and Donegal Bay). These developments impact on some of the same SPAs and their SCIs.

The Technical Advisor's Report noted the following other coastal/maritime activities taking pace in Gweedore Bay:

- The immediate area around Donegal Airport, Carrickfinn Beach and Portarthur Beach are regularly used by walkers and cyclists.
- Activities at Gweedore Bay's beaches include swimming, kayaking, boating, windsurfing and other land-based activities such as football and kite flying etc.
- Kayaking and some walking also occur in Gweedore Bay itself, particularly around the northern part of the bay. Rock-climbing occurs on Gola and Cruit Islands nearby.
- The Gweedore Bay area is also popular for recreational, diving, sailing, and boat tours with views of the sea cliffs, cliff arches and the island coasts.
- The nearby Derryveagh Mountains attract thousands of walkers per year mainly to climb Mt Errigal and for views of the nearby Poison Glen.
- Sea angling, including boat fishing in the central Gweedore Bay channel, the "Gola Roads" between Gola and Inishinny Islands, and to the west of Gola Island, and shore angling from Bunbeg Harbour.
- River angling in the Clady and Gweedore rivers.
- Inshore fishing activity, mainly pot fishing for lobster and brown crab, with line and net fishing further offshore.

The added impacts imposed by activities result from either increased disturbance, or depletion of food resources, the latter from angling activities. Both Common and Lesser Black-backed Gull are reasonably tolerant of disturbance activities, but increased intensity of pressures caused by recreational activities could impact on key roosting or feeding areas of one or both of the SCIs. Angling may result in the depletion of prey, especially Lesser Black-backed Gull which is reliant on fish within its diet.

Most other developments in the area relate to small-scale coastal domestic applications, most of which are dated and have been completed.

4. CONCLUSION

Taking into consideration all of the material that has been prepared to date, and in reviewing the nearby SPAs and their SCIs, it is not possible to rule out the possibility that usage by the Common Gull SCIs of the West

[*] https://www.agriculture.gov.ie/seafood/aquacultureforeshoremanagement/aquaculturelicensing/aquacultureforeshorelicenceapplications/donegal/

Donegal Islands and Inishbofin, Inishdooey and Inishbeg SPAs and the Lesser Black-backed Gull SCI of the Inishbofin, Inishdooey and Inishbeg SPA of the proposed aquaculture development area at Gweedore Bay for feeding and/ or roosting will not be negatively affected. Therefore, it is recommended that the assessment progress to a stage 2 Appropriate Assessment.

The reasons for this conclusion are summarised as follows:

1. The proposed development of aquaculture sites within Gweedore Bay will result in the loss of 58 ha of intertidal habitats potentially used by the abovementioned SCIs for feeding and/ or roosting.
2. Several cumulative impacts have been identified that may, in combination with the above development, exacerbate further the impacts on the SCIs. They include:
    a. Additional proposals for aquaculture development (largely oyster cultivation) elsewhere and in relatively close proximity to the Gweedore Bay aquaculture sites.
    b. High levels of recreational disturbance which if not regulated may temporarily or even permanently displace the SCIs from the area.
    c. Sea and river angling which could potentially affect prey availability, especially for Lesser Black-backed Gull which is reliant on fish prey.

5. REFERENCES

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6. APPENDIX

Site synopses relating to the six SPAs located within 15 km of the proposed aquaculture development:

- 004039 Derryveagh And Glendowan Mountains SPA
- 004083 Inishbofin, Inishdooey and Inishbeg SPA
- 004132 Illancrone and Inishkeeragh SPA
- 004149 Falcarragh to Meenlaragh SPA
- 004150 West Donegal Coast SPA
- 004230 West Donegal Islands SPA

SITE NAME: DERRYVEAGH AND GLENDOWAN MOUNTAINS SPA

SITE CODE: 004039

Derryveagh and Glendowan Mountains SPA is an extensive upland site in north-west Co. Donegal, comprising Glenveagh National Park, a substantial part of the Derryveagh and Glendowan Mountains and a number of the surrounding lakes. Much of the site is over 300 m above sea level, rising to a peak of 678 m at Slieve Snaght The solid geology is predominantly quartzite. The substrate over much of site is peat, with blanket bog and heath comprising the principal habitats.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Red-throated Diver, Merlin, Peregrine, Golden Plover and Dunlin.

This site is one of only a few locations where Red-throated Diver breed in Ireland and the birds also use a number of lakes within the site for feeding. A survey in 2010 recorded 6 pairs at the site. The extensive bog and heath habitats provide excellent foraging habitat for both Peregrine (5-6 pairs in 2002) and Merlin (estimated 6-11 pairs). Peregrine nest on the crags and cliffs, whilst Merlin nest in the heather or in old crows' nests in trees. The site is very important for breeding Golden Plover and Dunlin (subsp. *schinzii*) with 18 and 5 pairs respectively recorded in 2002.

Red Grouse is also widespread on the bogs and Ring Ouzel, a rare species of the uplands, breeds sparingly, with at least 2 pairs recorded in a 2002 survey. Several pairs of Whinchat, a scarce Irish species, breed within the site. Goosander is also a regular visitor to the lakes, though breeding within the site has not been proved.

Snowy Owl has also attempted to breed within the site - a clutch of eggs was laid but these did not hatch. Wood Warbler is present annually, with perhaps three pairs occurring. Redstart has bred on at least one occasion but there have been few sightings in recent years and it is not known if breeding occurs regularly.

Glenveagh National Park is the central location for the Golden Eagle re-introduction programme, which commenced in 2000. With time, this species may become successfully re-established as a breeding species in Ireland.

The site is of high ornithological importance with nationally important breeding populations of five species. Of particular note is that five of the species that occur regularly are listed on Annex I of the E.U. Birds Directive, i.e. Red-throated Diver, Peregrine, Merlin, Golden Plover and Dunlin (subsp. *schinzii*). A large proportion of Lough Barra Bog, a Ramsar Convention site and a Statutory Nature Reserve, is within the Derryveagh and Glendowan Mountains SPA.

7.7.2014

SITE NAME: INISHBOFIN, INISHDOOEY AND INISHBEG SPA
SITE CODE: 004083

Inishbofin, Inishdooey and Inishbeg SPA consists of three small to medium-sized islands located between 1 km and 4 km off the north-west coast of Co. Donegal. Inishbofin is inhabited during the summer months. The marine waters between and around the islands, to a distance of approximately 200 m, are included within the site.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Barnacle Goose, Corncrake, Common Gull, Lesser Black-backed Gull and Arctic Tern.

Inishbofin, Inishdooey and Inishbeg SPA supports a nationally important wintering population of Barnacle Goose (322 individuals – 4 survey mean between 1993 and 2003). The birds use the islands for both feeding and roosting but at times also commute to other sites in the region.

The site also supports a breeding population of Corncrake (13 pairs - five year mean peak between 2003 and 2007, based on records of calling males). Inishbofin, Inishdooey and Inishbeg SPA is one of a suite of sites along the western seaboard that is regularly utilised by nationally important numbers of breeding Corncrake.

Corncrake winter in southern and eastern Africa, migrating northwards to arrive on their breeding grounds from early April onwards, departing again in August and September. They require the cover of tall vegetation throughout their breeding cycle and are strongly associated with meadows which are harvested annually, where they nest and feed. Annual cutting of these meadows creates a sward which is easy for the birds to move through. Other habitats, which can provide cover for Corncrake in the early and late stages of the breeding season, are also important for this species.

Corncrake is listed on the 2010 International Union for Conservation of Nature (IUCN) Red List of Threatened Species. This is due to population and range declines of more than 50% in the last 25 years across significant parts of its range.

Inishbofin, Inishdooey and Inishbeg SPA also supports nationally important breeding populations of Common Gull (25 pairs on Inishdooey in 2002), Lesser Black-backed Gull (81 pairs on Inishdooey in 2002) and Arctic Tern (44 pairs on Inishbofin and 28 pairs on Inishdooey in 1995).

Inishbofin, Inishdooey and Inishbeg SPA is of high ornithological importance as it supports a nationally important population of Corncrake, a globally threatened species. The site also supports nationally important populations of wintering Barnacle Goose and breeding Common Gull, Lesser Black-backed Gull and Arctic Tern. Also of note is that three of the regularly occurring species are listed on Annex I of the E.U. Birds Directive, i.e. Barnacle Goose, Arctic Tern and Corncrake.

18.2.2011

SITE NAME: ILLANCRONE AND INISHKEERAGH SPA
SITE CODE: 004132

Illancrone and Inishkeeragh are two marine islands situated 8 to 9 km west of the town of Dunglow and south of Aranmore Island, Co. Donegal. Illancrone comprises areas of rock, shingle and short grassland. Inishkeeragh is a medium-sized, low-lying island surrounded by extensive intertidal rocks and, although now uninhabited, previous occupation has resulted in the island being divided into a system of enclosed fields. These fields have now reverted to unimproved dry grassland grazed by sheep.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Barnacle Goose, Common Tern, Arctic Tern and Little Tern.

Both islands are particularly important as breeding sites for seabirds. The following species were recorded from the site in 1995: Common Tern (59 pairs), Arctic Tern (224 pairs), Little Tern (13 pairs) and Sandwich Tern (1 pair). The Arctic Tern colony on Illancrone has been known since 1954 and, in 1984, was the largest known nesting colony for the species in Co. Donegal (132 pairs). Other seabird species recorded from Inishkeeragh include Common Gull (150 individuals in 1984), Herring Gull (100 individuals in 1984), Lesser Black-backed Gull (20 individuals in 1984) and Roseate Tern (3 pairs on Illancrone in 1984 and 2 pairs on Inishkeeragh in 1969).

The site also supports a nationally important Barnacle Goose flock (235 - mean of four counts between 1993 and 2003) which uses the islands for feeding over the winter.

Illancrone and Inishkeeragh SPA is of considerable conservation significance for the colonies of breeding seabirds and the Barnacle Goose flock that use it. Many of the species recorded from the site are listed on Annex I of the E.U. Birds Directive, i.e. Barnacle Goose, Common Tern, Arctic Tern, Little Tern, Sandwich Tern and Roseate Tern.

23.9.2009

SITE NAME: FALCARRAGH TO MEENLARAGH SPA

SITE CODE: 004149

Falcarragh to Meenlaragh SPA is located on the eastern and western sides of Ballyness Bay on the north-west coast of Co. Donegal. This large site follows the coastline from Falcarragh to Meenlaragh and encompasses three areas of mixed agricultural grassland.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Corncrake.

Falcarragh to Meenlaragh SPA supports a breeding population of Corncrake (9 pairs - five year mean peak between 2003 and 2007, based on records of calling males).
Falcarragh to Meenlaragh SPA is one of a suite of sites along the western seaboard that is regularly utilised by nationally important numbers of breeding Corncrake.

Corncrake winter in southern and eastern Africa, migrating northwards to arrive on their breeding grounds from early April onwards, departing again in August and September. They require the cover of tall vegetation throughout their breeding cycle and are strongly associated with meadows which are harvested annually, where they nest and feed. Annual cutting of these meadows creates a sward which is easy for the birds to move through. Other habitats, which can provide cover for Corncrake in the early and late stages of the breeding season, are also important for this species.

Corncrake is listed on the 2010 International Union for Conservation of Nature (IUCN) Red List of Threatened Species. This is due to population and range declines of more than 50% in the last 25 years across significant parts of its range.

Falcarragh to Meenlaragh SPA is of high ornithological importance as it supports a nationally important population of Corncrake, a globally threatened species.
Corncrake is also listed in Annex I of the E.U. Birds Directive.

5.11.2014

SITE NAME: WEST DONEGAL COAST SPA

SITE CODE: 004150

The West Donegal Coast SPA comprises separate sections of the Co. Donegal coastline and extends from Muckros Head in the south, northwards to Slieve League, Malin Beg, Rocky Point, Glen Head, Slieve Tooey, Maghera, Loughros Point, Dunmore Head, Aran Island, Magheradrumman, Carrickfin, Carnboy, Bunbeg, Magheragallan, Lunniagh, as far as Carrick, to the south of Bloody Foreland. The site includes the high coast areas and sea cliffs of the mainland and Aran Island, the land adjacent to the cliff, areas of sand dunes/machair at Maghera, Mullaghderg, Braade/Carrickfin/Carnboy, Magheragallan and Lunniagh/Carrick, and also several areas further inland of the coast at Croaghmuckros and Slieve League, north of Glencolumbkille and south of Dunmore Head. A low-lying area of land on the coast at Bunbeg used by roosting Chough is also included. The high water mark forms the seaward boundary, except at Tormore Island where the adjacent sea area to a distance of 500 m from the cliff base is included. Most of the site is underlain by granite and quartzite, though various other, particularly metamorphic, rock types also occur; rocks of Carboniferous age are found at Muckros Head.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Chough, Peregrine, Fulmar, Cormorant, Shag, Herring Gull, Kittiwake and Razorbill.

Vegetated sea cliffs are the predominant habitat of the site; these occur along its length and support a good variety of plant species typical of the habitat, including some rarities. The cliff tops support heath, blanket bog or coastal grassland. The northern section of the site includes several areas of machair. Apart from the sea cliffs and machair, the site includes areas of dry heath, wet heath, blanket bog, upland acid grassland, dense Bracken (*Pteridium aquilinum*), scrub, semi-improved and improved pasture grassland, fixed and mobile dune grassland, freshwater marsh, streams, oligotrophic lakes, bedrock shores and islets.

The site supports an important population of breeding Chough, a Red Data Book species that is listed on Annex I of the E.U. Birds Directive; 40 breeding pairs were recorded from the site in the 1992 survey and 58 in the 2002/03 survey.
Concentrations of breeding pairs occur on the Glencolumbkille Peninsula, from Killybegs in the south to Loughros Beg Bay in the north and on Aran Island. On Aran the exposed maritime situation coupled with sheep grazing has resulted in large areas of short sward suitable for foraging Chough. Flocking activity is centred on some of the extensive sand dune systems present; flocks of 76, 22 and 40 birds were recorded at Carrick, Dooey and Sheskinmore respectively in October 2004. At Sheskinmore, which is included in a separate SPA, larger flocks of as many as 140 birds have been previously reported. Up to 40 birds have been recorded roosting at Glen Head near Glencolumbkille and feeding in that area during September 2004.

Flock birds feeding at Sheskinmore were roosting at nearby Dunmore Head during October 2004 and a communal roost site associated with dune feeding exists near Bunbeg, Gweedore within sight of the dunes at Magheragallan.

The site supports a nationally important Peregrine population (6 pairs in 2002). The site also holds nationally important populations of Fulmar (1,879 pairs), Cormorant (71 pairs in 1999 and 2006), Shag (86 pairs), Herring Gull (229 pairs), Kittiwake (1,037 pairs) and Razorbill (322 pairs). Other species that occur include Black Guillemot (155 individuals), Guillemot (366 pairs), Great Black-backed Gull (15 pairs) and Lesser Black-backed Gull (2 pairs) – all seabird data from 1999 except where indicated. The most important breeding seabird colony in the site is at Tormore Island, a small precipitous grassy sea stack rising to a peak

of 139 m, on the north side of the Glencolumbkille Peninsula. Puffin has been recorded breeding on Tormore in the past, with an estimated 3,000 birds in 1970, though such high numbers are no longer considered to occur. Small groups of Barnacle Goose, also an E.U. Birds Directive Annex I species, occasionally graze on the sward on top of the stack. Twite and Ring Ouzel, both Red-listed species are also know to occur within the West Donegal Coast SPA.

The West Donegal Coast SPA contains nationally important breeding populations of Chough, Peregrine and six seabird species: Fulmar, Cormorant, Shag, Herring Gull, Kittiwake and Razorbill. The presence of Chough and Peregrine, species that are listed on Annex I of the E.U. Birds Directive, is of note.

30.5.2015

SITE NAME: WEST DONEGAL ISLANDS SPA
SITE CODE: 004230

West Donegal Islands SPA consists of a series of small to moderate-sized islands lying between 700 m and 3.5 km off the north-west coast of Co. Donegal. It includes the islands of Gola, Inishmeane, Inishsirrer (the three largest), Umfin, Go, Allagh, Torglass, Tornacolpagh and Tororragaun, as well as a number of smaller rocky islets. The islands are low-lying, the highest point being Knockaculleen on Gola (68 m).

The site, which includes the intervening and surrounding seas to 200 m from the shorelines, is highly exposed to Atlantic swells. The predominant habitat of the islands is grassland, with both wet and dry types represented; small areas of dune grassland also occur. Small lakes occur on Inishsirrer and Gola. The rocky shorelines have areas of boulders, shingle and coarse sand, and grade into submarine reefs, which are common in the shallow surrounding seas. The islands are uninhabited other than some summer dwellings on Gola and Inishmeane.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Shag, Barnacle Goose, Corncrake, Common Gull and Herring Gull.

The West Donegal Islands SPA supports a nationally important wintering population of Barnacle Goose (272 individuals - four survey mean between 1993 and 2003). The birds use the islands for both feeding and roosting, though at times may commute to other islands off the Donegal coast, such as Inishkeeragh and Inishdooey.

The site supports a breeding population of Corncrake (13 pairs - five year mean peak between 2003 and 2007, based on records of calling males). The West Donegal Islands SPA is one of a suite of sites along the western seaboard that is regularly utilised by nationally important numbers of breeding Corncrake.

Corncrake winter in southern and eastern Africa, migrating northwards to arrive on their breeding grounds from early April onwards, departing again in August and September. They require the cover of tall vegetation throughout their breeding cycle and are strongly associated with meadows which are harvested annually, where they nest and feed. Annual cutting of these meadows creates a sward which is easy for the birds to move through. Other habitats, which can provide cover for Corncrake in the early and late stages of the breeding season, are also important for this species.

Corncrake is listed on the 2010 International Union for Conservation of Nature (IUCN) Red List of Threatened Species. This is due to population and range declines of more than 50% in the last 25 years across significant parts of its range.

The West Donegal Islands SPA also supports nationally important breeding populations of Shag (40 pairs on Gola Island in 1999 and 30 pairs on Inishsirrer in 2000), Common Gull (20 pairs on Gola Island in 1999 and 55 pairs on Inishsirrer and Inishmeane in 2000) and Herring Gull (65 pairs on Gola Island in 1999 and 25 pairs on Inishsirrer in 2000). Arctic Tern is known to nest on Inishsirrer and possibly at times on Inishmeane. Common Tern may also be present; a total of 25 pairs were present in the 1995 National Tern Survey.

The West Donegal Islands SPA is of high ornithological importance as it supports a nationally important population of Corncrake, a globally threatened species. The site also supports nationally important populations of wintering Barnacle Goose and breeding Shag, Common Gull and Herring Gull. Also of note is that three of the regularly occurring species are listed on Annex I of the E.U. Birds Directive, i.e. Barnacle Goose, Arctic Tern and Corncrake.

15.6.2011

Appendix 3

Site Synopsis Reports

SITE SYNOPSIS

Site Name: Gweedore Bay and Islands SAC

Site Code: 001141

Gweedore Bay and Islands is an extensive coastal site situated between Burtonport in the south, Bloody Foreland in the north, near the towns of Derrybeg, Bunbeg and Annagary, and stretching eastwards to Bunaninver. It includes a large stretch of coastline, many islands (including Inishsirrer, Inishmeane, Gola, Umfin, Inishfree Lower and parts of Cruit Island) and areas of marine water between the islands and the coast. The terrain is generally undulating with knolls of exposed rock. The site is underlain by Granodiorite, a basic igneous rock. Areas of machair and sand dunes occur in several places along the coast, and large areas of sandflats are exposed off the coast at low tide. The site is of great ecological interest and importance.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[1150] Coastal Lagoons*
[1170] Reefs
[1220] Perennial Vegetation of Stony Banks
[1330] Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
[1410] Mediterranean Salt Meadows
[2110] Embryonic Shifting Dunes
[2120] Marram Dunes (White Dunes)
[2130] Fixed Dunes (Grey Dunes)*
[2140] Decalcified Empetrum Dunes*
[2150] Decalcified Dune Heath*
[2170] Dunes with Creeping Willow
[2190] Humid Dune Slacks
[21A0] Machairs*
[3130] Oligotrophic to Mesotrophic Standing Waters
[4030] Dry Heath
[4060] Alpine and Subalpine Heaths
[5130] Juniper Scrub
[1065] Marsh Fritillary (*Euphydryas aurinia*)
[1355] Otter (*Lutra lutra*)
[1395] Petalwort (*Petalophyllum ralfsii*)
[1833] Slender Naiad (*Najas flexilis*)

Machair grasslands are frequent within this site, being most extensive at Derrybeg, Bunlack, Carnboy, Kincaslough and west of Keadew. Machair occupies the central area of the tombolo joining Carnboy to the mainland and supports a species-rich vegetation, with hummocky areas colonised by Marram (*Ammophila arenaria*), Thrift (*Armeria maritima*), Sea Campion (*Silene vulgaris* subsp. *maritima*) and Common Sorrel (*Rumex acetosa*), and flat areas between the hummocks with a grassy vegetation dominated by a variety of grass species and with an abundance of small herbs. The vegetation of the other areas of machair in the site is broadly similar.

Sand dunes are frequently found in association with machair. Embryonic dunes are well represented, with particularly good examples to be found at Magheraclogher and to the west of Keadue strand. Lyme Grass (*Leymus arenarius*), Sand Couch (*Elymus farctus*) and Sand Sedge (*Carex arenaria*) are characteristic species of the embryonic dunes. The embryonic dunes often merge with white dunes dominated by Marram.

Fixed dunes are frequent throughout the site, with some of the best examples occurring at Lunniagh, to the north of Mullaghderg Lough, Gola Island and Cruit Island. The habitat is normally found behind the embryonic and/or Marram dunes, and these dunes can reach a height of 20 m or more. Important species of the habitat include Red Fescue (*Festuca rubra*), Lady's Bedstraw (*Galium verum*), Marram, Pyramidal Orchid (*Anacamptis pyramidalis*), Burnet Rose (*Rosa pimpinellifolia*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Wild Carrot (*Daucus carota*) and Wild Thyme (*Thymus praecox*). The most frequent and conspicuous bryophytes are *Tortula ruraliformis, Homalothecium lutescens* and *Rhytidiadelphus squarrosus*. At least three separate populations of the Red Data Book plant Hoary Whitlowgrass (*Draba incana*) have been recorded growing in this habitat. Another unusual species associated with the habitat is the diminutive fern, Moonwort (*Botrychium lunaria*), a nationally scarce plant species.

Fixed dunes with heath vegetation, including a specific type with Crowberry (*Empetrum nigrum*), are a feature of the site. This habitat has developed on thin, well-drained sandy soils often with outcropping rock, along the contact zone between dune grassland and coastal heath. At certain sites the habitats have developed in areas where sand is blown up onto coastal heath by strong onshore winds. This mixing of sand and peat soils result in the co-occurrence of dune grassland species such as Red Fescue, Common Birds'-foot-trefoil, Burnet Rose and Wild Thyme, with dry heath species such as Heather (*Calluna vulgaris*), Bell Heather (*Erica cinerea*), Heath-grass (*Danthonia decumbens*), Slender St. John's-wort (*Hypericum pulchrum*) and Tormentil (*Potentilla erecta*). Crowberry is an occasional species.

Also associated with the dune systems are dune slacks. These occur in both small, seasonally flooded depressions interspersed between areas of high fixed dune and as well as in more extensive flat areas. Creeping Willow (*Salix repens*) is a characteristic species, and is often accompanied by a range of wetland species, including Common Bent (*Agrostis stolonifera*), *M*arsh Bedstraw (*Galium palustre*), Silverweed (*Potentilla anserina*), Marsh Pennywort (*Hydrocotyle vulgaris*), Marsh Cinquefoil (*Potentilla*

palustris), Trailing Tormentil (*Potentilla anglica*) and Autumn Hawkbit (*Leontodon autumnalis*), as well as a range of small sedge species (e.g. *Carex demissa, Carex nigra* and *Carex flacca*). Species typical of well-drained dune grassland occur in the drier areas of the slacks.

At several areas within this site shingle bank vegetation is well represented. Of particular note is a stretch from Port ui Chuirean to Bunabinver, and an area at Port bun an Inbhir. These are highly exposed shores, with boulder and stony beaches which are unvegetated in some parts but have a well-developed flora in other parts, including stabilized zones with lichens. Species present include Spear-leaved Orache (*Atriplex prostrata*), Thrift, Common Scurvygrass (*Cochlearia officinalis*), Red Fescue, Buck's-horn Plantain (*Plantago coronopus*), Silverweed, Curled Dock (*Rumex crispus*), Sea Campion and Sea Mayweed (*Matricaria maritima*). The rare Sea Pea (*Lathyrus japonicus*), a species protected under the Flora (Protection) Order, 2015, has been recorded from the site.

The largest area of saltmarsh at the site occurs in the shallow bay north of Derrybeg. A substantial area of Mediterranean salt meadow, dominated by Sea Rush (*Juncus maritimus*), occurs where the Cathleen river enters Derrybeg bay. Other species present include Red Fescue, Creeping Bent (*Agrostis stolonifera*), Sea Arrowgrass (*Triglochin maritima*), Common Scurvygrass, Sea-milkwort (*Glaux maritima*) and, unusually, Purple Moor-grass (*Molinia caerulea*) and Black Bog-rush (*Schoenus nigricans*).

Atlantic salt meadow occurs as two separate areas; one located behind the relatively sheltered headland of Keadew Point, the second located in the south-eastern or uppermost part of Keadew Strand inlet. Both sections of saltmarsh are characterised by the presence of the large intertidal sand flats that occupy much of the inlet. The most frequent species is Sea Milkwort, although its abundance is variable. Pioneer vegetation is dominated by Common Saltmarsh-grass (*Puccinellia maritima*), although smaller abundances of Thrift, Sea Plantain (*Plantago maritima*) and Glasswort (*Salicornia* spp.) also occur. This pioneer vegetation is highly dynamic and it is likely that the vegetation is regularly reshaped with changes in extent of the saltmarsh and embryonic dunes. Low marsh vegetation is typically characterised by species such as Sea Aster (*Aster tripolium*), Thrift, Common Scurvy-Grass, Sea Plantain and Sea Arrow-Grass (*Triglochin maritimum*), with Distant Sedge (*Carex distans*), Extended Sedge (*Carex extensa*) and Saltmarsh Rush (*Juncus gerardii*). One notable species is Flat Saltmarsh sedge (*Blysmus rufus*), an occasional component of the upper marsh, in vegetation transitional to the sand dune habitats.

The site has at least two lagoons. Kincas Lough, which lies opposite Cruit Island, is a saline lake lagoon with a sluiced artificial outlet. Seawater enters on most tides but the lake also receives large volumes of freshwater from small streams and the channel which drains from Lough Mullaghderg to the north. Moorlagh, which lies just south of Annagary, is a saline lake lagoon with an artificial barrier formed by a causeway and road bridge, with a natural outlet modified by sluices. Seawater enters on most tides but large streams enter from the south. A range of typical lagoonal

plants occur, including the charophyte *Chara aspera*, Tasselweed (*Ruppia cirrhosa*), Saltmarsh Flat-rush, and the green alga *Chaetomorpha linum*. The number of faunal species present is quite high but many of these are species which can move easily between marine and freshwater systems and may not be resident species. However, four lagoonal specialists have been recorded, i.e. *Jaera nordmanni*, *J. ischiosetosa* (both Order Isopoda), *Neomysis integer* (Order Mysida) and *Cordylophora caspia* (a hydrozoan, Phylum Cnidaria).

Reef communities occur along much of the rocky shore from the Rutland area (where fine examples have been documented) to Bloody Foreland.

Areas of dry heath are common along the exposed rocky shores of this site which are not dominated by sand-dunes or related habitats. Typically, areas of heath occur interspersed between rocks outcrops and patches of acid grassland vegetation. However, the habitat may occasionally occur as a mosaic with dune grassland, giving rise to a species-rich mixture of plants, such as at Rinnalea Point north of Kincaslough. The typical species encountered in the habitat are Heather (often dominant), Bell Heather, Cross-leaved Heath *(Erica tetralix*), Purple Moor-grass, Tormentil and Mat-grass (*Nardus stricta*). Locally, more unusual species such as Bearberry (*Arctostaphylos uva-ursi*) and Crowberry can occur, indicating the presence of alpine/subalpine heath, while in other areas the habitat forms a mosaic with heath dominated by Juniper (*Juniperus communis*).

The lakes at this site are good examples of oligotrophic lakes, of which Mullaghderg Lough is the largest and most interesting. Typical plant species present include Water Lobelia (*Lobelia dortmanna*), Pipewort (*Eriocaulon aquaticum*) and Quillwort (*Isoetes lacustris*). The Annex II aquatic species Slender Naiad (*Najas flexilis*) occurs in at least one of the lakes. This species is listed in the Flora (Protection) Order, 2015.

The site includes many other coastal habitats, i.e. areas of sandflats, saltmarsh, sandy beaches, boulder beaches, rocky foreshore and sea cliffs, inlets, bays, open marine water, reefs, islets, brackish water lakes/inlets and Sea Buckthorn (*Hippophae rhamnoides*) scrub, amongst others. This diverse site also includes areas of grassland, lakes, freshwater marsh, cut-away bog and Sessile Oak (*Quercus petraea*) woodland.

The site is notable for the presence of a number of rare plants species, including Slender Naiad, mentioned above, and Petalwort (*Petalophyllum ralfsii*), both of which are listed on Annex II of the E.U. Habitats Directive. Scarce bryophytes recorded from the site include *Distichium inclinatum* and *Rhodobryum roseum*. Also found on the site is Small-white Orchid (*Pseudorchis albida*), a species protected under the Flora (Protection) Order, 2015, and the threatened, Red Data Book species, Hoary Whitlowgrass.

Otters are present at this site and are considered to be common and breeding. Otter is listed on Annex II of the E.U. Habitats Directive.

The Marsh Fritillary (*Euphydryas aurinia*), an Annex II and red-listed butterfly (VU), is present in several parts of the SAC. There is a long-established population centred on the heaths and dune grasslands of Cruit Island and it is also recorded from Inishsirrer and Inishmeane. It may also occur in other localities in habitats with its foodplant Devil's-bit Scabious (*Succisa pratensis*). Cruit Island is considered one of the richest butterfly sites in western Donegal. There have been records of 21 species including the additional red listed and near threatened species Small Blue (*Cupido minimus*), Dark Green Fritillary (*Argynnis aglaja*), Grayling (*Hipparchia semele*) and Small Heath (*Coenonympha pamphilus*).

The habitats in the SAC support a notable assemblage of bees especially bumblebees which are increasingly confined to large areas of flower-rich habitat. The red-listed and near threatened species *Bombus rupestris*, *Bombus campestris*, *Bombus ruderarius*, *Bombus lapidarius* and *Bombus muscorum* have all been recorded. The small solitary bee *Colletes floralis* is also recorded from several sites within the SAC. This is red listed in Ireland and in Europe and the Irish population is considered globally highly significant. Records of terrestrial and freshwater molluscs from the following red listed and near threatened species include *Helicella itala*, *Radix auricularia*, *Vertigo antivertigo*, *Vertigo pygmaea* and *Vertigo substriata*.

Many of the islands in the site are used by breeding seabirds (e.g. Common Gull, Herring Gull, Black-headed Gull, Lesser Black-backed Gull, Common Tern and Arctic Tern). All but the latter species also breed at Mullaghderg Lough. In 1995, 18 pairs of Common Tern and 28 pairs of Arctic Tern were recorded. Cormorant, Shag and Storm Petrel also use some of the islands in the site. Barnacle Goose winter on islands in the bay, with more than 300 individuals recorded in some years, e.g. 388 in spring 1994. Choughs are found in many areas of the site, e.g. on Cruit Island and Gola Island - a total of 6 pairs of Chough bred within the site in 1992. Nationally important numbers of Long-tailed Duck occur in Inishfree Bay, with an average maximum of 53 individuals over the five year period 1994/95-1998/99. An important population of Great Northern Diver also occurs in Inishfree Bay (average maximum of 36 individuals). The site has important populations of breeding waders, especially on the machairs. In a 1996 survey, the following were recorded: Oystercatcher 23 pairs, Ringed Plover 7 pairs, Lapwing 43 pairs, Dunlin 6 pairs and Redshank 5 pairs. Several of the bird species that use the site are listed on Annex I of the E.U. Birds Directive, i.e. Barnacle Goose, Chough, Great Northern Diver, Storm Petrel and the tern species.

The sand dunes and areas of machair on the site are particularly vulnerable to being overused for recreational activities and to unfavourable grazing regimes. Machair is best maintained as an open, evenly-grazed sward. A number of caravan sites are found on the margins of the site. Removal of sand and seaweed occurs at several locations, while some areas of saltmarsh are being reclaimed.

The site is of high ecological value for the occurrence of a wide range of coastal habitats, including areas of well-developed machair, sand dunes and shingle banks. It contains seventeen habitats that are listed, five with priority status, on Annex I of

the E.U. Habitats Directive and, as such, is of considerable conservation significance. The presence of populations of three E.U. Habitats Directive Annex II species and of several E.U. Birds Directive Annex I species adds significantly to the overall importance of the site.

SITE SYNOPSIS

Site Name: Cloghernagore Bog and Glenveagh National Park SAC

Site Code: 002047

Cloghernagore Bog and Glenveagh National Park SAC is an exceptionally large inland site located in the centre of north-west Donegal. It includes a rich diversity of habitats and landscape features, including mountains, exposed rock and scree, blanket bogs, dry, wet and alpine heath, upland grassland, wet grassland, rivers, lakes, scrub and woodland. The Gweebarra fault bisects the area forming a long valley, orientated north-east to south-west, in which Lough Barra and Lough Veagh (Beagh) are situated. The area is generally mountainous, taking in most of the Derryveagh and Glendowan ranges and including the two highest mountains in Donegal, Errigal (751 m) and Slieve Snaght (678 m). Towards the centre-west of the site are the fine ice-carved cliffs of the Poisoned Glen and Bingorms, which contrast dramatically with the gently undulating expanses of blanket bog in the south-west and north-east of the site. The underlying rock is predominantly granite, with a few intrusive dykes. However, around Errigal the geology is more complex with bands of schists, quartzite, granodiorite and limestone occurring.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[3110] Oligotrophic Waters containing very few minerals
[3260] Floating River Vegetation
[4010] Wet Heath
[4030] Dry Heath
[4060] Alpine and Subalpine Heaths
[6410] *Molinia* Meadows
[7130] Blanket Bogs (Active)*
[7150] Rhynchosporion Vegetation
[91A0] Old Oak Woodlands

[1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)
[1106] Atlantic Salmon (*Salmo salar*)
[1355] Otter (*Lutra lutra*)
[1421] Killarney Fern (*Trichomanes speciosum*)

Atlantic blanket bog is the dominant habitat of interest, with much of it being relatively unspoilt. Indeed, the area around Cloghernagore constitutes the most extensive blanket bog system remaining in the north-west of Ireland. Overall, there

are excellent examples of several types of blanket bog including Highland Bog (Cashelnagor and Dunlewy Far), Lowland Bog (Cloghernagore and Glenveagh Bridge), Domed Valley Bog (Derrybeg and Calabber Valley), Headwater Bog (Crockastoller and Carrickatimpan Mountain) and blanket bog apparently in the early stages of formation (Attinadague).

The blanket bog vegetation is relatively uniform and typically dominated by Purple Moor-grass (*Molinia caerulea*), Heather (*Calluna vulgaris*), Black Bog-rush (*Schoenus nigricans*), Deergrass (*Scirpus cespitosus*) and Common Cottongrass (*Eriophorum angustifolium*), with areas of Bog-myrtle (*Myrica gale*) also occurring.

A number of features indicative of well-developed blanket bog are found at the site. The pool systems found are typically colonised by bog moss species such as *Sphagnum auriculatum* and *S. cuspidatum*, Lesser Bladderwort (*Utricularia minor*), Bogbean (*Menyanthes trifoliata*) and sedges (e.g. *Carex panicea* and *C. limosa*), with Great Sundew (*Drosera anglica*) occurring around the margins. Hummocks of *Sphagnum* species (including *S. capillifolium, S. imbricatum* and *S. papillosum*) and other mosses such as *Leucobryum glaucum* and *Racomitrium lanuginosum* are found, as are flushed areas with *Sphagnum* species such as *S. auriculatum* var. *inundatum* and *S. magellanicum*), Common Reed (*Phragmites australis*), rushes (*Juncus acutiflorus* and *J. effusus*) or sedges (*Carex echinata, C. rostrata* and *C. demissa*). There are also quaking flats of mosses (*Campylopus atrovirens, C. brevipilus, Pleurozia purpurea* and *Sphagnum* spp.) with sedges (e.g. *Carex lasiocarpa*), and shallow, infilling lakes with associated *Sphagnum* scraws and sedge swards. The vegetation described for the pool areas and wet quaking flats is representative of Rhynchosporion vegetation.

A number of scarce or only locally-occurring vascular plant species have been recorded from bogs on the site. These include a hybrid Sundew, *Drosera anglica* x *D. rotundifolia* (*Drosera* x *obovata*), Whorled Caraway (*Carum verticillatum*), Bearberry (*Arctostaphyllos uva-ursi*), Cranberry (*Vaccinium oxycoccos*) and, in a gorge, Cowberry (*Vaccinium vitis-idaea*). Lower plants of note include several mosses (*Sphagnum fuscum, S. contortum, S. recurvum* var. *tenue, S. molle, Calliergon stramineum* and *Polytrichum longisetum*) and lichens (*Cladonia parasitica, C. gracilis, C. bellidiflora, C. cervicornis* subsp. *verticillata*, *C. digitata, Peltigera hymenea, Sphaerophorus fragilis, Usnea fragilescens* and *Umbilicaria polyrrhiza*).

Wet heath occurs at this site in an intimate mosaic with blanket bog, and the vegetation of the two habitat types intergrades. This occurs particularly on the lower slopes of hills, where deep lowland blanket peat meets shallower peat on the flanks of hills. Dry heath occurs at this site on slopes above 300 m. Heather and Bell Heather (*Erica cinerea*) are common, while species such as Gorse (*Ulex europaeus*) and Western Gorse (*U. gallii*) are thought to be relatively uncommon. Other species present include Common Bent (*Agrostis capillaris*), Velvet Bent (*A. canina*), Heath-grass (*Danthonia decumbens*) and Sheep's-fescue (*Festuca ovina*).

Subalpine heath is found at this site on very thin, peaty soils with some bare rock evident. The community is typically dominated by Heather and Bilberry (*Vaccinium*

myrtillus). Crowberry (*Empetrum nigrum*) is also found on some of the higher mountain slopes. Other species of note in this habitat are Tormentil (*Potentilla erecta*) and the moss *Racomitrium lanuginosum*. Juniper (*Juniperus communis*) and Bearberry are occasional on mountain summits.

The site includes many rivers and streams, containing, or fringed by plants such as Water Horsetail (*Equisetum fluviatile*), Lesser Spearwort (*Ranunculus flammula*), pondweeds (*Potamogeton natans, P. polygonifolius*), sedges (*Carex* spp.) and rushes (*Juncus* spp). By one river the locally-occurring Lemon-scented Fern (*Oreopteris limbosperma*) is found. In some areas gorges have been cut by streams, and here fragments of deciduous woodland remain. These are characterised by Aspen (*Populus tremula*), Rowan (*Sorbus aucuparia*), oak (*Quercus petraea* and *Q. robur*) and willow (*Salix* spp.).

An area of semi-natural deciduous woodland occurs on the steeply sloping eastern side of Glenveagh. The dominant trees are Sessile Oak (*Quercus petraea*), Downy Birch (*Betula pubescens*) and Rowan, with Hazel (*Corylus avellana*) occurring frequently. Holly (*Ilex aquifolium*) occurs in the understorey. Rhododendron (*Rhododendron ponticum*) has invaded much of the woodland and adjacent hillsides. Other species present include Yew (*Taxus baccata*), Juniper and, near Lough Veagh, the scarce Rock Whitebeam (*Sorbus rupicola*). Within the woodland the lower plant community is well-developed with liverworts, including *Frullania tamarisci*, growing on the tree trunks. This is replaced as an epiphyte in damper areas by Wilson's Filmy-fern (*Hymenophyllum wilsonii*). Of particular note is the presence of the scarcer Tonbridge Filmy-fern (*H. tunbrigense*). The woodlands are also notable for the presence of two rare species of Myxomycete fungus, namely *Licea gloeoderma* and *Physarum vernum*, the former in its only known Irish site.

Molinia meadow at the site is characterised by a co-dominance of Purple Moor-grass, Soft Rush (*Juncus effusus*), Sharp-flowered Rush (*J. acutiflorus*) and Conglomerate Rush (*J. conglomeratus*). The habitat occurs in areas that are subject to occasional flooding. Other species recorded include Water Horsetail, Marsh Speedwell (*Veronica scutellata*), Silverweed (*Potentilla anserina*), Marsh Ragwort (*Senecio aquaticus*), Cuckooflower (*Cardamine pratensis*), Marsh Cinquefoil (*Potentilla palustris*) and Marsh Pennywort (*Hydrocotyle vulgaris*).

There are several large oligotrophic lakes on the site, including Lough Barra, Lough Veagh and Lough Altan. Aquatic plant species found include Water Lobelia (*Lobelia dortmanna*), Shoreweed (*Littorella uniflora*) and Bulbous Rush (*Juncus bulbosus*). Lough Veagh also contains two quillwort species (*Isoetes lacustris* and *I. echinospora*), the latter of which is a locally-occurring species. Some of the smaller lakes also contain the scarce species Pipewort (*Eriocaulon aquaticum*).

Many scarce plants have been recorded from cliffs and gullies, mainly around Slieve Snaght and the Poisoned Glen. These include Brittle Bladder-fern (*Cystopteris fragilis*), Alpine Clubmoss (*Diphasiastrum alpinum*), Stiff Sedge (*Carex bigelowii*), Mountain Sorrel (*Oxyria digyna*) and Irish Spurge (*Euphorbia hyberna*). Purple Saxifrage

(*Saxifraga oppositifolia*) and Alpine Saw-wort (*Saussurea alpina*) have also been recorded from this area, along with a more recent sighting of Killarney Fern (*Trichomanes speciosum*). These are all rare species which are listed in the Irish Red Data Book, the latter also being legally protected under the Flora (Protection) Order, 1999, and listed on Annex II of the E.U. Habitats Directive.

Three other rare Red Data Book plant species have been recorded within the site: Bird Cherry (*Prunus padus*), Small-white Orchid (*Pseudorchis albida*) and Heath Cudweed (*Omalotheca sylvatica*). The two last-named are legally protected under the Flora (Protection) Order, 1999.

The area is also of considerable zoological value. Mammal interest includes the largest herd of Red Deer in Ireland, along with Badgers, Otters, Irish Hares and Stoats.

Lough Veagh contains Arctic Char, a fish species that was once widespread but is now rare in most places. It is listed as vulnerable in the Irish Red Data Book. The Owencarrow and Lackagh River systems support a good population of Atlantic Salmon, a species listed on Annex II of the E.U. Habitats Directive. Brown Trout also occur. Common Lizard has been recorded from the site. The site supports populations of Freshwater Pearl Mussel, a rare species that is listed on Annex II of the E.U. Habitats Directive.

A number of important bird species are represented at this site, with several which are listed in the Red Data Book, and a number listed on Annex I of the E.U. Birds Directive. Those which breed within the area include Red-throated Diver, Golden Plover, Merlin and Peregrine. A small flock of Greenland White-fronted Goose, also listed on Annex I of the E.U. Birds Directive, feed on some of the bogs in winter. The Red Data Book species Goosander and Wood Warbler both breed on the site. Generally, the woodlands are favoured by Siskin, Tree Creepers and Redstarts, while Meadow Pipits, Red Grouse, Ravens, Snipe and Dunlin are among the birds found on the moorland.

One of the major land uses at this site is conservation management. The site contains the whole of the Glenveagh National Park along with two Statutory Nature Reserves, Lough Barra Bog and Meenachullion Bog. Grazing by sheep and deer is common and in a few places the bogs have suffered from over-grazing and poaching. Grazing has also prevented woodland regeneration. Annual deer culls take place to control numbers and the main herd is kept within the confines of the National Park by a 45 km-long deer fence. Invasion by Rhododendron has been a particular problem within the National Park, where it has choked areas of woodland and covered adjacent hillsides. A removal programme is in progress and the threat from this species has been considerably reduced. Peat cutting, both by hand and machine, has caused damage to some bogs in the site. Turbary and afforestation are the main threats to this habitat, with erosion and burning also having an impact.

The site is of great scientific and conservation value, particularly for the large areas of excellent, little-damaged blanket bog it contains, including the largest intact area of blanket bog in north-west Ireland. It also includes good quality examples of semi-natural deciduous woodland, heath, oligotrophic lakes and inland cliffs. The importance of the site is increased by the presence of a wide range of plant and animal species, including many rare or threatened Red Data Book species, and several that are listed on Annex II of the E.U. Habitats Directive or Annex I of the E.U. Birds Directive.

SITE SYNOPSIS

Site Name: Rutland Island and Sound SAC

Site Code: 002283

Rutland Island and Sound SAC lies between Aran Island and Burtonport in north-west Donegal, 5 km north-west of Dunglow. Besides Rutland itself a number of other small rocky islets are also included in the site. The bedrock of Rutland Island is granite, but the dune systems on the island are highly calcareous.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (* = priority; numbers in brackets are Natura 2000 codes):

[1150] Coastal Lagoons*
[1160] Large Shallow Inlets and Bays
[1170] Reefs
[1210] Annual Vegetation of Drift Lines
[2110] Embryonic Shifting Dunes
[2120] Marram Dunes (White Dunes)
[2130] Fixed Dunes (Grey Dunes)*
[2190] Humid Dune Slacks
[1365] Common (Harbour) Seal (*Phoca vitulina*)

On the western side of Rutland Island, vigorous embryonic dunes with Sand Couch (*Elymus farctus*) are backed by dunes with Marram (*Ammophila arenaria*) and Common Milkwort (*Polygala vulgaris*) and by fixed grey dunes with Kidney Vetch (*Anthyllis vulneraria*), Common Bird's-foot-trefoil (*Lotus corniculatus*), Lady's Bedstraw (*Galium verum*), Biting Stonecrop (*Sedum acre*) and mosses (e.g. *Tortula* spp.). The fixed dunes grade into dune grassland. Good dune slacks, flushes and marshes also occur in places. Plants typically occurring in these damp areas include Cuckooflower (*Cardamine pratensis*), Bog Pimpernel (*Anagallis tenella*), Water Mint (*Mentha aquatica*) and Selfheal (*Prunella vulgaris*). The south end of the island has good drift line vegetation characterised by orache species (*Atriplex* spp.).

Sally's Lough, which is situated in the eastern part of the site, is a good example of a saline lake lagoon. While the lagoon basin is entirely natural, the narrow tidal inlet is apparently artificial. Seawater enters the lake on most tides but is diluted by rainfall running off the surrounding hills. Depth is up to 4 m and salinity has varied from 28 ppt to 34.3 ppt. Two lagoonal specialists, tasselweed (*Ruppia* spp.) and the green alga *Chaetomorpha linum*, were recorded in a recent survey, as well as a rare alga, *Cladophora battersii,* which grows unattached on the lagoon bed. Extensive underwater cliffs occur in the south-western quarter. These support a moderately

diverse macro-algal flora. Common Reed (*Phragmites australis*) occurs at the western end of the lake and the lagoon habitat is relatively rich, with 49 additional taxa recorded in a recent survey. Four species are regarded as lagoonal specialists: the molluscs *Onoba aculeus* and *Cerastoderma glaucum,* the isopod *Idotea chelipes* and the bryozoan *Conopeum seurati.* Two further species, *Ampithoe ramondi* and *Lembos longipes* (both Order Amphipoda) are rare in Ireland.

Rutland Channel and Sound is a complex of shallow reefs and sediment communities sheltered from wave action with varying degrees of current. The intertidal reefs are typical of these conditions with high species richness in the tide-swept sublittoral fringe. The shallow sublittoral reefs have excellent examples of tide-swept kelp communities with varying degrees of sand scour in which species richness is high. A number of species considered to be worthy of conservation occur, in particular, the sea squirt *Stolonica socialis.* The site displays a range of sediment types from coarse shelly sand to fine sand. The free-living red calcareous algae known as maerl (also called 'coral') occurs at several locations at the more open coastal sites on the south of Rutland Island. Beds of Eelgrass (*Zostera marina*) which host the rare hydroid *Laomedea angulata* and the southern species of burrowing anemone *Anthopleura ballii* are also present.

The site supports a population of Common Seal (maximum count of 202 in the all-Ireland survey of 2003).

Snipe have been recorded in the wet areas in the dunes.

Rutland Island and Sound contains important examples of eight habitats listed on Annex I of the E.U. Habitats Directive. The presence of a number of rare marine species adds further to the conservation importance of the site.

SITE SYNOPSIS

SITE NAME: INISHBOFIN, INISHDOOEY AND INISHBEG SPA

SITE CODE: 004083

Inishbofin, Inishdooey and Inishbeg SPA consists of three small to medium-sized islands located between 1 km and 4 km off the north-west coast of Co. Donegal. Inishbofin is inhabited during the summer months. The marine waters between and around the islands, to a distance of approximately 200 m, are included within the site.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Barnacle Goose, Corncrake, Common Gull, Lesser Black-backed Gull and Arctic Tern.

Inishbofin, Inishdooey and Inishbeg SPA supports a nationally important wintering population of Barnacle Goose (322 individuals – 4 survey mean between 1993 and 2003). The birds use the islands for both feeding and roosting but at times also commute to other sites in the region.

The site also supports a breeding population of Corncrake (13 pairs - five year mean peak between 2003 and 2007, based on records of calling males). Inishbofin, Inishdooey and Inishbeg SPA is one of a suite of sites along the western seaboard that is regularly utilised by nationally important numbers of breeding Corncrake.

Corncrake winter in southern and eastern Africa, migrating northwards to arrive on their breeding grounds from early April onwards, departing again in August and September. They require the cover of tall vegetation throughout their breeding cycle and are strongly associated with meadows which are harvested annually, where they nest and feed. Annual cutting of these meadows creates a sward which is easy for the birds to move through. Other habitats, which can provide cover for Corncrake in the early and late stages of the breeding season, are also important for this species.

Corncrake is listed on the 2010 International Union for Conservation of Nature (IUCN) Red List of Threatened Species. This is due to population and range declines of more than 50% in the last 25 years across significant parts of its range.

Inishbofin, Inishdooey and Inishbeg SPA also supports nationally important breeding populations of Common Gull (25 pairs on Inishdooey in 2002), Lesser Black-backed Gull (81 pairs on Inishdooey in 2002) and Arctic Tern (44 pairs on Inishbofin and 28 pairs on Inishdooey in 1995).

Inishbofin, Inishdooey and Inishbeg SPA is of high ornithological importance as it supports a nationally important population of Corncrake, a globally threatened species. The site also supports nationally important populations of wintering Barnacle Goose and breeding Common Gull, Lesser Black-backed Gull and Arctic

Tern. Also of note is that three of the regularly occurring species are listed on Annex I of the E.U. Birds Directive, i.e. Barnacle Goose, Arctic Tern and Corncrake.

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18.2.2011

SITE SYNOPSIS

SITE NAME: WEST DONEGAL ISLANDS SPA

SITE CODE: 004230

West Donegal Islands SPA consists of a series of small to moderate-sized islands lying between 700 m and 3.5 km off the north-west coast of Co. Donegal. It includes the islands of Gola, Inishmeane, Inishsirrer (the three largest), Umfin, Go, Allagh, Torglass, Tornacolpagh and Tororragaun, as well as a number of smaller rocky islets. The islands are low-lying, the highest point being Knockaculleen on Gola (68 m). The site, which includes the intervening and surrounding seas to 200 m from the shorelines, is highly exposed to Atlantic swells. The predominant habitat of the islands is grassland, with both wet and dry types represented; small areas of dune grassland also occur. Small lakes occur on Inishsirrer and Gola. The rocky shorelines have areas of boulders, shingle and coarse sand, and grade into submarine reefs, which are common in the shallow surrounding seas. The islands are uninhabited other than some summer dwellings on Gola and Inishmeane.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Shag, Barnacle Goose, Corncrake, Common Gull and Herring Gull.

The West Donegal Islands SPA supports a nationally important wintering population of Barnacle Goose (272 individuals - four survey mean between 1993 and 2003). The birds use the islands for both feeding and roosting, though at times may commute to other islands off the Donegal coast, such as Inishkeeragh and Inishdooey.

The site supports a breeding population of Corncrake (13 pairs - five year mean peak between 2003 and 2007, based on records of calling males). The West Donegal Islands SPA is one of a suite of sites along the western seaboard that is regularly utilised by nationally important numbers of breeding Corncrake.

Corncrake winter in southern and eastern Africa, migrating northwards to arrive on their breeding grounds from early April onwards, departing again in August and September. They require the cover of tall vegetation throughout their breeding cycle and are strongly associated with meadows which are harvested annually, where they nest and feed. Annual cutting of these meadows creates a sward which is easy for the birds to move through. Other habitats, which can provide cover for Corncrake in the early and late stages of the breeding season, are also important for this species.

Corncrake is listed on the 2010 International Union for Conservation of Nature (IUCN) Red List of Threatened Species. This is due to population and range declines of more than 50% in the last 25 years across significant parts of its range.

The West Donegal Islands SPA also supports nationally important breeding populations of Shag (40 pairs on Gola Island in 1999 and 30 pairs on Inishsirrer in

2000), Common Gull (20 pairs on Gola Island in 1999 and 55 pairs on Inishsirrer and Inishmeane in 2000) and Herring Gull (65 pairs on Gola Island in 1999 and 25 pairs on Inishsirrer in 2000). Arctic Tern is known to nest on Inishsirrer and possibly at times on Inishmeane. Common Tern may also be present; a total of 25 pairs were present in the 1995 National Tern Survey.

The West Donegal Islands SPA is of high ornithological importance as it supports a nationally important population of Corncrake, a globally threatened species. The site also supports nationally important populations of wintering Barnacle Goose and breeding Shag, Common Gull and Herring Gull. Also of note is that three of the regularly occurring species are listed on Annex I of the E.U. Birds Directive, i.e. Barnacle Goose, Arctic Tern and Corncrake.