03rd January 2023

File Ref: T12/572 & [redacted]

Foylantic Ltd
Cuan na Mara
Carrowtrasna
Greencastle
Co. Donegal

FISHERIES (AMENDMENT) ACT, 1997 (NO.23) NOTICE OF MINISTERIAL DECISION TO REFUSE TO GRANT AQUACULTURE LICENCES.

Dear Mr. McCorkell,

I wish to inform you that the Minister for Agriculture, Food and the Marine has refused to grant your applications for an Aquaculture Licence, for the cultivation of Pacific Oysters using bags & trestles on 2 sites no. T12/572A & [redacted] (see attached information notes). I enclose an extract from the public notice of the decision which **the Department** has arranged to have published in "The Donegal Democrat".

Any person aggrieved by the decision may, in accordance with Section 41 of the Fisheries (Amendment) Act 1997, appeal against it in writing to the Aquaculture Licences Appeals Board (ALAB). This appeal must be lodged within 30 days beginning on the date of the publication of the decision.

Note: As marine aquaculture operations require separate Aquaculture and Foreshore Licences, a separate determination on the foreshore licence application will be made once the licensing authority, or if appealed, ALAB have made a determination on the aquaculture licence application.

Yours sincerely

EMaher
Eileen Maher
Aquaculture and Foreshore Management Division

S.12 (3) OF THE FISHERIES (AMENDMENT) ACT, 1997(NO.23)
INFORMATION NOTE TO APPLICANT FOR THE PURPOSE OF REGULATION 18 OF THE AQUACULTURE (LICENCE APPLICATION) REGULATIONS 1998

FILE REFERENCE NO: **T12/572**

APPLICANT: **Foylantic Ltd**

AQUACULTURE TO WHICH DECISION RELATES: Cultivation of Pacific Oysters using bags and trestles on site T12/572A on the foreshore in Trawbreaga Bay, Co. Donegal

NATURE OF DECISION: Refusal of Licence.

DATE OF DECISION: **23/12/2022**

REASON FOR REFUSAL:

"Determination of Aquaculture Licensing application – T12/572

Foylantic Ltd. has applied for authorisation to cultivate Pacific Oysters using bags & trestles on the inter-tidal foreshore on a 0.78 hectare site (T12/572A) in Trawbreaga Bay, Co. Donegal.

The Minister for Agriculture, Food and the Marine has determined that it is not in the public interest to grant the licence sought. In making his determination the Minister considered those matters which by virtue of the Fisheries (Amendment) Act 1997, and other relevant legislation, he was required to have regard to. Such matters include any submissions and observations received in accordance with the statutory provisions. The Minister also had regard to the findings of the Appropriate Assessment. The following are the reasons and considerations for the Minister's determination to refuse the licence sought:

- *Due to the uncertainty in relation to population decline/displacement of the Light-bellied Brent Goose in Trawbreaga Bay, at present and the need for verification of the population, the potential for negative impacts cannot be discounted.*
- *Based on the requirement identified above for monitoring in relation to the potential effects of further aquaculture sites and their access routes to the Muddy sand to coarse sediment with Pygospio elegans community complex and on the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex, the potential for negative impacts cannot be discounted.*
- *Given the conclusions of the Appropriate Assessment process, in particular in relation to the need for monitoring to assess the impacts of any further aquaculture licensing on the Light-bellied Brent Goose for which Trawbreaga Bay SPA has been designated, and the need for monitoring in relation to the potential negative effects on the qualifying interest 1140 of the North Inishowen Coast SAC within the Trawbreaga Bay the licensing of all currently proposed applications is not recommended.*
- *The site size as applied for requires a reduction in size in order to ensure public and boat access to the shore.*
- *Cumulative visual impact of substantial significance could arise if the site were to be licensed as applied for."*

Note: As marine aquaculture operations require separate Aquaculture and Foreshore Licences, a separate determination on the foreshore licence application will be made once the licensing authority, or if appealed, ALAB have made a determination on the aquaculture licence application.

S.12 (3) OF THE FISHERIES (AMENDMENT) ACT, 1997(NO.23)
INFORMATION NOTE TO APPLICANT FOR THE PURPOSE OF REGULATION 18 OF THE AQUACULTURE (LICENCE APPLICATION) REGULATIONS 1998

FILE REFERENCE NO:	**T12/573**
APPLICANT:	**Foylantic Ltd**
AQUACULTURE TO WHICH DECISION RELATES:	Cultivation of Pacific Oysters using bags and trestles on site T12/573A on the foreshore in Trawbreaga Bay, Co. Donegal
NATURE OF DECISION:	Refusal of Licence.
DATE OF DECISION:	**23/12/2022**

REASON FOR REFUSAL:

"Determination of Aquaculture Licensing application –T12/573

Foylantic Ltd. has applied for authorisation to cultivate Pacific Oysters using bags & trestles on the inter-tidal foreshore on a 0.63 hectare site (*T12/573A*) in Trawbreaga Bay, Co. Donegal.

The Minister for Agriculture, Food and the Marine has determined that it is not in the public interest to grant the licence sought. In making his determination the Minister considered those matters which by virtue of the Fisheries (Amendment) Act 1997, and other relevant legislation, he was required to have regard to. Such matters include any submissions and observations received in accordance with the statutory provisions. The Minister also had regard to the findings of the Appropriate Assessment. The following are the reasons and considerations for the Minister's determination to refuse the licence sought:

- Due to the uncertainty in relation to population decline/displacement of the Light-bellied Brent Goose in Trawbreaga Bay, at present and the need for verification of the population, the potential for negative impacts cannot be discounted.
- Based on the requirement identified above for monitoring in relation to the potential effects of further aquaculture sites and their access routes to the Muddy sand to coarse sediment with Pygospio elegans community complex and on the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex, the potential for negative impacts cannot be discounted.
- Given the conclusions of the Appropriate Assessment process, in particular in relation to the need for monitoring to assess the impacts of any further aquaculture licensing on the Light-bellied Brent Goose for which Trawbreaga Bay SPA has been designated, and the need for monitoring in relation to the potential negative effects on the qualifying interest 1140 of the North Inishowen Coast SAC within the Trawbreaga Bay the licensing of all currently proposed applications is not recommended.
- The proposed development would impact negatively on public access on this shoreline.
- Small boat access to waters from shore and from water to shore in this locality would be hindered by this proposed development.
- The site as applied for would be a hazard to small boat navigation in the low water channel.

- The site applied for is poorly aligned with neighbouring licensed site T12/471A from an orderly development perspective.
- There is likely to be substantial negative visual impact with proposed development of this site.
- There is potential for significant negative impact over time on substrate's coastal protection value locally if the site were licensed for trestle based culture of oysters."

Note: As marine aquaculture operations require separate Aquaculture and Foreshore Licences, a separate determination on the foreshore licence application will be made once the licensing authority, or if appealed, ALAB have made a determination on the aquaculture licence application.

To be inserted in the Donegal Democrat **by the Department**

FISHERIES (AMENDMENT) ACT, 1997 (NO. 23) NOTICE OF DECISIONS TO REFUSE TO GRANT AQUACULTURE LICENCES.

The Minister for Agriculture, Food and the Marine has made determinations on the Aquaculture Licence applications as set out in the table below in Trawbreaga Bay, Co. Donegal:

Site Ref No	Applicants	Species & Method	Minister's Decisions
T12/572A	Foylantic Ltd Cuan na Mara Carrowtrasna Greencastle Co. Donegal	Pacific Oysters using bags & trestles	Refuse to Grant Licence
[redacted]	[redacted]	[redacted]	[redacted]

The reasons for these decisions are elaborated on, on the Department's website at: www.gov.ie

An appeal against the Aquaculture Licence decision may be made in writing, within 30 days of the date of its publication, to THE AQUACULTURE LICENCES APPEALS BOARD, Kilminchy Court, Portlaoise, Co. Laois, by completing the Notice of Appeal Application Form available from the Board, phone 057 86 31912, e-mail info@alab.ie or website at http://www.alab.ie/

As marine aquaculture operations require separate Aquaculture and Foreshore Licences, a separate determination on the foreshore licence application will be made once the licensing authority, or if appealed, the Aquaculture Licences Appeals Board (ALAB) have made a determination on the aquaculture licence application.

"Determination of Aquaculture Licensing application – T12/572

Foylantic Ltd. has applied for authorisation to cultivate Pacific Oysters using bags & trestles on the inter-tidal foreshore on a 0.78 hectare site (T12/572A) in Trawbreaga Bay, Co. Donegal.

The Minister for Agriculture, Food and the Marine has determined that it is not in the public interest to grant the licence sought. In making his determination the Minister considered those matters which by virtue of the Fisheries (Amendment) Act 1997, and other relevant legislation, he was required to have regard to. Such matters include any submissions and observations received in accordance with the statutory provisions. The Minister also had regard to the findings of the Appropriate Assessment. The following are the reasons and considerations for the Minister's determination to refuse the licence sought:

- Due to the uncertainty in relation to population decline/displacement of the Light-bellied Brent Goose in Trawbreaga Bay, at present and the need for verification of the population, the potential for negative impacts cannot be discounted.
- Based on the requirement identified above for monitoring in relation to the potential effects of further aquaculture sites and their access routes to the Muddy sand to coarse sediment with Pygospio elegans community complex and on the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex, the potential for negative impacts cannot be discounted.
- Given the conclusions of the Appropriate Assessment process, in particular in relation to the need for monitoring to assess the impacts of any further aquaculture licensing on the Light-bellied Brent Goose for which Trawbreaga Bay SPA has been designated, and the need for monitoring in relation to the potential negative effects on the qualifying interest 1140 of the North Inishowen Coast SAC within the Trawbreaga Bay the licensing of all currently proposed applications is not recommended.
- The site size as applied for requires a reduction in size in order to ensure public and boat access to the shore.
- Cumulative visual impact of substantial significance could arise if the site were to be licensed as applied for."

Submission AGR 01386-22: Recommendation to refuse an Aquaculture Licence for 1 site (T12/572A)

TO:	Minister	AUTHOR:	Maher, EileenM
STATUS:	Completed	OWNER:	Maher, EileenM
PURPOSE:	For Decision	REVIEWERS:	Farrell, Geraldine McLoughlin, PatrickM Waldron, Ultan Beamish, Cecil Smith, Ann
DIVISION:	Aquaculture and Foreshore Management Division		
DECISION BY:			

Final comment

cleared by Minister

Action required

Ministerial Determination on Aquaculture Licensing Application (T12/572)

Executive summary

The Minister's determination is requested in relation to an application for Foylantic Ltd, Cuan na Mara, Carrowtrasna, Greencastle, Co. Donegal. The application is for the cultivation of oysters using bags and trestles on Site T12/572A, totalling 0.78 hectares on the foreshore in Trawbreaga Bay, Co. Donegal.

It is recommended that the Minister determines that the Aquaculture Licence **not be granted** for the reasons outlined in the 'Detailed Information' section below.

Detailed information

Decision Sought

The Minister's determination is requested please in relation to an application for an Aquaculture Licence from Foylantic Ltd, Cuan na Mara, Carrowtrasna, Greencastle, Co. Donegal.

Note: Tabs attached to this submission may contain additional information which is subject to redaction if transmitted to third parties.

Background

Marine aquaculture operations require separate Aquaculture and Foreshore Licences.

The Aquaculture Licence defines the activity that is permitted on a particular site and the Foreshore Licence allows for the activity permitted under the Aquaculture Licence to take place in that particular area of the Foreshore. The validity of each licence is contingent on the other licence remaining in force.

Section 82 of the Fisheries (Amendment) Act 1997 requires the Minister in considering a lease or a licence under the Foreshore Act to have regard to the decision of the licensing authority in relation to the aquaculture licence.

82.—The Minister, in considering an application for a lease or a licence under the Foreshore Acts, 1933 and 1992, which is sought in connection with the carrying on of aquaculture pursuant to an aquaculture licence, shall have regard to any decision of the licensing

authority in relation to the aquaculture licence.

Therefore, the Foreshore Licence submission will be forwarded for consideration once the Licensing Authority/ALAB have made a decision.

APPLICATION FOR AN AQUACULTURE LICENCE

An application for an Aquaculture Licence has been received from the applicant referred to above (in conjunction with an application for a Foreshore Licence), for the cultivation of oysters using bags and trestles in relation to a 0.78 hectare site on the foreshore in Trawbreaga Bay, Co. Donegal (numbered T12/572A – see **TAB A**).

LEGISLATION

Section 7 of the Fisheries (Amendment) Act 1997 provides that the licensing authority (i.e. Minister, delegated officer or, on appeal, the Aquaculture Licences Appeals Board) may, if satisfied that it is in the public interest to do so, license a person to engage in aquaculture.

Article 6 (3) of the Habitats Directive provides that *"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon … shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives … the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned …"*

CONSULTATION AND PUBLIC COMMENT

The application was sent to the Department's technical experts, statutory consultees and was also publicly advertised in a composite public notice covering both aquaculture and foreshore elements.

Technical Consultation – **TAB B**

Marine Engineering Division (MED): The site is located on upper level intertidal foreshore. Because of its elevation it would seem suitable as an area for holding already developed stock or slowing down growth. MED report that the substrate was firm and had suitable bearing capacity for trestles.

Licensing the site would increase by a small margin the Bay's total licensed oyster production capacity and standing stock. There is a question about whether the continuing issue of new licences is advisable in this Bay as the licensed area has expanded significantly in recent years which may lead to overstretching the oyster culture carrying capacity of Trawbreaga Bay.

Proximity to the R242 road (which is part of the Wild Atlantic Way route) means that development of this site could well generate a negative visual impact when viewed from that public roadway (approximately 50 metres away) to north east of site T12/572A. However as [redacted] have been granted, in combination with these sites the likelihood is that stand alone impact of also developing site T12/572A would be less and may well be considered more acceptable in that context.

The north corner of the site is 30m from high water mark and the ground between the site and high water mark is stony and rough. This high section of intertidal foreshore is not readily passed over on foot. Longshore access at a lower level on shore is easier. Development of the site as applied for could therefore impede public access along the shore area between high water mark and licensed trestle covered area — this would apply both when tide is high and at lower tidal stages when proposed trestles rows on the site running down shore ENE — WSW would also impede access. MED recommend that the north most section of site should not be licensed for oyster culture to maintain longshore public access.

It is also important to ensure that a clear corridor to the sea is allowed for from high water to low water line at this shoreline location to allow for access by boats to the Bay from land and vice versa. If not provided for there is a risk of a continuous length of trestle blocked shoreline of trestles cutting off access. MED recommend that a clear way of minimum width 20m be provided for between the site and north boundary of next proposed site.

In order to mitigate the foregoing public and boat access issues and also for orderly development of oyster framing in this specific part of the Bay MED recommend that only a certain subarea of T12/572A as shown on the map attached to their report would be appropriate for consideration for licensing. This subarea of T12/572A is 0.5440 ha.

The site is located approximately 60m distant from the main water channel in the Bay. It will not impinge directly on low water channel. If the site (along with group of oyster sites nearby in central part of Bay) is marked for navigation the impact on navigation of this additional development should not be significant.

Statutory Consultation – TAB C

Regulation 10 of the Aquaculture (Licence Application) Regulations, 1998 requires certain statutory bodies to be notified of an Aquaculture Licence application.

Comments were received from the following statutory bodies:

Marine Survey Office (MSO): The MSO has no objections from a safety of navigation viewpoint to the application. In order for charts and nautical publications to be updated the British Admiralty Hydrographic Office at Taunton, UK, is to be informed of the location and nature of the site by the applicant. The applicant is also required to apply to the Commissioners of Irish Lights for sanction to establish any lights and marks that maybe required.

Sea Fisheries Protection Authority (SFPA): The SFPA noted no possible impacts on existing wild fisheries in the area, no possible impacts on shellfish growing areas adjacent to or within the area. Trawbreaga is Class B for Pacific Oysters and as such any shellfish leaving this bay should be depurated or only sold to purification plants before being sold to the final customer. All consignments of Pacific Oysters should have a shellfish registration document accompanying the consignment completed fully and accurately. The Marine Institute HABS database should be checked prior to harvesting to verify that the bay is open. The onus is on the operator to verify the bay is open, classified and that the shellfish registration documents requirements are met. It is the responsibility of any operator to place safe wholesome food on the market.

Marine Institute (MI): Site T12/572A is situated in Trawbreaga Bay Shellfish Growing Water Area. Currently oysters have a B classification. No chemicals or hazardous substances will be used during the process. There will be no significant impacts on the Marine environment and that the quality status of the area will not be adversely impacted. The Marine Institute recommends the continued use of triploid oysters by operators in Trawbreaga Bay. The initial source of seed and other sources which may be used at any point in the future should be approved by the Minister. The movement of stock in and out of the site should follow best practice guidelines as they relate to the risk of introduction of invasive non-native species (e.g. Invasive Species Ireland). The applicant should be required to draw up a contingency plan, for the approval of DAFM, which shall identify, inter alia, methods for the removal from the environment of any invasive non-native species introduced as a result of operations at this site. The Marine Institute considers that the CLAMS process may be a useful and appropriate vehicle for the development and implementation of alien species management and control plans.

Site T12/572A overlaps with two community types in North Inishowen Coast SAC - Muddy sand to coarse sediment with Pygospio elegans community complex and Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex. The MI notes the findings of the Appropriate Assessment reports and the Department's Natura conclusion statement in regard to the impacts on the Conservation Objectives within the Trawbreaga Bay SPA and the North Inishowen Coast SAC. If licenced it should be noted that it is a statutory requirement that a Fish Health Authorisation, as required under Council Directive 2006/88/EC, be in place prior to the commencement of the aquaculture activities proposed.

Commissioner of Irish Lights (CIL): CIL has no objection to this development. It is important to ensure that no navigable inter-tidal channels are impeded by the site. If a licence is granted, all structures must be clearly marked as required by Regulations and Licensing Permit conditions and to the approval of the Nautical Surveyor with the Marine Survey Office. CIL request inclusion of the following terms in the licence–

•That the applicant secures Statutory Sanction from the Commissioners of Irish Lights for the aids to navigation that may be required by the Marine Survey Office. These aids should be in place before development on the site commences.

•The size and specification of aids to navigation should be of the design and specification approved by the Marine Survey Office and must be agreed in advance with the Commissioners of Irish Lights.

Donegal County Council: The Planning Authority stated they had no comments to make on these applications.

Department of Housing, Local Government & Heritage (DHLGH): stated that the Department of Agriculture, Food and Marine's Conclusion Statement indicates that the proposed sites have "potential negative effects on the qualifying interest 1140 of the North Inishowen Coast SAC within the Trawbreaga Bay". In addition, the Appropriate Assessment notes the licensing of the referred applications could result in the displacement of up to 5.36% of the Light-bellied Brent Geese population of the Trawbreaga Bay SPA and would represent a significant negative impact on the conservation status of this species within the SPA. The Conclusion Statement therefore determines that the potential for negative impacts cannot be discounted and that the licensing of all currently proposed applications is not recommended.

The Department of Housing, Local Government and Heritage supports this conclusion as it is necessary to avoid negative impacts on the Qualifying Interests and Special Conservation Interests of the designated sites, in line with the Habitats Directive and relevant national transposing legislation.

Irish Water: This application refers to aquaculture developments that are within a designated shellfish water. There are existing primary and secondary discharges operated by Irish Water which are located within 10km of the proposed aquaculture site.

MED Observation on Irish Water comments (**TAB E**):

Most discharges listed are at points outside Trawbreaga Bay and have no significant impact on water quality in the Bay. The exception is that at grid coordinates 246729 448010 which is the Carndonagh-Malin scheme discharge. That scheme provides treatment of sewage wastewater to secondary level (biological) and tertiary level (UV light treatment). The discharge from that scheme to the Donagh River near south east end of the Bay after treatment to relatively high standard would not be an obstacle to oyster site licensing in the Bay.

Public Consultation

The application was publicly advertised using a composite public notice covering both aquaculture and foreshore elements, in the Donegal Democrat on 14th October 2021. The application and supporting documentation were available for inspection at Carndonagh and

Buncrana Garda Stations for a period of 30 days from the date of publication of the notice in the newspaper.

There were 30 objections received from the public consultation process. It is not possible to disaggregate the comments into aquaculture and foreshore elements. The objections can be summarised as follows:

- From a National and International perspective, Trawbreaga Bay is of significant importance in terms of Environment, habitat & species, we should continue to protect the bay and prevent excessive aquaculture from damaging the Special Area of conservation.
- Light Bellied Geese and Brent Geese populations affected by Aquaculture & Foreshore Activities.
- The bay is a Ramsar Site and Wildfowl Sanctuary, and this should be protected.
- Over time there will be a buildup of pollution due to the narrow entrance from the ocean that prevents the rapid clearing of waste produced by oysters.
- A colony of seals which reside on some sandbanks near this application would be affected.
- Otters in the areas may be displaced as they travel to water.
- Negative impact on winkle picking, shore fishing, pleasure boater, kayakers etc.
- Insufficient & inadequate facilities, parking/toileting facilities resulting in potentially hazardous conditions for workers, locals & other road users.
- Public Health & Safety, accidents, food concerns over exposed trestles & sewage outfall close to the new applications.
- Constant moving of sandbanks in the bay lead to unsuitable ground conditions.
- Many objectors would like a carrying capacity survey of the bay to be carried out.
- Oyster beds are unsightly and take away from the natural beauty of the coast.
- The visual impact is not to be ignored and will not boost tourism at a signature point on the Wild Atlantic Way
- The area has been disfigured by industrial sized operations involving rusting heaps of rebar, heaps of plastic not to mention abandoned tractors & machinery.

A copy of all the observations/submissions received at the Public/Statutory consultation stage was forwarded to the applicant. His comments (**TAB E**) were for both his applications together and were as follows:

- Upon visual inspection of the proposed site, it appears that it is not crossing directly in front of a property and there is no apparent access ramp within the parameters of the proposed site or its boundary.
- In relation to noise pollution that has been mentioned, there is a code of practice with any issued licences in relation to maintenance of vehicles etc to minimise this problem.
- There seems to be a misunderstanding or confusion regarding Pacific oysters that are being used in the bay. It has been mentioned in numerous letters of concern
- regarding these being an invasive species and concerns regarding the nearby Lough Swilly but this is an issue regarding diploid stock. All licences issued in Trawbreaga Bay specify that Triploid stock only are permitted to be used on site therefore do not pose this threat.

The Marine Institute also provided a response to the Public consultation comments received **(TAB E**) which included the following:

- The current applications for aquaculture activities in Trawbreaga Bay were subject to Appropriate Assessment (AA) for protected habitats and species within the SAC and for protected bird species within the SPA. In addition, the likely interactions between Species of Conservation Interest in adjacent Natura sites were assessed in the AA reports and conclusions drawn regarding risk. The AA process and the recommendations made in the SAC and SPA reports afforded the

appropriate level of protection to both Light Bellied Brent Geese and the relevant benthic community complex given the information to hand.

- As part of the screening exercise within the SPA report Lough Foyle SPA and Lough Swilly SPA are considered together given the similarities in bird species designated as conservation features within them. Due to the large distance between Trawbreaga and Lough Foyle and Lough Swilly SPAs relative to the foraging ranges of the non-migratory conservation features such as the Curlew and Oystercatcher and the lack of "published data on interchange of waders and wildfowl between the sites", the potential for significant adverse effects on Curlew and Oystercatcher were screened out.
- The SPA report made a clear finding as to the risk of the proposed aquaculture activities on Light Bellied Brent Geese concluding that "displacement of up to 5.36% of the [Light Bellied Brent] geese using Trawbreaga Bay SPA and represents a significant negative impact on the conservation status of Light bellied Brent Geese using Trawbreaga Bay SPA". This displacement occurs due to the direct overlap between the foraging and roosting areas of the Light Bellied Brent Geese and the proposed aquaculture activities.
- The MI notes that the findings of current Light Bellied Goose monitoring in Trawbreaga Bay will provide important information that should be taken into consideration before the Code of Practice is finalised.
- The MI notes the focus on carrying capacity of waterbodies containing aquaculture activities in the National Strategic Plan for Sustainable Aquaculture Development (2015) and to this end intends on investigating carrying capacity further in Trawbreaga Bay and other bays around Ireland. The findings of any such investigations will be incorporated into advice provision in relation to AA and aquaculture licensing in the future.
- No species of seal is designated as a conservation feature of the North Inishowen Coast SAC and therefore there is no data that has been collected as part of SAC monitoring exercises commissioned by NPWS.

MED reviewed the public and statutory comments and made the following additional comments (**Tab E**) to their MED report on the application:

- *Carrying Capacity - MED support the Marine Institute's specific recommendation on this issue (made in Appropriate Assessment North Inishowen Coast SAC, June 2021) that ecological carrying capacity be investigated so that future licensing decisions can take this into account;*
- *Visual Impact- In cumulative impact terms though the placement of trestles on the site will amplify the existing magnitude of impact by bringing impact closer to the R242 viewpoints (closer than any site licensed to date in the Bay) and extending that impact higher up intertidal shore/over a longer period of tidal cycle. In cumulative visual impact terms this may be an incremental change too far. I anticipate that cumulative visual impact of substantial significance could arise if the site were to be licensed as applied for.*

CRITERIA IN MAKING LICENSING DECISIONS

The licensing authority, in considering an application, is required by statute to take account of, as appropriate, the following points and must also be satisfied that it is in the public interest to license a person to engage in aquaculture:

a) the suitability of the place or waters

Scientific advice is to the effect that the waters are suitable for the cultivation of Pacific Oysters

b) other beneficial uses of the waters concerned

Public access to recreational and other activities can be accommodated by this project;

c) the particular statutory status of the waters

(i) Natura 2000

The site is located within the North Inishowen Coast SAC and the Trawbreaga Bay SPA. An Article 6 Appropriate Assessment has been carried out in relation to aquaculture activities in this SAC and/or SPA. This Assessment and its findings were examined by the Department and its scientific/technical advisors. This led to the Licensing Authority (i.e. the Minister) producing a Conclusion Statement outlining how it is proposed to licence and manage aquaculture activities in the above Natura sites in compliance with the EU Habitats and Birds Directives(**TAB D**).

Given the conclusions of the Appropriate Assessment process, in particular in relation to the need for monitoring to assess the impacts of any further aquaculture licensing on the Light-bellied Brent Goose for which Trawbreaga Bay SPA has been designated, and the need for monitoring in relation to the potential negative effects on the qualifying interest 1140 of the

North Inishowen Coast SAC within the Trawbreaga Bay the licensing of all currently proposed applications is not recommended.

(ii) Shellfish Waters

The site is located within Shellfish Designated Waters.

The oysters in these waters currently have a "B" classification

d) the likely effects on the economy of the area

Aquaculture has the potential to provide a range of benefits to the local community, such as attraction of investment capital, development of support services, etc.

e) the likely ecological effects on wild fisheries, natural habitats, flora and fauna

No significant issues arose regarding wild fisheries. The potential ecological impacts of aquaculture activities on natural habitats, flora and fauna are addressed in the Article 6 Appropriate Assessment for Trawbreaga Bay and in the Licensing Authority's Conclusion Statement.

The Department of Housing, Local Government & Heritage (DHLGH) supports the findings of the conclusion statement as it is necessary to avoid negative impacts on the Qualifying Interests and Special Conservation Interests of the designated sites, in line with the Habitats Directive and relevant national transposing legislation.

f) the effect on the environment generally

The Department's Scientific Advisors the Marine Institute, noted the findings of the conclusion statement in relation to the need for monitoring prior to any further licensing.

g) DHLGH raised no objection to the development from an underwater archaeological perspective

RECOMMENDATION

It is recommended that the Minister:

Refuses the granting of an Aquaculture Licence to Foylantic Ltd, Cuan na Mara, Carrowtrasna, Greencastle, Co. Donegal. The reasons for the recommendation are based on the findings of the Appropriate Assessment for Trawbreaga Bay and site suitability:

- Due to the uncertainty in relation to population decline/displacement of the Light-bellied Brent Goose in Trawbreaga Bay, at present and the need for verification of the population, the potential for negative impacts cannot be discounted.
- Based on the requirement identified above for monitoring in relation to the potential effects of further aquaculture sites and their access routes to the Muddy sand to coarse sediment with Pygospio elegans community complex and on the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex, the potential for negative impacts cannot be discounted.
- Given the conclusions of the Appropriate Assessment process, in particular in relation to the need for monitoring to assess the impacts of any further aquaculture licensing on the Light-bellied Brent Goose for which Trawbreaga Bay SPA has been designated, and the need for monitoring in relation to the potential negative effects on the qualifying interest 1140 of the North Inishowen Coast SAC within the Trawbreaga Bay the licensing of all currently proposed applications is not recommended.
- The site size as applied for should not be licensed as it requires a reduction in size in order to ensure public and boat access to the shore.
- In cumulative impact terms though the placement of trestles on the site will amplify the existing magnitude of impact by bringing impact closer to the R242 viewpoints (closer than any site licensed to date in the Bay) and extending that impact higher up intertidal shore/over a longer period of tidal cycle. Cumulative visual impact of substantial significance could arise if the site were to be licensed as applied for.

REASONS FOR DECISION

The Minister for Agriculture, Food and the Marine is required to give public notice of both the licensing determination and the reasons for it. To accommodate this, it is proposed to publish the following on the Department's website, subject to the Minister approving the above recommendation:

"Determination of Aquaculture Licensing application – T12/572

Foylantic Ltd. has applied for authorisation to cultivate Pacific Oysters using bags & trestles on the inter-tidal foreshore on a 0.78 hectare site (T12/572A) in Trawbreaga Bay, Co. Donegal.

The Minister for Agriculture, Food and the Marine has determined that it is not in the public interest to grant the licence sought. In making his determination the Minister considered those matters which by virtue of the Fisheries (Amendment) Act 1997, and other relevant legislation, he was required to have regard to. Such matters include any submissions and observations received in accordance with the statutory provisions. The Minister also had regard to the findings of the Appropriate Assessment. The following are the reasons and considerations for the Minister's determination to refuse the licence sought:

- Due to the uncertainty in relation to population decline/displacement of the Light-bellied Brent Goose in Trawbreaga Bay, at present and the need for verification of the population, the potential for negative impacts cannot be discounted.
- Based on the requirement identified above for monitoring in relation to the potential effects of further aquaculture sites and their access routes to the Muddy sand to coarse sediment with Pygospio elegans community complex and on the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex, the potential for negative impacts cannot be discounted.
- Given the conclusions of the Appropriate Assessment process, in particular in relation to the need for monitoring to assess the impacts of any further aquaculture licensing on the Light-bellied Brent Goose for which Trawbreaga Bay SPA has been designated, and the need for monitoring in relation to the potential negative effects on the qualifying interest 1140 of the North Inishowen Coast SAC within the Trawbreaga Bay the licensing of all currently proposed applications is not recommended.
- The site size as applied for requires a reduction in size in order to ensure public and boat access to the shore.
- Cumulative visual impact of substantial significance could arise if the site were to be licensed as applied for."

Related submissions

There are no related submissions.

User details

INVOLVED:
Maher, EileenM
Farrell, Geraldine
McLoughlin, PatrickM
Waldron, Ultan
Beamish, Cecil
Sub Sec Gens Office
eSub Sec Gen
eSub Ministers Office
eSub Minister

READ RECEIPT:
Maher, EileenM
Farrell, Geraldine
McLoughlin, PatrickM
Waldron, Ultan
Beamish, Cecil
Smith, Ann
Whelan, Paul

AQUACULTURE AND FORESHORE LICENCE APPLICATION FORM, for purposes of FISHERIES (AMENDMENT) ACT, 1997 and FORESHORE ACT, 1933

NB: The accompanying Guidance Notes should be read before completing this form.

Note: Details provided in Parts 1 and 2 will be made available for public inspection. Details provided in Parts 3 and 4 and any other information supplied will not be released except as may be required by law, including the Freedom of Information Act 1997 as amended.

USE BLOCK CAPITALS IN BLACK INK PLEASE

For Office Use

Application Ref. No: T12/572

Date of Receipt (Dept. Stamp): 19 JUN 2020

Aquaculture & Foreshore Management Division
Department of Agriculture, Food & The Marine

Type of Applicant (tick one)	
Sole Trader	
Partnership	
Company	✓
Co-Operative	
Other Please specify-	

PART 1: PRELIMINARY DETAILS

Applicant's Name(s)

1. FOYLANTIC L.T.D

Address: CUAN NA MARA
CARROWTRASNA
GREENCASTLE
Co DONEGAL

2.

Address:

3.

Address:

4.

Address:

Contact in case of enquiries (if different from above)	
Contact Name	
Organisation Name (if applicable)	
Address	

PART 1: PRELIMINARY DETAILS

TYPE OF APPLICATION – please indicate relevant type of application
This Application Form is valid for each type of application - ***See Guidance Note 3.1***

(i) Aquaculture Licence	✓
(ii) Trial Licence	
(iii) Foreshore Licence, if Marine Based	✓
(iv) Review of Aquaculture Licence	
(v) Renewal of Aquaculture Licence	

TYPE OF AQUACULTURE *See Guidance Note 3.2*

Indicate the relevant type of application with a tick.

(i) MARINE-BASED

Finfish			Go to Parts 2.1 and 2.1A
Shellfish	*Subtidal*		Go to Parts 2.2 and 2.2A
	Intertidal	✓	Go to Parts 2.2 and 2.2A
Seaweed/Aquatic Plants/Aquatic Fish Food			Go to Parts 2.3 and 2.3A

(ii) LAND-BASED

Finfish ☐ **Shellfish** ☐ Go to Parts 2.4 and 2.4A

Aquatic Plants ☐ **Aquatic Fish Food** ☐ Go to Parts 2.4 and 2.4A

(iii) TRIAL LICENCE ☐ Go to appropriate Parts as above **and** to Part 2.5.

2.2 MARINE-BASED SHELLFISH AQUACULTURE

When filling out this section refer also to 2.2A and Guidance Note 3.3 for information on Conditions and Documents required with this application type

Proposed Site Location

(i) Bay: TRAWBREAGA BAY

(ii) County: DONEGAL

(iii) OS Map No: PLEASE SEE ATTACHED

(iv) Co-ordinates of Site: (please specify coordinate reference system used e.g. Irish Grid (IG) or Irish Transverse Mercator (ITM) or Latitude/Longitude [in which case specify whether ETRS89 or WG84 etc.]
244142, 451148, 244184, 451163
244273, 451047
244216, 451020

(v) Size of Site (hectares): 0.9

(vi) Species (common and scientific name) and whether native or non-native species: (see Guidance Notes 3.3.1)

CRASSOSTREA GIGAS (pacific oysters)

(vii) Whether production will be sub-tidal or inter-tidal?

Inter-tidal

(viii) Please supply details of (a) source of seed e.g. wild hatchery and location and (b) means of collection and introduction to culture.

THE SEED WILL BE BROUGHT IN FROM FRANCE (FROM HATCHERY). (COLLECTED BY LORRY)
LOCATED IN POIDER DU DAIM, BOUN FRANCE. PUT IN GROWING BAGS AND ON TRESTLES BY HAND)

NB Importation of seed into the State or movement of seed within the State requires notification to the Marine Institute as per the Fish Health Authorisation Regulations – See Guidance Notes Section 6

(ix) Method of culture (rope, trestles – intensive; bottom – extensive; other) TRESTLES

(x) Proposed number of lines/ropes/trestles as per site layout drawing
100 TRESTLES + 600 bags

(xi) Proposed Production Tonnage:

Year 1	10	Year 2	15	Year 3	20	Year 4	25	Year 5	30

(xii) (a) Please outline the reasons for site selection:

THE SITE HAS A VERY STABLE GROUND WHICH IS ALSO VERY LEVEL FOR TRESTLES WITH NO SAND ACCUMULATIONS AND HAS EASY ACCESS FROM THE SHORE. (GOOD FIRM GROUND).

(b) If using trestles please outline the physical characteristics of the site which make it suitable for using trestles

THE SITE HAS A VERY GOOD HARD BOTTON WITH NO SHIFTING SAND WHICH MAKES IT IDEAL FOR PLACEMENT OF TRESTLES.

(xiii) Is it intended that the product is for direct human consumption or half grown? Please specify

DIRECT HUMAN CONSUMPTION

(xiv) How will the visual impact issues of the flotation devices for the proposed application be addressed?

N/A

(xv) Is the site located in Designated Shellfish Waters Area? (Refer to Guidance Note 3.3.2)

Yes [✓] No [ ]

If yes give details.

PLEASE SEE ATTACHED MAP

If no outline the reasons why you believe the site suitable for the proposed aquaculture, notwithstanding its location outside Designated Shellfish Waters Area?

N/A

(xvi) Has the area been classified under Food Safety Legislation? (For Bivalve Molluscs) What is the current classification of the area for the proposed species applied for?

YES - CLASS B

(xvii) Is the site located in/adjacent to a sensitive area e.g. SPA (Special Protection Area) or SAC (Special Area of Conservation) i.e. a Natura 2000 site? (Refer to Guidance Note 3.3.1- Natura 2000 sites)

YES

(xviii) Are there known sources of pollution in the vicinity e.g. sewage outfall? Yes / No
If yes please give full details.

NO

(xix) Methods used to harvest the shellfish and details of any subsequent processing of shellfish THE SHELLFISH WILL BE BROUGHT IN BY COLLECTION OF THE BAGS WITH A TRACTOR AND TRAILER AT LOW TIDE CALL DONE BY HAND.

(xx) Describe any proposed purification facilities to be used:

NONE

(xxi) What are the main predators of the species to be cultivated?

NONE

(xxii) Describe the method(s) which will be used to control them

N/A

See Part 2.2A for details of documentation to be included with this application type

2.2A DOCUMENTATION REQUIRED FOR MARINE-BASED SHELLFISH AQUACULTURE

(to be included separately with a Licence Application for a new site or for a renewal or review of an existing Licence)

1. **An appropriate Ordnance Survey Map (recommendation is a map to the Scale of 1:10,000/1:10,560, i.e. equivalent to a six inch map).** Note: The proposed access route to the site from the public road across tidal foreshore must also be shown on the map.

2. **Scale drawing of the structures to be used and the layout of the farm.**
   The proposed site drawings must illustrate all site structures above and below the water including mooring blocks. (recommended scales normally 1:100 for structures and 1:200 for layout) (See Guidance Note 3.3.2)

3. **The prescribed application fee (See Guidance Note Section 4)**

4. **If the applicant is a limited Company within the meaning of the Companies Act 1963. as amended, the Certificate of Incorporation and Memorandum and Articles of Association**

5. **If the applicant is a Co-operative, the Certificate of Incorporation and Rules of the Co-operative Society**

6. **Environmental Impact Statement (if required) in certain cases- See Guidance Notes Section 3.3.1**

7. **Alien Species dossier (where required) – See Guidance Notes Section 3.3.1**

NOW COMPLETE PARTS 2.6, 3, 4 AND 5 PLEASE

PART 3 D. LIMITED COMPANY

Company Name: FOYLANTIC LTD

Address: CUAN NA MARA CARROWTRASNA

GREENCASTLE Co DONEGAL

Company Registered No. (CRO No.) [redacted]

VAT No. [redacted]

Phone No

Mobile No

E-mail Address [redacted]

Please list below the names and Personal Public Service No's of the Directors of the Company

Name [redacted] Personal Public Service No [redacted]

Name: _____ Personal Public Service No. _____

Name: _____ Personal Public Service No. _____

Name: _____ Personal Public Service No. _____

Please list below the names and Personal Public Service No.'s of the Shareholders in the Company and the percentage shareholding held in each case

Name: _____ Personal Public Service No. _____

% Shareholding: _____

Name: _____ Personal Public Service No. _____

% Shareholding: _____

Name: _____ Personal Public Service No. _____

% Shareholding: _____

Name: _____ Personal Public Service No. _____

% Shareholding: _____

PART 5: APPLICATION DOCUMENTATION

The following documents are enclosed with this application:
NB: Refer to Guidance Note Section 3.3 – Guidance on Application Documentation

No.	DOCUMENTATION	YES	NO	N/A
1a	**An appropriate Ordnance Survey Map (recommendation is a map to the scale of 1:10,000/10:10,560, i.e., equivalent to a six inch map)**			
1b	The proposed access route to the site from the public road across tidal foreshore must also be shown			
2a	**Scale drawing of the structures to be used** (recommended scale normally 1:100 for structures).			
2b	**Scale drawing of farm layout** (recommended scale normally 1:200 for layout)			
3	**The prescribed application fee**			
4	**Environmental Impact Statement (EIS), if required**			
4a	**Natura Impact Statement (NIS), if required**			
5	**Water Quality Analysis Report, if appropriate**			
6	**Decision of Planning Authority under the Planning Acts, if required**			
7	**Copy of Licence under Section 4 of the Local Government (Water Pollution) Act, 1977 – Effluent Discharge, if required**			
8	**If the applicant is a limited Company within the meaning of the Companies Act 1963, as amended, a copy of the Certificate of Incorporation and Memorandum and Articles of Association.**			
9	**If the applicant is a Co-operative, a copy of the Certificate of Incorporation and Rules of the Co-operative Society**			
10	**Integrated Pest Management Plan, if required**			
11	**Alien Species documentation, if required.**			

PART 5: DECLARATION AND SIGNING

NB: Refer to Guidance Note Section 3.5 and Section 4 - Guidance on Declaration and Signing and Annual Aquaculture and Foreshore Licence Fees

If this is a renewal/review have you met all licence conditions of the existing aquaculture licence? If applicable, explain why you have not complied with all conditions:

I/We hereby declare the information provided in Parts 1, 2, 3 and 4 above to be true to the best of my/our knowledge and that I am over 18 years of age. I/We enclose an application fee* of €95.23 with this application.

Signature(s) of Applicant(s): CATHAL MC CORKELL

(Please state capacity of persons signing on behalf of a Company/Co-op) (M Director)

Date: 16/6/2020

NB All persons named on this licence application must sign and date this application form.
Only the existing licence holder(s) can apply for the renewal/review of an Aquaculture Licence.

*Preferred method of payment is by cheque or bank draft. The fee should be made payable to the Department of Agriculture, Food and the Marine.

Refer to Guidance Note Section 4 - Guidance on Aquaculture and Foreshore Licence Fees

The application form should be forwarded, with the required documents and application fee, to:

Aquaculture Licensing
Aquaculture & Foreshore Management Division
Department of Agriculture, Food and the Marine
National Seafood Centre
Clonakilty
Co. Cork
P85 TX47

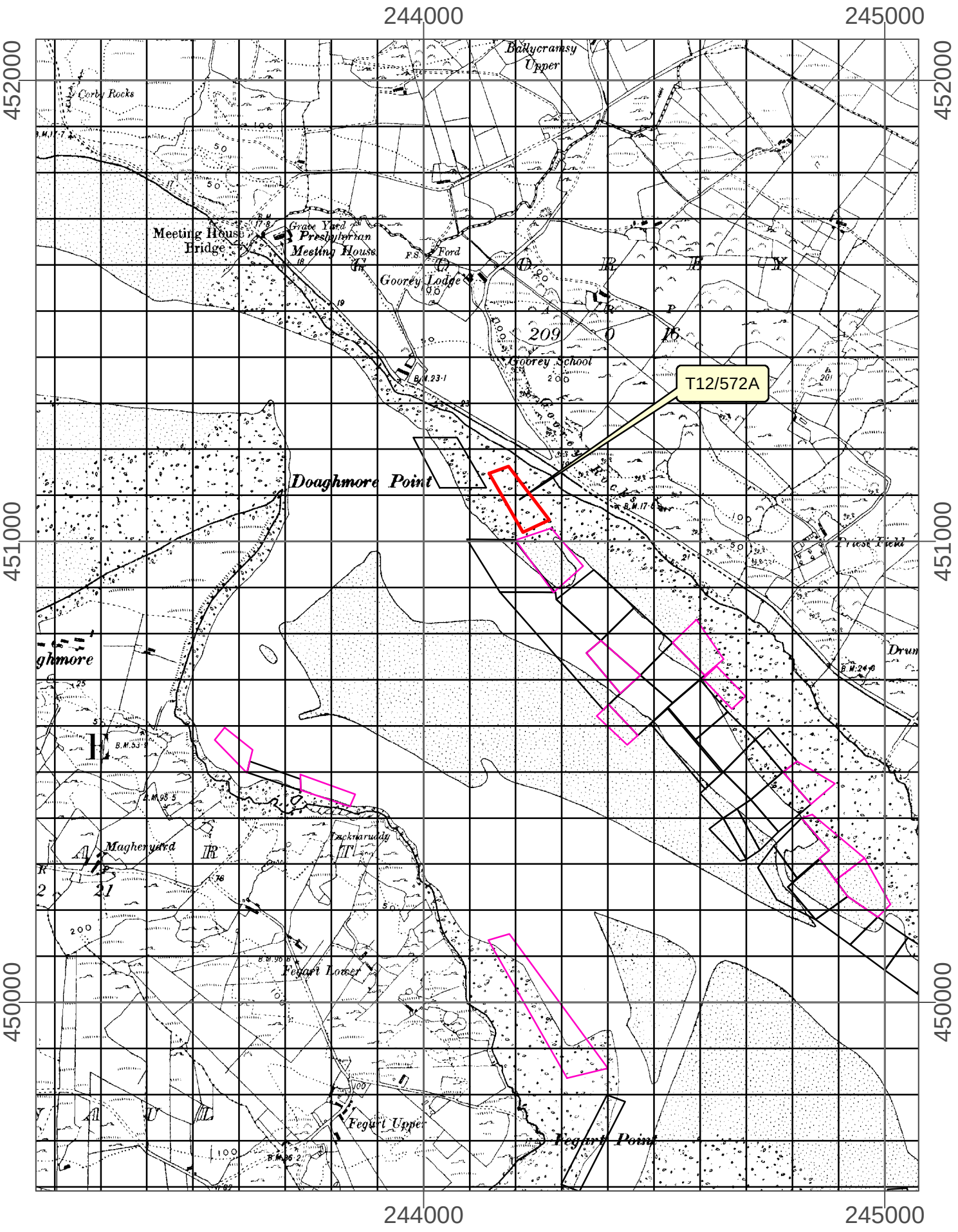
1 NO. SITE AT TRAWBREAGA BAY CO.DONEGAL

Co-ordinates & Area

Site T12/572A (0.78 Ha)

The area seaward of the high water mark and enclosed by a line drawn from Irish National Grid Reference point

244142, 451148 to Irish National Grid Reference point
244184, 451163 to Irish National Grid Reference point
244273, 451047 to Irish National Grid Reference point
244216, 451020 to Irish National Grid Reference point



Legend

100mgrid

Site_Status

Application

Licensed

1:10,560

Sites highlighted in red denotes Application

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

1:24,000

Legend

Site_Status

Application

Licensed

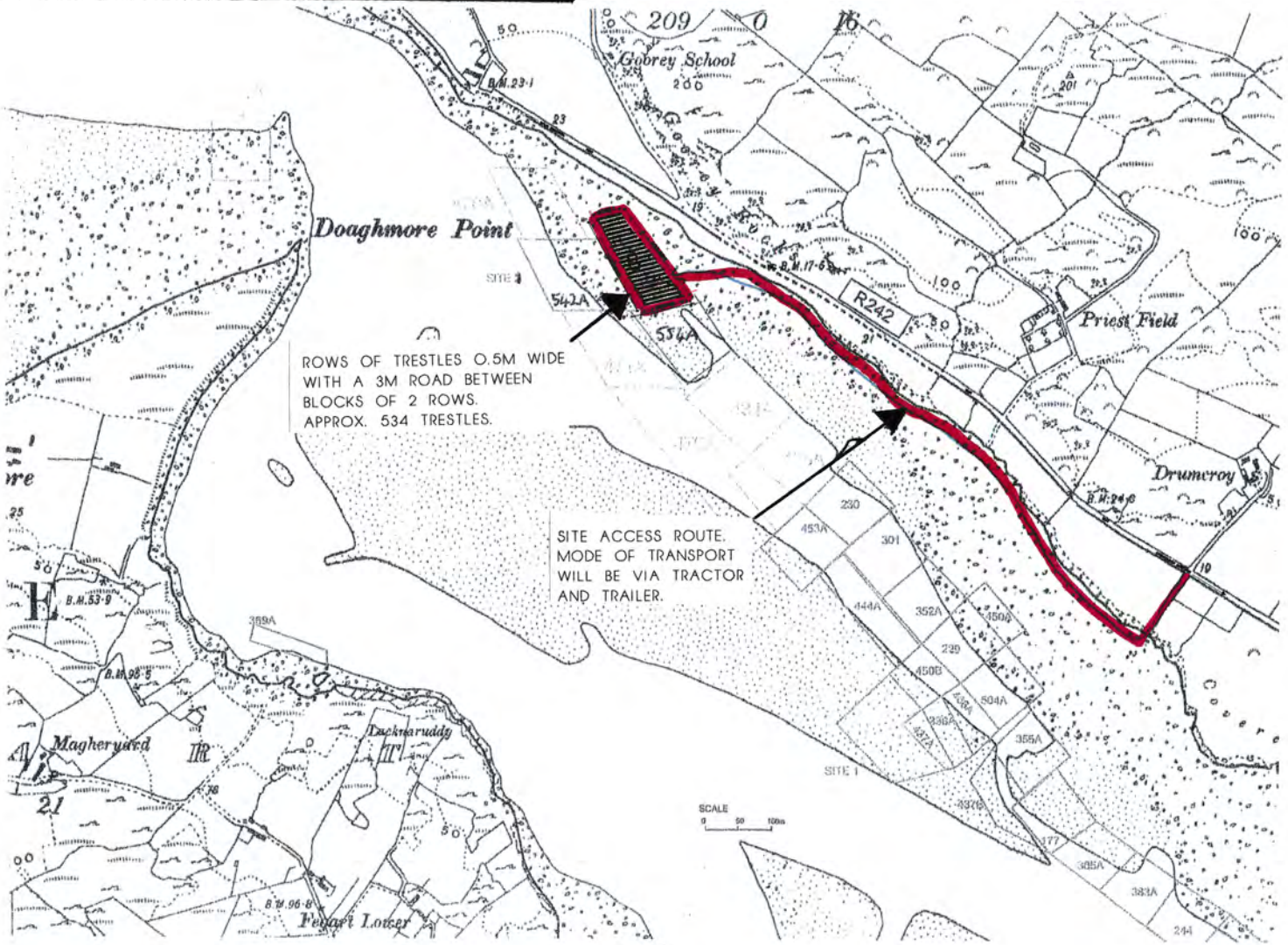
Sites highlighted in red denotes Application

Part of Admiralty Chart No =2811-0

Not to be used for Navigation

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

[redacted]



N

Rev.	Date	
C	20.10.20	Minor amendments
B	14.10.20	Minor amendments
A	22.09.20	Minor amendments

AQUACULTURE APPLICATION SEPT 2020

Client
FOYLANTIC LTD

Job
APPLICATION T12/572 AT TRAWBREAGA BAY, CO. DONEGAL

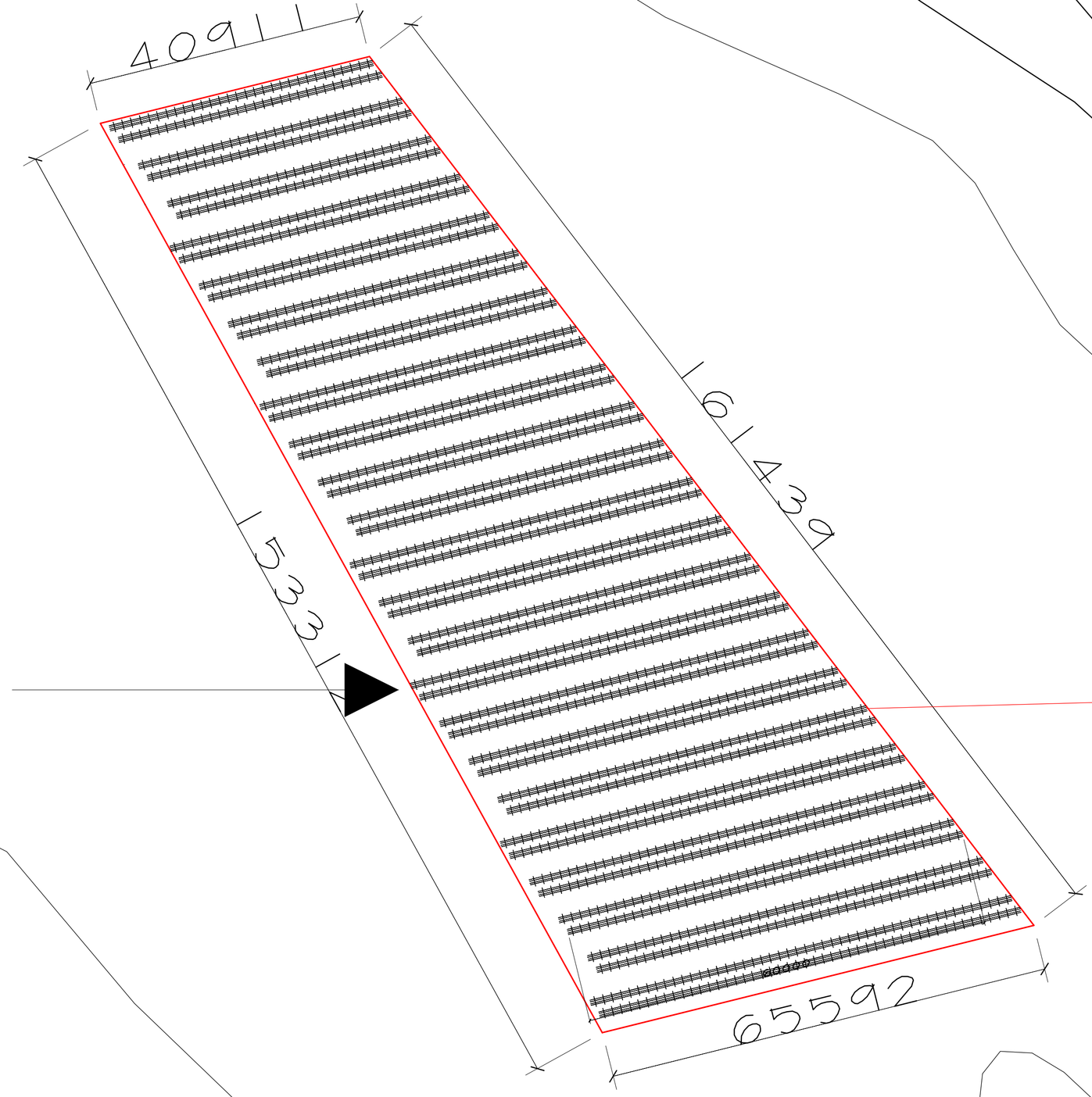
Title
SITE ACCESS

MICHAEL GALBRAITH ASSOCIATES
Architects & Surveyors
MILLBRAE HOUSE
LOWER MAIN STREET
BUNCRANA
CO. DONEGAL
T: 074 93 62300
F: 074 93 62351
E: info@mgarchitects.ie
W: www.mgarchitects.ie

Date	X, Y Co-ordinates
SEPT 2020	644153, 951071
Scale 1:2000	Site Area 0.78 Ha

Drg. No.
2422 SITE ACCESS - T12-572 (REV C)

SITE ACCESS ROUTE.
MODE OF TRANSPORT
WILL BE VIA TRACTOR
AND TRAILER.



ROWS OF TRESTLES 0.5M WIDE
WITH A 3M ROAD BETWEEN
BLOCKS OF 2 ROWS.
APPROX. 534 TRESTLES.

R242

N

Rev.	Date	
B	14.10.20	Minor amendments
A	22.09.20	Minor amendments

AQUACULTURE APPLICATION SEPT 2020

Client
FOYLANTIC LTD

Job
APPLICATION T12/572 AT
TRAWBREAGA BAY,
CO. DONEGAL

Title
SITE LAYOUT

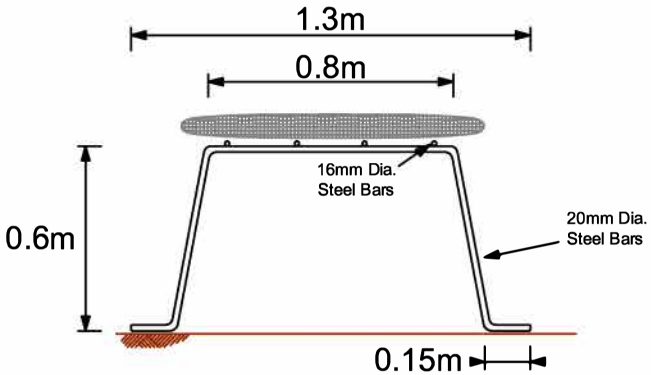
M G A MICHAEL GALBRAITH ASSOCIATES
Architects & Surveyors

MILLBRAE HOUSE
LOWER MAIN STREET
BUNCRANA
CO. DONEGAL

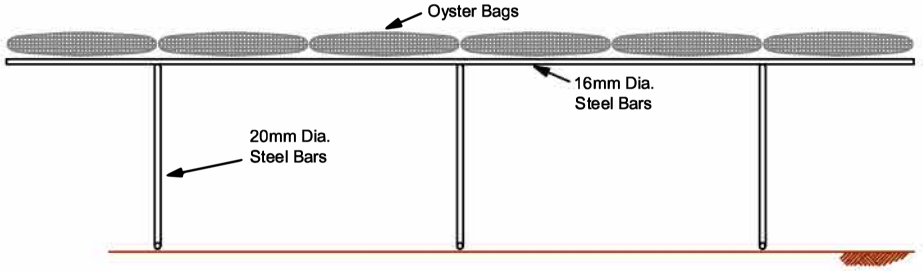
T: 074 93 62300
F: 074 93 62351
E: info@mgarchitects.ie
W: www.mgarchitects.ie

Date: SEPT 2020	X, Y Co-ordinates: 644153, 951071
Scale: 1:500	Site Area: 0.78 Ha

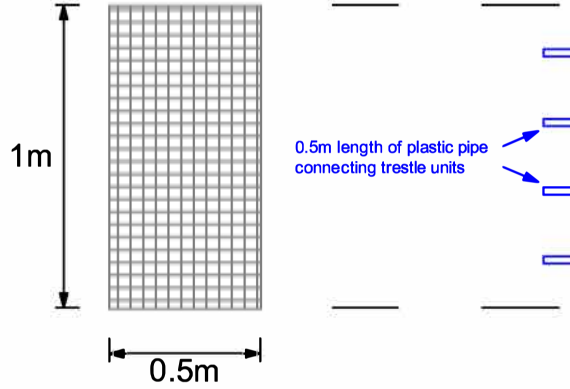
Drg. No.
2422 SITE LAYOUT – T12-572 (REV B)



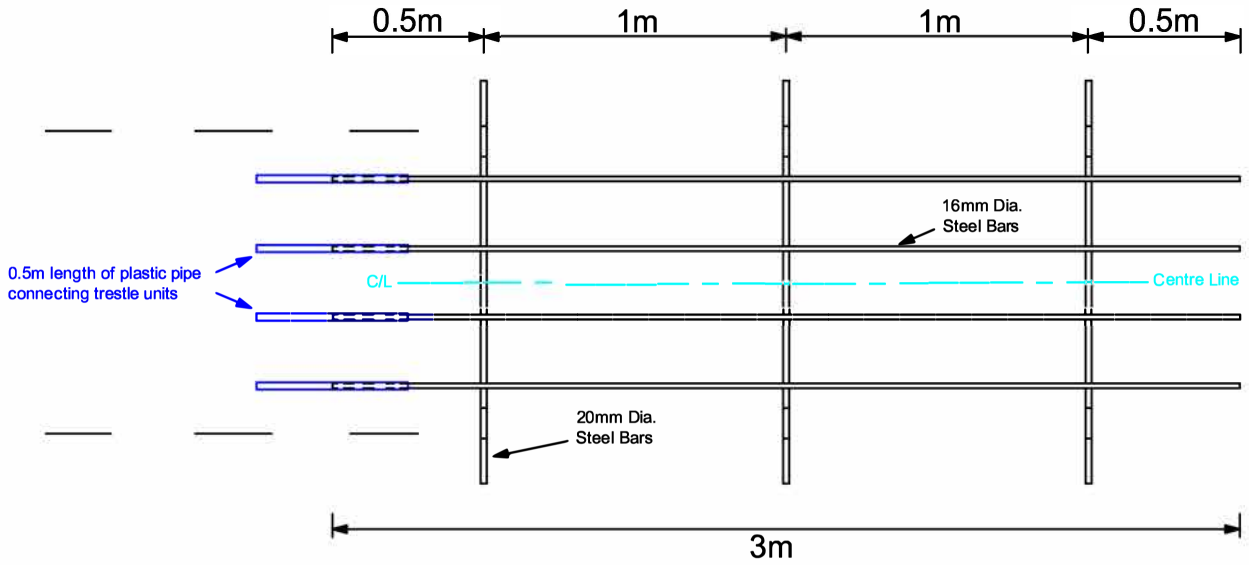
Cross Section



Longitudinal Section



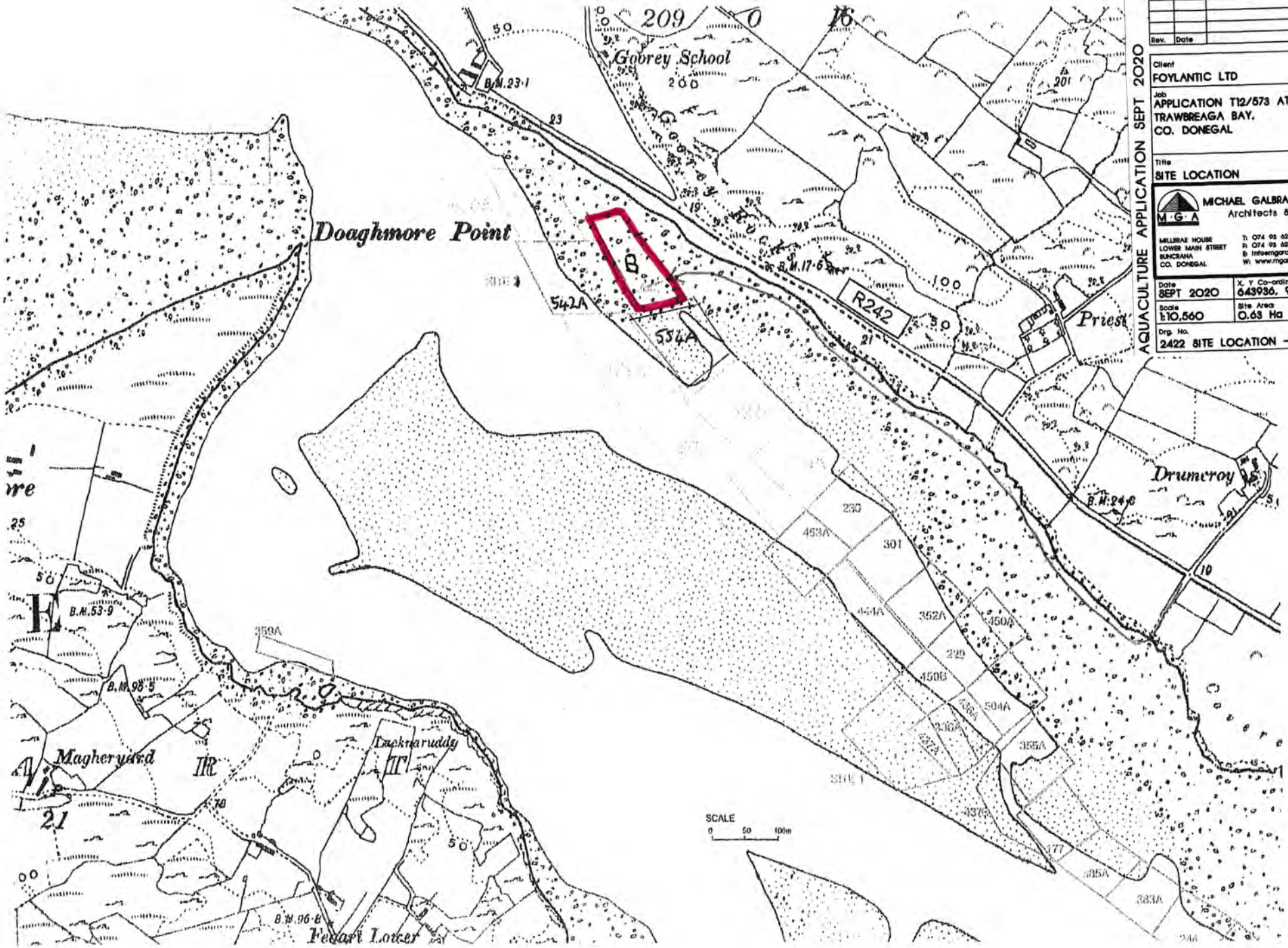
Typical Oyster Bag



Plan (Bags not shown for clarity)

Note: **Each oyster bag should be secured to trestle**

Title: Oyster Trestle Detail
Scale1:25
Date: 01/01/2011



N

Rev.	Date	

AQUACULTURE APPLICATION SEPT 2020

Client
FOYLANTIC LTD

Job
APPLICATION T12/573 AT
TRAWBREAGA BAY,
CO. DONEGAL

Title
SITE LOCATION

MICHAEL GALBRAITH ASSOCIATES
Architects & Surveyors
MILLBRAE HOUSE
LOWER MAIN STREET
BUNCRANA
CO. DONEGAL
T: 074 93 62300
F: 074 93 62551
E: info@mgarchitects.ie
W: www.mgarchitects.ie

Date: SEPT 2020	X, Y Co-ordinates: 643936, 951237
Scale: 1:10,560	Site Area: 0.63 Ha
Drg. No.: 2422 SITE LOCATION – T12-572	

Mr Campbell, Divisional Engineer BJC 4/2/21.

Ms Farrell, AFMD

RE: Aquaculture licence application for suspended oyster culture using trestles at Trawbreaga Bay, Co Donegal by Foylantic Ltd.

File ref: T12/572

Mr. Coakley's memo of 6/11/20 and attached application refers.

Application background

The applicant Foylantic Ltd. has applied for oyster sites in Trawbreaga Bay in recent years but has not been successful in being licensed for a site as yet. Application [redacted] was refused by Minister but appealed by the applicant in Jan 2020. The Minister decided to grant his other application [redacted] but it was appealed to ALAB by a third party. Both appeals are scheduled to be decided on by ALAB at end Feb 2021.

The applicant has oyster farm experience In Trawbreaga Bay from working with [redacted] occasionally some years ago. [redacted]

Site applied for

Site 572A is one of two sites in this part of Trawbreaga Bay that was applied for by Foylantic Ltd. in June 2020.

Site 572A is an oblong site of 0.775 hectare in area and is located on the upshore side of two other sites - application site [redacted] and licensed site [redacted]. The applicant has also applied for site [redacted] which is 110m to the northwest of site 572A.

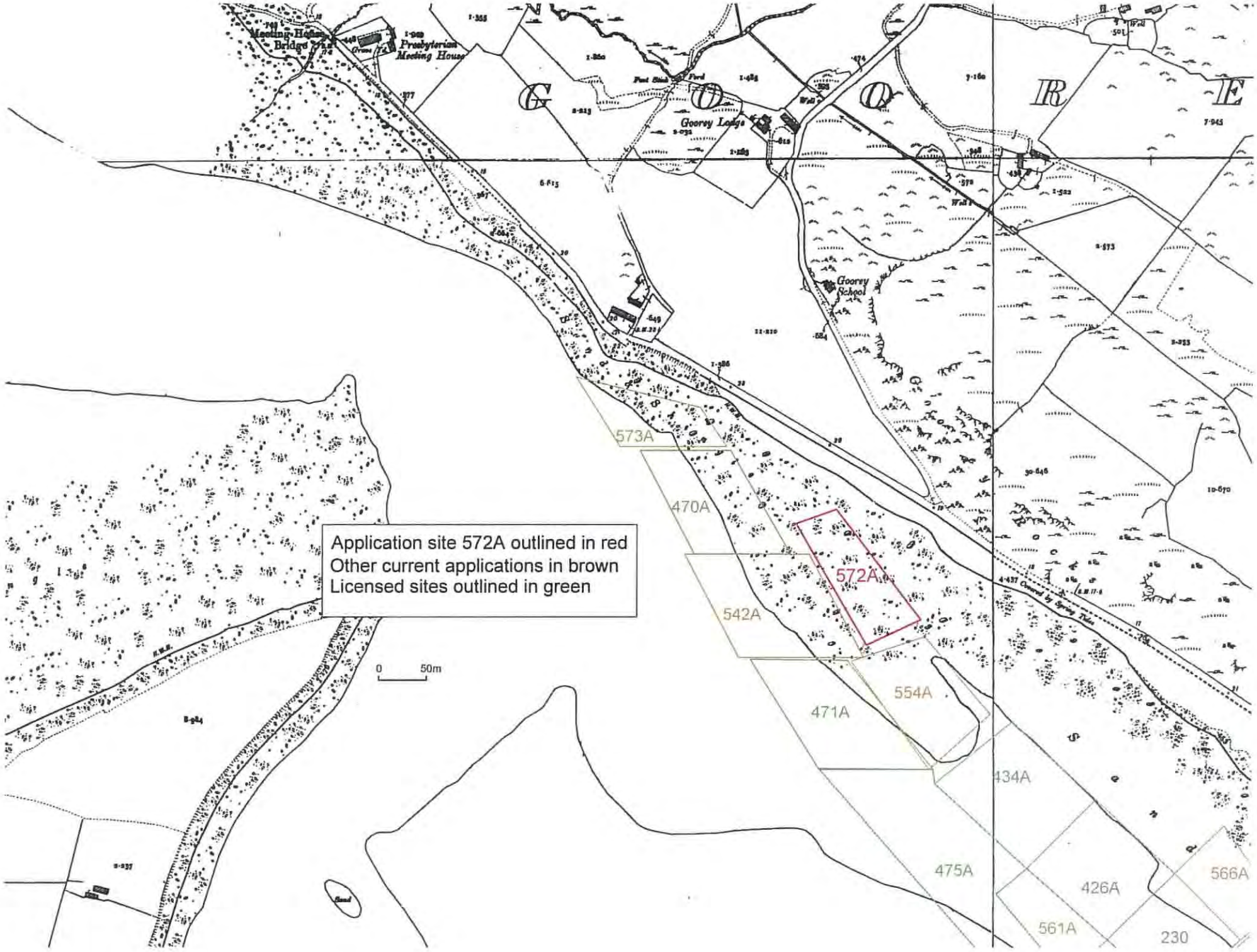
Site 572A is located on upper level intertidal foreshore. Because of its elevation it would seem suitable as an area for holding already developed stock or slowing down growth.

The location of the application site 572A and neighbouring sites is shown on the 1: 5000 scale map overleaf.

Site characteristics

On 16/11/20 Barry Doherty of MED carried out a detailed survey of the site. He found the substrate to sandy in south and east parts of site with isolated cobbles+boulders and attached seaweed in the north /northwest of the site. Substrate was firm and had suitable bearing capacity for trestles.

There were no structures on the application site.


Application site 572A outlined in red
Other current applications in brown
Licensed sites outlined in green
0 50m
573A
470A
572A
542A
554A
471A
434A
475A
426A
566A
561A
230
Goorey Lodge
Goorey School
Presbyterian Meeting House
Meeting House Bridge
G O O R E

View of site 572A from northwest corner looking to southeast 16/11/20

Development proposal

The applicant proposes to put 100 trestles on the site and no production plans are given in the application form other than proposed tonnages (10 to 30 tonnes per annum) which would require many more trestles than 100. I assume that if both sites are licensed that site 572A would be used in combination with adjoining site [redacted] supporting ongrowing on that (larger) site.

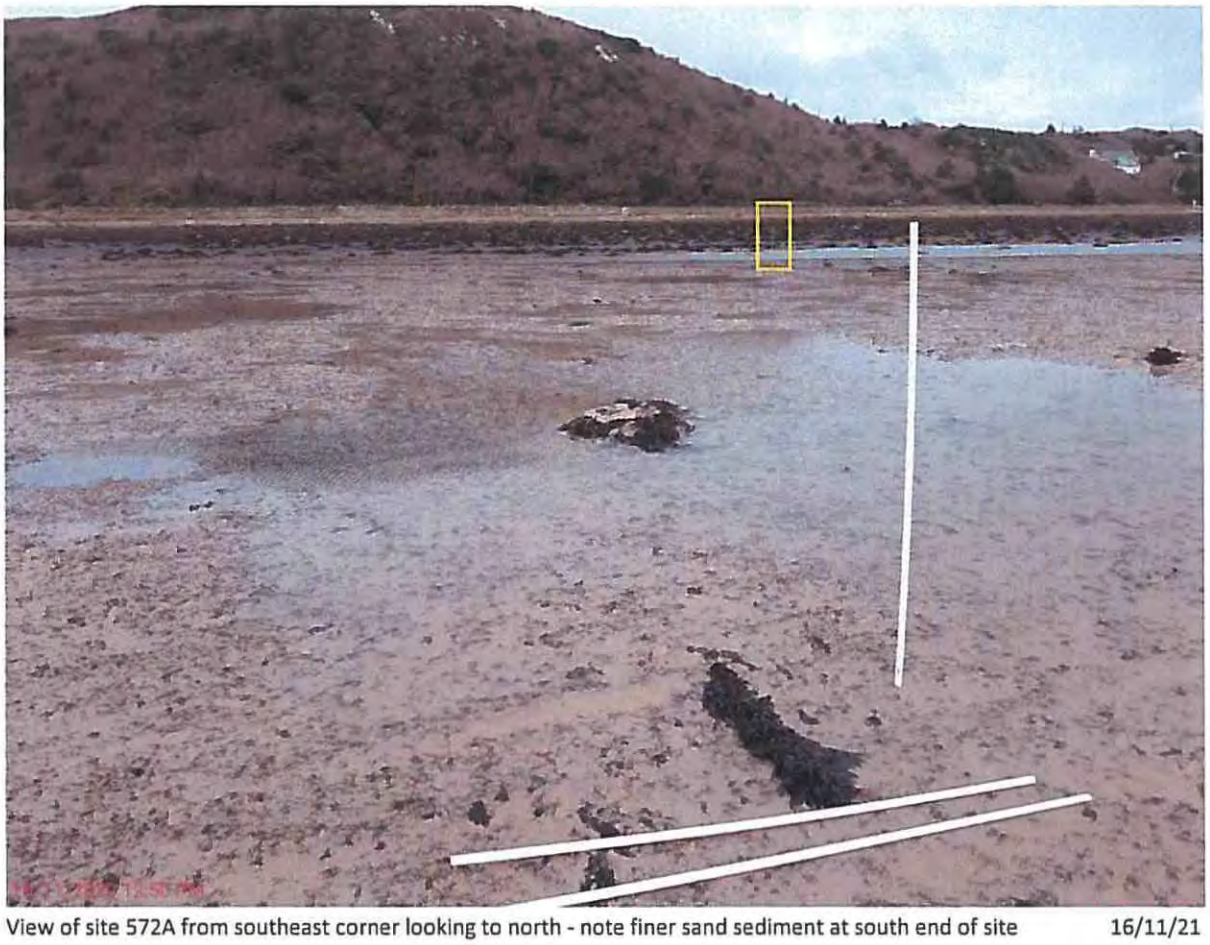
Licensing site 572A would increase by a small margin the Bay's total licensed oyster production capacity and standing stock. There is a question about whether the continuing issue of new licences is advisable in this Bay as the licensed area has expanded significantly in recent years which may lead to overstretching the oyster culture carrying capacity of Trawbreaga Bay – and this is a matter under appeal to ALAB in context of a number of earlier oyster culture licence applications.

Adequacy of application documents

Layout drawing –Adequate ; orientation of trestle rows does not quite match those proposed by the applicant for site [redacted]

Access route map – This is adequate. It shows an access route of 1.1 km in length along upper shore from the approved access point to shore. This is quite a long distance but it is probably preferable to opening up new access points onto shore to serve a single site. If licensed it would be important to discourage vehicle parking by oyster farmers along R242 close to the site taking a short cut to access it. Note there is a slip access point nearby.

Trestle structure drawing – none provided. The application is incomplete without this.



View of site 572A from southeast corner looking to north - note finer sand sediment at south end of site 16/11/21

Potential impacts on other beneficial usages

Natura 2000

Site 572A is located in a Natura 2000 area (it is in both the North Inishowen Coast SAC and the Trawbreaga Bay SPA). Appropriate assessment as specified under the Habitats Directive will be required to assess potential for impact on Conservation Objectives of the Natura 2000 areas.

Visual impact

Proximity to the R242 road (which is part of the Wild Atlantic Way route) means that development of this site could well generate a negative visual impact when viewed from that public roadway

(approximately 50 metres away) to north east of site 572A. This aspect will require more detailed evaluation at a later stage (when context of neighbouring site licensing decisions [redacted] are known – if for example sites [redacted] were not to be licensed the visual impact arising from proposed development of 572A would be of substantial significance from the R242 viewpoints. If on other hand [redacted] and [redacted] were to be licensed for oyster culture the likelihood is that stand alone impact of also developing site 572A would be less and may well be considered more acceptable in that context).

Public access

The north corner of site 572A is 29 m from high water mark and the ground between the site and high water mark is stony and rough. This high section of intertidal foreshore is not readily passed over on foot. Longshore access at a lower level on shore is easier. Development of site 572A as applied for could therefore impede public access along the shore area between high water mark and licensed trestle covered area – this would apply both when tide is high and at lower tidal stages when proposed trestles rows on site 572A running down shore ENE – WSW would also impede access. I recommend that the north most section of site should not be licensed for oyster culture with maintenance of longshore public access in mind.

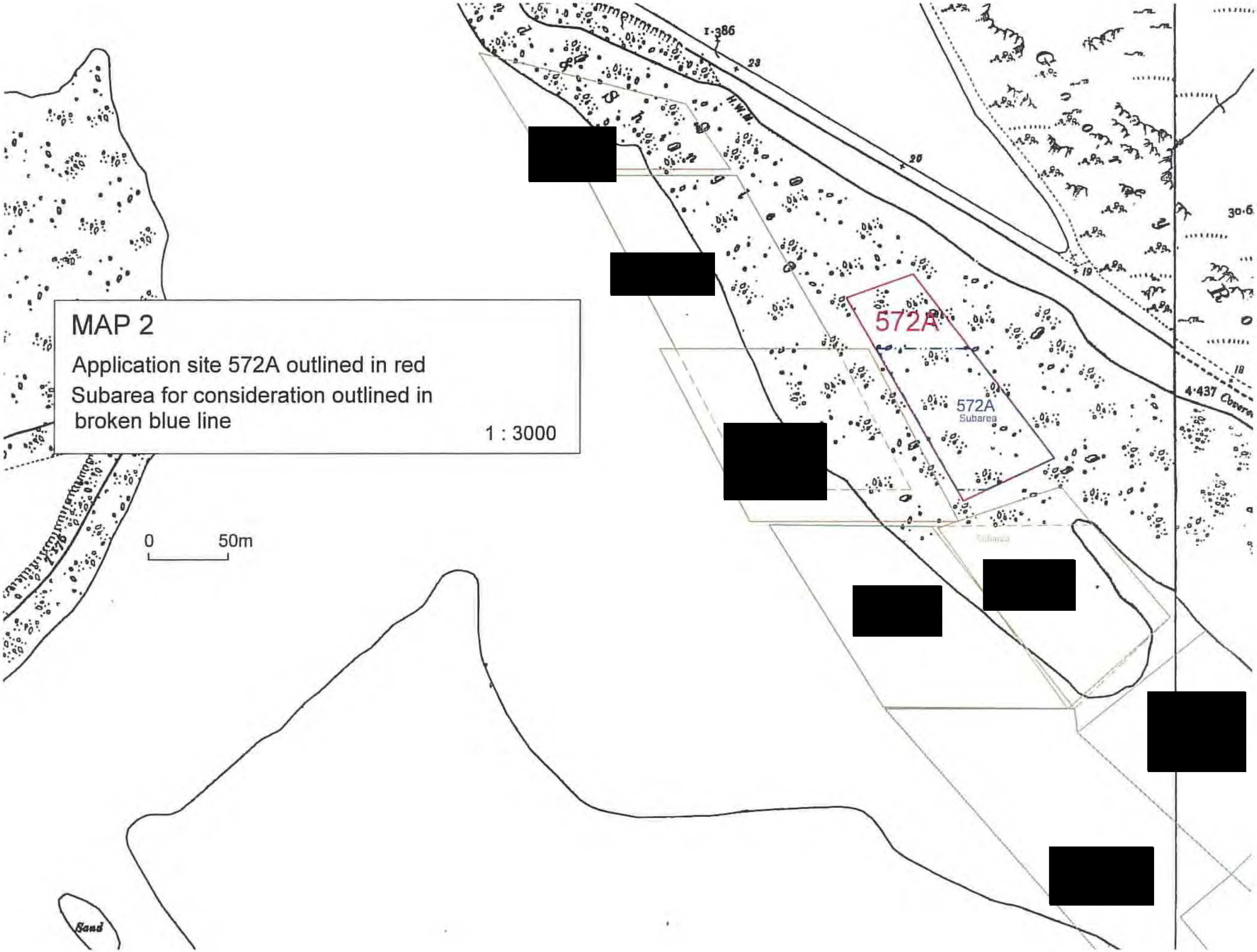
Boat access

As was the case for application [redacted] I think it is important to ensure that a clear corridor to the sea is allowed for from high water to low water line at this shoreline location to allow for access by boats to the Bay from land and vice versa. If not provided for there is a risk of a continuous length of trestle blocked shoreline of trestles cutting off access. I recommended a corridor width of about 20m width be left unlicensed between [redacted] in my report on application [redacted] dated 13/8/19. A similar provision will be required further up the shore to prevent access being blocked there. The implications for site 572A in this respect will depend on what licensing decisions are made regarding these neighbouring application sites [redacted] and what subareas if any may be licensed in those cases. See MAP 2 overleaf. Provisionally I recommend that a similar clear way of minimum width 20m be provided for between site 572A and north boundary of [redacted] (subarea as recommended in that case) and aligned with the other clearway provision recommended in 2019.

Orderly aquaculture development

The north portion of site 572A adjoins the licensed site of another oyster farmer (of site [redacted] and reduces access to the landward side of site [redacted] In my opinion it would not be in accordance with orderly development to licence that part of 572A which limits/reduces work access to the already licensed site of another. This would not apply to the portion of site 572A that adjoins [redacted] as the latter is application in name of same applicant).

In order to mitigate the foregoing public and boat access issues and also for orderly development of oyster framing in this specific part of the Bay I recommend that only a certain subarea of 572A as shown on MAP 2 overleaf (in broken blue line) would be appropriate for consideration for licensing.



MAP 2

Application site 572A outlined in red
Subarea for consideration outlined in broken blue line

1 : 3000

This subarea of 572A is 0.5440 ha and is defined by the following set of ING coordinates:

244161 451116
244220 451116
244273 451047
244230 451027
244212 451027

Fishing

Activity levels are low. Nevertheless trestle placement over a reduced site area would offer less impediment to other users of foreshore in the area including winkle pickers and crab potters.

As with propose oyster farm developments on neighbouring site [redacted] there is potential for damaging impact on substrate (at south end of site 572A where softer waterlogged sediment predominates. The opinion of Donegal County Council from a coastal protection perspective might be useful input in this case before a final licensing decision is taken

Navigation

Site 572A is located approximately 60m distant from the main water channel in the Bay. It will not impinge directly on low water channel. If the site (along with group of oyster sites nearby in central part of Bay) is marked for navigation the impact on navigation of this additional development should not be significant. There are likely to be intervening/adjacent oyster farm areas between this site and the low water channel. A group marking scheme was agreed last year with CIL for this part of the Bay.

Conclusion

Application incomplete as trestle structure drawing not provided.

Appropriate assessment of the application site area would be required due to location within Natura 2000 sites.

There is potential for negative visual impact with proposed development of this site. Significance of the impact will to some extent depend on licensing decisions made regarding earlier applications for similar developments on neighbouring foreshore. This should be evaluated later.

There is potential for cumulative negative impact on substrate's coastal protection value locally. There is also a carrying capacity question applicable to all such new applications in this Bay.

Irrespective of outcome of assessment of above issues, the north part of site and southernmost corner of site should not be licensed in my opinion for public / marine access and for orderly development reasons.

Paul O'Sullivan

Paul O'Sullivan
4/2/21

OSullivan, Paul

From: Campbell, John
Sent: 06 November 2020 15:24
To: OSullivan, Paul
Subject: FW: New application in Trawbreaga Bay
Attachments: T12 572 Application and Maps For MED 06.11.2020.pdf

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From: Crowley, Raphael
Sent: 06 November 2020 14:59
To: Campbell, John
Subject: FW: New application in Trawbreaga Bay

John
For your attention please.
Regards
Raphael

Raphael Crowley
Chartered Engineer - Marine Engineering Division
An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine
Pointe Uí Rinn, Cathair Uí Mhóráin, Trá Lí, Co. Chiarraí, V92 X2TK
Reen Point, Blennerville, Tralee, Co. Kerry, V92 X2TK
M +353 (0)87 2336425 T +353 (0)66 7149344 www.agriculture.gov.ie

---

From: Coakley, John
Sent: 06 November 2020 10:31
To: Crowley, Raphael
Cc: OKeeffe, Therese; Farrell, Geraldine; Maher, EileenM; Connolly, Ann (Clonakilty)
Subject: New application in Trawbreaga Bay

Hi Raphael,

Please see attached an application for Aquaculture and Foreshore licences for the cultivation of pacific oysters in
Trawbreaga Bay, Co. Donegal for your examination.

Please may I have your observations as soon as possible.

Kind regards

John Coakley
Aquaculture and Foreshore Management Division
National Seafood Centre
Clonakilty
Co Cork
P85TX47

Ph.

AN t-ÚDARÁS UM CHOSAINT IASCAIGH MHARA | SEA-FISHERIES PROTECTION AUTHORITY

From: Gilroy, Joan
Sent: 09 November 2020 14:18
To: Phair, Ann; Foley, Tina
Cc: Andersson, Kareen; Amrein, Rudi
Subject: RE: Aquaculture Application: T12/572 & [redacted] Foylantic Ltd,Trawbreaga Bay, Co. Donegal

Afternoon Ann and Tina
See below observations for above foreshore licences:

1. Possible impacts, if any, on existing wild fisheries in the area, with an emphasis on the possible implications for the SFPA conducting official controls and possible non-compliance issues that could arise.
   No known impacts known at time of writing.

2. Impacts, if any, on shellfish growing areas adjacent to or within the area and the possible impact on the ability of the SFPA to conduct official controls and possible non-compliance issues that could arise.
   No known impacts known at time of writing.

3. Possible impacts, if any, on seafood safety.
   Trawbreaga is Class B for Pacific Oysters and as such any shellfish leaving this bay should be depurated or only sold to purification plants before being sold to the final customer. All consignments of Pacific Oysters should have a shellfish registration document accompanying the consignment completed fully and accurately. The Marine Institute HABS database should be checked prior to harvesting to verify that the bay is open. The onus is on the operator to verify the bay is open, classified and that the shellfish registration documents requirements are met. It is the responsibility of any operator to place safe wholesome food on the market

Kind regards
Joan

Joan Gilroy
Sea Fisheries Protection Officer
Direct Line: 0238880585
T +353 74 973 1264
M +353 858772672
E joan.gilroy@sfpa.ie

AN t-ÚDARÁS UM CHOSAINT IASCAIGH MHARA | SEA-FISHERIES PROTECTION AUTHORITY

An t-Údarás um Chosaint Iascaigh Mhara, Lárionad Iascaigh Cuain na gCealla Beaga,
Na Cealla Beaga, Co. Dún na nGall
Fishery Harbour Centre
The Pier, Killybegs
Co Donegal
www.sfpa.ie

An Roinn Iompair
Department of Transport

Marine Survey Office
Leeson Lane,
Dublin 2,
D02 TR60,
Ireland
T +353 1 6707444
info@transport.gov.ie
www.gov.ie/transport

18/12/2020

Ref: Aquaculture License Applications T12/572 Foylantic

This office has no objections from a navigational viewpoint to the above applications.

• In order for charts and nautical publications to be updated the British Admiralty Hydrographic Office at Taunton , UK, is to be informed of the location and nature of the site.

(Fax:0044 1823 284077), Email: sdr@ukho.gov.uk

• The applicant is required to apply to the Commissioners of Irish Lights

(Fax: 01-2715566, email: info@irishlights.ie) for sanction to establish the following lights and marks:

As Trawbreaga Lough/Bay is a CLAMS bay the site is to be marked in line with the SUMS and conducive to safe navigation

Yours Sincerely

_____

Capt. Lawrence Kilbane.

Nautical Surveyor,
Marine Survey Office.

Commissioners of IRISH LIGHTS | Navigation and Maritime Services

Commissioners of Irish Lights
Harbour Road, Dun Laoghaire
Co. Dublin, Ireland

T +353.1.271.5400
F +353.1.271.5566

E info@irishlights.ie
W www.irishlights.ie

Ms. Geraldine Farrell
Aquaculture and Foreshore Management Division
Dept. of Agriculture Food & the Marine
National Seafood Centre
Clonakilty
Co. Cork

Reference: T12-572A

Date: 18/12/2020

Applicant: Foylantic Ltd.
Site: Trawbreaga, Co. Donegal

Dear Ms. Farrell,

Thank you for your letter advising us of this application, which we received on 06/11/2020.

Based on the information supplied, there appears to be no objection to the development. It is important to ensure that no navigable inter-tidal channels are impeded by the site.

If a licence is granted, all structures must be clearly marked as required by Regulations and Licensing Permit conditions and to the approval of the Nautical Surveyor with the Marine Survey Office.

We would request that you include the following terms in the licence **–**

- That the applicant secures Statutory Sanction from the Commissioners of Irish Lights for the aids to navigation that may be required by the Marine Survey Office. These aids should be in place before development on the site commences. Statutory sanction forms are available at http://www.irishlights.ie/safety-navigation/statutory-sanction.aspx
- The size and specification of aids to navigation should be of the design and specification approved by the Marine Survey Office and must be agreed in advance with the Commissioners of Irish Lights.

It is recommended that local fishing and leisure interests be consulted prior to a decision being made.

Furthermore, if a licence is granted, the UK Hydrographic Office at Taunton: sdr@ukho.gov.uk must be informed of the development's geographical position in order to update nautical charts and other nautical publications.

Yours sincerely,

Capt. Catríona Dowling
Navigation Services Manager

cc. Capt. L. Kilbane, MSO, Dept. of Transport

Rinville,
Oranmore,
Co. Galway
Tel: 091 387200

Date: 12 November 2021

Eileen Maher
Aquaculture and Foreshore Management Division
Department of Agriculture, Food and the Marine
Clogheen,
Clonakilty
Co. Cork.

Advice on Aquaculture Licence Application

Applicant	**Foylantic Ltd**
Application type	**New**
Site Reference No	**T12/572A**
Species	**Pacific Oysters – Bags and trestles**
Site Status	**Located within the Trawbreaga Bay SPA (Site Code 004034)** **Located within the North Inishowen Coast SAC (Site Code 002012)** **Located within the Trawbreaga Bay Shellfish Waters Directive Area**

Dear Eileen

This is a new application for an aquaculture licence for the cultivation of pacific oysters (*Crassostrea gigas*) using bags and trestles at Site **T12/572A** on the foreshore at Trawbreaga Bay, Co. Donegal. The area of foreshore at Site **T12/572A** is 0.77ha.

Site **T12/572A** is located within the Trawbreaga Bay Shellfish Growing Water Area.

Under Annex II of EU Regulation 854/2004 oysters in Trawbreaga Bay currently have a "B" Classification.

No chemicals or hazardous substances will be used during the production process.

Considering the location, nature and scale of the proposed aquaculture activity, and in deference to our remit under the Marine Institute Act, and the considerations implicit to Sections 61(e and f) of the Fisheries (Amendment) Act, 1997 the Marine Institute is of the view that there will be no significant impacts on the marine environment and that the quality status of the area will not be adversely impacted.

Given the short residence time of the bay it is concluded that the risk of establishment of non-native oyster species is low in the Trawbreaga Bay portion of the North Inishowen Coast SAC and Trawbreaga Bay SPA. Notwithstanding this, the Marine Institute recommends the continued use of triploid oysters by operators in Trawbreaga.

In order to be able to assess and manage the potential risk of the introduction of invasive non-native species the MI recommends that the initial source of seed and other sources which may be used at any point in the future should be approved by the Minister. This approval should be a specific condition of any licence that may issue. It should be noted that the control of alien species is a separate issue to the control of diseases in the context of the current Fish Health legislation.

Notwithstanding the recommendation outlined above, and in the event that an Aquaculture Licence is granted, the movement of stock in and out of the site should follow best practice guidelines as they relate to the risk of introduction of invasive non-native species (e.g. Invasive Species Ireland). In this regard it is recommended that, prior to the commencement of operations at the site, the applicant be required to draw up a contingency plan, for the approval of DAFM, which shall identify, inter alia, methods for the removal from the environment of any invasive non-native species introduced as a result of operations at this site. If such an event occurs, the contingency plan shall be implemented immediately.

In the event that invasive non-native species are introduced into a site as a result of aquaculture activity the impacts may be bay-wide and thus affect other aquaculture operators in the bay. In this regard, therefore, the Marine Institute considers that the CLAMS process may be a useful and appropriate vehicle for the development and implementation of alien species management and control plans.

Site **T12/572A** is located within the Trawbreaga Bay SPA (Site Code 004034) and the North Inishowen Coast SAC (Site Code 002012). Site **T12/572A** overlaps with two marine community types in North Inishowen Coast SAC - Muddy sand to coarse sediment with *Pygospio elegans* community complex and Sand with *Angulus tenuis* and *Scoloplos (Scoloplos) armiger* community complex.

The MI notes the findings of the Appropriate Assessments reports and the Department's Natura conclusion statement in regard to the impacts on the Conservation Objectives within the Trawbreaga Bay SPA and the North Inishowen Coast SAC. In making the final determination with respect to this application, it is recommended that DAFM take full account of the conclusions and recommendations of the Appropriate Assessment reports and the outputs of the Department's Natura AA Conclusion Statement.

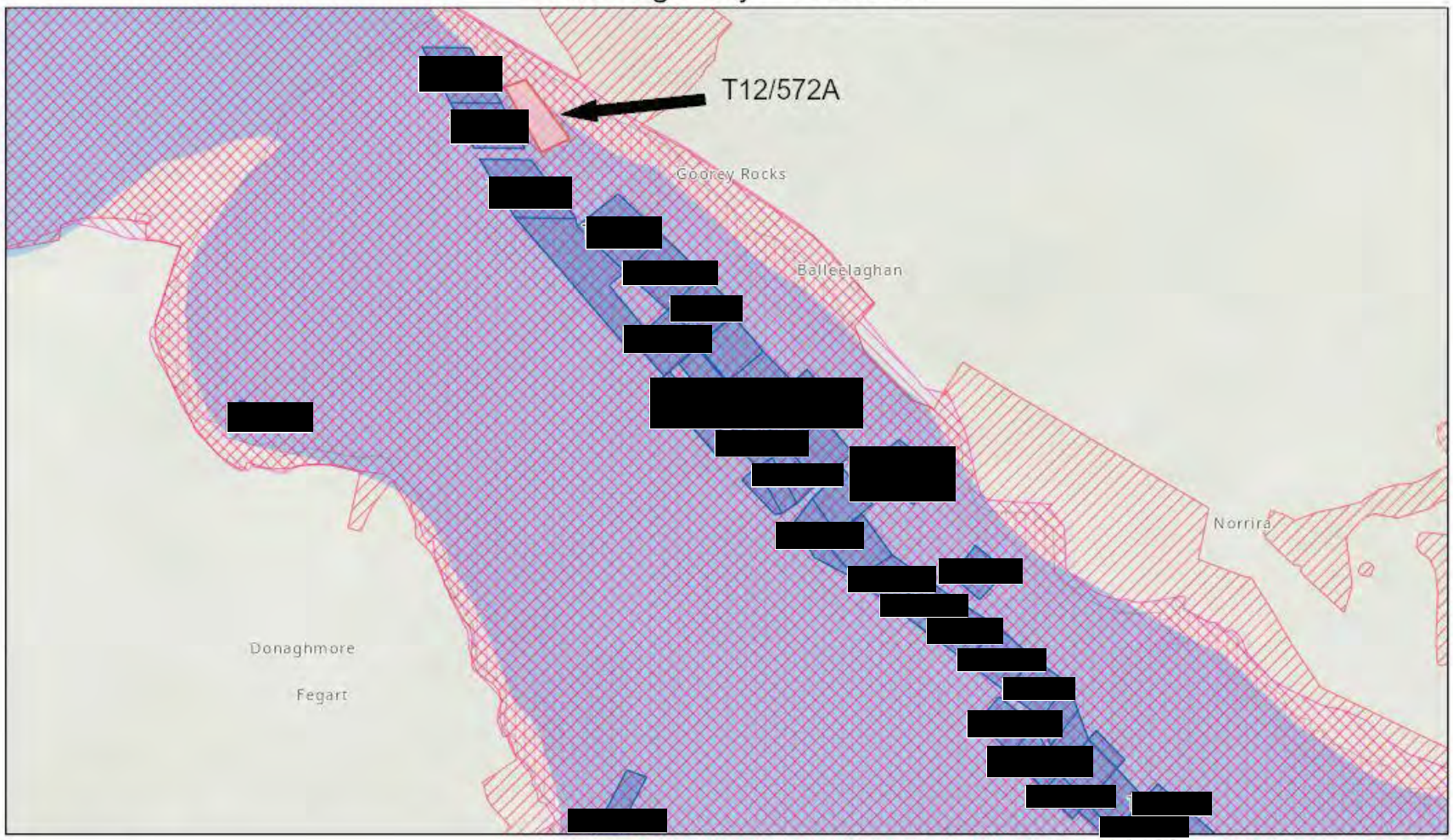
If the Minister is minded licence this activity, it should be noted that it is a statutory requirement that a Fish Health Authorisation, as required under Council Directive 2006/88/EC, be in place prior to the commencement of the aquaculture activities proposed.

Kind regards,

_____

Dr. Francis O'Beirn
Section Manager,
Marine Environment and Food Safety Services,
The Marine Institute.

Trawbreaga Bay - T12/572A



12/11/2021, 15:22:44

Aquaculture Sites Search Results

Licensed

Special Areas of Conservation

Special Protection Areas

Shellfish Waters Directive Areas

1:18,056

0 0.07 0.15 0.3 mi

0 0.13 0.25 0.5 km

Aquaculture Licensing Viewer

DAFM

An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreachta
Department of Housing,
Local Government and Heritage

[redacted] **T12/572A,** [redacted]
(Please quote in all related correspondence)

28 October, 2021

Aquaculture and Management Division
Department of Agriculture, Food and the Marine
National Seafood Centre,
Clonakilty,
Co. Cork, P85 TX47

Aquaculture Licence Referral
The proposed licensing of pacific oyster culture [redacted] T12/572A, [redacted] in Trawbreaga Bay, Co Donegal

A chara

I refer to correspondence sent to the Department in October, 2021 which was received in connection with the above proposed aquaculture developments, namely the licensing of pacific oyster culture in Trawbreaga Bay, Co Donegal which has been evaluated by a Natura Impact Statement (NIS) and a draft Conclusion Statement prepared by the Department of Agriculture, Food and Marine.

The Department of Agriculture, Food and Marine's Conclusion Statement indicates that the proposed sites have "potential negative effects on the qualifying interest 1140 of the North Inishowen Coast SAC within the Trawbreaga Bay". In addition, the Appropriate Assessment notes the licensing of the referred applications could result in the displacement of up to 5.36% of the Light-bellied Brent Geese population of the Trawbreaga Bay SPA and would represent a significant negative impact on the conservation status of this species within the SPA. The Conclusion Statement therefore determines that the potential for negative impacts cannot be discounted and that the licensing of all currently proposed applications is not recommended.

The Department of Housing, Local Government and Heritage supports this conclusion as it is necessary to avoid negative impacts on the Qualifying Interests and Special Conservation Interests of the designated sites, in line with the Habitats Directive and relevant national transposing legislation.

Is mise le meas,

Michael Murphy,
Development Applications Unit

Uisce Éireann
Teach Colvill
24-26 Sráid Thalbóid
Baile Átha Cliath 1
D01 NP86
Éire

Irish Water
Colvill House
24-26 Talbot Street
Dublin 1
D01 NP86
Ireland

T: +353 1 89 25000
F: +353 1 89 25001
www.water.ie

Your Refs: [redacted] T12_572, [redacted]

Aquaculture and Foreshore Management Division,
Department of Agriculture, Food and the Marine,
National Seafood Centre
Clonakilty
Co Cork

Date: 29/10/2021

Re: Application for Aquaculture Licence

Dear Sir/Madam,

We refer to your email notification of the 08/10/2021 and 14/10/2021 regarding the above applications for aquaculture licence and make the following observations.

It is noted that the application refers to aquaculture developments that are within a designated shellfish water.

Table 1 shows the coordinates of existing primary and secondary discharges operated by Irish Water which are located within 10km of the proposed aquaculture site.

Table 1 Location of existing primary and secondary discharges operated by Irish Water

Application Nos.			
[redacted] T12_572, [redacted]		**Easting**	**Northing**
	Primary Discharge	242303	457123
	Primary Discharge	252190	452751
	Primary Discharge	253050	449329
	Primary Discharge	246731	448010
	Primary Discharge	238741	448801

	Primary Discharge	237328	446194
	Secondary Discharge	253024	449338
	Stormwater Overflow	238718	448794

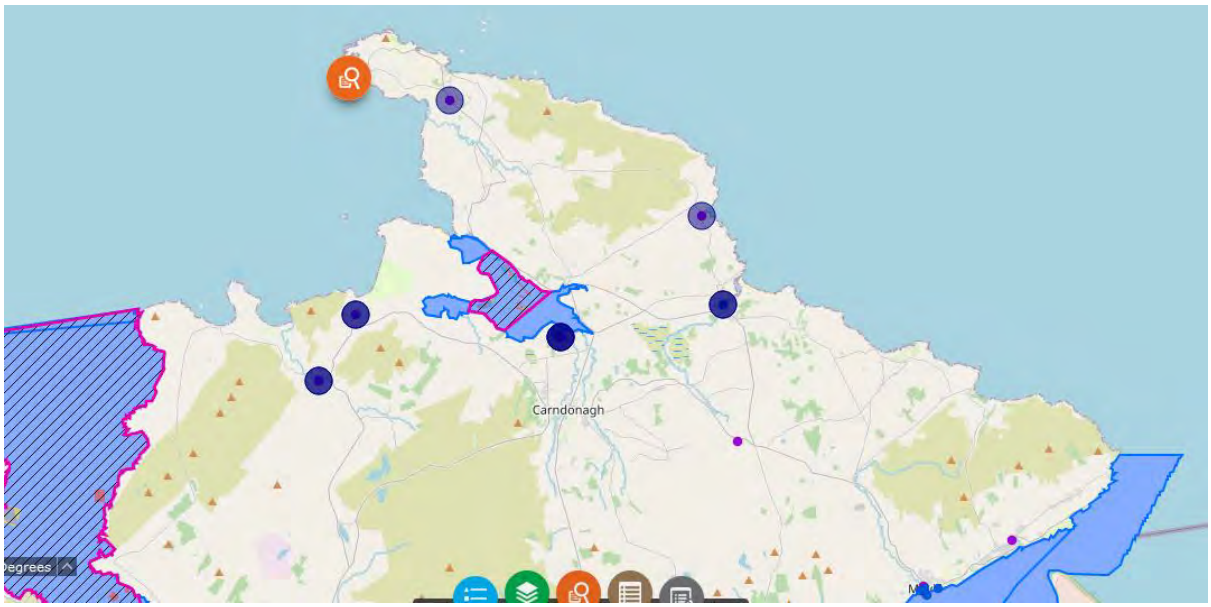
The Department may wish to consider the proximity of the discharge points to the proposed aquaculture developments when making a decision on these applications.

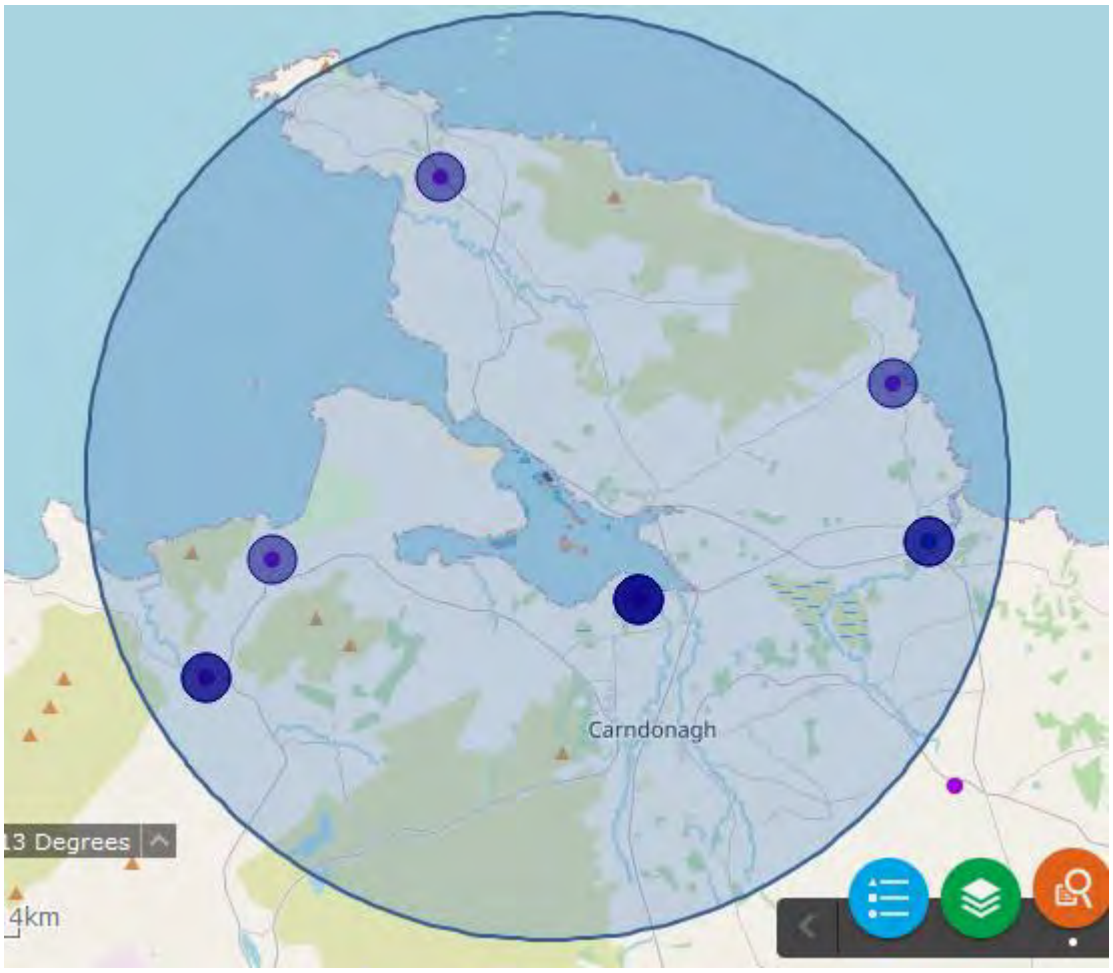
Yours faithfully,

Sheila Convery

Spatial Analyst
Irish Water

[redacted] T12_572, [redacted]





From: CARMEL KELLY <CKELLY@donegalcoco.ie> on behalf of planning mailbox <Planning@Donegalcoco.ie>
Sent: 14 October 2021 11:54
To: Maher, EileenM
Subject: FW: Applications for Aquaculture Licences for Sites in Trawbreaga Bay, Co. Donegal

Dear Eileen,

The Planning Authority has no comments to make on these applications.

Thank you

Kind regards

Carmel

From: Maher, EileenM [mailto:EileenM.Maher@agriculture.gov.ie]
Sent: Thursday 14 October 2021 09:46
To: 'francisxobeirn@marine.ie'; 'planning@failteireland.ie'; 'naturalenvironment@antaisce.org'; 'environmentalplanning@fisheriesireland.ie'; 'ciara.oleary@fisheriesireland.ie'; 'Planning@donegalcoco.ie'; 'Cathal.sweeney@donegalcoco.ie'; 'foreshore@housing.gov.ie'; 'Aquaculture.licensing@bim.ie'; 'louise.collins@bim.ie'; 'Operations@irishlights.ie'; 'lawrencekilbane@dttas.gov.ie'; 'mmo@dttas.ie'; 'spatialplanning@water.ie'
Cc: Farrell, Geraldine
Subject: Applications for Aquaculture Licences for Sites in Trawbreaga Bay, Co. Donegal

Dear Sir/Madam,

In accordance with Section 10 of the Aquaculture (Licence Application) Regulations, 1998 (SI No. 236 of 1998), you are hereby notified that this Department has received aquaculture licence applications from see attached table in Trawbreaga Bay, Co. Donegal.

Details of the applications and all other relevant documentation may be viewed on the Department's website at:

https://www.gov.ie/en/collection/24edb-aquacultureforeshore-licence-applications-donegal/#trawbreaga-bay-october-2021

I would be grateful for any observations you wish to make on the above proposal which must be submitted **within six weeks** from the date of notification. As this correspondence is being sent by e-mail, the date of the e-mail is treated as the date of notification. In the event that observations are submitted by you, the applicant will be given an opportunity to comment thereon.

Kind Regards,

Eileen Maher
Aquaculture and Foreshore Management Division

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An Roinn Talamhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

Rannán Riaracháin an Iascaigh Mhara, An Cloichín, Cloch na Coillte, Co. Chorcaí. P85 TX47.
National Seafood Centre, Clogheen, Clonakilty, Cork, P85 TX47.

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T +353 (0)23 885 9505
www.agriculture.gov.ie

Final Appropriate Assessment Conclusion Statement by Licensing Authority for aquaculture activities in North Inishowen Coast Special Area of Conservation (SAC) (Natura 2000 Site Code: 002012), and Trawbreaga Bay Special Protection Area (SPA) (Natura 2000 Site Code: 004034)

1. Appropriate Assessment Process

1.1. This Conclusion Statement outlines how it is proposed to licence and manage aquaculture activities in the above Natura 2000 sites in compliance with the EU Birds and Habitats Directives.

1.2. Aquaculture in these Natura sites will be licensed in accordance with the standard licence terms and conditions as set out in the aquaculture licence templates[i]. Should licences be issued, they will also incorporate specific conditions to accommodate Natura requirements, as appropriate.

1.3. Appropriate Assessment reports relating to aquaculture in the North Inishowen Coast Special Area Conservation (SAC) and Trawbreaga Bay Special Protection Area (SPA) have been prepared by the Marine Institute on behalf of the Department of Agriculture, Food and the Marine[ii]. These Reports assessed the potential ecological impacts of aquaculture activities on Natura features in both the SAC and the SPA.

1.4. In addition to the target Natura sites, there are a number of other SACs and SPAs proximate to the proposed aquaculture activities and a screening was carried out on their likely interactions with aquaculture.

1.5. The information upon which the Appropriate Assessment is based is the definitive list of existing licences and applications for aquaculture available at the time of assessment. This information was provided by the Department of Agriculture, Food and the Marine.

2. Description of the Aquaculture Activities

2.1. Current aquaculture activities within the North Inishowen SAC/SPA occur at Trawbreaga Bay and focus exclusively on the cultivation of the Pacific oyster *(Crassostrea gigas)* on trestles in intertidal areas.

3. North Inishowen Coast Special Area of Conservation

3.1. The North Inishowen Coast SAC is situated on the north Donegal coast and is designated as an SAC under the Habitats Directive. The SAC stretches from Crummies Bay in the west up to Malin Head and back down to Inishowen Head to the East.

3.2. The SAC is designated for the following habitats and species, as listed in Annex I and Annex II of the Habitats Directive (Natura 2000 codes are in brackets):

- [1140] Mudflats and sandflats not covered by seawater at low tide
- [1220] Perennial vegetation of stony banks
- [1230] Vegetated sea cliffs of the Atlantic and Baltic coasts
- [2130] Fixed coastal dunes with herbaceous vegetation (grey dunes)
- [21AO] Machairs (*priority habitat in Ireland)
- [4030] European dry heaths
- [1014] Narrow-mouthed Whorl Snail *Vertigo angustior*
- [1355] Otter *Lutra lutra*

3.3. Constituent communities and community complexes recorded within the qualifying interest Annex 1 marine habitats (i.e. 1140 - Mudflats and sandflats not covered by seawater at low tide) consist of:

- Zostera-dominated community
- Fine to medium sand with Eurydice pulchra community complex
- Muddy sand to coarse sediment with Pygospio elegans community complex
- Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex.

3.4. The conservation objectives for the Qualifying Interests were defined by the National Parks and Wildlife Service (NPWS). 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.

4. Appropriate Assessment Screening of North Inishowen Coast Special Area of Conservation

4.1. A screening assessment is an initial evaluation of the possible impacts that such aquaculture activities may have on the qualifying interests.

4.2. An initial screening exercise resulted in a number of habitat features and species being excluded from further consideration. It was found that aquaculture activities have the potential to interact with one Qualifying Interest only:

- [1140] Mudflats and sandflats not covered by seawater at low tide

Therefore, this Qualifying interest was carried forward for a full assessment of the interactions.

4.3. Aquaculture sites and access routes do not overlap the community type Fine to medium sand with *Eurydice pulchra* community complex or *Zostera*-dominated community and no interaction with aquaculture operations was considered likely; consequently, potential effects on these community types **were screened out.**

5. Findings of the Appropriate Assessment of Aquaculture in relation to the North Inishowen Coast Special Area of Conservation

5.1. Potential effects on Qualifying Interest Mudfats and sandflats not covered by seawater at low tide [1140] in Trawbreaga Bay

5.1.1 Qualifying Interest 1140 covers an area of 988.31ha within Trawbreaga Bay in Site 002012 hosts four benthic community types:

- Fine to medium sand with *Eurydice pulchra* community complex (234.79ha)
- Muddy sand to coarse sediment with *Pygospio elegans* community complex (542.99ha)
- Sand with *Angulus tenuis* and *Scoloplos* (*Scoloplos*) *armiger* community complex (208.99ha)
- *Zostera*-dominated community (1.91ha)

5.1.2 Muddy sand to coarse sediment with *Pygospio elegans* community complex and, Sand with *Angulus tenuis* and *Scoloplos* (*Scoloplos*) *armiger* community

complex. constituent communities of the Qualifying Interest 1140 are overlapped by the aquaculture sites and access routes.

5.1.3 Given the evidence on the resilience of the Sand with *Angulus tenuis* and *Scoloplos* (*Scoloplos*) *armiger* community to depositional and organic enrichment effects the existing and proposed overlap of trestles **will not result in significant adverse effects or disturbance**.

5.1.4 The level of overlap between oyster trestle sites and the Muddy sand to coarse sediment with Pygospio elegans community complex are low (current levels = 3.82% and proposed levels = 5.46%). However, there is no existing data for Trawbreaga Bay on the sensitivity of this community type to depositional and organic enrichment effects. Given that the Muddy sand to coarse sediment with Pygospio elegans community complex has not been studied in Trawbreaga Bay in terms of its resilience it cannot be determined if this community is resilient to depositional and organic enrichment effects.

5.1.5 Given this lack of information the risk of depositional and organic enrichment effects arising from the overlap between aquaculture sites and the Muddy sand to coarse sediment with Pygospio elegans community complex the risk of adverse effects **cannot be discounted**.

5.1.6 For the previous AA reports prepared by the Marine Institute to support DAFM aquaculture licensing decisions, the Marine Institute has concluded that the activity at access routes is non-disturbing to intertidal habitats where the spatial overlap is less than the disturbance thresholds identified by NPWS in Conservation Objectives (*i.e.* where overlap is below 15%). In the case of Trawbreaga the access routes overlap 2.05% and 3.66% respectively of the Muddy sand to coarse sediment with *Pygospio elegans* community complex and, Sand with *Angulus tenuis* and *Scoloplos* (*Scoloplos*) *armiger* community complex. **The level of overlap of access routes is below the disturbance threshold.**

5.1.7 Intertidal and subtidal sands are sensitive to the introduction of non-native species. Aquaculture has been identified as a vector for the introduction/spread of a number of non-native species in Irish waters that have the potential to impact Qualifying Interest habitats and species for which the SACs are

designated. With strict adherence to the relevant legislation and best practice guidelines, there will likely be no significant adverse effects. It is important that triploid oysters continue to be used in Site 002012 in order to minimise any risk to Site 2237.

6. Screening of Adjacent SACs

6.1. In addition to the North Inishowen Coast SAC there are a number of other SAC sites proximate to the proposed activities. As it was deemed that there are no *ex-situ* effects and no effects on features in adjacent SACs, all qualifying features of the adjacent SAC sites were screened out.

7. Trawbreaga Bay Special Protection Area

7.1. Trawbreaga Bay SPA includes a very large area of intertidal habitat sheltered within the bay, with some narrow tidal creeks which develop into wider subtidal channels towards the mouth of the bay. Areas of terrestrial habitat include saltmarsh, coastal beach, dune, grassland, shingle banks and coastal cliffs. The SPA also includes Glashedy Island and the waters surrounding it, west of Isle of Doagh. The SPA has a total area of 1,549 ha. Around 80 % of the bay area is exposed at each low tide with intertidal sediment composed mainly of a mix of mud and sand flats with some stony/rocky substrates. Green algae mats occur on open flats and *fucoid* seaweeds grow on the stones.

7.2. Qualifying Interests of the Special Protection Area and Adjacent Special Protection Areas

7.2.1 The Qualifying Interests of the Trawbreaga Bay SPA include non-breeding populations of Barnacle Geese and Light-bellied Brent Geese. In addition, both breeding and non-breeding elements of the Chough population are also Qualifying Interests. The wetlands habitat contained within Trawbreaga Bay SPA is an additional conservation feature.

7.2.2 Two further SPAs are located within 15 km of Trawbreaga Bay SPA; Malin Head SPA (004146) and Inishtrahull SPA (004100). The Qualifying Interests of the Inishtrahull SPA are non-breeding populations of Barnacle

Goose and breeding populations of Shag and Common Gull, while the Qualifying Interests of Malin Head SPA is a breeding population of Corncrake. A further five Special Protection Areas are located beyond the 15 km search area recommended by guidance, but are included due to potential interchange that may occur between the sites due to the mobile nature of birds. Sites considered were: -

- Lough Foyle (both ROI and NI managed sites) (15.3 km to the southeast of Trawbreaga Bay SPA) (site codes 004087 & UK 9020031, respectively);
- Lough Swilly SPA (004075; 21 km to the southwest of Trawbreaga Bay SPA);
- Horn Head to Fanad Head SPA (004194; 16.8 km west of Trawbreaga Bay SPA);
- Fanad Head SPA (004148; 20.5 km to the west of Trawbreaga Bay SPA); and
- Greers Isle SPA (004082; 24.5 km west of Trawbreaga Bay SPA).

7.3 Conservation Objectives for Trawbreaga Bay Special Protection Area

7.3.1 Barnacle Geese and Light-bellied Brent Geese

The overall conservation objective for the non-breeding populations of Barnacle Goose and Lightbellied Brent Goose is to maintain or restore the favourable conservation status of the species. The favourable conservation conditions of these non-breeding species in Trawbreaga Bay SPA are defined by various attributes and targets, (i) population trend, and (ii) distribution.

7.3.2 Wetlands and waterbirds

The conservation objective for wetlands and waterbirds is to maintain its favourable conservation condition, which is defined by there being no significant decrease in the permanent area occupied by wetland habitats.

8. Appropriate Assessment Screening of Trawbreaga Special Protection Area and Adjacent Special Protection Areas

8.1. A screening exercise was carried out to screen out Qualifying Interests species that did not show any potential spatial overlap with effects from any of the proposed aquaculture activities being assessed. This was undertaken across all SPAs being assessed.

8.2. All of the Qualifying Interests for Trawbreaga Bay SPA were carried forward for full Appropriate Assessment. The remaining sites were addressed as follows: -

- Inishtrahull SPA (004100) – this site is designated for Barnacle Goose, Shag and Common Gull. Barnacle Goose at this site is considered in full in and the potential for impacts on Shag and Common Gull were **screened out**.
- Malin Head SPA (004146) & Fanad Head SPA (004148) are designated for breeding populations of Corncrake; both were **screened out**.
- The qualifying interests of Greers Isle SPA (004082) are Sandwich Tern, Black-headed Gull and Common Gull. Each was considered in detail and **screened out.**
- Lough Foyle (IE004087) & Lough Swilly (004075) are designated for a diverse range of wintering waders and wildfowl as well as breeding Sandwich Tern and Common Tern in the case of Lough Swilly. The former were screened out based on distance, site use etc.; while the potential for impacts on Sandwich Tern and Common Tern was considered in detail and **screened out**.
- Horn Head to Fanad Head SPA (004194). Barnacle Goose at this site is considered in full. This site is also designated for Chough. Horn Head to Fanad Head SPA supports an important population of breeding chough which favour coastal grassland. No impact from intertidal aquaculture is predicted and accordingly Chough at this site was therefore **not considered further**.
- Other Qualifying Interests, namely Peregrine and seabirds (i.e. Fulmar, Cormorant, Shag, Kittiwake, Guillemot and Razorbill) were considered in detail and **screened out**.

9. Findings of the Appropriate Assessment of Aquaculture in Trawbreaga Bay Special Protection Area

9.1. Chough

Due to the proposed scale of oyster cultivation; the lack of any significant use of intertidal habitat by Chough; and the separation of proposed oyster cultivation from known foraging, roosting or nesting sites it is unlikely that the intertidal oyster would have a negative impact on Chough using Trawbreaga Bay SPA.

9.2. Barnacle Geese

9.2.1 In the case of Trawbreaga, the flock would appear to be closely linked with the wider Malin flock and should be considered as a single unit. The site conservation condition of Barnacle Goose at Trawbreaga Bay SPA has been assessed as favourable based on the increasing population. Barnacle Geese do not feed on intertidal habitats, but favour terrestrial grassland or saltmarsh. Placement of trestles will not therefore result in direct habitat loss.

9.2.2 While there is evidence for small scale intertidal roosting, observed flocks have been small and ample alternate intertidal habitat exists to accommodate such day-time roosting.

9.2.3 The main potential for conflict is from access points where there may be increased activity close to feeding birds and / or from increased levels of activity on the shoreline. While the risk of negative impacts cannot be entirely discounted, geese are likely to habituate to repeated patterns of work at trestles on the intertidal area close to foraging fields.

9.2.4 The Department in conjunction with key stakeholders is working on a clear Code of Practice for operators in the Bay to address issues that arise in relation to this issue. The Code of Practice will provide a framework within which sustainable relationships may be developed between shellfish growers, Government Agencies, and other users, all of which co-exist in Trawbreaga Bay.

9.2.5 Continuation of annual monitoring of Barnacle Geese to identify and address any disturbance issues that may arise in the future is necessary.

9.3. Light-bellied Brent Geese

9.3.1 The site conservation condition for Light-bellied Brent Goose at Trawbreaga Bay SPA has been assessed as favourable based on the increasing population. However, when compared to historic site counts, recent counts undertaken in 2019 and 2021 suggest a large recent decline in numbers of Light-bellied Brent Goose at Trawbreaga. Thus, on the basis of these declining numbers the conservation condition of Light-bellied Brent Geese has been considered as unfavourable in Trawbreaga Bay in this assessment.

9.3.2 Based upon the NPWS low tide surveys (2009/10), the proposed applications being assessed in this report would result in displacement of up to 5.36% of the geese using Trawbreaga Bay SPA and represents a significant negative impact on the conservation status of Light-bellied Brent Geese using Trawbreaga Bay SPA.

9.3.3 However, the 2 counts undertaken in 2021 suggest that the number of areas within the bay being used by geese has declined, with smaller numbers of geese being located within a more confined area from Fegart Point to Lagg Beach.

9.3.4 The decline in Trawbreaga would appear to be higher than the current national trend which is a -15.5% (5 year; 2012 census); -10.2% (10 year; 2007 census) and +96 % (20 year; 1997 census). Unlike Barnacle geese, Light-bellied Brent Geese feed both on the foreshore and in areas of improved grassland. It is not clear whether birds are, *i*) preferentially moved to feed on grassland; *ii)* being displaced from the foreshore and forced to feed on grassland or, *iii)* being displaced entirely from Trawbreaga Bay SPA to another site, such as Lough Swilly. While there is evidence of field feeding, the numbers involved is unknown. There is anecdotal evidence that numbers of Light-bellied brent geese at Lough Swilly have increased.

9.3.5 Introduction of trestles to sand / mudflats provides a 3-dimensional structure upon which a range of algal species can grow; especially green algae favoured by Light-bellied Brent Geese. The species type and density of growth is influenced by the level of site maintenance. Where little maintenance occurs, a fucoid community can however develop; at this stage the trestles provide feeding opportunities for species such as Herring Gull, Oystercatcher and Hooded Crow

which target associated invertebrate fauna. Higher levels of maintenance favour the smaller green and purple algae; growth will also be influenced by nutrient levels within the estuary and water temperature and thus this resource can be quite substantial in autumn when birds first arrive.

9.3.6 It is noted that Light-bellied Brent Goose do feed on terrestrial grassland, though the degree to which this is undertaken at Trawbreaga has not been established.

9.3.7 It cannot be stated at this time whether the reduced number of observed birds can be explained by birds moving to feed terrestrially or whether birds have vacated the site.

9.3.8 The continuation of the existing licence conditions in relation to dogs on licensed sites, vehicles maintenance and that unused equipment (e.g. trestles; bags etc.) are removed from the foreshore will all continue to help in the reduction of disturbance to birds.

9.3.9 The Department, in conjunction with key stakeholders is also working on a code of practice for operators in the Bay to address issues that arise.

10. In-combination effects of aquaculture and other activities

10.1. The Appropriate Assessment reports considered the cumulative impacts of the combined effects of the aquaculture and other activities within the SAC/SPA, notably fisheries, seaweed harvesting, residential and recreational developments, hand collection of shellfish, bait digging and effluent discharge.

10.2. Given that interactions between Qualifying Interest 1140 and fishing activities are unlikely to occur, in-combination effects of fishery aquaculture activities are **screened out.**

10.3. Given that seaweed harvesting is confined to reefs combination effects of seaweed harvesting activities are **screened out**.

10.4. 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 **screened out**.

10.5. The likelihood of significant *in situ* and *ex situ* effects on all other Qualifying Interests of SAC sites have been excluded (**screened out**).

11. Natura Issues raised during the public/statutory consultation process regarding aquaculture licence applications within the SAC/SPA

11.1 The following are a range of the Natura related issues raised during the Public/Statutory Consultation phases.

- From a National and International perspective, Trawbreaga Bay is of significant importance in terms of Environment, habitat & species.
- The bay is a Ramsar Site and Wildfowl Sanctuary, and this should be protected.
- Concerns were raised in relation to Barnacle Geese, Light Bellied Brent Geese, Geese species in general, Chough, Peregrine Falcon, Curlew and Oystercatcher.
- Over time there will be a buildup of pollution due to the narrow entrance from the ocean that prevents the rapid clearing of waste produced by oysters.
- A colony of seals which reside on sandbanks near some application sites would be affected. Otters in the area may be displaced as they travel to water.
- Public Health & Safety, Accidents, food concerns over exposed trestles & sewage outfall close to the new application sites.
- Constant moving of sandbanks in the bay lead to unsuitable ground conditions
- A carrying capacity survey of the bay should be carried out.

Response:-

- *The applications were subject to Appropriate Assessment (AA) for protected habitats and species within the SAC and for protected bird species within the SPA. In addition, the likely interactions between Species of Conservation Interest in adjacent Natura sites were assessed and conclusions drawn regarding risk. The AA process and the recommendations made in the SAC and SPA reports afforded the appropriate level of protection to both Light Bellied Brent Geese and the relevant benthic community complex given the information to hand. The SPA report made a clear finding as to the risk of the proposed aquaculture activities on Light Bellied Brent Geese.*

- *Based on the findings of the AA Report on request from DAFM the Marine Institute (MI) has commissioned the monitoring and investigation of the potential adverse effects of existing aquaculture activities on both Light Bellied Brent Geese and the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex within Trawbreaga Bay.*
- *The results of the monitoring in Trawbreaga Bay will provide important information that shall be taken into consideration before the in progress Code of Practice is finalised.*
- *As part of the screening exercise within the SPA report Lough Foyle SPA and Lough Swilly SPA are considered together given the similarities in bird species designated as conservation features within them. The AA Report screened out the potential for significant adverse effects on the Curlew, Oyster Catcher and Peregrine Falcon.*
- *The Marine Institute intends to investigate carrying capacity further in Trawbreaga Bay and other bays around Ireland. The findings of any such investigations will be incorporated into advice provision in relation to AA and aquaculture licensing in the future.*
- *The recommendations in relation to invasive species in the AA will adequately mitigate the risk of invasive species impacting protected habitats and species in Trawbreaga Bay.*
- *No species of seal is designated as a conservation feature of the North Inishowen Coast SAC. However, there are known haul out areas within the Bay which would be considered during the processing of any aquaculture licence application and where necessary, mitigation would be provided based on the proximity of the application site and if no natural barrier existed.*
- *The level of disturbance on the Otter is likely to be very low given it is unlikely that the species will be active at the aquaculture site and access routes during operations and encounter rates will be low; consequently, significant disturbance effects will not occur.*
- *It has been confirmed with Irish Water that UV filtration is provided on the outfalls in the vicinity of the application sites. The Sea Fisheries Protection Authority (SFPA) have confirmed that Trawbreaga has Class B Status for Pacific Oysters and as such*

any shellfish leaving this bay should be depurated or only sold to purification plants before being sold to the final customer.

12. Conclusion

12.1. Due to the uncertainty in relation to population decline/displacement of the Light-bellied Brent Goose in Trawbreaga Bay, at present and the need for verification of the population, the potential for negative impacts **cannot be discounted**.

12.2. Based on the requirement identified above for monitoring in relation to the potential effects of further aquaculture sites and their access routes on the qualifying interest 1140 of the North Inishowen Coast SAC (Muddy sand to coarse sediment with *Pygospio elegans* community complex and on the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex), the potential for negative impacts **cannot be discounted**.

12.3. Further monitoring is required to provide for a greater understanding of the effects on the community complex Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger and the community complex Pygospio elegans can be established before the 15% threshold is reached/exceeded by potential future sites.

12.4. Given the conclusions of the Appropriate Assessment process, in particular in relation to the need for monitoring to assess the impacts of any further aquaculture licensing on the Light-bellied Brent Goose and the need for monitoring in relation to the potential negative effects on the qualifying interest 1140, the currently proposed new aquaculture as assessed in the Appropriate Assessment cannot be licensed.

July 2022

[i] Aquaculture Licence Templates https://www.gov.ie/en/publication/fcd20-aquaculture-foreshore-management/

[ii] https://www.gov.ie/en/publication/fcd20-aquaculture-foreshore-management/#appropriate-assessments-carried-out

Fovlantic Ltd

Cuan Na Mara

Carrowtrasna

Greencastle

Donegal

7th December 2021

Dept of Agriculture Food and The Marine

National Seafood Centre

Clogheen

Clonakilty

Cork

Re: [redacted] & T12572

To Whom It May Concern,

Please find response in relation to email dated 29th November 2021 regarding issues for above application:

Upon a visual inspection of the proposed site, it appears that it is not crossing directly in front of a property and that there is no apparent access ramp within the parameters of the proposed site or its boundary.

In relation to access of the proposed site and also the references to potential trespassing violations, I have provided my proposed access route with my application, which does not interfere with any private property. I also would like it noted that I have never trespassed on anyone's land nor do I ever intend to.

In relation to noise pollution that has been mentioned, there is a code of practice with any issued licences in relation to maintenance of vehicles etc to minimise this problem.

There seems to be a misunderstanding or confusion regarding Pacific oysters that are being used in the bay. It has been mentioned in numerous letters of concern regarding these being an invasive species and concerns regarding the nearby Lough Swilly but this is an issue regarding diploid stock. All licences that are issued in Trawbreaga Bay specify that Triploid stock only are permitted to be used on site so therefore do not pose this threat.

I hope this clarifies any issues or concerns

Kind Regards

C McConkell

Department of Agriculture, Food & the Marine

15 DEC 2021

RECEIVED

Date: 5 February 2022

To: Eileen Maher - AFMD

From: Jack O'Carroll, Marine Institute

CC: Francis O'Beirn, Joe Silke - MI: Geraldine Farrell AFDM-DAFM

Re: Department of Housing Local Government and Heritage Submission on Aquaculture Licence Applications in Trawbreaga Bay

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The Marine Institute (**MI**) has been asked to comment on the submission lodged on 28 October 2021 by the Department of Housing Local Government and Heritage (**DHLGH**) relating to aquaculture licence applications for Pacific Oyster trestle cultivation in the North Inishowen Coast Special Area (**SAC**) of Conservation and Trawbreaga Bay Special Protected Area (**SPA**).

In its submission DHLGH explicitly references the licence applications: [redacted] T12/572A, [redacted]. It then notes the following findings of the DAFM AA Conclusion Statement:

1. The *"…potential negative effects on the qualifying interest 1140[1] of the North Inishowen Coast SAC within the Trawbreaga Bay*";
2. The significant negative impact on the conservation status of Light Bellied Brent Geese presented by the potential displacement of 5.36% of the population within the SPA by the proposed aquaculture activities; and
3. "*The Conclusion Statement therefore determines that the potential for negative impacts cannot be discounted and that the licensing of all currently proposed applications is not recommended*".

DHLGH then indicates it supports the conclusion that licences cannot be granted on the grounds of potential adverse effects on conservation features and that this conclusion is in line with "*the Habitats Directive and relevant national transposing legislation"*.

[1] Qualifying interest 1140 being the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex

MI Response to DHLGH Submission

The MI feels that the conclusions reached in the AA reports[2], [3] relating to the conservation features of the SPA and SAC, which informed the conclusions reached by DAFM in its AA Conclusion Statement, were sound and based on the best scientific information available at the time. On foot of DAFM's findings and following a request made by DAFM, the MI has commissioned the monitoring and investigation of the potential adverse effects of existing aquaculture activities on both Light Bellied Brent Geese and the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex within Trawbreaga Bay.

-END-

[2] Report Supporting Appropriate Assessment of Aquaculture in the North Inishowen Coast SAC, Marine Institute, August 2021

[3] Appropriate Assessment of Aquaculture Trawbreaga Bay SPA, Marine Institute, 6 August 2021

Date: 5 February 2022

To: Eileen Maher - AFMD

From: Jack O'Carroll, Marine Institute

CC: Francis O'Beirn, Joe Silke - MI: Geraldine Farrell AFDM-DAFM

Re: Irish Wildlife Trust Submission on Aquaculture Licence Applications in Trawbreaga Bay

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The Marine Institute (**MI**) has been asked to comment on the submission lodged on 26 October 2021 by the Irish Wildlife Trust (**IWT**) relating to aquaculture licence applications for Pacific Oyster trestle cultivation in the North Inishowen Coast Special Area (**SAC**) of Conservation and Trawbreaga Bay Special Protected Area (**SPA**).

1. **AA Conclusion Statement**

In its submission IWT explicitly references the licence applications: [redacted] T12/572A [redacted]. It makes the following observation:

> *"The Appropriate Assessment (AA) report for the SPA rightly points out the many negative impacts, as well as uncertainty around oyster aquaculture regarding the conservation objectives of Light-bellied Brent Geese. The population of this species has declined in Trawbreaga Bay, which suggests that even current levels of aquaculture in the bay are having a negative impact. We therefore support the AA's conclusion that the proposed aquaculture licences should not be granted"*.

2. **Assessment of Carrying Capacity**

IWT then showed its support for "*the recommendation that further research and monitoring and an investigation of carrying capacity of Trawbreaga Bay*".

3. **NPWS 15% Disturbance Threshold**

IWT also outlined its concerns around the use of the 15% disturbance threshold in the AA process as required under National Parks and Wildlife guidance on assessing adverse effects of plans or projects on habitats in Natura 2000 sites.

MI Response to IWT Submission

1. AA Conclusion Statement

The MI feels that the conclusions reached in the AA reports[1], [2] relating to the conservation features of the SPA and SAC, which informed the conclusions reached by DAFM in its AA Conclusion Statement, were sound and based on the best scientific information available at the time. On foot of DAFM's findings and following a request made by DAFM, the MI has commissioned the monitoring and investigation of the potential adverse effects of existing aquaculture activities on both Light Bellied Brent Geese and the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex within Trawbreaga Bay.

2. Assessment of Carrying Capacity

The MI notes the focus on carrying capacity of waterbodies containing aquaculture activities in the National Strategic Plan for Sustainable Aquaculture Development (2015)[3] and to this end intends on investigating carrying capacity further. The findings of any such investigations will be incorporated in to advice provision in relation to AA and aquaculture licensing in the future.

3. NPWS 15% Disturbance Threshold

IWT's submission then moves on to address its concerns on the appropriateness of the NPWS 15% disturbance threshold. Matters such as this, which relate to interpretation of EU Guidelines on AA are beyond the remit of the MI to provide comment.

-END-

[1] Report Supporting Appropriate Assessment of Aquaculture in the North Inishowen Coast SAC, Marine Institute, August 2021

[2] Appropriate Assessment of Aquaculture Trawbreaga Bay SPA, Marine Institute, 6 August 2021

[3] https://assets.gov.ie/99298/a0c7bd0c-212c-43cf-a380-2f4704b93fcc.pdf

Date: 11 February 2022

To: Eileen Maher - AFMD

From: Jack O'Carroll, Marine Institute

CC: Francis O'Beirn, Joe Silke - MI: Geraldine Farrell AFDM-DAFM

Re: Public Submissions on Aquaculture Licence Applications in Trawbreaga Bay

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The Marine Institute (**MI**) has been asked to comment on a number of public submissions relating to aquaculture licence applications for Pacific Oyster (*Crassostrea* gigas) trestle cultivation in Trawbreaga Bay County Donegal, which is designated as the North Inishowen Coast Special Area (**SAC**) of Conservation and the Trawbreaga Bay Special Protected Area (**SPA**).

26 submissions were lodged which related to all 14 applications for aquaculture licences subject to Appropriate Assessment (**AA**) by the Department of Agriculture Food and the Marine (**DAFM**) and a further 19 submissions were lodged which related to specific licences.

There were a number of common issues relevant to the MI's remit throughout most submissions. In this response, the MI will deal with these relevant issues broadly as opposed to on a submission by submission basis. The names of the submitters who raised each issue will be listed in the MIs response so that the record will show that the concerns of the submitters relevant to the MI have been responded to.

1. Natura 2000 – SACs and SPAs

A number of submitters raised concerns about the impact of the proposed activities on protected bird species, given the area's protected status as a SPA under the Birds Directive (Directive 79/409/EEC) and as a Ramsar site under the Convention on Wetlands of International Importance (1971).

A number of submitters also raised concerns about the impact of the proposed activities on protected habitats and species, given the area's the protected status as a SAC under the Habitats Directive (Directive 92/43/EEC).

Concerns around the broader impact of the proposed aquaculture activities on the ecosystem of Trawbreaga Bay due to exploitation of natural resource via culture of Pacific oyster were also raised.

The submitters who raised some or all of the above issues are: Ailish McLaughlin/Barry, Billy Sweeney, Colette Doherty, Denise & Brian Ferran, Donna Cregan, Frank & Doreen Platt, Harkin Family, Helena

McLaughlin, Katherine & George Beaumont, Lynette Mitchell, Margaret McLaughlin, Michael Mackay, Paul Doherty, Rachel McLaughlin, Ria Rye/Maria Power, Seamus Doherty, Siobhan McLaughlin, Dempsey & Laurence Dempsey, Tricia Lafferty and Una Stewart.

MI Response

The MI notes the purpose of the Natura 2000 network is to protect conservation features (species and habitats) in Natura 2000 sites (meaning both SACs and SPAs) under the Habitats Directive (Directive 92/43/EEC). In Ireland, the European Communities (Natural Habitats) Regulations, (1997) require that proposed plans and projects in Natura 2000 sites must be subject to AA. Trawbreaga Bay has two designations under the Natura 2000 network; the North Inishowen Coast SAC and the Trawbreaga Bay SPA. Due to these designations all proposed aquaculture activities in this area must be subject to AA to determine if they could adversely affect the conservation features of the SAC and SPA. If a plan or project is identified as having the potential to adversely affect any conservation features and these effects cannot be mitigated, then the plan or project must be refused or the proposal must be amended.

The current applications for aquaculture activities in Trawbreaga Bay were subject to AA for protected habitats and species within the SAC and for protected bird species within the SPA. In addition, the likely interactions between Species of Conservation Interest in adjacent Natura sites were assessed in the AA reports and conclusions drawn regarding risk (see below). The overall conclusion reached by DAFM in its AA was to not recommend licencing the applications considered on the grounds of the potential for adverse effects of the proposed activities on the Light Bellied Brent Goose population. The potential adverse effects of the proposed activities on a particular community complex[1] of the protected mudflat and sandflat not covered by high tide habitat were noted too. DAFM's decision was based on the recommendations made in the SAC[2] and SPA[3] reports which were underpinned by the best available scientific information. The AA process and the recommendations made in the SAC and SPA reports afforded the appropriate level of protection to both Light Bellied Brent Geese and the relevant benthic community complex[1] given the information to hand.

2. Designated Bird Species

A number of submitters raised concerns relating to the potential impacts of the proposed aquaculture activities on species of birds and their habitats designated as conservation features within the

[1] The Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex
[2] Report Supporting Appropriate Assessment of Aquaculture in the North Inishowen Coast SAC, Marine Institute, August 2021
[3] Appropriate Assessment of Aquaculture Trawbreaga Bay SPA, Marine Institute, 6 August 2021

Trawbreaga Bay SPA. Concerns were raised in relation to Barnacle Geese, Light Bellied Brent Geese, Geese species in general, Chough, Peregrine Falcon, Curlew and Oystercatcher.

The submitters who raised some concerns relating to some or all of the species listed above are: Ailish McLaughlin/Barry, Caitriona McLaughlin, Anne McLaughlin & John James McLaughlin, Colette Doherty, Denise & Brian Ferran, Denise & Brian Ferran, Deborah McLaughlin, Helena McLaughlin, Katherine & George Beaumont, Kieran Doherty, Liam Gibbons & Sheila Gibbons, Lynette Mitchell, Malcon Burns, Paul Doherty, Rachel McLaughlin, Ria Rye/Maria Power, Sarah Shovlin, Seamus Doherty, Siobhan McLaughlin Dempsey & Laurence Dempsey

One submitter, Sarah Shovlin, also made the point that they feel aquaculture licences should not be granted until the Code of Practice for aquaculture operation in relation to species of geese is finalised.

MI Response

In relation to the, Curlew, Oyster Catcher and Peregrine Falcon the SPA report screened out the potential for significant adverse effects on the species due to the proposed aquaculture activities. These species are designated within other adjacent SPAs such as Lough Swilly SPA and Lough Foyle in the case of the Curlew and Oystercatcher, and the Hornhead to Fanad Head SPA in the case of the Peregrine Falcon. The SPA report findings are discussed in further detail in the following sections.

Curlew and Oystercatcher

As part of the screening exercise within the SPA report Lough Foyle SPA and Lough Swilly SPA are considered together given the similarities in bird species designated as conservation features within them. Due to the large distance between Trawbreaga and Lough Foyle and Lough Swilly SPAs relative to the foraging ranges of the non-migratory conservation features such as the Curlew and Oystercatcher and the lack of "*published data on interchange of waders and wildfowl between the sites*"[4], the potential for significant adverse effects on Curlew and Oystercatcher were screened out.

Peregrine Falcon

The SPA report highlights that the foraging ranges of Peregrine in Britain and Ireland varies from 2 km – 15 km with the foraging ranges reducing during the breeding season and extending outside of the breeding season depending on prey availability in the area (such as waders, gulls, terns, feral pigeon and Jackdaw in coastal areas). The Hornhead to Fanad Head SPA is noted as holding a large population

[4] Section 4.4, Page 34 of 101 in Appropriate Assessment of Aquaculture Trawbreaga Bay SPA, Marine Institute, 6 August 2021 (SPA report)

of Peregrine (5 pairs in 2002) and that these pairs are spread over 70 km of coastline with the nearest nests in the Hornhead to Fanad Head SPA lying within approximately 17 km of Trawbreaga Bay and the proposed aquaculture activities. It also goes on to state it is "*seems likely that the intertidal oyster cultivation area provides potentially suitable feeding habitat and is within the foraging range of at least one pair of the SPA Peregrine population. However, the availability of high quality food resources closer to this pair (the Horn Head to Fanad Head seabird population), and the low numbers of waterbirds that will be present during most of the Peregrine's breeding season, indicate that the intertidal oyster cultivation area is probably not of major importance as feeding habitat for the fannad Head to Horn Head SPA Peregrine population".* The SPA report screened out the potential for the proposed activities from adversely affecting Peregrine on this basis.

Cough and Barnacle Goose

Cough and Barnacle goose are designated as conservation features within the Trawbreeaga Bay SPA. In relation to Chough, the SPA report highlights that Chough "*favour coastal grassland*" for foraging and roost on coastal cliffs and are therefore are unlikely to be displaced or impacted by the proposed aquaculture activities. The SPA report screened out the potential for the proposed activities to adversely affect Chough on this basis.

The potential for impacts on Barnacle Geese were assessed in detail given the potential for direct overlap and displacement between this species and the proposed aquaculture activities. Barnacle Geese were surveyed on 10th and 12th February 2021 and all feeding individuals were observed on grasslands and not on the intertidal mudflats and sandflats. These observations align with the NPWS Conservation Objectives Supporting Document[5] statement that Barnacle Geese are "*primarily a land-based bird, foraging terrestrially while roosting can occur on sandbanks, saltmarsh and offshore islands*". On the basis that the proposed aquaculture activities would not overlap with either foraging or roosting grounds of Barnacle Geese and that the Barnacle goose population in Trawbreaga SPA is growing[6] over time, the SPA report concluded that "*the risk of negative disturbance impacts [on Barnacle Geese] is low*".

Light Bellied Brent Geese

The SPA report made a clear finding as to the risk of the proposed aquaculture activities on Light Bellied Bret Geese concluding that "*displacement of up to 5.36% of the* [Light Bellied Brent] *geese*

[5] https://www.npws.ie/sites/default/files/publications/pdf/Trawbreaga%20Bay%20SPA%20(004034)%20Conservation%20objectives%20supporting%20document%20-%20[Version%201].pdf

[6] See Section 6.3.2.3 of Appropriate Assessment of Aquaculture Trawbreaga Bay SPA, Marine Institute, 6 August 2021 (SPA report)

using Trawbreaga Bay SPA and represents a significant negative impact on the conservation status of Lightbellied Brent Geese using Trawbreaga Bay SPA". This displacement occurs due to the direct overlap between the foraging and roosting areas of the Light Bellied Brent Geese and the proposed aquaculture activities. This conclusion on the impacts of the propose activities on Light Bellied Brent Geese underpinned DAFM's decision to refuse all 14 licence applications.

The Code of Practice

The MI acknowledges the importance of the Code of Practice and notes that the findings of current Light Bellied Goose monitoring in Trawbreaga Bay will provide important information that should be taken into consideration before the Code of Practice is finalised.

3. Carrying Capacity

A number of submitters raised their concerns in relation to the carrying capacity of Trawbreaga Bay and stated that they want a full assessment carried out. The submitters who raised this issue are: Ailish McLaughlin/Barry, Denise & Brian Ferran, Helena McLaughlin, Katherine & George Beaumont, Paul Doherty, Rachel McLaughlin, Ria Rye/Maria Power, Seamus Doherty, Siobhan McLaughlin Dempsey & Laurence Dempsey.

MI Response

The MI notes the focus on carrying capacity of waterbodies containing aquaculture activities in the National Strategic Plan for Sustainable Aquaculture Development (2015) and to this end intends on investigating carrying capacity further in Trawbreaga Bay and other bays around Ireland. The findings of any such investigations will be incorporated into advice provision in relation to AA and aquaculture licensing in the future.

4. Wild Shellfish

A number of submitters raised concerns in relation to the impacts of the proposed aquaculture activities on native wild shellfish, primarily the native mussel. The submitters who raised this issue are: Rachel McLaughlin, Tricia Lafferty and Frank & Doreen Platt.

MI Response

The MI is not aware of any specific data on the population trends on specific species of wild shellfish such as the native mussel (*Mytilus edulis*) from within Trawbreaga Bay. The MI is aware of a general

decline in mussel populations across northwest Europe[7] which has been attributed to a number of factors such as; climate change, changes in distributions of predators, eutrophication in coastal waters, and extreme weather events.

The MI cannot make any conclusive comment on wild shellfish population dynamics in Trawbreaga Bay at this time but notes that any assessments of carrying capacity carried out in Trawbreaga Bay will take into consideration population dynamics of native wild shellfish in the area.

5. Invasive Species

A number of submitters raised concerns about the risk of the introduction of invasive species into Trawbreaga Bay as a result of the proposed aquaculture activities. The submitters who raised this concern are: Ailish McLaughlin/Barry, Denise & Brian Ferran, Dermot Doherty, Donna Cregan, Helena McLaughlin, Katherine & George Beaumont, Malcolm Burns, Michael Mackay, Paul Doherty, Rachel McLaughlin, Ria Rye/Maria Power, Seamus Doherty, Siobhan McLaughlin Dempsey & Laurence Dempsey and Una Stewart.

MI response

In relation to the risk of introducing invasive species into Trawbreaga Bay the SAC report made a number of observations and subsequent recommendations which serve to mitigate this risk. The SAC report highlights that "*The pacific oyster (Crassostrea gigas) itself is a non-native species*" and that "*Recruitment of C. gigas has been documented in a number of Bays in Ireland*". In these cases, *C. gigas* could potentially compete with "*native species for space and food*". The SAC report also highlighted site characteristics that increase likelihood of invasive species becoming established such as "*residence times >21 days and large intertidal areas*". The SAC report goes onto highlight the Trawbreaga Bay does not meet all these criteria as the resident time for this area is approximately 10 days[8]. The SAC report recommended that "*triploid oysters only are grown in*" in Trawbreaga Bay and that "*all stock movement in the bay follow should strictly adhere to relevant legislation and follow best practice guidelines*". The MI is satisfied that these recommendations, if followed, will adequately mitigate the risk of invasive species impacting protected habitats and species in Trawbreaga Bay.

[7] S. Baden, B. Hernroth and O. Lindahl, Declining Populations of Mytilus spp. In North Atlantic coastal waters—a Swedish Perspectivre. Journal of Shellfish Research, Vol. 40, No. 2, 269–296, 2021.
[8] Dabrowski, T. 2011. Short report on residence times calculations of coastal embayments. Marine Institute Report

6. Depositional and Organic Enrichment Effects

The submitters Liam Gibbons & Sheila Gibbons raised a concern in relation to the potential for depositional and organic effects to occur in the SAC.

MI response

The SAC report states that significant adverse depositional and organic enrichment effects at trestles and compaction effects along access routes "*on the Muddy sand to coarse sediment with Pygospio elegans community complex cannot be discounted*".

In relation to organic enrichment and deposition effects it goes on to recommend that "*monitoring should be carried so out that an understanding of the effects on this community complex is established before the 15% threshold is exceeded by potential future sites*" on the basis that there is a lack of "*data on the sensitivity of this community complex to oyster trestle cultivation activities*". The SAC report also acknowledges that the likely compaction impacts along proposed access routes are below the 15% disturbance threshold for this community complex.

These findings and recommendations do not amount to grounds for refusing licence applications in this instance (due to small spatial scale of potential impacts) but do acknowledge areas of uncertainty in relation to the sensitivity of certain community complexes to oyster trestle cultivation activities. The results of the recommended monitoring of this community complex will provide useful information that could be used in support of AA of aquaculture activities in Trawbreaga Bay and in other SACs where this community complex occurs in the future.

7. Marine Mammals

Concerns were raised by a number of submitters in relation to the potential impacts of the proposed aquaculture activities on marine mammals, specifically seals and otter. The submitters that raised concerns relating to seals were: Ailish McLaughlin/Barry, David Mitchell, Deborah McLaughlin, Denise & Brian Ferran, Donna Cregan, Edel Doherty, Grainne Doherty, Helena McLaughlin, Katherine & George Beaumont, Kieran Doherty, Paul Doherty, Rachel McLaughlin, Ria Rye/Maria Power, Seamus Doherty, Siobhan McLaughlin Dempsey & Laurence Dempsey and Una Stewart. David Mitchell raised concerns relating to Otter.

MI response

Otter (Lutra lutra)

Otter (*Lutra lutra*) are designated as a conservation feature of the North Inishowen Coast SAC. The potential effects of the proposed aquaculture activities were screened out within the SAC report for the following reasons:

"*Negative effects from intertidal oyster cultivation can be excluded on the basis that the proposed activities will not lead to any modification of the following attributes for otter:*

- *Extent of habitat (terrestrial, marine and/or freshwater habitat) primarily because The oyster culture structures are raised from the seabed (0.5m -1m) and are oriented in rows, thus allowing free movement through and within the aquaculture sites.*
- *The activity involves net input rather than extraction of fish biomass as fish are attracted to the trestles and provide foraging opportunities for otters, as such, 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. Shellfish production activities are unlikely to pose any risk to otter populations through entrapment or direct physical injury.*
- *Disturbance associated with vessel and foot traffic at oyster cultivation sites could potentially affect the distribution of otters at the site. However, the level of disturbance is likely to be very low given that the likely encounter rates will be low and dictated primarily by tidal state and in daylight hours.*
- *Oyster culture operations are likely to be carried out in daylight hours. The interaction with the otter is likely to be minimal given that otter are mainly active in the early morning and/ or late evening. Given this behaviour, it is unlikely that the species will be active at the aquaculture site and access routes during operations and encounter rates will be low; consequently, significant disturbance effects will not occur*".

Seals

The MI is unaware of any data on seal population dynamics in Trawbreaga Bay. No species of seal is designated as a conservation feature of the North Inishowen Coast SAC and therefore there are no data that have been collected as part of SAC monitoring exercises commissioned by NPWS. The MI is unable to make definitive statements on seal population dynamics in Trawbreaga at this time.

However, the MI notes that there are numerous bays designated as SACs with seal species as conservation features where similar aquaculture activities are carried out in a manner that is not detrimental to seals. In addition, seal species are capable of making large foraging trips, up to 220 km for harbour seal[9] and up to 500 km for grey seals[10]. Any seals that are observed utilising Trawbreaga Bay for foraging, resting, breeding or molting will also utilise other adjacent embayments thereby reducing the potential of significant adverse effects of intertidal aquaculture on seals in Trawbreaga Bay.

-END-

[9] Sharples, R.J., Moss, S.E., Patterson, T.A. and Hammond, P.S., 2012. Spatial variation in foraging behaviour of a marine top predator (Phoca vitulina) determined by a large-scale satellite tagging program. PLoS one, 7(5).
[10] Cronin, M.A., Jessop, M.J. and Del Villar, D., 2011 Tracking grey seals on Irelands' continental shelf Report to National Parks and Wildlife Service, Department of Arts, Heritage and Gaeltacht November 2011 Coastal and Marine Research Centre University College Cork Ireland.

Mr Campbell, Divisional Engineer BJC 16/2/22

Ms Maher, AFMD

Re: Aquaculture licence application T12/572A – Public and statutory body comments

Background:

Engineering Division recommended that north portion of site 572A not be licensed for access and orderly development reasons. That report also expressed concern about cumulative visual impact and loss of stone cover /coastal protection impacts that could arise with development of this site. Refer to my report dated 4/2/21 for details.

The draft Appropriate Assessment conclusion statement by DAFM of September 2021 states that given the conclusions of the Appropriate Assessment Process the licensing of all currently proposed applications [including T12/572] is *not recommended.*

Ms Maher's email of 21/12/21 with attached public submissions and statutory body submissions refers. AFMD request comments on those submissions.

Public submissions

Important points (additional to those in AA conclusion statement and MED report) as raised in public submissions include the following :-

Ecological Carrying Capacity of Bay
Reference is made to carrying capacity concern that was raised in 2019 appeals to ALAB of 13 licensing decisions made by D. Diver (AP57 -19 to AP69-19) . Note that ALAB Technical Report in relation to those appeals stated that the issue of carrying capacity was "outside the remit of the Technical Advisor Report as it reflects internal Departmental processes of licence granting and the overall assessment in relation to the carrying capacity of a particular bay, which is determined at Departmental Level".

We can assume therefore that this matter of Bay capacity is to be determined by the Department . I raised issue of carrying capacity also (see my report on application T12/572 dated 4/2/21) . My opinion on the carrying capacity of Trawbreaga Bay to accommodate more farmed oyster biomass is that :

1) It is more of a concern now than it was in 2019 with 15 new site areas licensed in 2021;
2) I support the Marine Institute's specific recommendation on this issue (in Appropriate Assessment North Inishowen Coast SAC June 2021) that ecological carrying capacity be investigated so that future licensing decisions can take this into account;
3) A sensible approach would be to not licence further area until there is a detailed assessment of carrying capacity available and then subject to a finding of there being spare capacity unused to consider licensing further area in Bay. Until such an outcome no new area for oyster cultivation in the Bay should be licensed on a precautionary basis.

Tourism impact

Various members of public have raised issue of potential for increased negative impact on tourism and tourism based economic benefit at a local level. This is relevant to site 572A due to its proximity to Wild Atlantic Way (site 572A is 50m away from R242 road at its nearest point and there are unimpeded views of the site from road).

Impact on local public amenity

Various public submissions refer to marine based leisure activities that are of local importance in the Bay. Shore walking is not common practice but may be of some relevance to area near site 572A – given proximity to road, public slipway, car park and picnic area. Reduction of northern extent of site 572A may well mitigate the potential impact on shore amenity by reducing potential obstruction to long shore access at higher levels of the intertidal shore at this location. There is a cumulative impact consideration also – large areas of north shore are already covered in trestles and site 572A potentially adding to the area no longer available for shore walking/shore angling.

Visual impact

This is raised as a general issue of concern in many of the public submissions. With site [redacted] now licensed on the seaward side of 572A, there is already a strip of licensed oyster sites located on or close to the MLWS tide line. These (when developed) will act as a backdrop to trestle placement on site 572A and will reduce its stand-alone visual impact (which would otherwise be of substantial significance). In cumulative impact terms though the placement of trestles on site 572A will amplify the existing magnitude of impact by bringing impact closer to the R242 viewpoints (closer than any site licensed to date in the Bay) and extending that impact higher up intertidal shore/over a longer period of tidal cycle. In cumulative visual impact terms this may be an incremental change too far. I anticipate that cumulative visual impact of substantial significance could arise if site 572A were to be licensed as applied for.

Aquaculture waste

Management of aquaculture waste generated by existing farms is raised by a number of the public submissions. There is scope for collective improvement by the Trawbreaga Bay oyster farmers in this regard. This is more an enforcement matter rather than a licensing matter. However waste management level notwithstanding it is true that increasing the total area under trestles and bags will increase potential for aquaculture debris generation such as plastic bags, clips, rubbers etc.

Otters and Curlews

Mr Mitchell's submission of 30/10/21 raises concern about a curlew roost and otter passage in vicinity of the site. Curlews are not a QI species in SPA and are not mentioned specifically in the AA report dealing with the SPA. Otters were one of 2 species screened out in the SAC AA on basis that encounter rates between aquaculture activity and otters were expected to be low.

Statutory body submissions

Marine Institute – the submission recommends taking full account of the conclusions and recommendations of the Appropriate Assessment reports and of the Department's Natura AA Conclusion Statement in making the final determination with respect to this application.

DHLGH – supports the draft conclusion statement determination that potential for negative impacts cannot be discounted and that the licensing of all current application is not recommended.

Irish Water – Most discharges listed are at points outside Trawbreaga Bay and have no significant impact on water quality in the Bay. The exception is that at grid coordinates 246731 448010 which is the Carndonagh-Malin scheme discharge. That scheme provides treatment of sewage wastewater to secondary level (biological) and tertiary level (UV light treatment). The discharge from that scheme to the Donagh River near south east end of the Bay after treatment to relatively high standard would not be an obstacle to oyster site licensing in the Bay.

Donegal County Council (planning) – no comments offered.

Response of applicant dated 7/12/21

The applicant correctly states in case of site 572A that the site is not crossing directly in front of a (house) property. Nor is there a ramp near the site boundary; the ramp is 260m to northwest and Mitchell residence is approximately 290m to the northwest of the site.

The applicant has put forward his proposed access route and it does not interfere with private property.

The applicant refers to a code of practise for dealing with noise issue. There are conditions relating to operational conduct in issued licences which relate to machinery upkeep. While they may contribute to reducing potential machinery noise they will not prevent an increase in operational noise locally where new site area is developed for aquaculture. The proposed development of a code of practice referred to in Schedule 4 of recent licences is not relevant at this point. Site 572A if licensed will add to cumulative noise /disturbance impact arising from aquaculture activity on this shore.

The applicant correctly points out that triploid oyster use will not cause an invasive species problem. Note that there is provision for diploid use in limited circumstances in certain Trawbreaga Bay licences.

Overall Conclusions

The AA conclusion statement and the submissions of certain statutory consultees (Marine Institute and DHLGH) which support that statement provide clear grounds for refusal to licence in the case of all current applications including this one.

Issues raised by public in regard to this application would broadly support a position that incremental increases in negative impact on visual amenity, and other environmental impacts are likely to arise with this development. Ecological carrying capacity of the Bay is under question also. Engineering Division has expressed significant concerns on the issues of access impact , cumulative visual impact and coastal protection damage that could result from the proposed development of site 572A.

Taking account of the various assessment reports and consultation submissions made to date I recommend that application T12/572 should not be licensed.

Paul O'Sullivan

Paul O'Sullivan

16/2/22

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Standing Stone

Doaghmore

Standing Stones

R242

Crockmore

Megalithic Tomb

Rock Art

Magheranaul

Rock Art

Standing Stone

Balloor

Cross-inscribed Stone

Binconor

Glassagh Point

PO

Site Status

- Appealed to ALAB
- Lapsed
- Licensed
- Under Application

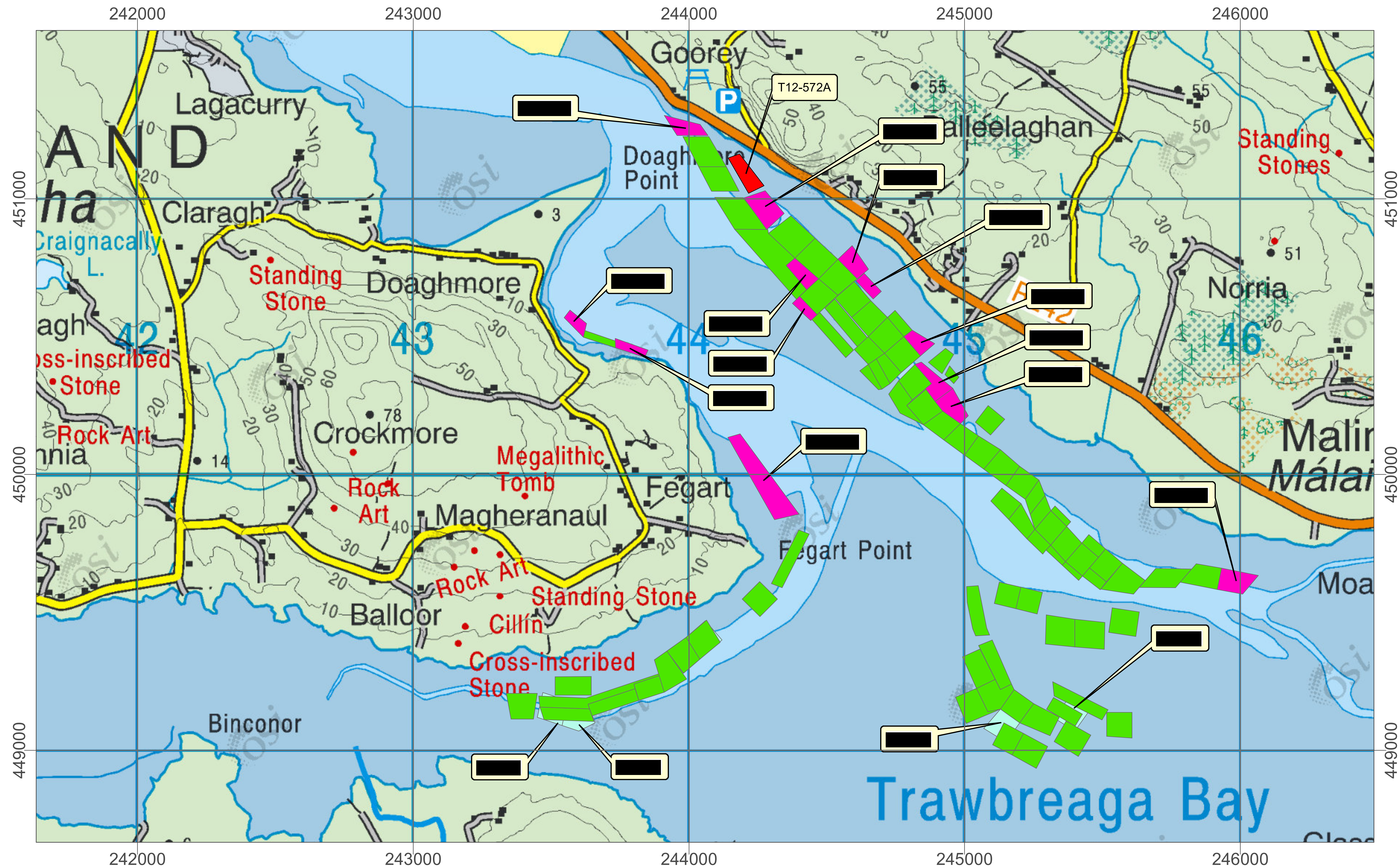
Drawn : 20-02-2023

Scale = 1:12,500

TRAWBREAGA BAY
CO. DONEGAL
LICENSED AQUACULTURE SITES

CYAL50317599

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine



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Ballèelaghan
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Standing Stone
Doaghmore
Norria
Cross-inscribed Stone
Crockmore
Megalithic Tomb
Fegart
Malin
Málai
Rock Art
Magheranaul
Fegart Point
Balloor
Standing Stone
Cillín
Cross-inscribed Stone
Binconor
Trawbreaga Bay
42
43
44
45
46

Site Status

- Appealed to ALAB
- Lapsed
- Licensed
- Under Application

Scale = 1:12,500

TRAWBREAGA BAY
CO. DONEGAL
AQUACULTURE SITES LAPSED, UNDER APPLICATION & APPEALED TO ALAB

CYAL50317599

Drawn : 23-02-2023

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

ATKINS

Member of the SNC-Lavalin Group

Appropriate Assessment of Aquaculture

Trawbreaga Bay SPA

Marine Institute

06/08/2021

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Document history

Revision	Purpose description	Origin-ated	Checked	Reviewed	Author-ised	Date
Rev 1.0	Draft for Comment	POD	POD	EN	MF	01-04-21
Rev 2.0	Revision 2.0	POD	POD	EN	MF	17-05-21
Rev 3.0	Revision 3.0	POD	POD	EN	MF	27-05-21
Rev 4.0	Final Report	POD	POD	EN	MF	06-08-21

Client signoff

Client	Marine Institute
Project	Appropriate Assessment of Aquaculture
Job number	5146490
Client signature / date	

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Plates

Acknowledgements

We are grateful to Louise Collins (BIM) for providing information about the history, and current activity, of the aquaculture industry in Trawbreaga Bay SPA. Information on licences was provided by Francis O'Beirn (Marine Institute) on behalf of the Department of Agriculture, Forestry and Marine; with further review input provided by Jack O'Carroll. We are also grateful to Lesley Lewis (BirdWatch Ireland) for Irish Wetland Bird Survey data and David Tierney (NPWS) for provision of baseline waterbird survey data collated by NPWS.

We would also like to thank Emmet Johnston and Lee McDaid (NPWS) for providing information on bird usage of Trawbreaga Bay SPA as well as details of goose counts. Thanks also to Kendrew Colhoun for assistance, notably regarding Barnacle Geese and Light-bellied brent geese in the bay.

Executive Summary

Introduction

Atkins (Ecology) was commissioned by the Marine Institute to provide ornithological services in relation to the appropriate assessment of aquaculture and shellfisheries on coastal Special Protection Areas (SPAs). This report contains the Appropriate Assessment of aquaculture license areas in Trawbreaga Bay as well as any other activities in and around the bay that may be deemed to contribute to an 'in combination' effect. The activities being assessed are within the Trawbreaga Bay SPA (site code 004034) and this SPA is the primary focus of this assessment.

Methodology

Analysis of the likely impacts of activities covered in this assessment was based on a comparison of spatial overlap between the Qualifying Interest (QI) species distribution and the spatial extent of the activities as well as looking at species occurrence, behaviour and general ecology. These analyses focus on distribution patterns of feeding, or potentially feeding birds, as the main potential impacts will be to the availability and/or quality of feeding habitat; as well as an assessment of potential impacts on roosting birds, where relevant. Access points and shore based activities were also considered.

The distribution of waterbirds was initially analysed using data from the Irish Wetland Bird Survey (IWeBS) counts and National Parks and Wildlife Service (NPWS) baseline waterbird survey counts (carried out in 2009/10). Additional data on spatial distribution of geese in 2007/2008 was supplied by NPWS local office; along with a summary of year's accumulated knowledge of the sites use by geese (Emmett Johnston, Local Conservation Ranger, NPWS). These were supplemented by recent goose counts from 2020 and 2021 (Source: NPWS & collected as part of this study).

The methodology used to identify potentially significant impacts is focussed on the Conservation Objectives, and their attributes, that have been defined and described for Trawbreaga Bay SPA. Impacts that will cause displacement of 5% or more of the total SPA population of a non-breeding QI species (for each site) have been assessed as potentially having a significant negative impact and are examined further in the context of species behaviour; relationship with aquaculture types; population trends etc.

Conservation objectives

The Qualifying Interests of the Trawbreaga Bay SPA include non-breeding populations of Barnacle Goose and Light-bellied Brent Goose. In addition, both breeding and non-breeding elements of the Chough population are taken as Special Conservation Interests. The wetland habitats within Trawbreaga Bay SPA and the waterbirds that utilise this resource are an additional QI (the wetlands and water bird QIs). The conservation objective for this QI is to maintain its favourable conservation condition, which is defined by there being no significant decrease in the permanent area occupied by wetland habitats.

As noted, 2 further SPAs are located within 15 km of Trawbreaga Bay SPA; these are Malin Head SPA (004146; 730 m north of Trawbreaga Bay SPA) and Inishtrahull SPA (004100; 11.6 km northeast of Trawbreaga Bay SPA). The Qualifying Interests of the Inishtrahull SPA are non-breeding populations of Barnacle Goose and breeding populations of Shag and Common Gull, while the Qualifying Interests of Malin Head SPA is a breeding population of Corncrake.

A further five Special Protection Areas are located beyond the 15 km search area recommended by guidance but are included due to potential interchange that may occur between the sites due to the mobile nature of birds. Sites considered were: -

- Lough Foyle (both ROI and NI managed sites) (15.3 km to the southeast of Trawbreaga Bay SPA) (site codes 004087 & UK 9020031, respectively);
- Lough Swilly SPA (004075; 21 km to the southwest of Trawbreaga Bay SPA);

- Horn Head to Fanad Head SPA (004194; 16.8 km west of Trawbreaga Bay SPA);
- Fanad Head SPA (004148; 20.5 km to the west of Trawbreaga Bay SPA); and
- Greers Isle SPA (004082; 24.5 km west of Trawbreaga Bay SPA).

Screening

All of the Qualifying Interest species for Trawbreaga Bay SPA were carried forward for full Appropriate Assessment. Each site is addressed separately, in Chapters 6.0. The remained sites were addressed as follows: -

- Inishtrahull SPA (004100) – this site is designated for Barnacle Goose, Shag and Common Gull. Barnacle Goose at this site is considered in full in Chapter 6.0. The potential for impacts on Shag and Common Gull were screened out in Chapter 4.0.
- Malin Head SPA (004146) & Fanad Head SPA (004148) are designated for breeding populations of Corncrake; both were screened out in Chapter 4.0.
- The qualifying interests of Greers Isle SPA (004082) are Sandwich Tern, Black-headed Gull and Common Gull. Each was considered in detail in Chapter 4.0 and screened out.
- Lough Foyle (IE004087) & Lough Swilly (004075) are designated for a diverse range of wintering waders and wildfowl as well as breeding Sandwich Tern and Common Tern in the case of Lough Swilly. The former were screened out based on distance, site use etc.; while the potential for impacts on Sandwich Tern and Common Tern was considered in detail in Chapter 4.0 and screened out.
- Horn Head to Fanad Head SPA (004194). As for Inistrahull, Barnacle Goose at this site is considered in full in Chapter 6.0. This site is also designated for Chough. Horn Head to Fanad Head SPA supports an important population of breeding Chough (22 breeding pairs in 1992; 32 in 2002/03). Chough favour coastal grassland; while we are not aware of any information on interchange of Chough between Trawbreaga and Fanad, as for Trawbreaga no impact from intertidal aquaculture is predicted. Chough at this site was therefore not considered further. Other Qualifying Interests, namely Peregrine and seabirds (i.e. Fulmar, Cormorant, Shag, Kittiwake, Guillemot and Razorbill) were considered in detail in Chapter 4.0 and screened out.

Description of aquaculture activities

Oyster production has been operational in Trawbreaga Bay since the late 1990's. However, licences for aquaculture activities were not issued until early in the 2000's. In 2001, there were 26 licences to farm oysters in Trawbreaga Bay (BIM, 2014). The current assessment covers 14 no. new applications covering an area of 10.13ha, as illustrated in Figure 6.1. It was assumed that all existing licences and licences under appeal are operational and form part of the existing activities in the SPA at the time this report was drafted. By assuming existing licences and licences under appeal are all operational enables this assessment of the impacts of the aquaculture activities proposed in the new licence applications to be based on worst-case principles (refer to consideration of In-Combination Impacts in Chapter 7.0).

Current oyster cultivation within Trawbreaga SPA (and North Inishowen Coast 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 North Inishowen Coast SAC when G4 to G8 (6 – 10mm, respectively) oyster seed is brought to the service site either in spring or late summer of each year.

Oyster bags vary in mesh size (4mm, 6mm, 9mm and 14 mm) depending on oyster stock grade. For example, 6mm seed is put into 4mm mesh bags at a ratio of 1000 to 1500 seed per bag. The oyster seed is bought in from oyster nurseries in France or the UK and include: GrainOcean, France Turbot, Satmar and 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 2.5 to 4 years, where they will have reached 60 or 80 to the kilo. At reaching market size oysters are in bags of about 120. Some farmers also take in half grown oysters and contract grow for local farmers in the area.

Farms on the intertidal area are typically accessed during 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 North of the Bay, producers observe one access route from the shore to their farm area. In the south of the Bay producers access growing areas using one dedicated access route from the shore at Glassagh Point. There are four further access points to local areas of trestles along the shore of Doagh Island (see Figure 6.1). Detailed information as to the number of tractors / operators on site at any given time and the number of days per month when there will be activity onshore were not available at the time of writing.

Assessment of aquaculture activities

Chough

Overall, due to the proposed scale of oyster cultivation; the lack of any significant use of intertidal habitat by Chough; and the separation of proposed oyster cultivation from known foraging, roosting or nesting sites it is unlikely that the intertidal oyster would have a negative impact on Chough using Trawbreaga Bay SPA.

Barnacle Geese

In Ireland, Barnacle Geese (from the Greenland breeding population) is mainly recorded along the west and northwest Coasts, at sites such as Trawbreaga Bay. In the case of Trawbreaga, the flock would appear to be closely linked with the wider Malin flock and should be considered as a single unit. The population trend for Barnacle Goose was calculated by NPWS using IWeBS data and is based on the change between the baseline period (mean 1995/96 to 1999/00) and recent counts (mean 2007/08 to 2009/10). A mean number of 645 individuals were recorded for the baseline period with a mean number of 1,421 recorded from the recent period. Atkins recorded a peak of 2,479 at Ballyliffin in February 2021. The site conservation condition for Barnacle Goose at Trawbreaga Bay SPA has been assessed as favourable based on the increasing population. Unlike Light-bellied Brent Geese, Barnacle Geese do not feed on intertidal habitats, but favour terrestrial grassland or saltmarsh. Placement of trestles will not therefore result in direct habitat loss. While there is evidence for small scale intertidal roosting, observed flocks have been small and ample alternate intertidal habitat exists to accommodate such day-time roosting. The main potential for conflict is from access points where there may be increased activity close to feeding birds and / or from increased levels of activity on the shoreline; key areas noted include risk of disturbance to Barnacle Geese at Magheranaul / Strath; close to Malin and close to the Glassagh access point. While the risk of negative impacts cannot be entirely discounted, geese are likely to habituate to repeated patterns of work at trestles on the intertidal close to foraging fields. That said, development of a clear Code of Practice is strongly recommended; as is close consultation with NPWS. Continuation of annual monitoring of Barnacle Geese is also recommended to identify and address any disturbance issues that might arise, with particular emphasis on areas around Magheranaul / Strath; Malin and Glassagh Point.

Light-bellied brent geese

The *hrota* population of Light-bellied Brent Geese that over winter in Ireland and breed in the Canadian high Arctic have shown increases in population since the early 1990's (Boland and Crowe, 2012) with a peak population estimate of 39,000 in 2007 (Hall and Colhoun, 2007). The population has been calculated to be increasing at an annual rate of 5.1 percent overall (Boland and Crowe, 2012). The site population trend for Light-bellied Brent Goose at Trawbreaga Bay published by NPWS was calculated using IWeBS data and was based on the change between the baseline period (mean 1995/96 to 1999/00) and more recent counts (mean 2007/08 to 2008/09). A mean number of 362 individuals were recorded for the baseline period with a mean number of 366 recorded from the recent period (2-yr mean 2007/2008 – 2008/2009). As a result, the site conservation condition for Light-bellied Brent Goose at Trawbreaga Bay SPA was assessed as favourable based on the increasing population. However, recent counts are significantly lower (e.g. 151 on 10th February 2021) and suggest that numbers have declined significantly at Trawbreaga Bay.

Light-bellied Brent Geese were recorded in all but one subsite (0A441 – Malin) during the NPWS baseline waterbird surveys. Intertidal foraging had recorded them within five subsites overall: 0A438, 0A439, 0A440, 0A442 and 0A443 (NPWS, 2014c). Brent Geese were recorded most frequently in subsite 0A443 (Northwest) with geese present during all low tide counts. In addition, this subsite held the highest mean number of Brent Geese across all low tide counts. The other two subsites where Brent Geese were consistently recorded across the low tide counts were 0A439 (Trawbreaga South) and 0A442 (North central); aquaculture sites are already in place in both 0A439 and 0A442. It is within these sites that new Applications are located. These two subsites also held high peak and mean numbers of Brent Geese. In 2021 birds were recorded from 0A442 and 0A443, with small numbers in 0A439 (i.e. near Doagh Island and Glassagh).

Based upon the NPWS low tide surveys (2009/10), the proposed applications would result in displacement of up to 5.36% of the geese using Trawbreaga Bay SPA and represents a significant negative impact on the conservation status of Light-bellied brent geese using Trawbreaga Bay SPA. In-combination impacts with existing trestles would result in displacement of up to 13.78% of the geese using Trawbreaga Bay SPA. As shown on Figure 6.5 the 2 counts undertaken in 2021 suggest that the number of areas within the bay being used by geese has declined, with smaller numbers of geese being located within a more confined area from Fegart Point to Lagg Beach.

Concluding Statement

Chough

Overall, due to the proposed scale of oyster cultivation; the lack of any significant use of intertidal habitat by Chough; and the separation of proposed oyster cultivation from known foraging, roosting or nesting sites it is unlikely that the intertidal oyster would have a negative impact on Chough using Trawbreaga Bay SPA. As noted, a National Survey of Chough is proposed for 2021.

Barnacle Geese

The site conservation condition of Barnacle Goose at Trawbreaga Bay SPA has been assessed as favourable based on the increasing population. Unlike Light-bellied Brent Geese, Barnacle Geese do not feed on intertidal habitats, but favour terrestrial grassland or saltmarsh. Placement of trestles will not therefore result in direct habitat loss. While there is evidence for small scale intertidal roosting, observed flocks have been small and ample alternate intertidal habitat exists to accommodate such day-time roosting.

The main potential for conflict is from access points where there may be increased activity close to feeding birds and / or from increased levels of activity on the shoreline. While the risk of negative impacts cannot be entirely discounted, geese are likely to habituate to repeated patterns of work at trestles on the intertidal close to foraging fields. A clear Code of Practice; close consultation with NPWS and continuation of annual monitoring of Barnacle Geese is recommended to identify and address any disturbance issues that may arise in the future. Furthermore, it is our understanding that NPWS intend to use data from an ongoing programme of darvic colour ringing to examine local site use and movements. Once available this should also be reviewed against ongoing patterns of aquaculture activity.

It should also be a condition of planning that no dogs are allowed when accessing the foreshore to avoid disturbing geese; that vehicles must be maintained in sound working order to prevent excessive noise disturbance and that no bird scaring devices are to be used on site; and that unused equipment (e.g. trestles; bags etc.) are removed from the foreshore.

Light-bellied brent geese

When compared to historic site counts, recent counts undertaken in 2019 and 2021 suggests a large recent decline in numbers of Light-bellied brent goose at Trawbreaga. Thus, the conservation condition of Light-bellied brent geese has been assessed as Unfavourable In Trawbreaga Bay SPA. The decline in Trawbreaga would appear to be higher than the current national trend which is a -15.5% (5 year; 2012 census); -10.2% (10 year; 2007 census) and +96 % (20 year; 1997 census). Unlike Barnacle geese, Light-bellied brent goose feed both on the foreshore and in areas of improved grassland. It is not clear whether birds i) preferentially moved to feed on grassland; ii) being displaced from the foreshore and forced to feed on grassland or iii) being displaced entirely from Trawbreaga Bay SPA to another site, such as Lough Swilly. While there is evidence of field feeding numbers involved is unknown. There is anecdotal evidence that numbers of Light-bellied brent geese at Lough Swilly have increased.

As noted, a commercial company, Oileán Glas Teo, have applied to the Department of the Environment, Community and Local Government for a Foreshore Licence for the hand-harvesting of the seaweed *Ascophyllum nodosum* from the intertidal shoreline in Trawbreaga Bay. No decision has as yet been made on this application. In a similar application in Clew Bay (Ecofact, 2014) restrictions on timing of works in ecologically sensitive areas which were included in a Code of Practice. With respect to in-combination impacts, the presence of additional people on the shore either harvesting seaweed or bait digging etc. could increase the level of disturbance on Light-bellied Brent Geese above that arising from aquaculture activities. However, there is insufficient information in the Seaweed Harvesting NIS (Aquafact, 2013) to comment on the proposed timing, level and spatial distribution of activity associated with proposed seaweed harvesting. While the potential for management of *Ascophyllum* to provide feeding opportunities for Light-bellied Brent Geese by encouraging the growth of smaller green / purple algae in short-term cycles before *Ascophyllum* regrows and out-competes them cannot be discounted, the risk of increased patterns of disturbance could result in significant negative impacts (see comments on proposed Code of Practice / monitoring recommendations).

It is, however, noted that Light-bellied Brent Goose do feed on terrestrial grassland, though the degree to which this is undertaken at Trawbreaga has not been established. Without a clear understanding of the spatial distribution of Light-bellied brent geese and the use of terrestrial foraging grounds within the bay and environs, it cannot be stated whether the reduced number of observed birds can be explained by birds moving to feed terrestrially or whether birds have vacated the site. It therefore cannot be stated with confidence that displaced geese can be accommodated on grassland within Trawbreaga Bay and environs.

With respect to mitigation measures, an option to be considered would be the management of areas of grassland specifically for Light-bellied brent geese. This has recently been done in Baldoyle Bay, Dublin by Fingal County Council and should be explored further with National Parks and Wildlife Service. As noted, NPWS have recently entered in a number of farm plans with local landowners. Consideration should be given to development of a Code of Practice covering aquaculture activities within the estuary; close liaison with NPWS regarding patterns of use of Trawbreaga by both Light-bellied Brent Geese and Barnacle Geese would be a key part of this process. For example, it should be a condition of planning that no dogs are allowed when accessing the foreshore to avoid disturbing geese; that vehicles must be maintained in sound working order to prevent excessive noise disturbance and that no bird scaring devices are to be used on site.

1. Introduction

Atkins (Ecology) was commissioned by the Marine Institute to provide ornithological services in relation to the appropriate assessment of aquaculture and shellfisheries on coastal Special Protection Areas (SPAs).

This report contains the Appropriate Assessment of existing aquaculture license areas in Trawbreaga Bay as well as any other activities in and around the bay that may be deemed to contribute to an 'in combination' effect. The activities being assessed are within the Trawbreaga Bay SPA (site code 004034) and this SPA is the primary focus of this assessment. There are two other SPAs within 15 km of the proposed aquaculture and shellfishery areas in Trawbreaga Bay; namely Inishtrahull SPA (site code 004100) and Malin Head SPA (site code 004146).

Additionally, a number of SPAs are located close to the 15 km buffer from Trawbreaga Bay SPA. These include Lough Foyle SPA (site code 004146), Lough Swilly SPA (site code 004146), Horn Head to Fanad Head SPA (site code 004146), Fanad Head SPA (site code 004146) and Greers Isle SPA (site code 004146).

Furthermore, to assess any potential for transboundary impact, the portion of Lough Swilly designated as a SPA in Northern Ireland is included. Notably the suite of QI species listed for the Lough Swilly SPA (NI) is different for the QI species listed for the Lough Swilly SPA (ROI).

This assessment is based on a desktop review of existing information. This included published reports and papers and unpublished data from waterbird surveys. Where relevant, the report identifies information gaps that may affect the reliability of the conclusions of this assessment.

For the Appropriate Assessment of aquaculture, the data analysis and report writing was done by Paul O'Donoghue. An assessment of Aquaculture in Trawbreaga Bay SPA was originally undertaken in 2015 (Atkins, Sept. 2015); additional applications were subsequently assessed in May 2016, December 2017, July 2018 and July 2019).

Scientific names and British Trust for Ornithology (BTO) species codes of bird species mentioned in the text are listed in Appendix A.

1.1. Scope of the Assessment

1.1.1. Aquaculture

The aquaculture activities contained in this assessment are off-bottom culture of Pacific Oysters (*Crassostrea gigas*) using bag and trestles in the intertidal zone (hereafter referred to as intertidal oyster cultivation) at Trawbreaga Bay, Co. Donegal.

1.1.2. Structure of this report

The structure of the report is as follows: -

- Section 2 describes the methodology used for the assessment;
- Section 3 lists the Special Conservation Interests (QIs) of the SPAs included in this assessment, and describes the Conservation Objectives, and their attributes and targets, that have been defined for these QIs;
- Section 4 contains a preliminary screening assessment that screens out QIs that do not show any significant spatial overlap with the activities being assessed. It also includes a habitat screening that is used to define which of the remaining QIs are assessed in relation to activities affecting particular habitat zones;

- Section 5 contains a brief description of the proposed aquaculture activity – in this case solely intertidal cultivation of oysters – and a review of potential impacts on the QIs of the Trawbreaga Bay SPA and other nearby SPAs;

- Sections 6.1 presents a detailed assessment of the likely impact of intertidal oyster cultivation on the QIs of the Trawbreaga Bay SPA and other nearby SPAs; presenting in turn a review of the species status; a summary of distribution patterns within Trawbreaga Bay SPA; a summary of the species response to trestles; and an assessment of potential impacts;

- Section 6.2 contains an assessment of cumulative impacts from the in-combination effects of aquaculture with other relevant activities;

- Section 7.0 provides a concluding assessment of the impacts of the aquaculture activities included in this assessment, and any in-combination effects with other activities, on the conservation objectives of the QIs of the Trawbreaga Bay SPA and other nearby SPAs;

- Section 8.0 presents Conclusions & Recommendations;

- Section 9 – References.

1.1.3. Constraints to this assessment

The subsites used for waterbird counts in the Trawbreaga Bay SPA do not cover the whole SPA as the boundaries for the SPA have been altered to include additional areas of coastal cliff and grassland to the north around the Five Fingers area primarily to include important habitat for Chough. In any event, all areas where aquaculture activity is proposed to occur are included in the count subsites and the areas outside the count subsites but inside the SPA are unlikely to be used by geese.

There is relatively good information available on the low tide distribution of waterbirds in Trawbreaga Bay in winter through the NPWS Waterbird Survey Programme (WSP) counts; this data is, however, from the winter of 2009/2010. Irish Wetland Bird Survey (IWEBS) counts, however, are more limited, with very limited recent IWEBS counts.

However, these data were complemented by a number of sources of data provided by NPWS. The data provided by NPWS summarised the findings of a study of site usage undertaken in the winter of 2007/2008 as well as discussion of which areas are generally favoured by geese in Trawbreaga (Emmett Johnston, NPWS, *pers comm*). Light-bellied Brent Geese are known to feed in estuarine habitats. In contrast Barnacle Geese favour improved agricultural grassland, though preferred sites are often located close to Irish estuaries; despite this there appears to be no published information of the occurrence of Barnacle Geese within estuarine habitats. While the age of these data should, however, be noted, further data from 2021 was also provided by NPWS (Lee McDaid, NPWS, *pers comm*). To further enhance the data available and our understanding of the site was also visited in February 2021; details of which are provided below.

There is a strong base for the assessment of displacement impacts for some of the aquaculture activities, particularly intertidal oyster cultivation (i.e. the cultivation of oysters in bags on oyster trestles as well the use of well as the use of access tracks and / or shore based facilities)

The assessment of cumulative impacts provides a general assessment of issues such as recreational impacts, but without detailed information on other activities it is not possible to precisely quantify these potential impacts. General comments are, however, included as appropriate.

2. Methods

2.1. General

This assessment is based on a desktop review of existing information about waterbird population trends and distribution in Trawbreaga Bay. Additional waterbird data was provided by Emmett Johnston, NPWS conservation ranger (O'Donoghue, 2018). As noted, the site was also visited in February 2021.

2.2. Data sources

The SPA boundaries are derived from NPWS *shapefiles* which were downloaded from the NPWS website. The spatial extents of the proposed aquaculture plots have been derived from shapefiles supplied by the Marine Institute based upon site lists supplied to the Marine Institute by the Department of Agriculture, Food and the Marine. An Aquaculture Profile was provided by Bord Iascaigh Mhara (BIM, 2014, 2019, 2021). Spatial mapping of existing aquaculture structures on site was provided by the Engineering section of Department of Agriculture, Food and the Marine (DAFM).

Subsite count boundaries were provided by Dr. Lesley Lewis (NPWS waterbird survey programme) and Olivia Crowe, formerly of BirdWatch Ireland (IWEBS).

The waterbird data sources used for the assessment are as follows: -

- Irish Wetland Bird Survey (IWEBS) counts 1994/95-2013/14[1];
- NPWS waterbird survey programme (NPWS WSP) 2009/10 counts;
- NPWS Non-estuarine Waterbird Survey (NPWS NEWS) 2015/16 counts;
- Additional count / spatial data provided by NPWS - 2007/2008 (Emmett Johnston, NPWS *pers comm*) and 2021 (Lee McDaid, NPWS, *pers comm*);
- Data from a site visit in February 2021; and
- Additional sources of published bird data.

We understand that further counts may have been undertaken in recent years in Trawbreaga Bay but were unable to resolve when or by whom these may have been undertaken.

Biotope information for Trawbreaga Bay was collected on two occasions with Aquatic Services Unit performing a survey of the mudflats and sandflats (ASU, 2007) and RPS performing a benthic survey of the intertidal habitat in 2009 and 2010 (RPS, 2013). Furthermore, distribution of biotopes within the Trawbreaga Bay SPA is based upon the NPWS biotope map, from the Site-specific Conservation Objectives datasets downloaded from the NPWS website, Habitats and Species section.[2]

Information on other activities (such as recreational use and boat activity) was obtained primarily from a review of potentially disturbing activities recorded during the NPWS WSP counts (Cummins and Crowe, 2010) and field observations from Emmett Johnston (NPWS Conservation Ranger for Inishowen) (O'Donoghue., 2018).

GIS data used for this assessment was mainly received in Irish Transverse Mercator (ESPG: 2157) (ITM) coordinate reference system. GIS data received in the Irish National Grid (IG) coordinate reference system was transformed to the ITM coordinate reference system using the method described by Alcorn (2014).

[1] There are no IWEBS counts available for after 2013 / 2014.

[2] https://www.npws.ie/maps-and-data/habitat-and-species-data (downloaded 11/05/2015; last updated by NPWS 15/01/2015)

The site was revisited in February 2021. Due to Covid-19 restrictions this survey work was done by an ecologist living closer to the site (i.e. Robert Vaughan, Woodrow Environmental Consultants on behalf of Atkins). The main focus was to visit proposed shore access points; as well as counting any Light-bellied Brent Geese and Barnacle geese encountered during the study.

In a number of cases Light-bellied Brent Geese and Barnacle geese were found to be carrying plastic darvic[3] rings. Where these could be read in the field records have been forwarded to the project co-ordinator (Dr. Kendrew Colhoun).

2.3. Trawbreaga Bay SPA

The boundary of Trawbreaga Bay SPA is presented below (Figure 2.1). The SPA includes a large area of intertidal habitat sheltered within the bay, with some narrow tidal creeks which develop into wider subtidal channels towards the mouth of the bay. Areas of terrestrial habitat, including saltmarsh, coastal beach, dune, grassland, shingle banks and coastal cliffs are included within the boundaries of the SPA. The SPA also includes Glashedy Island and the waters surrounding it, west of Doagh Isle.

The total area of the SPA is 1,549ha. Around 80 percent of the bay area is exposed at each low tide with the intertidal sediment composed mainly of a mix of mud and sand flats, with some stony/rocky substrates. Green algae mats occur on the open flats and *Fucus* spp. seaweeds grow on the stones. In places the intertidal flats merge with salt marshes, particularly in the west and southeast of the bay. The surrounding land use is mostly low intensity agriculture (NPWS, 2014b).

2.4. Shellfish Waters

Article 5 of the Shellfish Directive (2006/113/EC) and Section 6 of the Quality of Shellfish Waters Regulations (S.I. No. 268 of 2006) require the development of Pollution Reduction Plans (PRPs) for designated shellfish areas in order to support shellfish life and growth and to contribute to the high quality of directly edible shellfish products. Shellfish PRPs relate to bivalve and gastropod molluscs, including oysters, mussels, cockles, scallops and clams. They do not cover shellfish crustaceans such as crabs, crayfish and lobsters. Trawbreaga has been designated for oyster farms and a small number of clams and mussels. The designated shellfish area in Trawbreaga Bay is 4.3 km^2 and stretches from Moanrealtagh Point to Doaghmore Point and around Fegart Point. The contributing catchment of the shellfish area is 144.4 km^2 in area and includes a number of small rivers and streams, chiefly the Ballyboe, Donagh and Glennagannon Rivers (RPS, 2013).

2.5. Other Designations

Trawbreaga Bay is also part of the North Inishowen Coast proposed Natural Heritage Area / Special Area of Conservation (site code 002012; NPWS, 2014i).

Trawbreaga Bay is also designated as a Ramsar site (site number 841; designated on 11th June 1996). The total area of the site is 1,003.0 ha, much of which overlaps with the boundaries of the SPA. To acquire designation under the Ramsar Convention, the site must contain wetland habitats of international importance. The convention encourages the conservation and sustainable utilisation of wetlands and their resources within these sites.

In addition, Trawbreaga Bay is designated as a Wildfowl Sanctuary under National legislation (WFS-17). This prohibits the hunting of birds within its boundary.

[3] Darvics are numbered plastic rings placed in birds which can be read in the field.

Client: Marine Institute		
Project: Trawbreaga Bay SPA - AA		
Title: Trawbreaga Bay SPA		
Designed/Drawn: POD	Checked: POD	Authorised: POD
Date: 18-03-21	Date: 18-03-21	Date: 18-03-21
Drawing No: 2.1		Rev: 1.0

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2.6. Bird Count Subsites

Trawbreaga Bay is subdivided into a number of subsites for the purposes of various bird surveys within the SPA boundary. These are discussed below with any variations between the boundaries highlighted.

2.6.1. BirdWatch Ireland IWEBS Subsites

Trawbreaga Bay is divided into 6 subsites for the BirdWatch Ireland IWEBS survey (Figure 2.2). The subsites do not cover the coastal cliff area north of the Back Strand, the coastal dune and grassland habitat behind the Back Strand or Glashedy Island which are within the SPA boundary. However, subsite 0A441 covers an area of grassland habitat west of the R242 road. The subsites along the southern shore of the bay also include areas of grassland that are not within the boundaries of the SPA. Notably, the area of saltmarsh at Ballymacmoriarty which is within the SPA is not covered by the IWEBS count subsites. There are no IWEBS counts for Trawbreaga Bay for the period after the winter of 2012/2013.

2.6.2. NPWS Waterbird Survey Programme

Trawbreaga Bay was also divided into 6 subsites for the NPWS Waterbird Survey Programme (WSP, 2009 / 10) (Figure 2.3) (Cummins and Crowe, 2010). The boundaries of the WSP subsites broadly follow those of the IWEBS. However, there are slight differences outlined below.

2.6.2.1. Subsite area variations

The boundaries of IWEBS and WSP subsites were not equivalent and therefore slight differences in area for each subsite were noted in Trawbreaga Bay, notably the areas of saltmarsh at Ballymacmoriarty in the west and south of Glassagh Point. Other differences between the boundaries include an area of intertidal and subtidal habitat at the mouth of the bay in 0A443 and the boundary at the Back Strand.

Table 2.1 shows the areas recorded on the GIS attribute tables for both datasets from the *shapefiles* provided from BWI and NPWS, respectively. Table 2.2 summarises the variation between IWEBS and WSP site boundaries.

Table 2.1 Variation in subsite areas from IWEBS and WSP subsites inTrawbreaga Bay.

Subsite Code	IWEBS area (ha)	WSP area (ha)
0A438	144.06	167.87
0A439	495.41	496.30
0A440	120.42	129.24
0A441	47.92	44.17
0A442	215.97	222.72
0A443	170.85	176.49
Total area (ha)	**1,194.63**	**1,236.79**

Table 2.2 Variation in subsite areas from IWEBS and WSP subsites inTrawbreaga Bay.

Date	Species	Number
19th January 2016	Peregrine	1
	Eider	7
	Common Gull	3
	Great Northern Diver	1
	Herring Gull	7
	Oystercatcher	9

Date	Species	Number
	Grey Heron	1
	Chough	2
	Raven	1
	Rock Pipit	5
	Rock Pipit	2
8th February 2016	Lesser Black-backed Gull	1
	Herring Gull	1
	Cormorant	1
	Pied Wagtail (*yarrellii*)	1
	Long-tailed Duck	3
	Oystercatcher	1
	Ringed Plover	6
	Redshank	1
	Shelduck	1
	Hooded Crow	2

2.6.2.2. BWI NEWS Transects

The BWI non-estuarine waterbirds survey (NEWS) transects located at Trawbreaga Bay are divided into three sections on the north and south Coasts at the mouth of the bay (count sectors A019, A020 & A021). The northern section runs along the top of the cliffs within the boundary of the SPA. The southern section begins within the SPA boundary and runs west along the top of the cliffs, finishing at the northern end of the beach in Pollan Bay (Figure 2.4). These areas lie entirely outside the bay in areas where no aquaculture is proposed.

In the 3rd Non-Estuarine Coastal Waterbird Survey which ran over the winter of 2015 / 16 only sector A019 was counted (Figure 2.4) on the 19th January 2016 and 8th February 2016.

IWEBS Subsite Boundaries

Client: Marine Institute		
Project: Trawbreaga Bay SPA - AA		
Title: IWEBS Subsite Boundaries		
Designed/Drawn: POD	Checked: POD	Authorised: POD
Date: 18-03-21	Date: 18-03-2021	Date: 18-03-2021
Drawing No: 2.2		Rev: 1.0

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Client: Marine Institute		
Project: Trawbreaga Bay SPA - AA		
Title: WSP Subsite Boundaries		
Designed/Drawn: POD	Checked: POD	Authorised: POD
Date: 18-03-2021	Date: 18-03-2021	Date: 18-03-2021
Drawing No: 2.3		Rev: 1.0

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2.6.2.3. Biotopes

Biotope information for Trawbreaga Bay was collected on two occasions with Aquatic Services Unit performing a survey of the mudflats and sandflats (ASU, 2007) and RPS performing a benthic survey of the intertidal habitat in 2009 and 2010 (RPS, 2013).

RPS (2013) characterised the outer bay as having long sand strands to the north and south, with exposed rock and shingle areas at the mouth of the estuary. The strands are relatively barren with mobile sands at the low water mark. The outer bay beaches are backed by dunes. These beaches include rock outcrops of mussel and barnacle communities, but these only occur in the outer estuary. Towards the mid channel these beaches have rippled sands with moderate densities of *Arenicola marina* (Lugworm) casts.

The mid estuary is characterised by muddy sands with some gravels. The upper shore is characterised by gravels and muds with upper shore fucoids such as *Pelvetia canaliculata* and *Fucus spiralis* with some areas of *Ascophyllum nodosum* (RPS, 2013). The sheltered nature of the inner bay along with riverine input results in areas of mudflats. To the south of the inner estuary there is a large muddy sandy area with oyster trestles at the channel (RPS, 2013). The upper estuarine areas in some areas are either low impact coastal defence such as boulders or cobbles. Around the town of Malin there are areas of rock armour and seawall (RPS, 2013).

While RPS (2013) includes written descriptions and photographs from each sampling station no map of biotope distribution was produced from these surveys.

Aquaculture sites (licenced and applications) at Trawbreaga Bay relative to principal benthic communities recorded within the marine Annex I qualifying interest of Mudflats and sandflats not covered by seawater at low tide (1140) of North Inishowen Coast SAC (NPWS 2014e) are presented in Figure 2.5 (copy of Figure 5.1 from the North Inishowen Coast SAC appropriate assessment; Marine Institute, 2016).

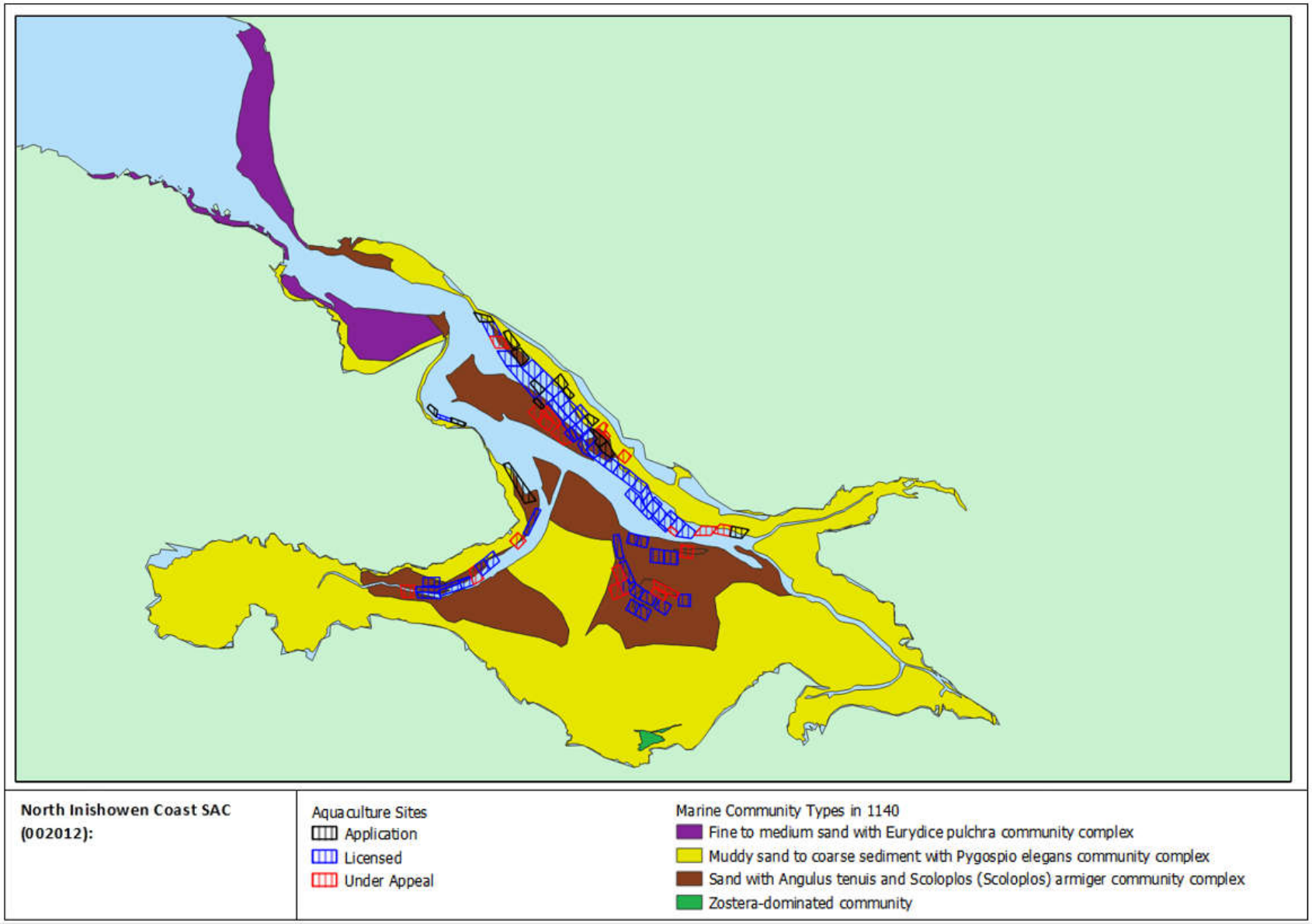


Figure 2.5 – Aquaculture sites (licenced and applications) at Trawbreaga Bay relative to principal benthic communities (Source: from SAC Assessment).

2.7. Analyses of waterbird distribution

The analyses of waterbird distribution in this assessment focuses on distribution patterns of feeding, or potentially feeding birds, as the main potential impacts will be to the availability and/or quality of feeding habitat. Most waterbird species will roost at high tide in shoreline or terrestrial areas, which will not be affected by the activities being assessed. However, we have included assessment of potential impacts on roosting birds that may roost in subtidal habitats, on intertidal sandflats, or when activities can occur during the high tide period. Consideration has also been given to proposed access routes.

Waterbird distribution has been mainly analysed by reviewing count data across subsites from the NPWS WSP and/or IWEBS dataset. However, we have only calculated percentage distributions where we consider the data to be consistent (i.e. excluding counts with poor coverage and/or low numbers). In addition, NPWS WSP flock map data has also been used as well as additional survey and spatial data from Emmett Johnston, NPWS.

2.7.1. Use of data sources

2.7.1.1. Irish Wetland Bird Survey (IWEBS)

The Irish Wetland Bird Survey (IWEBS) scheme aims to carry out monthly counts each winter between September and March in all sites that are important for non-breeding waterbird populations. However, this level of coverage is not always possible to achieve in a volunteer-based scheme and in relatively isolated sites such as Trawbreaga Bay. Count coverage at Trawbreaga Bay are presented in Table 2.3 below.

Prior to the NPWS waterbird survey programme in 2009/2010 (discussed below) the whole bay at Trawbreaga was counted as one site. Boundaries, approximately following those used during the NPWS waterbird survey programme, were used in subsequent IWEBS surveys in the bay.

Table 2.2 demonstrates that recent IWEBS counts were rarely made on more than two months each survey season. The most consistent effort was made during the period around the NPWS waterbird survey programme. In the intervening years, frequency of counts has been poor with a limited number or no counts undertaken each year. In addition, only poor coverage has been achieved during the counts that have been made at the site.

Table 2.3 Coverage and percentage of subsites covered by IWEBS counts in Trawbreaga Bay SPA from 1994/95 to 2013/14.

Year	Months	% Complete	Year	Months	% Complete
1994/95	J, F	29	2006/07	No Data	0
1995/96	S,O*^, J, F*	57	2007/08	D, F^	29
1996/97	S*^, O, N, D*^, J*, F	86	2008/09	S^, N, J	43
1997/98	O*^, N, D, J, F, M	86	2009/10	O^, N^, J*, F, M	71
1998/99	N, D, J, M	57	2010/11	N	14
1999/00	N, D*^	29	2011/12	F, M	29
2000/01	No Data	0	2012/13	N	14
2001/02	F	14	2013/14	No Data	0
2002/03	J*^, F, M	43	2014/15	No Data	0
2003/04	No Data	0	2015/16	No Data	0
2004/05	No Data		2016/17	No Data	0
2005/06	No Data	0	Not used		

Notes: -

Results based on IWEBS data returned from BWI from data request.

* Low Accuracy (some or all of count affected).

^ Low Quality (some or all of count affected).

2.7.1.2. NPWS waterbird survey programme

In the winter of 2009/10 waterbird counts were carried out as part of the National Parks and Wildlife Service's baseline waterbird survey. Details of the NPWS waterbird survey programme methodology and results at Trawbreaga Bay are described in Cummins and Crowe (2010). A site visit was made on the 16th September 2009 to scope and plan the survey. Six low tide and one high tide count were carried out between the 19th October 2009 and the 12th March 2010. The counts were carried out by a co-ordinated team of three professional counters. Most counts were completed within a 3-hour period.

The winter of 2009/10 was "*the coldest winter since 1962/63 everywhere*" with "*mean air temperatures for the season around two degrees lower than the 1961-1990 average*" (Met Éireann, 2010). Due to the extreme cold weather in early January, the planned high tide count at Trawbreaga Bay was postponed until the 5th February 2010. In general, each count was completed in a single day with overall good weather conditions reported with fair conditions reported on the 2nd November low tide count due to strong winds and showers which reduced visibility (Cummins and Crowe, 2010).

The NPWS WSP counted feeding and roosting birds separately. However, we have generally not analysed their distribution separately. In general, birds at low tide usually roost in the same area as they feed and often the roosting birds are mainly just roosting for short periods of time before resuming feeding. Therefore, the division between feeding and roosting may be a matter of chance depending upon the exact timing of the count.

As part of the NPWS waterbird survey programme, the approximate position of the main flocks encountered were mapped. There are some limitations to the interpretation of flock map data because of the difficulties of accurately mapping positions of distant flocks from shoreline vantage points and also the two observers may have varied in the extent to which they mapped flocks.

2.7.1.3. Goose Counts

NPWS kindly provided additional data on both Barnacle Goose and Light-bellied Brent Goose from 2007/200. In both cases these data included both counts and information on spatial distribution of birds. This was also used in assessing potential impacts on these species. This was based on site usage studies undertaken by NPWS in the winter of 2007/2008 as well as discussion of which areas are generally favoured by Barnacle geese in Trawbreaga when they are recorded within the estuary. The age of this data is however, noted. [Source: Emmett Johnston, Conservation Ranger (CR), Inishowen].

Further data were also provided by NPWS from 2021 [Lee McDaid, current Conservation Ranger (CR), Inishowen].

As noted, to further enhance the data available and our understanding of the site was also visited in February 2021. The site was revisited in February 2021. Due to Covid-19 restrictions this survey work was done by an ecologist living closer to the site (i.e. Robert Vaughan, Woodrow Environmental Consultants on behalf of Atkins). The main focus was to visit proposed shore access points; as well as counting any Light-bellied Brent Geese and Barnacle geese encountered during the study.

2.8. Appropriate Assessment Process

2.8.1. Legislative Context

Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora, known as the 'Habitats Directive' provides legal protection for habitats and species of European importance. Article 2 of the Directive requires the maintenance or restoration of habitats and species of European Community interest, at a favourable conservation status. Articles 3 – 9 provide the legislative means to protect habitats and species of Community interest through the establishment and conservations of an EU-wide network of sites known as European sites. European sites are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Conservation of Wild Birds Directive (79/409/EEC).

Articles 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans or projects that could potentially affect European sites. Article 6(3) establishes the requirement for Appropriate Assessment: -

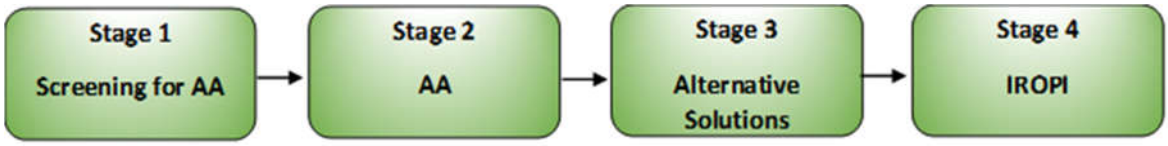
> *"Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."*

Article 6 (4) deals with the steps that should be taken when it is determined, as a result of Appropriate Assessment, that a plan or project will adversely affect a European site. Alternative solutions, imperative reasons of overriding public interest (IROPI) and compensatory measures need to be addressed in this case. Article 6(4) states: -

> *"If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.*
>
> *Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest."*

2.8.2. Appropriate Assessment Steps

Guidance on the AA process was produced by the European Commission (EC, 2001; 2018), which was subsequently used to develop guidance for Ireland by the Department of Environment, Heritage and Local Government in 2009 (DEHLG, 2009) and also by the National Parks and Wildlife Service in 2018[4] (NPWS 2018). These guidance documents set out a staged approach to complete the AA process and outlines the issues and tests at each stage. The stages outlined below are taken from the guidance document *Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities* (DEHLG, 2009).



Text Figure 2.1 Appropriate Assessment Process (Source: DEHLG, 2009).

2.8.2.1. Screening for Appropriate Assessment

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

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

If the effects are deemed to be significant, potentially significant, or uncertain, then the process must proceed to Appropriate Assessment.

2.8.2.2. Appropriate Assessment

Appropriate Assessment considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a European site, and includes any necessary mitigation measures.

The competent authority can only agree to the plan or project after having ascertained that it will not adversely affect the integrity of the site(s) concerned. If this cannot be determined, and where sufficient mitigation cannot be achieved, the alternative solutions need to be considered and the process proceeds to the consideration of alternative solutions.

2.8.2.3. Alternative Solutions

This examines any alternative solutions or options that could enable the plan or project to proceed without adverse effects on the integrity of a European site. The process must return to AA as alternatives will require assessment in order to proceed. Demonstrating that all reasonable alternatives have been considered and assessed, and that the least damaging option has been selected, it is necessary to examine whether there are imperative reasons of overriding interest (IROPI).

2.8.2.4. IROPI

This examines whether there are imperative reasons of overriding public interest for allowing a plan or project that will have adverse effects on the integrity of a European site to proceed in cases where it has been established that no less damaging alternative solution exists. Compensatory measures must be proposed and assessed, of which the Commission must be informed.

The AA process only progresses through the full process for certain plans and projects. For example, for a project not connected with the management of a European site and where no likely significant effects on a

[4] https://www.npws.ie/development-consultations

European site in view of its conservation objectives are identified, the process stops at Screening for AA. Throughout the process the precautionary principle must be applied, which requires that the conservation objectives of Natura 2000 should prevail where there is uncertainty (EC, 2001; 2018).

2.8.3. Legislation & Guidance Documents

This report was prepared with reference and due consideration to the following documents and due regard for relevant case law, including but not limited to: -

- Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna (Habitats Directive);
- Statutory Instrument No. 477/2011 — European Communities (Birds and Natural Habitats) Regulations 2011;
- European Commission (2020). Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2006). Nature and biodiversity cases: Ruling of the European Court of Justice. Office for Official Publications of the European Communities, Luxembourg.
- European Commission (2002). Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. Office for Official Publications of the European Communities, Luxembourg.
- Department of the Environment, Heritage and Local Government (2009). Appropriate Assessment of Plans and Projects in Ireland. Guidance for Planning Authorities; and,
- Office of the Planning Regulator (2021). Appropriate Assessment Screening for Development Management. OPR Practice Note PN01; and,
- Case C-323/17 People Over Wind & anor. V. Coillte and other relevant court rulings and case law.

2.8.4. General approach

The methodology used for this Appropriate Assessment is focused on the Conservation Objectives, and their attributes, that have been defined and described for the Special Conservation Interest (QI) species of the Trawbreaga Bay SPA (NPWS, 2014b).

The conservation objectives for QI species defines two types of attributes to assess conservation condition:

- long term population trends; and
- distribution of birds which is measured by range, timing and intensity of use of areas within the SPA.

This assessment focuses on assessing potential impacts on the spatial distribution of the QI waterbird species within Trawbreaga Bay and, in particular, whether the activities will cause displacement of a significant proportion of the Trawbreaga Bay population from the affected area(s). If the activities are not predicted to cause significant displacement, then the activities are not likely to affect the long term population trends. If the activities are predicted to cause significant displacement, then the activities could affect the long term population trends (but see below). In the cases where the activities are predicted to cause significant displacement, the impacts on distribution and population size are considered separately in a Natura Impact Statement (Section 6).

The basis for the assessments are datasets that indicate the distribution of waterbird species between different broad sectors of Trawbreaga Bay (the IWEBS and NPWS WSP counts) as well as additional data informed by local knowledge and long term observations by the local NPWS conservation ranger and recent goose counts. In general, such datasets allow calculation, or qualitative assessment, of the proportion of a population that

would be affected if aquaculture activities cause displacement of birds from areas occupied by the activities under consideration. This approach can be considered as a very simple form of habitat association model and represents a conservative form of assessment (see Stillman and Goss-Custard, 2010): the population-level consequences of displacement will depend upon the extent to which the remaining habitat is available (i.e., whether the site is at carrying capacity). In general, this assessment method "*will be pessimistic because some of the displaced birds will be able to settle elsewhere and survive in good condition*" (Stillman and Goss-Custard, 2010).

The assessment of potential disturbance impacts is based mainly on the potential for disturbance to cause displacement of birds from areas they would otherwise occupy. However, where there is limited availability of alternative habitat, or where the energetic costs of moving to alternative habitat is high, disturbance may not cause displacement of birds but may still have population-level consequences (e.g., through increased stress, or reduced food intake, leading to reduced fitness) (Gill *et al*., 2001). However, assessing these types of potential impacts would require detailed population modelling, which would require a major research effort that is beyond the scope of this assessment.

The above assessment is particularly suited to the assessment of potential impacts on waterbirds which utilise areas of intertidal and subtidal habitat. However, in the case of Trawbreaga Bay, Barnacle geese primarily feed on supratidal habitats, mainly improved grassland, with preferred foraging areas often adjoining the estuary. Small flocks of Barnacle geese are known to roost on occasion within areas of intertidal habitat; this is often associated with access to sources of freshwater, such as small freshwater creeks entering the estuary. In contrast, Light-bellied brent geese will feed both in intertidal and shallow subtidal habitats; as well as foraging on areas of improved grassland.

2.8.4.1. Structure of the assessment

An initial screening exercise was carried out to screen out QI species that did not show any potential spatial overlap with effects from any of the proposed activities being assessed. This was undertaken across all SPAs being considered. The conservation status of all the remaining QIs and their distribution within Trawbreaga Bay was then reviewed. This review included exploratory analyses of the relationships between subsite distribution and various habitat parameters, as well as visual assessment of habitat relationships from the flock map data. The objective was to identify habitat parameters that could be used to interpret species distribution patterns in relation to areas affected by intertidal oyster cultivation.

The potential impacts of the intertidal oyster cultivation on all the remaining QI species that cannot be screened out were assessed in the Natura Impact Statement (Section 6). As noted, QI species from other SPAs were included in this assessment, but the assessment was limited to the potential impact on their utilisation of Trawbreaga Bay.

The in-combination effects of aquaculture with other activities was then assessed. This stage of the assessment was limited to species for which the in-combination effects of all aquaculture activities found relatively high levels of potential displacement. Again, the assessment of QI species from other SPAs was limited to the potential impact on their utilisation of Trawbreaga Bay.

Finally, the likely impact on the attributes defined in the conservation objectives for each QI was assessed. For this stage of the assessment, each QI population was considered separately in relation to the objectives for the relevant SPA.

2.8.4.2. Identification of potential impacts

Potential negative impacts to QI species from habitat alteration have been identified where the activity may cause negative impacts to prey resources, where there is evidence of a negative response to the activity by the species from previous work, and/or where a negative response is considered possible by analogy to activities that have similar types of impacts on habitat structure and/or by analogy to ecologically similar species.

As well as considering potential disturbance impacts to foraging birds, we also considered potential disturbance impacts to breeding colonies and roost sites, where relevant. Potential negative disturbance impacts were identified when the spatial and temporal intensity of the activity was considered to represent

frequent disturbance. Population modelling studies indicate that a high frequency of disturbance (multiple disturbances per hour) are required to cause negative effects to waterbird survival rates (Durell *et al*., 2007, 2008; Goss-Custard *et al*., 2006). Therefore, small-scale and/or infrequent disturbance impacts have not been assessed individually for each activity but are considered as part of the cumulative assessment.

2.8.4.3. Assessment of impact magnitude

Where potential impacts from an activity on a QI species have been identified, or cannot be ruled out, the spatial overlap between the distribution of the species and the spatial extent of the activity was calculated, or qualitatively assessed when quantitative data was not available. This overlap is considered to represent the potential magnitude of the impact, as it represents the maximum potential displacement if the species has a negative response to the activity. Where appropriate, information on species habitat usage was used to refine the assessment of likely impact magnitude.

2.8.4.4. Trawbreaga Bay non-breeding QI species

The normal approach adopted in the detailed assessment methodology is to quantify the potential displacement impacts for the Trawbreaga Bay non-breeding QI species. In order to complete this assessment, the site would be divided into appropriate tidal zones, such as intertidal, shallow subtidal etc. However, in the case of Barnacle Geese and Chough; both species are largely terrestrial (supratidal) with limited use of intertidal areas. Light-bellied Brent Geese utilise both intertidal and shallow subtidal habitats; with birds on occasion also roosting on deeper subtidal waters.

The calculated potential displacement assumes that all birds are excluded by the proposed activity and that birds are uniformly distributed throughout the relevant tidal zone(s) within the relevant subsite(s). In the impact assessment section for each activity, after presentation of the calculated potential displacement, these assumptions are discussed, and the nature of any adjustment that should be made to the potential displacement is assessed.

All of the aquaculture plots are covered by the NPWS waterbird survey programme or IWEBS subsites. The ecology of the species and their general distribution patterns in the SPA in relation to biotopes and tidal zones was used to assess their potential occurrence in the affected areas.

2.8.4.5. Additional QIs from other SPAs

QIs from other neighbouring SPAs were also considered. These include both species which are also a QI for Trawbreaga Bay; and species for which Trawbreaga Bay is not designated, but which could conceivably occur within the bay.

2.8.5. Assessment of impact significance

The significance of any potential impacts identified has been assessed with reference to the attributes and targets specified by NPWS for the conservation objective for each QI. Potential negative impacts are either assessed as significant (if the assessment indicates that they will have a detectable effect on the attributes and targets) or not significant. The significance levels of potential positive impacts have not been assessed.

2.8.5.1. Trawbreaga Bay non-breeding QI species

Attribute 1 – Long term population trends

The criteria that we have used for assessing significance with reference to attribute 1 of the conservation objectives are summarised in Table 2.4 and are described below.

If the impact is predicted to cause spatial displacement of >25% of the total Trawbreaga Bay population of a QI species, then the impact could, pessimistically, cause the long term population trend to show a decrease of 25% or more. Therefore, the impact would be potentially significant with reference to attribute 1 of the conservation objective.

If the long-term population trend of the species is a decrease of 25% or more, and the impact is predicted to cause spatial displacement of 5% or more (see criteria under Attribute 2), then the impact could prevent the potential recovery of the population. Therefore, the impact would be potentially significant with reference to attribute 1 of the conservation objective.

If the long-term population trend of the species is a decrease of less than 25%, but the combination of the long-term population trend and the predicted spatial displacement (where the latter is assessed to be significant; see criteria under Attribute 2) would equal or exceed 25%, then the impact could cause the long term population trend to show a decrease of 25% or more. Therefore, the impact would be potentially significant with reference to attribute 1 of the conservation objective.

Table 2.4 Criteria for assessing significance with reference to attribute 1 of the conservation objectives.

Long-term population decrease (P)	Spatial displacement (S)	Additional criteria	Impact
-	≥ 25%	-	Significant
≥ 25%	≥ 5%	-	Significant
< 25%	≥ 5%	P + S ≥ 25%	Significant

Attribute 2 – Number or range (distribution) of areas used

Assessing significance with reference to attribute 2 is more difficult because the level of decrease in the numbers or range (distribution) of areas that is considered significant has not been specified by NPWS. There are two obvious ways of specifying this threshold: (i) the value above which other studies have shown that habitat loss causes decreases in estuarine waterbird populations; and (ii) the value above which a decrease in the total Trawbreaga Bay population would be detectable against background levels of annual variation.

There have been some studies that have used individual-based models (IBMs; see Stillman and Goss-Custard, 2010) to model the effect of projected intertidal habitat loss on estuarine waterbird populations. West *et al*. (2007) modelled the effect of percentage of feeding habitat of average quality that could be lost before survivorship was affected. The threshold for the most sensitive species (Black-tailed Godwit) was 40%. Durell *et al*. (2005) found that loss of 20% of mudflat area had significant effects on Oystercatcher and Dunlin mortality and body condition but did not affect Curlew. Stillman *et al*. (2005) found that, at mean rates of prey density recorded in the study, loss of up to 50% of the total estuary area had no influence on survival rates of any species apart from Curlew. However, under a worst-case scenario (the minimum of the 99% confidence interval of prey density), habitat loss of 2-8% of the total estuary area reduced survival rates of Grey Plover, Black-tailed Godwit, Bar-tailed Godwit, Redshank and Curlew, but not of Oystercatcher, Ringed Plover, Dunlin and Knot. Therefore, the available literature indicates that generally quite high amounts of habitat loss are required to have significant impacts on estuarine waterbird populations, and that very low levels of displacement are unlikely to cause significant impacts. However, it would be difficult to specify a threshold value from the literature as these are likely to be site specific.

If a given level of displacement is assumed to cause the same level of population decrease (i.e., all the displaced birds die or leave the site), then displacement will have a negative impact on the conservation condition of the species. However, background levels of annual variation in recorded waterbird numbers are generally high, due to both annual variation in absolute population size and the inherent error rate in counting waterbirds in a large and complex site. Therefore, low levels of population decrease will not be detectable (even with a much higher monitoring intensity than is currently carried out). The minimum error level in large-scale waterbird monitoring is considered to be around 5% (Hale, 1974; Prater, 1979; Rappoldt, 1985). Therefore, any population decrease of less than 5% is unlikely to be detectable and, for the purposes of this assessment, 5% has been taken to be the threshold value below which displacement effects are not considered to be significant. This is a conservative threshold, as error levels combined with natural variation are likely to, in many cases; prevent detectability of higher levels of change. This threshold is also likely to be very conservative in relation to levels that would cause reduced survivorship (see above).

Summary

Impacts have been assessed as potentially having a significant negative impact on attribute 1 of the conservation objectives (the species' long-term population trend), if they are predicted to cause: -

- Displacement of 25% or more of the Trawbreaga Bay total; or
- Significant displacement levels (i.e., 5% or greater) that combined with current long-term population trends, could result in a long-term population decline of 25%; or
- Significant displacement levels (i.e., 5% or greater) where the current long-term population decline is already equal to or greater than 25%.

Impacts that will cause displacement of 5% or more of the total Trawbreaga Bay population of a QI species have been assessed as potentially having a significant negative impact on attribute 2 of the conservation objectives (the species' distribution within Trawbreaga Bay).

Other QIs

The methodology outlined above was developed with wintering waders and wildfowl in mind. With respect to breeding birds, in many cases detailed attributes and targets have been specified by NPWS for the conservation objective for each species relating to breeding colony size, distribution and productivity, prey resources, barriers to connectivity and disturbance. All the other attributes are assessed qualitatively. The same approach will be adopted for Chough.

3. Conservation Objectives

3.1. Trawbreaga Bay SPA (Site code: 004034)

3.1.1. Special Conservation Interests

The Special Conservation Interests (QIs) of the Trawbreaga Bay SPA include non-breeding populations of Barnacle Goose and Light-bellied Brent Goose. In addition, both breeding and non-breeding elements of the Chough population are taken as Special Conservation Interests.

In addition, the wetland habitat within Trawbreaga Bay SPA is an additional Special Conservation Interest.

3.1.2. Conservation objectives

3.1.2.1. QI species

The overall conservation objective for the non-breeding populations of Barnacle Goose and Light-bellied Brent Goose is to maintain or restore the favourable conservation status of the species (NPWS, 2014b/c).

The favourable conservation conditions of these non-breeding species in Trawbreaga Bay SPA are defined by various attributes and targets, which are shown in Table 3.1.

Table 3.1 Attributes and targets for the conservation objectives for non-breeding populations of Barnacle Goose and Brent Goose in Trawbreaga Bay SPA.

Attribute	Measure	Target	Notes
1 Population trend	Percentage trend	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document [NPWS, 2014c].
2 Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by … [the SIC species] … other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document [NPWS, 2014b/c].

Source: NPWS (2014b/c).

Attributes are not numbered in NPWS (2014c) but are numbered here for convenience.

The favourable conservation conditions of Chough in Trawbreaga Bay SPA are defined by various attributes and targets, which are shown in Table 3.2.

Table 3.2 Attributes and targets for the conservation objectives for breeding Chough populations in Trawbreaga Bay SPA.

Attribute	Measure	Target	Notes
1 Population trend	Percentage change	Long term population trend stable or increasing	This SPA contains coastal habitats used by chough. Nest sites have been recorded in the past at the northern end of the site. However, the main importance of this SPA to chough conservation is that it contains an important foraging resource centred on the dune system at Lag (Map 3 in NPWS, 2014b) and parts of the coastal slope that support coastal heath and maritime grassland. These areas are used by recently fledged young and others particularly during the autumn period. Furthermore, the coastal cliffs contain a regularly-used communal roost site. For further information see the NPWS site synopsis (Site code: 004034); Trewby *et al*. (2006); Gray *et al.* (2003).
2 Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by chough other than that occurring from natural patterns of variation	See note above.

Source: NPWS (2014b).

Attributes are not numbered in NPWS (2014b) but are numbered here for convenience.

3.1.2.2. Wetlands

The conservation objective for wetlands in Trawbreaga Bay SPA is to "*maintain the favourable conservation condition of the wetland habitat in Trawbreaga Bay SPA as a resource for the regularly occurring migratory waterbirds that utilise it*" (NPWS, 2014c).

The favourable conservation condition of the wetland habitat in Trawbreaga Bay SPA is defined by a single attribute and target, which is shown in Table 3.3.

Table 3.3 Attribute and target for the conservation objective for wetlands in Trawbreaga Bay SPA.

Attribute	Measure	Target	Notes
Habitat area	Hectares	The permanent area occupied by the wetland should be stable and not significantly less than the area of 1,317 ha other than that occurring from natural patterns of variation. (See Map 3 NPWS, 2014b)	The wetland habitat area was estimated as 1,317 ha using OSi data and relevant orthophotographs. For further information see part three of the conservation objectives supporting document

Source: NPWS (2014b).

3.2. Sites within 15km of Trawbreaga Bay SPA

Two Special Protection Areas are located within 15 km of Trawbreaga Bay SPA. These are Malin Head SPA (004146; 730 m north of Trawbreaga Bay SPA; NPWS, 2020a) and Inishtrahull SPA (004100; 11.6 km northeast of Trawbreaga Bay SPA; NPWS, 2020b) (Figure 3.1).

3.2.1. Generic Conservation Objectives

A summary of generic conservation objectives relevant to Malin Head SPA (004146) and Inishtrahull SPA (004100) is presented in Table 3.4.

Table 3.4 Details about generic conservation objectives published for Natura 2000 sites within and beyond 15 km from Trawbreaga Bay.

Note on Generic Conservation Objectives
Specific conservation objectives have not been published for a number of Natura 2000 sites. In lieu of this generic conservation objectives have been published for each Natura 2000 site across Ireland. The overall conservation objective is "*to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA*" (NPWS, 2015). The maintenance of species and habitats at favourable conservation condition at site level will contribute to the maintenance of favourable conservation status of the species or habitat at a national level. General indications that a habitat has achieved favourable conservation status presented in the conservation objective document include when: - • its natural range, and area it covers within that range, are stable or increasing, and • the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and • the conservation status of its typical species is favourable. General indications that a species has achieved favourable conservation status presented in the conservation objective document include when: - • population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and • the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and • there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

3.2.2. Inishtrahull SPA (Site code: 004100)

3.2.2.1. Special Conservation Interests

The Special Conservation Interests (QI) of the Inishtrahull SPA are non-breeding populations of Barnacle Goose and breeding populations of Shag and Common Gull (NPWS, 2020b).

3.2.2.2. Conservation objectives

No specific conservation objectives have been published for this Natura 2000 site; see Table 3.4 for details of generic conservation objectives published by NPWS.

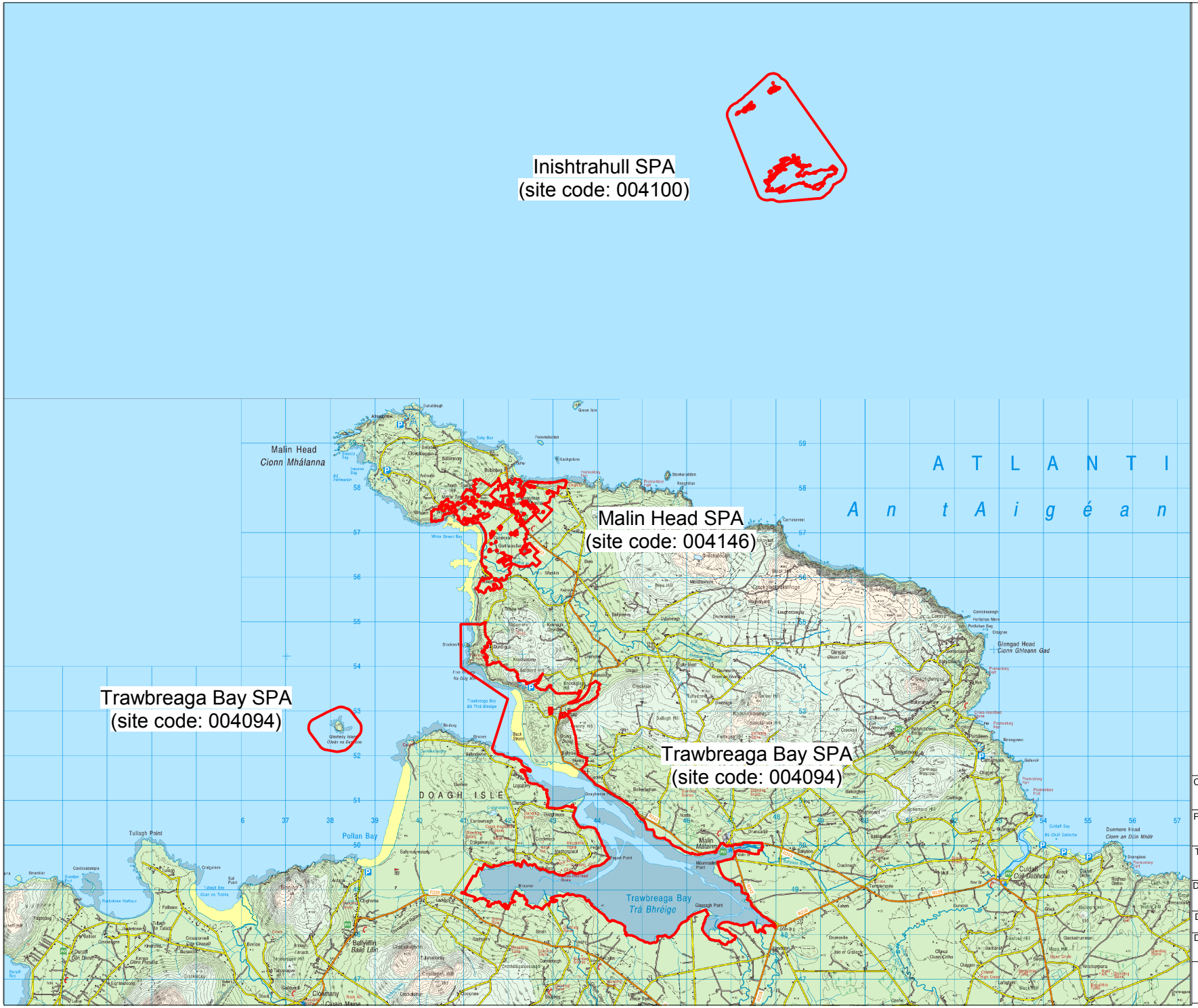
3.2.3. Malin Head SPA (Site code: 004146)

3.2.3.1. Special Conservation Interests

The Special Conservation Interest (QI) of Malin Head SPA is a breeding population of Corncrake (NPWS, 2020a; 2014h).

3.2.3.2. Conservation objectives

No specific conservation objectives have been published for this Natura 2000 site; see Table 3.4 for details of generic conservation objectives published by NPWS.



Client: Marine Institute		
Project: Trawbreaga Bay SPA - AA		
Title: SPAs within 15km of Trawbreaga		
Designed/Drawn: POD	Checked: POD	Authorised: POD
Date: 18-03-2021	Date: 18-03-2021	Date: 18-03-2021
Drawing No: 3.1		Rev: 1.0

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3.3. Sites outside 15km of Trawbreaga Bay SPA

A further five Special Protection Areas are located beyond the 15 km search area recommended by guidance (DEHLG, 2009) but are included due to potential interchange that may occur between the sites due to the mobile nature of birds.

The additional sites are listed below, and their location is shown in Figure 3.2: -

- Lough Foyle (both ROI and NI managed sites) (15.3 km to the southeast of Trawbreaga Bay SPA) (site codes IE004087 & UK9020031, respectively);
- Lough Swilly SPA (004075; 21 km to the southwest of Trawbreaga Bay SPA);
- Horn Head to Fanad Head SPA (004194; 16.8 km west of Trawbreaga Bay SPA);
- Fanad Head SPA (004148; 20.5 km to the west of Trawbreaga Bay SPA); and
- Greers Isle SPA (004082; 24.5 km west of Trawbreaga Bay SPA).

3.3.1. Lough Foyle SPA (ROI) (Site code: 004087)

3.3.1.1. Special Conservation Interests

The Qualifying Interest (QI) of Lough Foyle SPA (ROI) are non-breeding populations of Red-throated Diver, Great Crested Grebe, Bewick's Swan, Whooper Swan, Greylag Goose, Light-bellied Brent Goose, Shelduck, Wigeon, Teal, Mallard, Eider, Red-breasted Merganser, Oystercatcher, Golden Plover, Lapwing, Knot, Dunlin, Bar-tailed Godwit, Curlew, Redshank, Black-headed Gull, Common Gull and Herring Gull (NPWS, 2015c; 2014d/e).

In addition, the wetland habitat within Lough Foyle SPA is an additional Qualifying Interest (NPWS 2014d).

3.3.1.2. Conservation objectives

The overall conservation objective for the non-breeding populations of the Qualifying Interests in Lough Foyle is to maintain or restore the favourable conservation condition of the species (NPWS, 2014d). Achieving favourable conservation condition on the site will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level (NPWS, 2014d).

The favourable conservation conditions of these non-breeding species in Lough Foyle SPA are defined by various attributes and targets, which are shown below in Table 3.5.

Table 3.5 Attributes and targets for the conservation objectives for non-breeding populations of Barnacle Goose and Brent Goose in Trawbreaga Bay SPA.

Attribute	Measure	Target	Notes
1 Population trend	Percentage trend	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the conservation objectives supporting document [NPWS, 2014d].
2 Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas by … [the SIC species] … other than that occurring from natural patterns of variation	Waterbird distribution from the 2011/2012 waterbird survey programme is discussed in part five of the conservation objectives supporting document NPWS (2014d).

Source: NPWS (2014d).

Attributes are not numbered in NPWS (2014d) but are numbered here for convenience.

3.3.1.3. Wetlands

The conservation objective for wetlands in Lough Foyle SPA is to "*maintain the favourable conservation condition of the wetland habitat in Lough Foyle SPA as a resource for the regularly occurring waterbirds that utilise it*" (NPWS, 2014d).

The favourable conservation condition of the wetland habitat in Lough Foyle SPA is defined by a single attribute and target, which is shown in Table 3.6, below.

Table 3.6 Attribute and target for the conservation objective for wetlands in Lough Foyle SPA.

Attribute	Measure	Target	Notes
Habitat area	Hectares	The permanent area occupied by the wetland should be stable and not significantly less than the area of 588 ha other than that occurring from natural patterns of variation. (See Map 3 NPWS, 2014c)	The wetland habitat area was estimated as 588 ha using OSi data and relevant orthophotographs. For further information see part three of the conservation objectives supporting document

Source: NPWS (2014d/e).

3.3.2. Lough Foyle SPA (NI) (Site code: UK9020031)[5]

3.3.2.1. Qualifying Interests

In Northern Ireland the site qualifies under Article 4.1 of the Birds Directive (79/409) by regularly supporting, in winter, internationally important numbers of Whooper Swan, Light-bellied Brent Geese and Bar-tailed Godwit[6]. The site also qualifies under Article 4.2 of the Directive by supporting over 20,000 migratory wildfowl; including nationally important numbers (on an all-Ireland basis) of the following species: - Red-throated Diver, Great Crested Grebe, Mute Swan, Bewick's Swan, Greylag Goose, Shelduck, Teal, Mallard, Wigeon, Eider, Red-breasted Merganser, Oystercatcher, Golden Plover, Grey Plover, Lapwing, Knot, Dunlin, Curlew, Redshank and Greenshank. A notable wintering population of Slavonian Grebe also occurs.

The Qualifying Interests for Lough Foyle SPA in Northern Ireland are nearly equivalent to those from the Lough Foyle SPA in the Republic of Ireland. Notably, an additional QI for Lough Foyle SPA in Northern Ireland is Greenshank and Mute Swan.

3.3.2.2. Conservation objectives

The overall conservation objectives for the over-wintering species populations for which Lough Foyle SPA was designated is: -

- To maintain or enhance the population of the qualifying species;
- To maintain or enhance the range of habitats utilised by the qualifying species;
- To ensure that the integrity of the site is maintained;
- To ensure there is no significant disturbance of the species;
- To ensure that the following are maintained in the long term: -
    - Population of the species as a viable component of the site,

[5] Lough Foyle SPA (UK 9020031) – full details of this site in Northern Ireland can be found at - https://www.daera-ni.gov.uk/publications/lough-foyle-special-protection-area.
[6] Lough Foyle Citation document - https://www.daera-ni.gov.uk/sites/default/files/publications/doe/Lough%20Foyle%20SPA%20Citation%20documents%20and%20map.pdf

- Distribution of the species within site.
- Distribution and extent of habitats supporting the species.
- Structure, function and supporting processes of habitats supporting the species, and to

- maintain species diversity contributing to the waterfowl assemblage.

The conservation objectives for the wetland habitats that the over-wintering species populations utilise is to : -

- Maintain or enhance the area of natural and semi-natural habitats used or potentially usable by feature bird species (2056.13 ha intertidal area) subject to natural processes;
- Maintain the extent of main habitat components subject to natural processes.

An additional conservation objective is to maintain or enhance sites utilised as roosts by the over-wintering species populations.

3.3.3. Lough Swilly SPA (Site code: 004075)[7]

Aquaculture activities in Lough Swilly have been subject to Appropriate Assessment (Gittings & O'Donoghue, 2013a).

3.3.3.1. Qualifying Interests

The Qualifying Interests (QIs) of the Lough Swilly SPA include non-breeding populations of Great Crested Grebe, Grey Heron, Whooper Swan, Greylag Goose, Shelduck, Wigeon, Teal, Mallard, Shoveler, Scaup, Goldeneye, Red-breasted Merganser, Coot, Oystercatcher, Knot, Dunlin, Curlew, Redshank, Greenshank, Common Gull and Greenland White-fronted Goose and breeding populations of Black-headed Gull, Sandwich Tern and Common Tern.

In addition, the wetland habitat within Lough Swilly SPA is an additional Qualifying Interest.

3.3.3.2. Conservation objectives

The overall conservation objective for the non-breeding and breeding QI species populations is to maintain of maintain or restore the favourable conservation status of the species (NPWS, 2015d; 2011a/b).

The favourable conservation conditions of the non-breeding QI species in Lough Swilly SPA are defined by various attributes and targets, which are shown in Table 3.7, below.

[7] Lough Swilly SPA was subject to appropriate assessment of aquaculture in 2013; *Lough Swilly Special Protection Area: Appropriate Assessment of Fisheries and Aquaculture.*

Table 3.7 Attributes and targets for the conservation objectives for non-breeding populations of waterbirds in Lough Swilly SPA.

Attribute	Measure	Target	Notes
1 Population trend	Percentage change	Long term population trend stable or increasing.	Population trend assessment (Generalised Additive Modelling (GAM)) was undertaken using waterbird count data collected through the Irish Wetland Bird Survey and other surveys. See the SPA conservation objectives supporting document for further details.
2 Distribution	Number and range of areas used by waterbirds	No significant decrease in the numbers or range of areas used by waterbird species, other than that occurring from natural patterns of variation.	As determined by regular low tide and other waterbird surveys Waterbird distribution from the 2009/2010 waterbird survey programme is discussed in part five of the conservation objectives supporting document.

Source: NPWS (2011a/b; 2015d).

Attributes are not numbered in NPWS (2011a) but are numbered here for convenience.

The favourable conservation conditions of breeding QI species in Lough Swilly SPA are defined by various attributes and targets, which are shown in Table 3.8, below.

Table 3.8 Attributes and targets for the conservation objectives for breeding QI species populations in Lough Swilly SPA.

Attribute	Measure	Target	Notes
1 Breeding population abundance: apparently occupied nests (AONs)	Number	No significant decline	Measure based on standard tern survey methods (see Walsh *et al.,* 1995). Mitchell *et al.* (2004) provides summary population information. The Seabird Monitoring Programme (CMP) also provides background data (JNCC, 2011)
2 Productivity rate: fledged young per breeding pair	Mean number	No significant decline	Measure based on standard tern survey methods (see Walsh *et al.,* 1995)
3 Distribution: breeding colonies	Distribution	No significant decline	The only known breeding site for Sandwich Tern is on Inch Island.

Source: NPWS (2011a); References quoted from NPWS (2011a).

Attributes are not numbered in NPWS (2011a) but are numbered here for convenience.

3.3.3.3. Wetlands

The conservation objective for wetlands in Lough Swilly SPA is to "*maintain the favourable conservation condition of the wetland habitat in Lough Swilly SPA as a resource for the regularly occurring migratory waterbirds that utilise it*" (NPWS, 2011a).

The favourable conservation condition of the wetland habitat in Lough Swilly SPA is defined by a single attribute and target, which is shown in Table 3.9, below.

Table 3.9 Attribute and target for the conservation objective for wetlands in Lough Swilly SPA.

Attribute	Measure	Target	Notes
Habitat area	Hectares	The permanent area occupied by the wetland habitat is stable and not significantly less than the areas of 4,162, 2,419, 201 and 317 hectares for subtidal, intertidal, supratidal and lagoon (and associated) habitats respectively, other than that occurring from natural patterns of variation. (See map 7; NPWS, 2011b).	Wetland areas defined as follows: subtidal - seaward extent of SPA boundary up to MLWM; intertidal - MLWM to MHWM; supratidal - MHWM to SPA boundary minus the area of terrestrial habitat; lagoon (and associated) habitats - lagoon extent and adjacent wetland habitat as defined by embankments.

Source: NPWS (2011a).

3.3.4. Fanad Head SPA (Site code: 004148)

3.3.4.1. Qualifying Interests

The Qualifying Interest (QI) of Fanad Head SPA is the breeding population of Corncrake (NPWS, 2020c).

3.3.4.2. Conservation objectives

No specific conservation objectives have been published for this Natura 2000 site; see Table 3.4 for details of generic conservation objectives.

3.3.5. Horn Head to Fanad Head SPA (Site code: 004194)

3.3.5.1. Qualifying Interests

The Qualifying Interests (QIs) of the Horn Head to Fanad Head SPA include non-breeding populations of Greenland White-fronted Goose and Barnacle Goose and breeding populations of Fulmar, Cormorant, Shag, Peregrine, Kittiwake, Guillemot, Razorbill and Chough (NPWS, 2014g; 2020d).

3.3.5.2. Conservation objectives

No specific conservation objectives have been published for this Natura 2000 site; see Table 3.4 for details of generic conservation objectives.

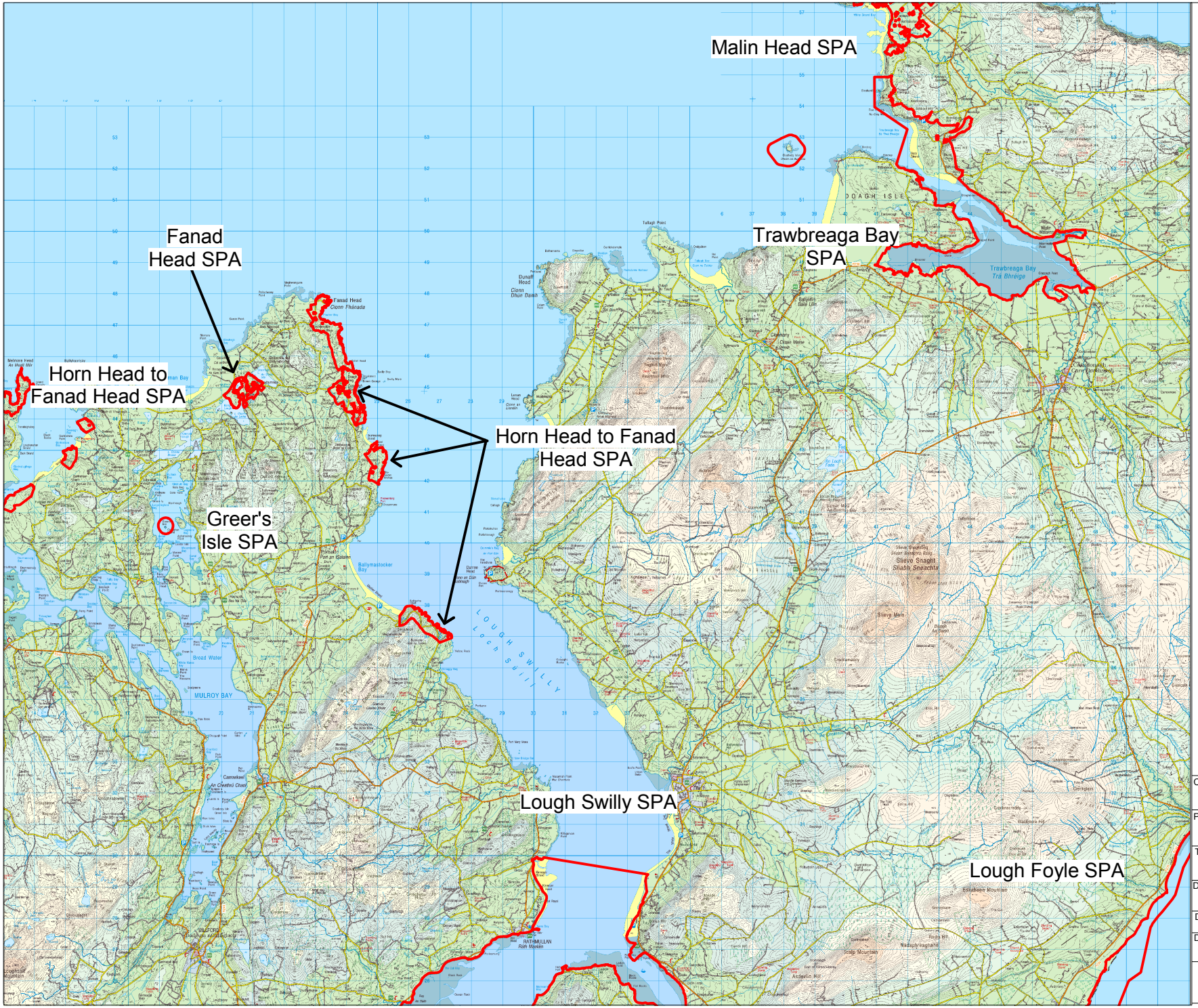
3.3.6. Greers Isle SPA (Site code: 004082)

3.3.6.1. Qualifying Interests

The Qualifying Interests (QIs) of the Greers Isle SPA include breeding populations of Black-headed Gull, Common Gull and Sandwich Tern (NPWS, 2010a; 2020e).

3.3.6.2. Conservation objectives

No specific conservation objectives have been published for this Natura 2000 site; see Table 3.4 for details of generic conservation objectives.



Client: Marine Institute		
Project: Trawbreaga Bay SPA - AA		
Title: SPAs >15km from Trawbreaga		
Designed/Drawn: POD	Checked: POD	Authorised: POD
Date: 18-03-2021	Date: 18-03-2021	Date: 18-03-2021
Drawing No: 3.2		Rev: 1.0

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4. Appropriate Assessment Screening

4.1. Trawbreaga Bay SPA

All three species for which Trawbreaga Bay has been designated are considered in full in the appropriate assessment, below.

4.2. Inistrahull SPA

Inistrahull SPA is designated for non-breeding Barnacle Geese and breeding Shag and Common Gull.

Barnacle Geese will be returned to as part of the Trawbreaga Bay assessment presented below.

Shag - 127 pairs bred at Inishtrahull in 1999; higher numbers bred in 1991/92 (500 pairs). In the 2015 & 2016 survey of cliff-nesting seabirds 90 occupied nests were recorded at Instrahull (Newton *et al.*, 2015; NPWS *pers comm*). Shag typically occurs in both offshore and inshore marine waters but usually do not range far from the Coast (Cramp and Simmons, 2004). From radio-tagging studies, Wanless *et al.* (1991) found that the mean foraging range of Shags from a colony on the Isle of May in Scotland was 7km (maximum 17km) and that all feeding sites were within 7km of land. In their study, Shags fed most frequently in water depths of 21-40 m, with substrates of either gravel and sand, or rock with thin patchy sediment cover. Using data on duration of foraging trips and flight speeds, Pearson (1968) estimated a maximum foraging range of 19km from a breeding colony on the Farne Islands in England, while Furness and Barrett estimated a median foraging range of 12 km from a colony in Norway; this method is likely to overestimate foraging ranges. Rees (1965, quoted by Cramp and Simmons, 2004) reported a foraging range of 13 km from a roosting area.

The Seabird Wikispace gives a mean foraging range of 6.5km, a mean maximum of 16km and a maximum of 20km from breeding colonies. It describes key foraging habitats as: "*shallow waters, particularly over sand and gravel banks, areas of high tidal flow*." Shags feed on benthic and demersal prey and can dive up to depths of 70m, with a mean dive depth in the data collated by the Seabird Wikispace of 33m.

Shag feed almost exclusively on fish which it takes predominantly from midwater, though it also occasionally feeds on bottom dwelling species in coastal areas; they also take small numbers of polychaetes, cephalopods and other molluscs (small, usually benthic crustaceans) The fish component of its diet varies with both season and locality but is generally dominated by sand-eel, herring, and cod, amongst other fish species and some crustaceans (Cramp and Simmons, 2004).

There is no evidence as to the extent of use of the inner parts of Trawbreaga Bay by breeding Shag or by wintering birds; though it is to be expected that birds would especially use the western approaches to Trawbreaga and offshore waters (IWEBS data suggest that they are present in Trawbreaga in winter months). That said licenced and proposed aquaculture activities would appear to be on the outer edge of core foraging ranges of breeding birds; >12km. Overall, due to the proposed scale, distance from Inishtrahull and possible influence of trestles as fish attracting devices - it is unlikely that the intertidal oyster culture would have a negative impact on Shag breeding at Inishtrahull SPA. Shag breeding on Inistrahull SPA is therefore screened out and will not be considered further.

Common Gull – 30 pairs of Common Gull were recorded as breeding on Inishtrahull in 1999; only 7 pairs were recorded in 2016 (NPWS *pers comm*). Common Gull foraging ranges are not well reported in the literature, but Common Gulls do frequently occur as scavengers following ships in offshore waters during winter; however, it seems to be largely limited to the coastal and littoral zone as an active forager for live prey (Cramp and Simmons, 2004). Common Gull has a broad dietary range and uses a wide range of feeding methods in a variety of habitats. In coastal and marine habitats their diet can include benthic invertebrates in intertidal habitats; invertebrates, fish and scavenged items taken from the pelagic zone whilst swimming or from plunge dives whilst flying; and food items taken by kleptoparasitism. They regularly follow inshore fishing boats and also feed commonly in terrestrial habitats. In coastal and marine areas, molluscs, polychaetes, crustaceans and fish can all be significant components of Common Gull diets. As for Black-headed Gulls, recent studies of Irish breeding colonies suggest that during the breeding season terrestrial habitat use and prey items dominate (Kelly *et al.*, 2012).

Overall, due to the proposed scale of oyster cultivation and the distance from Inishtrahull it is unlikely that the intertidal oyster would have a negative impact on Common Gull breeding at Inishtrahull SPA.

4.3. Malin Head SPA

Malin Head SPA is designated for **Corncrake**. The Corncrake is included on the red list of Birds of Conservation Concern (Gilbert *et al.*, 2021) due to significant declines in the Irish breeding populations; due in a large part to agricultural intensification. It occurs on a number of coastal headlands, such as Malin, and offshore islands such as Greers Isle SPA (4082). In terms of habitat use Corncrake favour dense vegetation such as hay meadows. Proposed aquaculture activities at Trawbreaga will not negatively impact on Corncrake either directly or indirectly through loss of prey / habitat.

As Malin Head SPAs only qualifying interest is Corncrake, this site is therefore screened out from further consideration.

4.4. Lough Foyle / Lough Swilly

Lough Foyle and Lough Swilly bound the Inishowen Peninsula to the east and west, respectively. As noted, Lough Swilly was subject to an appropriate assessment in 2013 (Gittings and O'Donoghue, 2013a). Lough Swilly is ca. 21km from Trawbreaga in a direct line; but is nearer 35km around the Coast. Lough Foyle is just over 15km (overland) to the southeast of Trawbreaga. Of the qualifying interests designated for each site we are aware of no published data on interchange of waders and wildfowl between the sites. It is certainly possible that migrants which breed in Iceland (or further afield) may make landfall at sites such as Trawbreaga before travelling south through sites such as Lough Swilly, or indeed Lough Foyle; particularly for species such as Light-bellied Brent Geese and Whooper Swan. However, it would seem highly unlikely that aquaculture developments at Trawbreaga would affect patterns of seasonal use of either Lough Swilly or Lough Foyle by such species.

Both Sandwich Tern and Common Tern breed at Inch in the southern section of Lough Swilly. Sandwich Tern favour "*shallow marine waters such as bays, inlets and outflows, gullies, shoals, inshore waters, reefs, and sandbanks; also more open waters nearshore or offshore, including open sea*" (Source: Seabird Wikispace); mean foraging range is 15km; this would place them predominantly in waters west of Trawbreaga; though the mean maximum published foraging range of 42km would allow Swilly birds to forage as far north as Trawbreaga. Overall, due to the proposed scale, distance from the Inch breeding colony and the possible influence of trestles as fish attracting devices - it is unlikely that the intertidal oyster would have a negative impact on Sandwich Tern breeding at Lough Swilly SPA. Furthermore, note that should Sandwich Tern forage in Trawbreaga it would be at high tide when there would be no maintenance activities ongoing; NPWS note that an estimated 80% of the bay area is exposed at each low tide (Natura 2000 form; update 2014-09) making it largely unsuitable to foraging terns at low tide. In contrast, Common Tern tend to feed closer to their colony; mean foraging range of 9km, a mean maximum of 34km. It would seem very unlikely that Common Tern from the Inch colony at Lough Swilly feed in Trawbreaga – other than perhaps during post-breeding dispersal.

Both Lough Foyle and Lough Swilly SPAs are therefore screened out from further consideration.

4.5. Fanad Head SPA

As for Malin Head SPA, Fanad Head SPA is designated solely for Corncrake (NPWS, 2014a; 2018c). Proposed aquaculture activities at Trawbreaga will not negatively impact on Corncrake either directly or indirectly through loss of prey / habitat; this site is therefore screened out from further consideration.

4.6. Horn Head to Fanad Head SPA

Horn Head to Fanad Head is designate for a range of qualifying interests, including two geese species, namely Greenland White-fronted Goose and Barnacle Goose.

Both Greenland White-fronted Geese and Barnacle Geese favour New Lake near Dunfanaghy (196 and 160, respectively; averages 1995/96-1999/00); this site is just over 40km to the southwest of Trawbreaga. There's no evidence of Greenland White-fronted Geese using Trawbreaga.

Barnacle Geese will be returned to below as part of the Trawbreaga Bay assessment presented below.

This site is also designated for two terrestrial species, namely Chough and Peregrine. Horn Head to Fanad Head SPA supports an important population of breeding Chough (22 breeding pairs in 1992; 32 in 2002/03). As noted above **Chough** favour coastal grassland; while we are not aware of any information on interchange of Chough between Trawbreaga and Fanad, as for Trawbreaga no impact from intertidal aquaculture is predicted. Chough at this site is therefore not considered further.

No information is available about the occurrence of visiting **Peregrine** from Horn Head to Fanad Head SPA within Trawbreaga Bay. However, an assessment of likely patterns of occurrence can be made, based on information about the species breeding dispersion and foraging behaviour. The recorded breeding dispersion of Peregrine in Britain and Ireland varies from 2-5 km (nearest neighbour difference; Ratcliffe, 1993). The Horn Head to Fanad Head SPA is noted as holding a large Peregrine population (5 pairs in 2002) (NPWS site synopsis; 2014g); however, the SPA is a series of blocks distributed across over 70km of Coastline; giving a density of ca. 1 nest / 10km. The nearest nest(s) within the SPA is certainly likely to be on the Coast from Fanad Head south to Saldanha Head – between about 17km and 20km from Trawbreaga. However, it is equally likely that Peregrine are in fact nesting closer to Trawbreaga in the Malin Head area.

Ratcliffe (1993) classifies Peregrine breeding habitats in Britain into six categories, based on their prey resources. In the "*ordinary Coast*" category, which may correspond to much of the Horn Head to Fanad Head SPA, around one-third of the prey-type by weight comprises waders and gulls and terns. Coastal birds also take large numbers of feral pigeon and Jackdaw. The seabird colonies around Fanad Head are likely to provide a major component of the diet of Peregrines breeding at eastern end of the SPA (supporting as they do an assemblage of over 20,000 seabirds (NPWS site synopsis; 2006). Peregrine also regularly feed in intertidal areas during winter, exploiting the availability of large numbers of waterbirds, which provide them with potential prey, and inland breeding Peregrines will often move to the Coast in winter for this reason.

Peregrines are territorial during the breeding season and their foraging range may depend upon the local population density: for example, Peregrines in north-east Scotland mainly feed within 2 km of their nest site, but their foraging range can be extended to 6 km or more, while in continental Europe, the foraging ranges may extend up to 15 km or more from nest sites (Cramp and Simmons, 2004). The foraging range of breeding Peregrines will be dictated by the availability of food resources and at coastal eyries close to large seabird colonies, "*Peregrines often hunt directly from the eyrie and kill within a few hundred metres*" (Ratcliffe, 1993).

In conclusion, it seems likely that the intertidal oyster cultivation area provides potentially suitable feeding habitat and is within the foraging range of at least one pair of the SPA Peregrine population. However, the availability of high quality food resources closer to this pair (the Horn Head – Fanad Head seabird population), and the low numbers of waterbirds that will be present during most of the Peregrine's breeding season, indicate that the intertidal oyster cultivation area is probably not of major importance as feeding habitat for the SPA Peregrine population.

Horn Head to Fanad Head SPA is also designated for a number of breeding **seabirds**; namely Fulmar (1.974 pairs), Cormorant (79 pairs), Shag (110 pairs), Kittiwake (3,853 pairs), Guillemot (4,387 pairs) and Razorbill (4,515 pairs) (counts from 1999; NPWS site synopsis, 2014g[8]). Survey work undertaken at Horn Head in the summer of 2015 (Newton *et al*., 2015) indicated that both Fulmar and Kittiwake numbers have decreased strongly, while Guillemot numbers have decreased to a lesser degree. In contrast Razorbill numbers are stable; Horn Head is the 2nd most important colony for this species in Ireland. Fulmar, Kittiwake, Guillemot and Razorbill will all tend to forage at sea rather than in sheltered tidal inlet such as Trawbreaga. Development of intertidal oyster cultivation in the bay does not present a risk to these species.

Shag was discussed above (para. 4.9-4.12) with respect to birds nesting on Inistrahull. As noted, published data indicates a mean foraging range of 6.5km, a mean maximum of 16km and a maximum of 20km from

[8] The site also supports Black Guillemot (204 individuals) as well as smaller populations of Puffin (189 pairs), Herring Gull (21 pairs), Great Black-backed Gull (5 pairs) and Common Gull (2 pairs) (NPWS, 2014g).

breeding colonies. It is not known where within the SPA the main Shag colony is located; a conservative approach has therefore been taken to consider the nearest cliffs at Fanad Head as potentially supporting breeding Shag. As noted, Horn Head to Fanad Head SPA is spread over an array of discrete blocks covering coastal cliffs – generally separated by areas of beach / dunes. The nearest such nesting sites is over 19km from the mouth of Trawbreaga Bay, putting the bay at the outer extreme of recorded foraging distances. Overall, due to the proposed scale, distance from Horn Head to Fanad Head SPA, availability of suitable foraging grounds around Fanad Head and possible influence of trestles as fish attracting devices - it is unlikely that the intertidal oyster would have a negative impact on Shag breeding at Horn Head to Fanad Head SPA. Shag breeding on Horn Head to Fanad Head SPA is therefore screened out and will not be considered further.

Cormorant - It is not known where within the SPA the main Cormorant colony is located; a conservative approach has therefore been taken to consider the nearest cliffs at Fanad Head as potentially supporting breeding Cormorant; i.e. just over 19km from the mouth of Trawbreaga Bay. The mean foraging range of Cormorants from their breeding colonies is 8.5 km, with a mean maximum of 32 km and a maximum of 50 km (Seabird Wikispace[9]). Therefore, the intertidal oyster cultivation area is within the potential foraging range of the SPA population but may only be a peripheral area.

In winter, Cormorant regularly occur within Trawbreaga Bay; in the NPWS waterbird survey programme Cormorant was recorded on all counts (peak count, 10; mean count, 4); it is not known to what extent, if any, Cormorants use Trawbreaga in summer. Only 4 IWEBS counts have been undertaken at Trawbreaga Bay since the baseline waterbird survey in 2009/2010. Single cormorants were recorded during counts in November 2010 and 2011.

In a study of Cormorant diet at several Irish coastal breeding colonies West *et al*. (1975), found that birds at the Lambay Island, Mattle and Little Saltee colonies were taking fish species associated with estuarine habitats. At Mattle and Little Saltee, wrasse predominated (77% and 85% of the diet by weight, respectively) indicating that the birds were mainly feeding in marine habitats. However, West *et al*. (1975) considered that, due to the absence of wrasse from their diet, the Lambay Island birds were mainly feeding in the estuaries at Rush and Malahide rather than in the marine waters around Lambay Island. However, birds from the Keeragh Island colony appeared to be feeding exclusively on marine fish, despite Keeragh Island being closer to estuarine habitat compared to the Little Saltee. The diet of Cormorants from two other breeding colonies (Great Saltee and Roaninish) was studied by Tierney *et al*. (2011). Again, wrasse predominated forming 65-70% of the diet by item, but some flatfish were taken indicating some foraging in estuarine habitats.

Overall, therefore, the available evidence from both the typical foraging range and diets of breeding Cormorants indicates that both Trawbreaga Bay in general and the intertidal oyster cultivation area in particular, may provide potential foraging habitat for the SPA Cormorant population but that these areas are not likely to be of major importance in providing food resources for this population.

4.7. Greers Isle SPA

The qualifying interests of Greers Isle SPA are Sandwich Tern, Black-headed Gull and Common Gull.

Sandwich Tern were recorded breeding on Greers Isle in the 1984 tern census (180 pairs); subsequently in the 1995 census none were recorded (Hannon *et al*., 1997; NPWS site synopsis, 2006. However, the site has been reoccupied since 2002 with 63 pairs recorded in three subcolonies. This increase to 217 pairs in 2004 (along with small numbers of Common Tern and / or Arctic Tern) (NPWS site synopsis, 2010). Greers Isle is between ca. 26km to 30km from the mouth of Trawbreaga Bay depending on whether birds fly overland or around the Coast. For the reasons outlined in paragraph 4.15 it is very unlikely that Sandwich Tern from the Greers Isle colony would be affected by aquaculture activities at Trawbreaga Bay.

Black-headed Gull – in 2002 Greers Isle supported ca. 200 breeding pair of Black-headed Gull (NPWS site synopsis, 2010). Black-headed Gull typically occurs in "*inshore tidal waters, avoiding rocky or exposed Coasts and preferring inlets or estuaries with extensive sandy or muddy beaches*" (Cramp and Simmons, 2004). While they can occur in deeper offshore waters, mapping studies indicate that they only do so occasionally and at low density (e.g., Kubetzki and Garthe, 2003). Black-headed Gulls have a broad dietary range and use a wide

[9] http://seabird.wikispaces.com/

range of feeding methods in a variety of habitats. In coastal and marine habitats their diet can include benthic invertebrates in intertidal habitats; invertebrates, fish and scavenged items taken from the pelagic zone whilst swimming or from dips-to-surface and surface plunges whilst flying; and food items taken by kleptoparasitism. Black-headed Gulls also feed commonly in terrestrial habitats.

In the breeding season, earthworms and insects are described as predominating in their diet, although this probably reflects the distribution of colonies, which are mainly inland. At the Lady's Island colony in Wexford, Black-headed Gulls also feed extensively in terrestrial habitats, taking worms, beetles and small mammals, as well as frogs and, through kleptoparasitism of terns, fish (T. Murray, NPWS). On the sea Coast, the "*surface fauna of exposed mudflats and shallows*" are described as providing a "*rich food supply*". In studies of two coastal colonies in the North Sea bivalves and polychaetes were the major components of their diet (Kubetzki and Garthe, 2003) and fish were only a minor component.

Greers Isle is a small island located in the northern reaches of Mulroy Bay, with Ballyhiernan Bay and Fanad Head to the north and Lough Swilly to the east. There is a diverse range of agricultural grassland; freshwater loughs; and sheltered intertidal and subtidal waters offering a diverse array of foraging habitat close to the breeding grounds. Furthermore, recent studies of Irish breeding colonies suggest that during the breeding season terrestrial habitat use and prey items dominate. Thus, it is very unlikely that Black-headed Gull from the Greers Isle colony would be affected by aquaculture activities at Trawbreaga Bay.

Common Gull - in 2002 Greers Isle supported ca. 30 breeding pair of Common Gull. This species was discussed in para. 4.8-4.9 for Inishtrahull SPA. As is the case for Black-headed Gull, it is very unlikely that Common Gull from the Greers Isle colony would be affected by aquaculture activities at Trawbreaga Bay.

5. Site Visit

The site was visited on the 10th and 12th February 2021 by Robert Vaughan (for Woodrow Environmental) on behalf of Atkins. The main objective was to undertake a survey of all proposed access points, while also recording the location of any Light-bellied brent geese and Barnacle geese feeding flocks.

5.1. Vantage Point Survey

The main objective was to undertake a survey of all proposed access points. The bay was viewed from a number of different points; as shown on Figure 6.1. The photos illustrate the condition of the shoreline close to proposed access points and areas of trestle activity.

Plate 5.1 View across Trawbreaga Bay from the R242 Malin Road (VP1).

Plate 5.2 View over Trawbreaga Bay from VP4, south of the R242 Malin Road.

Plate 5.3 View over trestles at VP4, south of the R242 Malin Road.

Plate 5.4 View from access road at Glassagh Point (VP6).

Plate 5.5 View over trestles at Glassagh Point (VP6).

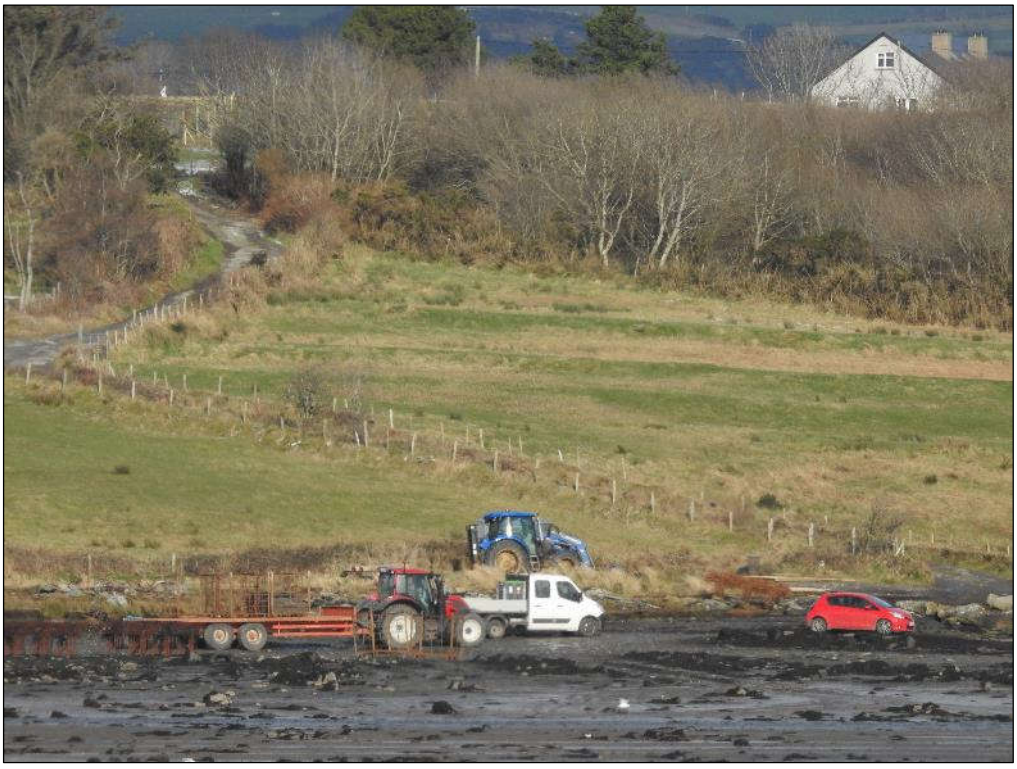


Plate 5.6 View from Carndonagh (VP8).

Plate 5.7 View from access at Magheranaul (VP9).

Plate 5.8 View across trestles off Magheranaul (VP9).

Plate 5.9 View from access at Fegart (VP10).

Plate 5.10 View from access at Doaghmore (VP11) eastwards towards sheds adjoining R242.

A number of points to emerge from the site visit is the presence of unused bags and trestles on the foreshore (see Plate 5.5).

5.2. Feeding Flocks

While the survey of geese in Trawbreaga Bay should not be viewed as a comprehensive, co-ordinated survey of the Bay for geese ,during the course of the site survey the location of flocks of Barnacle geese and Light-bellied brent geese was noted. Counts were undertaken on the 10th and 12th February 2021. Observations are summarised in Table 5.1.

Table 5.1 Counts of Barnacle Geese and Light-bellied brent geese (10th and 12th February 2021).

No.	Species	Date	Time	Count	Behaviour	Notes	X	Y
10/02/21								
1	Brent geese	10/02/2021	11:20	58	Forage		-7.31628	55.30538986
2	Brent geese	10/02/2021	11:20	37	Roost	Also preening, includes 8 birds that flew in from east	-7.30562	55.30528432
3	Brent geese	10/02/2021	11:20	21	Forage	Spread out, 7 forage close to trestles	-7.30323	55.30465645
4	Brent geese	10/02/2021	11:20	14	Forage		-7.29596	55.2921634
5	Brent geese	10/02/2021	11:29	21	Fly-land	Flew in and land in and amongst trestles	-7.29955	55.30083826
6	Barnacle geese	10/02/2021	12:07	46	Fly	12:07 end point (last seen)	-7.28824	55.27480552
7	Barnacle geese	10/02/2021	11:52	6	Forage		-7.2743	55.27795821
8	Barnacle geese	10/02/2021	12:01	250	Fly	Picked up at this point - flew west	-7.31164	55.28829627
9	Barnacle geese	10/02/2021	13:46	2350	Forage	Flock approximately 2,350 birds feeding in tight flock, approx. half flew north east after circling for 10 mins at 13:50	-7.36183	55.28627722
Note: A repeat count was undertaken at 13:10 (-7.30666; 55.30004159); 76 brent geese were observed foraging (spread out through the area as shown in Figure 5.1).								
12/02/21								
10	Barnacle goose	12/02/2021	12:05	1536	Forage	Foraging in a tight flock	-7.36183	55.28627722
11	Barnacle goose	12/02/2021	12:12	670	Forage	Also, some roosting and preening - c. 200 flew in from previous count - spread across wide area over two fields	-7.35498	55.29089235
12	Barnacle goose	12/02/2021	12:40	70	Forage	Feeding and roosting	-7.34937	55.29110426
13	Brent geese	12/02/2021	13:14	13	Flying	Flushed out of area by workers, 26 wigeon flew off also	-7.31852	55.28828883
14	Brent geese	12/02/2021	13:20	2	Forage	2 remained feeding after 13 flushed by bait digger	-7.31889	55.28885185
15	Brent geese	12/02/2021	13:53	3	Forage		-7.27483	55.28081486
16	Brent geese	12/02/2021	14:08	19	Forage	3 preening in river, rest feeding along shore	-7.31376	55.30951885
17	Brent geese	12/02/2021	14:09	36	Forage		-7.31409	55.30557306
18	Brent geese	12/02/2021	14:17	9	Forage		-7.306	55.30387208

The total number of geese counted on the 10th February 2021 amounted to 2,650 Barnacle geese and 151 Light- bellied brent geese. Barnacle geese numbers were dominated by a single large flock of 2,350 birds on the 10th February 2021 (Figure 5.1). Brent geese were found in scattered small flocks predominantly off the south and east Coast of Doagh Island.

The total number of geese counted on the 12th February amounted to 2,479 Barnacle geese and 82 Light-bellied brent geese. Barnacle geese numbers were divided into three flocks in Ballyliffin; a single large flock of 1,536 birds north of Lackboy / R268; 670 further north (across two fields), as well as a smaller flock of 70 birds) (Figure 5.2). Brent were again geese were found in scattered small flocks predominantly off the south and east Coast of Doagh Island, with small numbers also seen off Glassagh Point on the 12th (refer to Figure 5.2).

While all the Barnacle geese were feeding on areas of improved grassland (farmland), Light-bellied brent geese were observed along the shore. It should be noted, however, that Light-bellied brent geese have also been recorded field feeding (see e.g. Plate 5.11).

Plate 5.11 Light-bellied brent goose feeding on grass near VP6 (Glassagh Point).

Plate 5.12 Barnacle geese on grass - alert.

Plate 5.13 Barnacle geese on grass – actively feeding.

5.3. Ringed Birds

Both Barnacle geese and Light bellied brent geese have been ringed with both metal rings and plastic darvic rings in Trawbreaga Bay. The darvic rings are a combination of three letters / numbers in black on a white ring placed on the left leg; allowing birds to be individually identified. One bird also carried a red ring on its right leg. Records of darvic rings recorded during the site visits have been forwarded to the Scheme Co-ordinator.

On the 12th February a large number of ringed Barnacle geese were observed in the fields in Ballyliffin (north of Lackboy / R268.). Fourteen rings were read; along with one additional putative read. On the 12th a further six darvic rings were read; while a single additional ring was read on a bird feeding near Carnmalin, Malin Head. All records have been forwarded to the scheme co-ordinator.

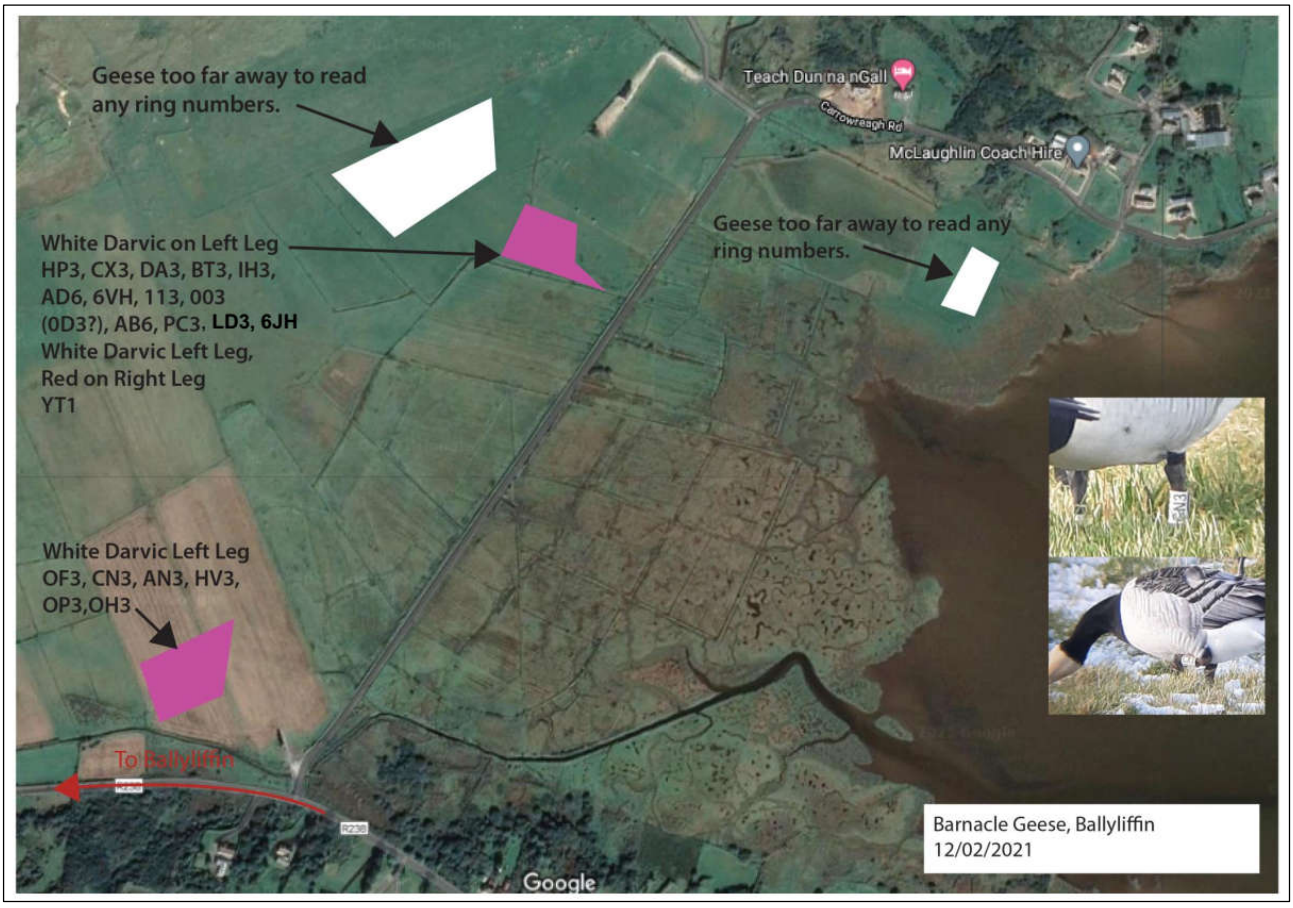


Figure 5.1 Barnacle goose darvic rings read at Ballyliffin on the 12th February 2021.

A full listed of rings read is presented below.

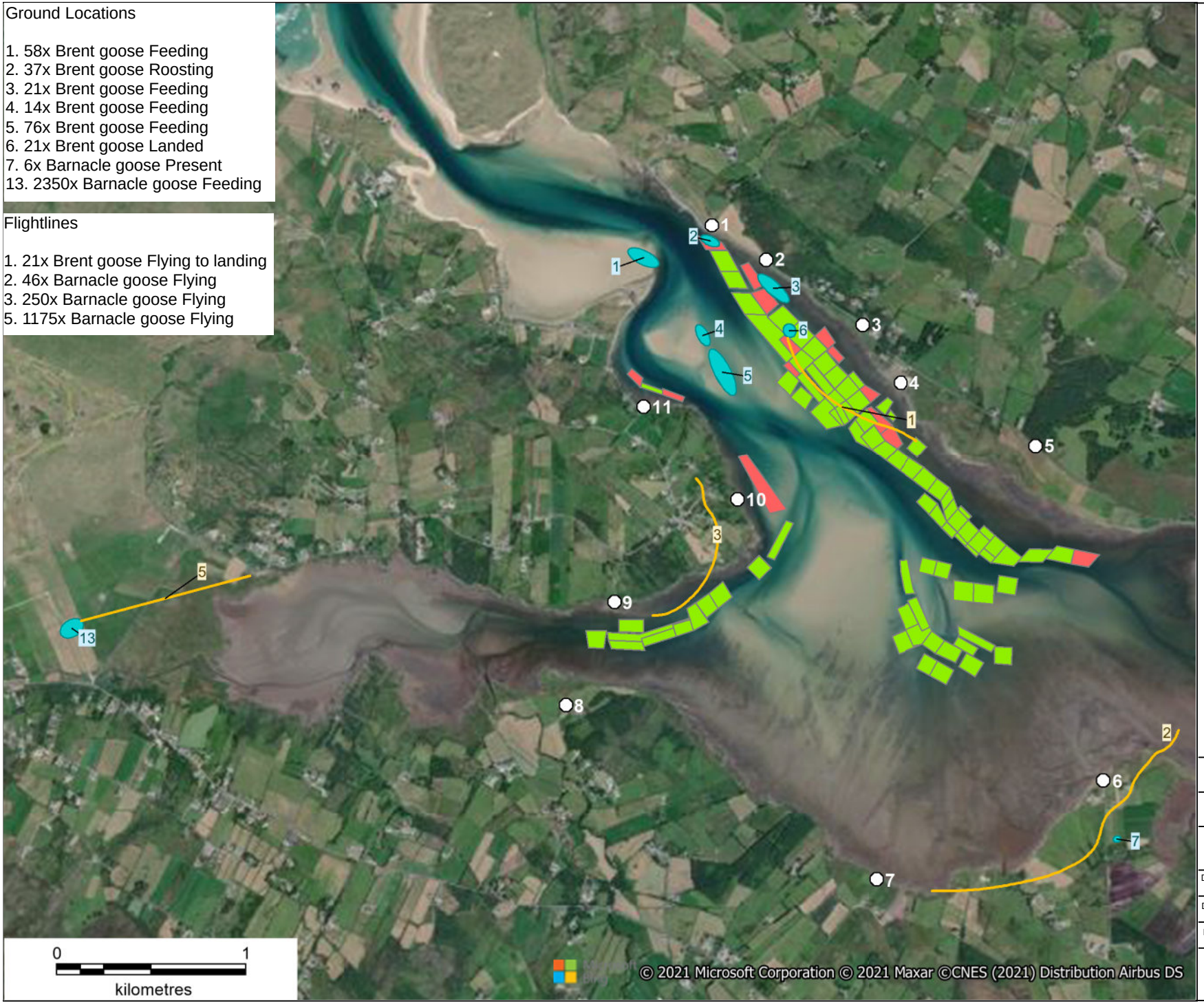
Field 1 (north)

White darvic on left leg		
HP3	AD6	AB6
CX3	6VH	PC3
DA3	113	6JH
BT3	003	LD3
IH3	(OD3?)	
White darvic on left leg; red on the right		
YT1		

Field 2 (south)

White darvic on left leg
OF3
CN3
AN3
HV3
OP3
OH3

6JY was observed in Carnmalin, close to Malin Head.



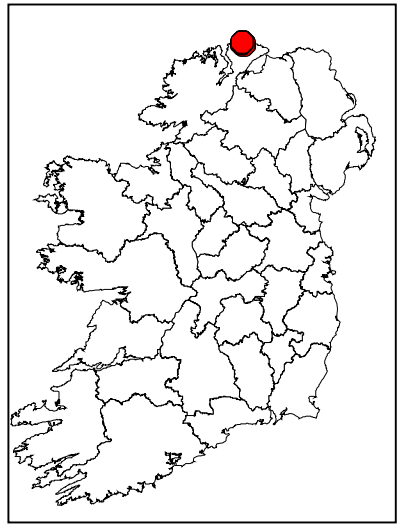
N

Legend

- Vantage Point Locations
- Goose Flightlines
- Goose ground locations

Aquaculture Sites

- Application
- Licensed



Client:	Marine Institute
Project:	Trawbreaga Aquaculture AA
Title:	Goose species flightlines and ground locations 10.02.21

Drawn:	Checked:	Authorised:
EN	NS	PO'D
Date: 24/05/2021	Date: 24/05/2021	Date: 24/05/2021
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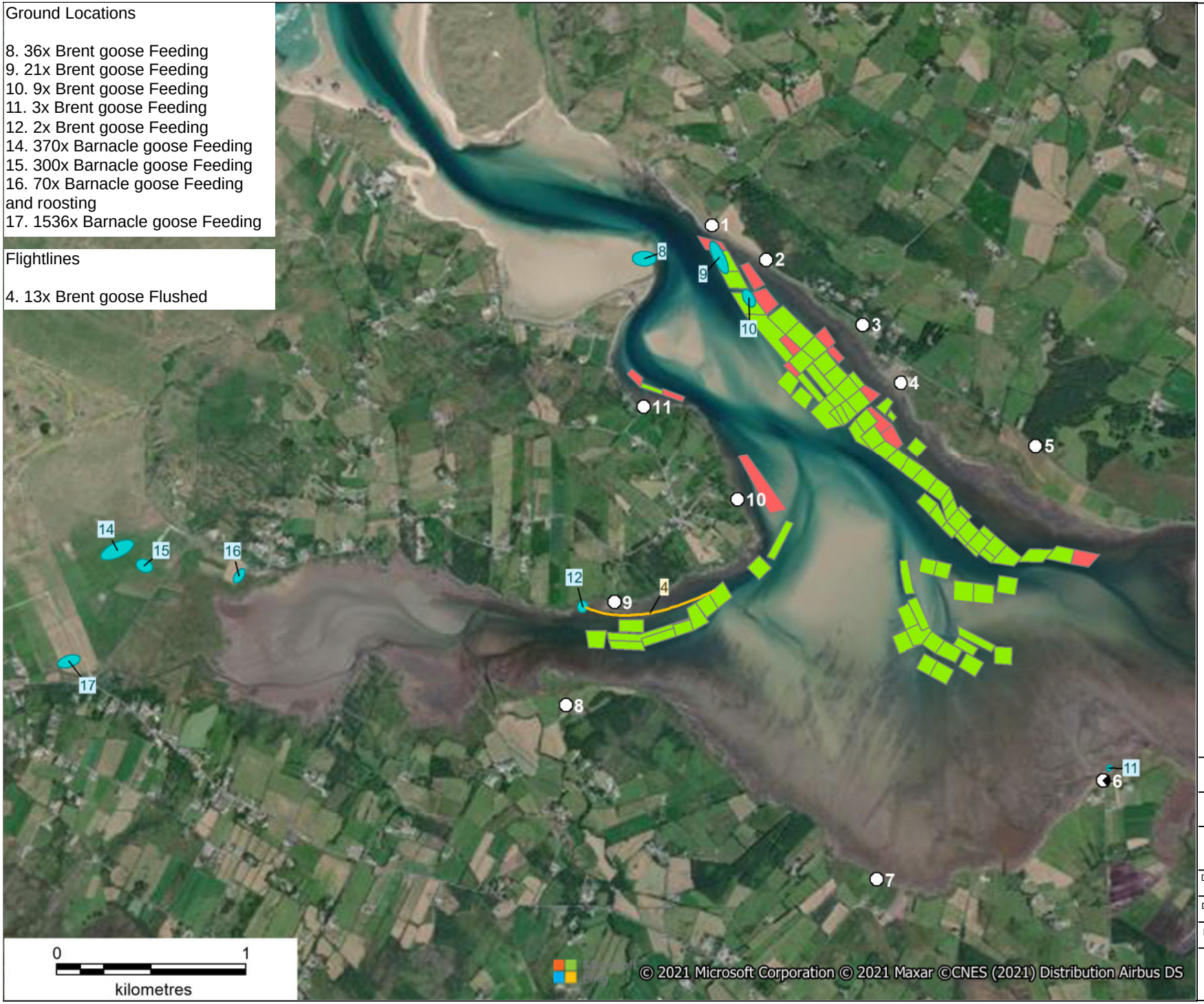

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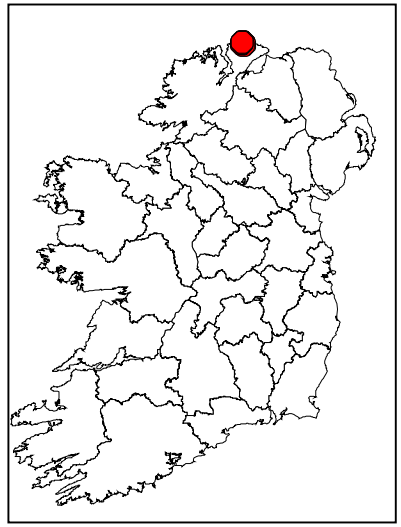
Legend

- Vantage Point Locations
- Goose Flightlines
- Goose ground locations

Aquaculture Sites

- Application
- Licensed



Client:	Marine Institute
Project:	Trawbreaga Aquaculture AA
Title:	Goose species flightlines and ground locations 12.02.21

Drawn: EN	Checked: NS	Authorised: PO'D
Date: 24/05/2021	Date: 24/05/2021	Date: 24/05/2021
Drawing No: 5.2		Rev: 1.1

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6. Natura Impact Statement

6.1. Intertidal Oyster Cultivation

The following text adapted and updated from BIM *Appropriate Assessment Profiling. Trawbreaga Bay, Co. Donegal* prepared by Louise Collins, Aquaculture Regional Officer (Donegal & Sligo). Aquaculture sites and proposed access routes are illustrated in Figure 6.1.

6.1.1. Introduction

Trawbreaga Bay is a sheltered bay situated in the North of Donegal. It is fed by a number of small streams and rivers. 80% of the bay area is estimated to be exposed at low tide, exposing a mixture of sandbanks, mudflats and stony/rocky substrates. Trawbreaga Bay lies within two Natura sites, North Inishowen Peninsula SAC (002012) and Trawbreaga Bay SPA (004034).

Oyster production has been operational in the bay since the late 1990's, however it was not until the early noughties that licenses were first issued for the area. There were 26 licences to farm oysters in Trawbreaga Bay, in 2001.

In 2016, there were 25 existing licensed aquaculture sites and 42 determinations for new site applications or renewals. Of the 25 existing aquaculture sites, 22 were located in the North shore of Trawbreaga Bay and of the 42 new applications, 38 were located in the same area of the bay.

All the existing sites are licensed for Oyster production. These sites are all currently in use. For the purpose of this assessment it is assumed that all licences under appeal are operational and are part of existing activities in the SPA.

There are three main pacific oyster production areas within Trawbreaga Bay. The North and South of the bay, with one producer farming in the West of the bay.

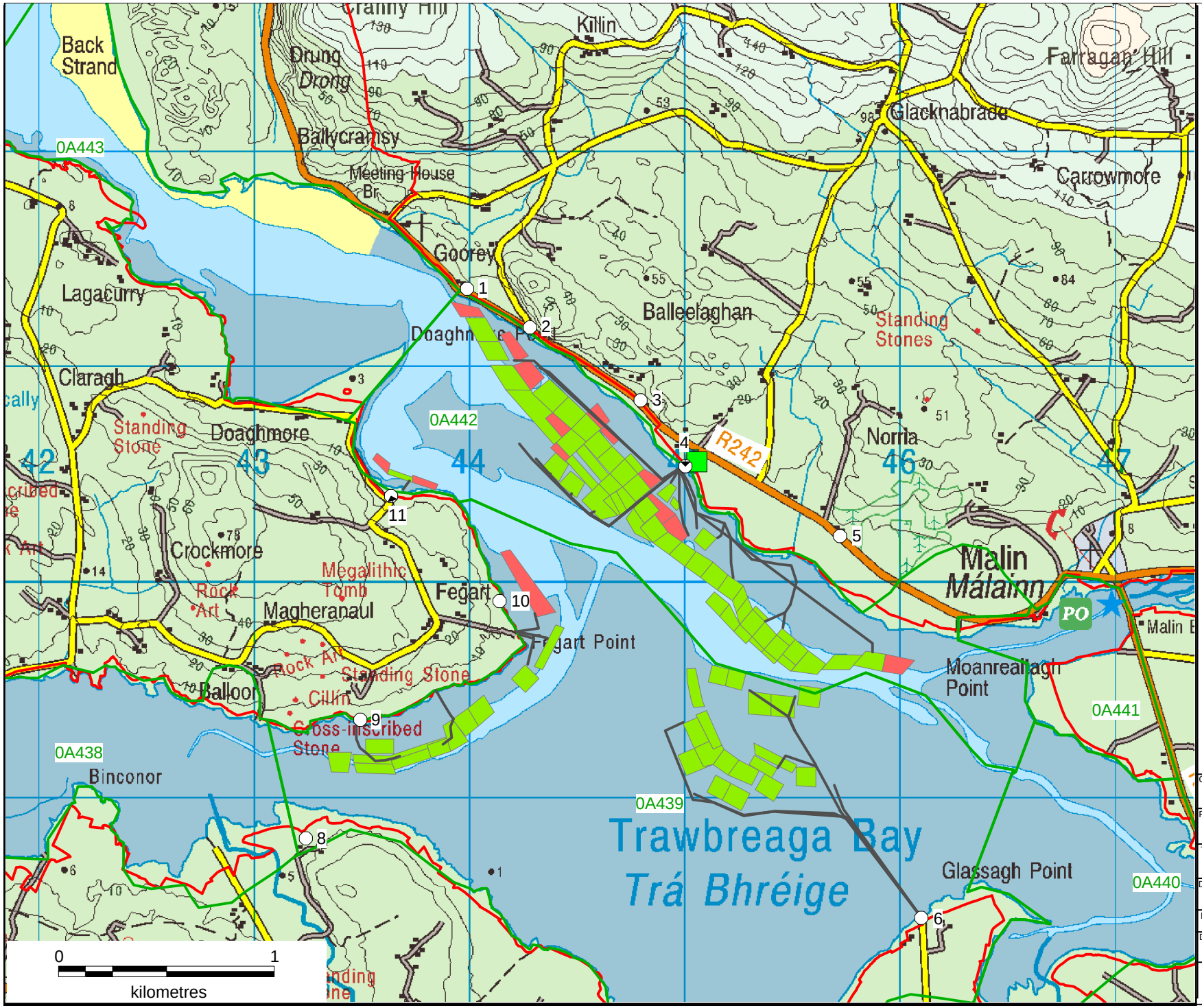
The current applications are defined as i) Applications; ii) Existing licences & recently approved licences / sites under appeal (see Figure 6.1). The total number of sites and area in each category are as follows: -

- Applications 14 plots; 10.13 ha
- Licence / Under Appeal 99 plots; 61.14 ha

Those licenced can be divided into 80 existing licences (46.55ha) and 19 licences recently approved / or under appeal (14.59ha). All plots are for extensive cultivation oysters using bags and trestles. A full list of current applications is presented in Table 6.1.

Table 6.1 Details of proposed Aquaculture Sites.

Applications Numbers	Area (sq. m)
T12/554A	10080.03432
T12/555A	23028.9098
T12/557A	7482.05659
T12/558A	6957.525421
T12/560A	8987.984145
T12/561A	5719.520555
T12/562A	3513.998471
T12/563A	3594.499687
T12/566A	6344.996748
T12/568A	3667.381086
T12/570A	3067.288154
T12/571A	4833.004553
T12/572A	7750.500654
T12/573A	6304.992268
Total area (ha)	**10.13 hectares**



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Client: Marine Institute		
Project: Trawbreaga Bay SPA - AA		
Title: Aquaculture Sites & Access Lanes		
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6.1.2. Background

The Trawbreaga Bay CLAMS* Group was established in 2006 and is composed of representatives for most of the oyster producers in the bay. The CLAMS group meet approximately three times a year, and in response to issues arising in the bay or the area which require that the aquaculture sector is informed or have an input into their address. Louise Collins, BIM is the local CLAMS liaison officer for the group.

Oyster farming brings in a lot of employment and wealth into the region of the Northwest, where emigration has greatly affected the local population, and this wealth has had a knock on for the wider economic benefit of the area.

All of these sites are operated by local people that are working and living in the area. Exports from Trawbreaga Bay were in excess of €1.5 million in 2018, and employment was in the region of 70, between part time and full time.

The oyster farms in Trawbreaga Bay are mainly 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.

These sites are all very close in distance from one another, and all the sites in Trawbreaga are small sites, usually one hectare to two hectares.

In recent years operators in Trawbreaga Bay have faced many challenges in farming their oysters. In 2011, many oysters were lost in the Red Tide. The following year a lot of mortality was due to a viral outbreak. There were also problems with sanding and silting, causing sites to “shift” and making some areas unworkable as trestles would sink and tractors would not be able to access them, so the farmers preferred to move there farming operations onto higher shores so to make sure there was firmer substrate. These shifts in site location are reflected in some of the licence renewal applications.

6.1.3. Production Cycle

6.1.3.1. Source of Seed

The oyster seed is bought in from oyster nurseries in France or the UK. The following seed has been used in the Bay: -

- GrainOcean
- France Turbot
- Satmar
- France Nissian

These seed start off very small going down to just to 4- 6 mm in size.

Oysters in Trawbreaga Bay are grown in trestles and bags.

The typical trestle method is constructed of 16mm steel bar with plastic oyster bags secured on top. Trestles are 0.6m high with a width of 1.3m at the base tapering to 0.8m at the top. Oyster bags are placed length ways across the trestles at a width of 1m. Trestles are arranged in rows of up to 100m in length to fit within the licence area and rows are spaced 4m apart. The trestles are located at low water Spring tides and so are only accessible or visible during the latter period of low water when this occurs in daylight hours.

6.1.3.2. Stocking densities and grading and harvesting

Seed is brought to the service site (see Figure 6.1) either in spring or late summer of each year, typically at an intake size of 6 - 10mm. These are packed in oyster bags at a predetermined density and taken to the inter-tidal zone, where the bags are attached to trestles for the growing process to begin.

The mesh size in the bag varies according to what seed is grown. For example, 6mm seed is put into 4mm mesh bags at a ratio of 1,000 to 1,500 seed per bag.

Oysters are thinned out and graded as the oysters grow. As the oysters grow, they will be taken to the handling / sorting facility (service site; see Figure 6.1) 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 2.5 to 4 years. Some farmers take in half grown oysters and contract grow these for local farmers in the area.

The intertidal area is 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.

Any oysters that die in the inter-tidal area typically degrade rapidly. Empty shells are retained on-site and spread on the ground.

6.1.3.3. Turning Oyster Bags

Producers generally turn each bag on site once a month. Turning takes place when the oysters are growing. This means turning takes place from March up to October/November depending on growth. Both spring tides of each month will be used by producers to get out to their sites.

6.1.3.4. Access Route

Trestles will be access from a number of different areas around the bay. The main access point is from the Malin Road / R242 on the north side of the bay (at VP4 as described in Chapter 5.0). This is also the site of Sheds / process area. From here vehicles travel east and west along the shoreline to access trestles. Information is not available on the number of vehicles that might be on the shore at any one time or the number of days in which there is shoreline activity. This area include sites which are Licenced, Under Appeal and New Applications (see Figure 6.1).

On the southern side of the bay, the main access point is at Glassagh Point (at VP6 as described in Chapter 5.0). This area include sites which are Licenced and Under Appeal (see Figure 6.1). There are no new Applications in this area.

To the west, off Doagh Island there are a number of different access points; at Magheranaul; Fegart and Doaghmore (i.e. at VP9, 10 & 11 as described in Chapter 5.0). Those access from Magheranaul are Licenced and Under Appeal (see Figure 6.1). There are Applications for new sites off Fegart and Doaghmore, as shown on Figure 6.1.

In all of these cases information is not available on the number of vehicles that might be on the shore at any one time or the number of days in which there is shoreline activity.

Plate 6.1 – Example of an Oyster bag on a trestle.

6.2. Potential Impacts

6.2.1. Ecosystem effects

The boundary of Trawbreaga Bay SPA was defined by NPWS to include the primary wetland habitats of this site and this total wetland area is estimated to be 1,317 ha. In addition, 232 ha of terrestrial habitat was included within the site for Chough. This gives a total combined SPA area of 1,549 ha. For Trawbreaga Bay SPA the area of intertidal habitat is estimated to be 827 ha; while there is ca. 314 ha of subtidal habitats, such as tidal river, creeks and channels. There is a further 176 ha of supratidal habitat (i.e. above mean high water mark) (from NPWS, 2014c).

The area of existing licenced aquaculture activities is 46.55ha; while a further 14.59ha have been progressing through the appeal process; giving a total of 61.14ha currently being operated. To date 15 of 19 sites have been approved. These sites are all currently in operation and therefore are considered as part of the existing environment (see Figure 6.1); these are discussed further under In-Combination Impacts (Chapter 7.0).

As noted there are current applications for a further 10.13ha dispersed across 14 plots (see Figure 6.1).

There are 10.13ha of applications across 14 plots. Within the bay current and proposed licence blocks are centred on IWEBS subsites 0A439 and 0A442 (Figure 6.2). All but one of the current applications falls within the IWEBS count sector 0A442 (7.83ha). A single large site to the north of Fegart Point falls within IWEBS subsite 0A439 (2.30ha).

Both areas are characterised by intertidal, shallow subtidal and subtidal habitats. In the case of Light-bellied brent geese, they are capable of reaching approximately 40 cm below surface when upending and therefore can make use of shallow subtidal waters as the tide is changing (Clausen, 2000); as well as grazing on terrestrial grassland. While Barnacle geese may occasionally roost on intertidal areas or access freshwater creeks in such areas they feed exclusively on neighbouring grassland and roost on an offshore island.

The approximate area of intertidal habitat (i.e. equivalent to mudflats and sandflats not covered by seawater at low tide *1140*) is 395.42ha in subsites 0A439 and 151.37ha in subsite 0A442. The area of subtidal habitat is 27.57ha and 87.83ha, respectively. Table 6.2 sets out the area of proposed trestles within intertidal and subtidal habitat for IWEBS subsites 0A439 and 0A442.

Table 6.2a Area of aquaculture sites in intertidal and subtidal habitat for IWEBS subsites 0A439 and 0A442.

Category	Intertidal (hectares)	Subtidal (hectares)
Total Area in SPA	827	314
0A439		
Total Area	395.42	27.57
Applications	2.31	0.77
%	0.58%	2.8%
0A442		
Total Area	151.37	87.83
Applications	10.80	1.41
%	7.13%	1.61%

Table 6.2b Area of aquaculture sites in intertidal and subtidal habitat as a function of the entire SPA.

Category	Intertidal (hectares)	Subtidal (hectares)
Total Area in SPA	827	314
Application Areas	13.11	1.09
	1.59%	0.35%

There are no applications within IWEBS subsites 0A440 and 0A441 at the far eastern end of the site; or in 0A438 on the western side of the bay.

Given the moderate scale of intertidal oyster cultivation proposed for Trawbreaga, in relation to the overall size of the bay, the trophic pathways involving intertidal oyster cultivation are unlikely to form a major component of the overall food web system, and, therefore, ecosystem level effects on benthic invertebrates and fish populations are unlikely to occur.

6.2.2. Habitat structure

Intertidal oyster cultivation causes a significant alteration to the intertidal habitat suitable for bird usage through the placement of physical structures (oyster trestles) on the intertidal habitat. This alteration may alter the suitability of the habitat for waterbirds by interfering with sightlines and/or creating barriers to movement. Based on the characteristics of species showing positive/neutral or negative responses to trestles, we have hypothesised that trestles may interfere with flocking behaviour causing species that typically occur in large, tightly packed flocks to avoid the trestles (Gittings and O'Donoghue, 2012). Trestles could also interfere with the visibility of potential predators causing increased vigilance and reduced foraging time, while they may also interfere with the ability of hunting raptors to detect and capture prey.

6.2.3. Food resources

6.2.3.1. Benthic fauna

Intertidal oyster cultivation may cause impacts to benthic invertebrates through sedimentation and eutrophication, and this could potentially affect food resources for waterbird species.

In a review of the literature, Dumbauld *et al*. (2009) found variation in the effects of intertidal oyster cultivation on the benthic fauna. In studies in England, France and New Zealand, intertidal oyster cultivation caused increased biodeposition, lower sediment redox potential and reduced diversity and abundance of the benthic fauna. However, in studies in Ireland and Canada, few changes in the benthic fauna were reported, due to high currents preventing accumulation of biodeposits.

The Irish study referred to above was carried out at Dungarvan Harbour (De Grave *et al*., 1998). This study compared an oyster trestle block (in the north-eastern section of the main block of trestles) with a control site approximately 300 m away, with both areas being at the mean tide level. Within the trestle block areas underneath trestles and areas in access lanes were compared. The study found no evidence of elevated levels or organic matter or high densities of organic enrichment indicator species within the trestle blocks. There were minor differences in the benthic community between the control area and the areas sampled under the trestles (higher densities of *Nephtys hombergii*, *Bathyporeia guiiliamsoniana*, *Gammarus crinicomis*, *Microprotopus maculatus* and *Tellina tenuis* including increased abundance of *Capiteila capitata* in the latter area), but these were considered to be probably due to increased predation by epifaunal decapods and fishes. There appeared to be stronger changes in the benthic community in the access lanes with increased densities of three polychaete species (*Scolopos armiger*, *Eteone longa* and *Sigalion mathildae*) and higher overall diversity, and these changes were considered to be due to the compaction of the habitat by vehicular traffic.

In more recent work commissioned by the Marine Institute, Forde *et al*. (2015) looked at benthic invertebrates along access tracks, under trestles and in close controls at a number of sites nationally. There was a strong site effect from the study in that significant differences were observed using a variety of invertebrate response (dependent) variables among the sites. Access routes were considered more disturbed than trestle and control

locations; most likely due to the influence of compaction from regular vehicle movements. Abundance (among other variables) was significantly higher in control and trestle samples when compared with those derived from access routes. No noticeable difference between control and trestle samples was detected. Therefore, this research indicates that intertidal oyster cultivation is unlikely to have had major impacts on food resources for waterbirds that feed on benthic fauna (Forde *et al*., 2015).

Introduction of trestles to sand / mudflats provides a 3-dimensional structure upon which a range of algal species can grow; especially green algae favoured by Light-bellied Brent Geese (see e.g. Plate 5.1). The species type and density of growth is influenced by the level of site maintenance as bags are routinely turned and cleaned to ensure unobstructed flow of oxygenated water to oysters within the bags. Where little maintenance occurs, a fucoid community can however develop; at this stage the trestles provide feeding opportunities for species such as Herring Gull, Oystercatcher and Hooded Crow which target associated invertebrate fauna. Higher levels of maintenance favour the smaller green and purple algae; growth will also be influenced by nutrient levels within the estuary and water temperature and thus this resource can be quite substantial in autumn when birds first arrive.

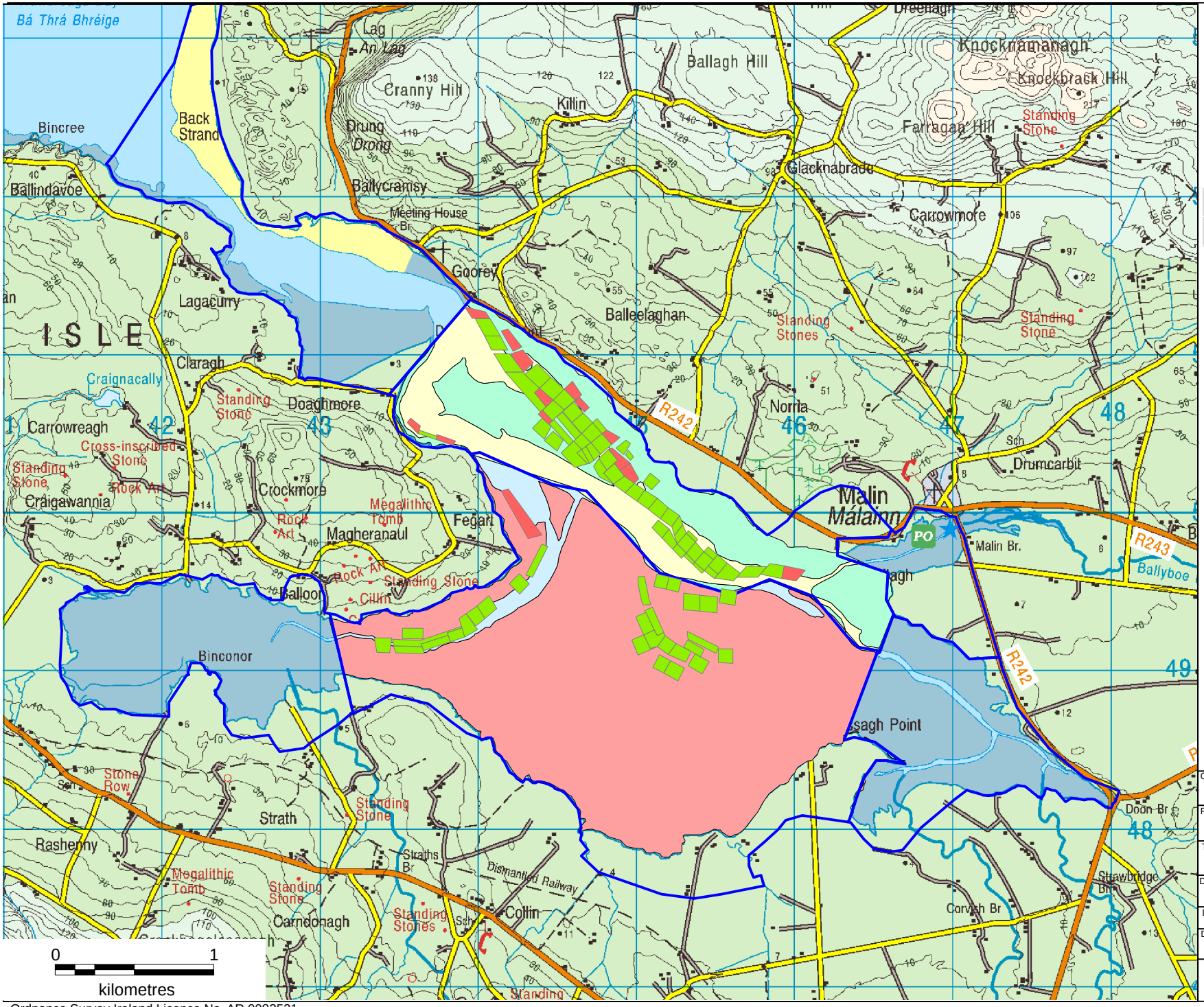
6.2.3.2. Disturbance

Intertidal oyster cultivation can require intensive husbandry activity, and this may cause impacts to waterbirds using intertidal and/or shallow subtidal habitats through disturbance. Disturbance will not affect high tide roosts, or waterbirds that mainly, or only, use trestle areas when they are covered at high tide because no husbandry activity takes place during the high tide period. The trestle study (Gittings and O'Donoghue, 2012) examined the combined potential effects of habitat alteration and disturbance from husbandry activity. The sites included in the study included some with very high levels of husbandry activity. Therefore, it is not necessary to consider the disturbance component of the potential impacts separately in relation to potential impacts on waterbirds at low tide.

Aquaculture husbandry activities were amongst five different activities that were recorded to cause disturbance to waterbirds at Trawbreaga Bay during the NPWS waterbird survey programmes in 2009/2010. Aquaculture activities (both machinery and workers walking in the intertidal area) was one of the most frequently recorded activities along with walking (including with dogs) (NPWS, 2014c).

Disturbance events associated with aquaculture husbandry activities were most frequently recorded in subsite 0A442 (north central) and was caused both by machinery and workers walking on the intertidal zone (NPWS, 2014c).

Disturbance was also noted by an aquaculture worker in the intertidal area who was accompanied by a dog in the area northwest of Glassagh Point. No specified date was noted on the data sheet however the record was made during site usage surveys undertaken between 2007 and 2009.



Client:	Marine Institute
Project:	Trawbreaga Bay SPA - AA
Title:	Areas of Intertidal & subtidal habitat in IWEBS count sectors

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6.3. Assessment of QI Species in Trawbreaga Bay SPA

6.3.1. Chough

6.3.1.1. Status of Chough

The Atlantic and Celtic Sea Coasts of Ireland support the majority of the Northwest European population of Choughs. Census counts of Chough have been undertaken in Ireland at roughly decadal intervals over the last 40 years (Cabot 1965, Bullock *et al.* 1983a, Bullock *et al.* 1983b, Berrow *et al.* 1993 all cited in Gray *et al.* 2003). The early surveys estimated the population to number in the range of 567 to 685 pairs. Additional coverage and survey effort in the 1992 survey reported a maximum of 906 pairs of Choughs with an additional 821 birds in flocks in Ireland representing over 70% of the northwest European population (Berrow *et al* 1993 cited in Gray *et al*. 2003). The 2002/2003 survey recorded a total of 838 breeding pairs of Chough with 388 confirmed, 57 probable, and 393 possible breeding pairs. A further 756 birds were recorded in flocks. The largest numbers of birds were recorded in Cork, Kerry and Donegal (Gray *et al*. 2003).

Chough is amber listed on the Birds of Conservation Concern in Ireland (Gilbert *et al*., 2021). This classification is based on the fact that the species conservation status has been listed as unfavourable on the Species of European Conservation Concern (SPEC). Chough are listed as SPEC 3 where SPEC 3 species are those for which the global population is concentrated outside Europe.

Winter counts made from 2001 and 2004 indicate that Trawbreaga Bay supports 100 Chough. This exceeds the All-Ireland 1 percent threshold for this species and so makes the site of national importance for Chough NPWS (2014b). More recently 53 birds were observed at Lagg, Malin Head in October 2014, while a flock of over 100 birds was noted near Horn Head (source: www.irishbiridng.com).

Chough is listed on Annex I of the EU Birds Directive 2009/147/EC.

A tender for undertaking new national survey of Chough in 2021 was advertised by National Parks and Wildlife Service of Department of Housing, Local Government and Heritage in February 2021, with the survey to be undertaken over the summer of 2021.

6.3.1.2. Distribution of Chough in Trawbreaga Bay

Trawbreaga Bay SPA contains coastal habitats used by Chough. Nest sites have been recorded in the past at the northern end of the site. However, the main importance of this SPA to Chough conservation is that it contains an important foraging resource centred on the dune system at Lagg, and parts of the coastal slope that support coastal heath and maritime grassland. These areas are used by recently fledged young and others particularly during the autumn period. Furthermore, the coastal cliffs contains a regularly-used communal roost site (NPWS, 2014b).

6.3.1.3. Response of Chough to oyster trestles

While Chough are not known to associate with oyster trestles; equally they are rarely found to use the lower parts of the shore where oyster trestles are normally located. Use of the upper shore tends to be restricted to feeding on invertebrates associated with rotting seaweeds thrown up on the beach.

6.3.1.4. Impact Assessment - Chough

The Chough is a species of crow frequenting coastal areas from Wexford to Donegal; they are largely cliff nesting, though some birds will nest in man-made structures (Gray *et al*. 2003; Balmer *et al*. 2013). They frequent coastal habitats including areas of pasture and thus are at risk from changes in agricultural practices. In Ireland the 2007-11 Atlas (Balmer *et al.* 2013) indicates that there has been an overall winter range expansion of 10% since the 1981-84 Atlas (Lack, 1986); while the breeding range has increased 4% since 1968-72 (Sharrock, 1976) and 2% since 1988-91 (Gibbon *et al*, 1993). While they may feed on insects associating with rotting algae on the upper shore, they generally do not use intertidal habitats. However, foraging along wrack deposits on the strandline is not commonly recorded on Donegal; when recorded it is possibly linked to frosty spells (M. Trewby, *pers comm*; P. O' Donoghue, *pers obs*. in Co. Cork). We are not aware of any evidence that Chough interact with oyster trestles.

Some of the largest Chough flocks in Ireland have been recorded in dune systems at Lagg north of Trawbreaga Bay (Trewby *et al*. 2006). Trewby *et al*. (2006) state that 15 breeding pairs were recorded on a 70km stretch of Coast on the Inishowen peninsula during the 2003 survey. In addition, a ca. 100 bird autumn flock was recorded in Lagg during the 2004/2005 survey. Furthermore, 100 birds were also recorded in the Lagg area from a separate observation in 2000 suggesting that this area has been an important Chough area for an extended period of time (R. Sheppard *pers comm* cited in Trewby *et al*. 2006).

The relatively low density of breeding pairs on Inishowen and the disproportionately high number of birds seen in the dunes at Lagg suggests this area and the associated roost at Five Fingers have a wider regional significance with these dunes assumed to be attracting birds from a wider area (Trewby *et al*. 2006).

Trewby *et al*. (2006) also observed that dune systems exhibiting a diversity of habitats and land use will provide a mosaic of profitable foraging microhabitats for Choughs. This diversity of dune habitats and complexity in land uses tends to be more evident in large dune systems, such as at Lagg. Therefore, these larger dune systems will tend to be of higher conservation value to Choughs, when compared to smaller dune systems or dune systems that have become fragmented through development pressures. In addition, Trewby *et al*. (2006) suggest that such dune sites were important as autumn '*assembly points*' for young Choughs and birds from outside the area and these flocks may then go on to roost communally and feed as a flock in nearby habitats through the winter. A similar pattern of use was observed at Barley Cove, Co. Cork and Inch, Co. Kerry, where the flock usage of coastal dune habitat declines in the late autumn and birds chose to feed in improved and semi-improved pastures inland from the coastal roost site over the winter (Trewby *et al*. 2006).

As a result, these communal roosts may play an important role in the re-colonisation of the Co. Antrim Coast where Chough numbers have shown declines during past surveys.

Overall, due to the proposed scale of oyster cultivation; the lack of any significant use of intertidal habitat by Chough; and the separation of proposed oyster cultivation from known foraging, roosting or nesting sites it is unlikely that the intertidal oyster would have a negative impact on Chough using Trawbreaga Bay SPA.

6.3.2. Barnacle Goose

6.3.2.1. Review of Barnacle Goose counts

The Greenland breeding population of Barnacle Geese that over winter in Ireland and Britain was increasing in numbers (Mitchell *et al.* 2008) with a total wintering population estimated at 80,670 birds (Mitchell and Hall, 2013; see also Doyle and McMahon, 2017). This figure is based on the results of a 2013 census which found that 31 sites of 72 checked in Ireland held 17,500 in 2013 (Crowe *et al*. 2014) while in Scotland, the equivalent survey yielded 63,170 geese from 38 of 224 sites checked (Mitchell and Hall, 2013). This represented a total wintering population increase of 14.4 percent since the previous survey in 2008 (Mitchell and Hall, 2013).

The results of the 2013 recent census suggested that Ireland holds 22 percent of the flyway population and has shown an increase of 43 percent since the last census was undertaken in 2008 (Crowe *et al.* 2014). Over the long term, census results showed a population increase from 2,771 in 1959/60 to 12,232 in 2008 (Walsh and Crowe, 2008; Mitchell *et al.* 2008) to 17,500 for the 2013 survey (Crowe *et al.* 2014).

Notably, Mitchell and Hall (2013) investigated the increases in population on a site by site basis and found that prior to the 2013 survey it appeared that increases in population were due to increases at a number of key sites in Ireland and Scotland, namely Islay, Tiree, Coll, Oronsay/Colonsay, South Walls, Inishkea Islands and Ballintemple/Lissadell which held the majority of geese (75.5% of the total in 2013); with Islay alone holding 55.7% of the population total. However, the 2013 census results suggest that numbers at key sites have stabilised since 2008 whereas number on the outlying sites continue to rise. This suggests that the key sites may have reached their carrying capacity and so outlying sites will continue to see an increase in numbers.

Internationally the population trend also showed an increasing trend (Wetland International, 2012). Notably, no sites in Northern Ireland record significant numbers of Barnacle Geese (Calbrade *et al.* 2010).

When counted in 2018 a total count of 72,162 represented a 10.5% decrease since the population was last censused in 2013. In Ireland, 16,237 birds were counted; this represented a 7.2% decline in numbers since 2013 and is in line with a recent flyway population decline (Doyle *et al*., 2018; Mitchell, 2018). Trawbreaga Bay continues to support an internationally important population, with 1,775 birds recorded in the 2018 census (Doyle *et al*., 2018). This national decline must, however, be viewed in the context of a control programme being implemented in Islay since 2014. Doyle *et al*. (2018) noted that there may have been a decrease in Barnacle Goose immigration into Ireland from Islay (Scotland) due to the shooting control programme for Barnacle Geese currently being implemented on Islay as part of the *Islay Sustainable Goose Management Strategy, 2014-2024* (MacKenzie, 2014). A similar scale of decline has been seen in Scotland indicating a reduction at a flyway level rather than a redistribution of birds away from Irish sites.

Barnacle Goose is amber listed on the Birds of Conservation Concern in Ireland (Gilbert *et al.*, 2021). While numbers at the time were increasing for this species, it was retained on the amber list of conservation concern as it has a localised wintering population, i.e. where 50 percent of the Irish population are located in 10 or fewer sites. The localised nature of the wintering groups makes them vulnerable; hence their inclusion on the amber list. In addition, the Irish population represents more than 20% of the European wintering population and so the species is considered to be of international importance and qualifies for the amber list.

In the UK, the Barnacle Goose is also listed as amber status on birds of conservation concern (Eaton *et al*. 2009) due to the localised nature of the wintering population with 50 percent of the UK population located in 10 or fewer sites.

In Ireland, the species is mainly recorded along the west and northwest Coasts, often on islands or remote areas which are difficult to access. Internationally important numbers were recorded at Ballintemple in Co. Sligo, the Inishkea Islands off Co. Mayo and on Malin Head, Dunfanaghy New Lake and Trawbreaga Bay (all Co. Donegal) (Crowe *et al*. 2014). A number of additional sites along the west and northwest Coast held nationally important numbers of Barnacle geese. The criteria to meet international importance is 810 birds, while the threshold for national importance is 160 birds (Lewis *et al*., 2018).

Notably, no Barnacle Geese were recorded at Trawbreaga during the spring 2008 census. However, 317 birds were recorded at Malin Head. It is now thought that the flock at Malin Head and Trawbreaga Bay form one

ecological unit (NPWS, 2014b) and may move between the sites. A summary of counts from different sources, including IWEBS are shown in Table 6.3 and 6.4.

Table 6.3 Summary population data for Barnacle Goose at Trawbreaga Bay (multiple sources).

Survey	Numbers recorded
Data from Crowe, 2005 (5-year averages)	1994-1998; 663 1995-199; 645 1999-2000; 621
Baseline period from IWEBS (Mean Peak 1995/96 to 1999/00) (Natura 2000 form)	645 (I)
1999 Spring census	217 (N)
2003 Spring census	254 (N)
2008 Spring census *	317 (N)
November 2009 (WSP, NPWS)	Peak - 2,194 (I) Average – 714 (N)
2010 November IWEBS ground census	668 (N)
2013 Land based Spring census (Trawbreaga)	890 (I)
2013 Land based Spring census (Malin Head)	1,800 (I)
2018 Census (Doyle *et al*., 2018; Lewis et al., 2019)	1,775[10]
Incidental records (www.irishbirding.com) - Lagg (1st January 2017) - Near Malin Town (18th Feb 2015) - Between Malin & Malin Head (14th Oct 2014)	 1,500 + ca. 2,000 2,500
(N) All Ireland 1% importance threshold: 150 (Crowe and Holt, 2013) (I) Based on Wetlands International, 2006 for baseline period and 2012 thresholds for recent counts * peak count of Malin Head flock using aerial count	

Table 6.4 Summary of notable counts from IWEBS.

Date	Count	IWEBS subsite
25/01/18	420	0A443
21/11/12	518	0A442
28/02/12	1300	0A438
14/11/10	660	0A439
02/03/10	510	0A439
22/01/09	760	0A402 [a]
25/11/08	1328	0A402
06/02/08	1943	0A402
16/12/07	2355	0A402

[a] 0A402 refers to when IWEBS counted Trawbreaga as a single site (no subsites).

The site conservation condition for Barnacle Goose at Trawbreaga Bay SPA has been assessed as favourable based on the increasing population (NPWS, 2014c).

[10] During the 2018 census, in addition to 1,775 birds at Trawbreaga, a further 380 birds were recorded at Malin and 300 at Doagh – giving a combined Trawbreaga / Malin population of 2,455. This is in line with recent high counts from Trawbreaga.

6.3.2.2. Recent Barnacle Goose Counts

Trawbreaga Bay and the nearby Malin Head were counted by NPWS in March 2020 (Lee McDaid, NPWS, *pers comm*). On the 16th March 2020 the following flocks were recorded, giving a total of 1,265 birds in Trawbreaga Bay (see Figure 6.3): -

- 30 Balloor, Doagh Island
- 340 Strath
- 105 Glassagh
- 790 Doon Bridge

On the 12th February 2021 (during a recent IWEBS count) 1,670 Barnacle geese were counted on IWEBS subsite 0A439 (southern bay) and 21 in subsite 0A440 (eastern bay); see Figure 2.2 for subsite boundaries. A further 870 were recorded on the same day below the tower at Malin Head. This makes a total of just over 2,500 Barnacle geese for North Inishowen and is consistent with the large numbers NPWS have seen this year (NPWS, per comm). On the 28th November 2019 1,380 Barnacle geese were recorded in 0A438 (see Figure 2.2; subsite adjoins Ballyliffin fields and south side of Doagh Island).

As noted, the site was surveyed by Atkins on the 10th and 12th February 2021 (see Chapter 5.0). The total number of Barnacle geese recorded using Trawbreaga Bay and environs was 2,350 on the 10th and 2,479 on the 12th February. Location of flocks is shown in Figure 5.1 and 5.2.

The species is primarily a land-based bird, foraging terrestrially while roosting can occur on sandbanks, saltmarsh and offshore islands (NPWS, 2014b/c). Glashedy Island is used as an overnight roost.

Figure 6.3 Location of barnacle geese flocks, 16th March 2020 (Source: L. McDaid, NPWS).

[Note: In each case the count value is placed over the field used by foraging Barnacle geese]

In earlier versions of this Appropriate Assessment Report a number of figures were included which summarised the distribution of geese in Trawbreaga Bay; this included data from 2007/2008 (Source: E. Johnston, NPWS) and 2009/2010 (Source: NPWS); along with a summary of areas favoured by geese (Source: NPWS). However, these data are now over 10 years old.

Figure 6.4 therefore illustrates the location of many areas favoured by Barnacle geese in Trawbreaga Bay in recent years; it should not, however, be viewed as an exhaustive list of sites (Source: Lee McDaid, NPWS, *pers comm*). To this we have added fields for which there is historic evidence of use by Barnacle geese in order to present a more complete picture of site use by Barnacle geese in Trawbreaga.

In summary, the site conservation condition for Barnacle Goose at Trawbreaga Bay SPA continues to be positive.

6.3.2.3. Trends

The population trend for Barnacle Goose presented in NPWS (2014b) is calculated using IWEBS data and is based on the change between the baseline period (mean 1995/96 to 1999/00) and recent counts (mean 2007/08 to 2009/10). A mean number of 645 individuals were recorded for the baseline period with a mean number of 1,421 recorded from the recent period. This represents a 120 percent increase in numbers at Trawbreaga Bay during this period. As a result, the site conservation condition for Barnacle Goose at Trawbreaga Bay SPA was assessed as favourable based on the increasing population (NPWS, 2014c).

During the NPWS waterbird survey programme in 2009/2010, a peak count of 2,194 Barnacle Geese was recorded in Trawbreaga Bay during the November low tide count. The average number of Barnacle Geese recorded during low tide counts was 714.

However, as noted above recent NPWS counts in February 2021 noted just over 2,500 Barnacle geese for North Inishowen and is consistent with the large numbers NPWS have seen this year (NPWS, per comm).The trend seems to be a significant increase in Barnacle Goose numbers in Trawbreaga Bay. In response to this increase NPWS have responded by offering Farm Plans to some of the local landowners. While in February 2021 NPWS noted geese distributed between Trawbreaga and Malin, in March 2021 Atkins noted 2,350 on the 10th and 2,479 on the 12th February 2021; all within Trawbreaga.

Lewis *et al*. (2019) indicates that Barnacle geese numbers rose by 101.1% over 25 years; +32.7% over 10 years; but there has been a slight decline of -7.2% over the most recent 5 years (2013 census; *Crowe et al*., 2014). Trawbreaga is clearly identified as a site of International importance. The nearby site at Dunfanahy is also noted to be of national importance.

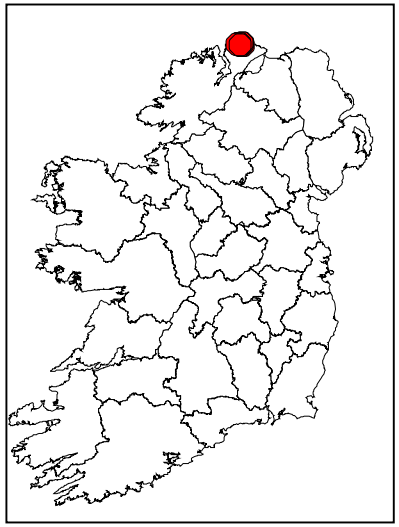
Barnacle Geese utilising sites at Lissadell and Ballintemple in Drumcliff Bay, Co. Sligo, the Inishkea Islands, Co. Mayo and Rathlin O'Birne Island, Co. Donegal show consistent site usage. In other locations, site usage is less consistent and may depend on food availability, disturbance and weather conditions through the winter (Boland and Crowe, 2012). The inconsistency in numbers recorded from surveys indicates that flocks are highly mobile through the winter (Boland and Crowe, 2012). In the case of Trawbreaga, the Trawbreaga flock is clearly closely linked with the wider Malin flock and should be considered as a single unit. Barnacle Goose is not, however, a qualifying interest of the neighbouring Malin Head SPA (designated solely for Corncrake). Movements between Ireland and Islay (Scotland) have also been recorded.

The evidence from all available counts indicates that the site conservation condition for Barnacle Goose at Trawbreaga Bay SPA is favourable at present.

N

Legend

- Important On-Land Barnacle Goose Areas (NPWS, 2020)
- Additional Important Barnacle Goose Areas (NPWS, 2007/08; 2009/10)



Client: Marine Insistute

Project: Trawbreaga Bay SPA - AA

Title: Overview of Important On-Land Barnacle Goose Areas

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6.3.2.4. Other SPAs which support Barnacle Geese

As noted above Barnacle Goose is also a qualifying interest of Inishtrahull SPA, Horn Head to Fanad Head SPA and Greers Isle SPA (see Table 6.5).

- The island of Inishtrahull is located 12.5km northeast of Malin Head. The site is known to occasionally support Barnacle Geese – 153 in spring of 1993; 69 in spring of 1994. The NPWS site synopsis assigns these birds to the population that frequents Trawbreaga Bay (NPWS site synopsis, 2015b). It notes that the island provides a useful feeding site and a safe refuge. However, at 12.5km offshore this would be on the outer margin of recorded daily foraging – roost site commutes for Barnacle Geese (Johnson *et al*., 2014). The timing of the records suggests use of the island by spring migrants. Inistrahull is not listed in the 2008 or 2013 surveys (Crowe *et a*l., 2014).

- Both Greenland White-fronted Geese and Barnacle Geese are recorded from Horn Head to Fanad Head SPA. They favour New Lake near Dunfanaghy (196 and 160, respectively; averages 1995/96-1999/00); this site is just over 40km to the southwest of Trawbreaga. There's no evidence of Greenland White-fronted Geese using Trawbreaga. In the 2013 census Dunfanaghy New Lake supported 1,215 Barnacle Geese; in the 2018 census 1,300 Barnacle geese were recorded (Doyle *et al*. 2018).

- As noted, while Malin Head is not listed for Barnacle Geese it supported 1,800 birds in 2013 (i.e. a 311.9% population change since 2008) (Crowe *et al*., 2014). In the 2018 census 380 Barnacle geese were recorded at Malin Head (Doyle *et al*. 2018).

Table 6.5 Summary population data for Barnacle Goose at Trawbreaga Bay & Environs (after Crowe *et al*., 2014, Doyle *et al*., 2018).

Site	SPA	2013 Census Numbers recorded	2018 Census Numbers recorded
Inistrahull	Inistrahull SPA	n/a	n/a
Dunfanaghy New Lake	Horn Head to Fanad Head SPA	1,215	1,300
Trawbreaga	Trawbreaga Bay SPA	890	1,775
Malin Head	-	1,800	380

Notes: n/v – site not visited; n.a. – site visited, but no geese recorded.

- It would therefore appear that Trawbreaga / Malin supports ca. 2,500 – 3,000 Barnacle Geese; with a further ca. 1,200-1,300 to the west at Dunfanaghy New Lake. It is not known to what extent there is interchange between these colonies or with sites further to the west; though some interchange with Islay, Scotland is known to occur (NPWS, *pers comm*). Further west 232 birds were recorded in 2013 from Inishbofin, Inishdooey & Inishbeg SPA; with a further 318 from Inishsirrer within West Donegal Islands SPA. Numbers at Inishsirrer are also increasing – 62.2% since 2008 (no figure is available for Inishbofin, Inishdooey & Inishbeg). To the east there are no SPAs in Northern Ireland for which Barnacle Goose is a qualifying interest. A colour-ringing scheme is ongoing; this will help to fully understand patterns of movement between these sites to determine if they act as separate populations or not; e.g. is the increase in numbers of these other sites been driven by growth and expansion of the Trawbreaga / Malin flock. The ongoing cull in Scotland further increases the importance of such studies.

6.3.2.5. Distribution of Barnacle Goose in Trawbreaga Bay

Barnacle Geese are predominantly terrestrial grazers and forage within coastal grassland and saltmarshes. During the NPWS waterbird survey programme at Trawbreaga Bay (surveyed in 2009/10), Barnacle Geese were predominantly recorded foraging terrestrially along the west and south shores of the bay and used terrestrial habitats in all subsites except the back strand (0A443). In addition, Barnacle Geese were occasionally recorded roosting in the intertidal area at the southeast of the bay. Notably, the areas of terrestrial grassland in which the flocks were recorded are largely outside the SPA boundary (NPWS, 2014c).

In addition to observations of foraging birds, two observations of roosting geese in the intertidal area were made during the 2009/2010 surveys (flocks of 20 and 60 birds in 0A440). In general, Barnacle Geese have been observed to forage terrestrially during the day and to fly out to Glashedy Island to roost at night; although it appears that the intertidal flats can also be used as a daytime roost site. This is generally used if birds are disturbed or where birds might be accessed freshwater in creeks running across the estuary.

As the winter of 2009/2010 was exceptionally cold the prevailing weather could have influenced bird behaviour compared to behaviour under average winter conditions; additional information was provided by Emmett Johnston (NPWS conservation ranger for Inishowen) in the form of bird usage maps for Trawbreaga Bay based on surveys undertaken in 2007/08 as well as sketch maps showing important Barnacle Geese areas in the bay based on accumulated personal observations at the time. These were included in full in earlier versions of this Appropriate Assessment. In the current version they have been assessed against more recent observations (see Figures 5.1; 6.2 and 6.3).

Thus, in summary, current understanding of spatial distribution is summarised in Figures 5.1; 6.2 and 6.3. As can be seen Barnacle geese can be found widely throughout the bay, but certain areas are certainly favoured. This includes Ballyliffin; fields south and west of Malin

In summary; based on all of the information available, favoured terrestrial foraging habitats include the improved grassland fields at Ballyliffin; areas of Doagh Island such as Magheranaul; Strath and Glassagh eastwards to Doon Bridge; fields south and west of Malin village; and Moanrealtagh Point. Recent observations highlight the importance of the Ballyliffin area – see Figure 5.1.

6.3.2.6. Response of Barnacle Goose to oyster trestles

We are not aware of any published information on the response of Barnacle Geese to oyster trestles. Given that Barnacle Geese now predominantly feed on improved grassland, creation of trestles would not result in any direct loss of foraging grounds. Disturbance due to access to the foreshore could disturb birds feeding in coastal fields; while there is also evidence of Barnacle Geese roosting on the intertidal flats at low tide. These birds could also be disturbed by site workers.

Displacement of birds from feeding areas and roost sites is an important consideration, as Barnacle geese tend to congregate in large numbers at favoured feeding and roosting sites in winter year on year; such sites frequently may be associated with a SPA, but often lie outside the site boundaries. It has been demonstrated in the literature that habitat quality on the wintering grounds can influence factors such as time of migration, body condition during spring migration and subsequent breeding success. As a consequence, loss of feeding areas or roosting sites through disturbance is of concern, especially if birds are forced to move to suboptimal sites.

It is difficult to find clear published evidence of disturbance / flight initiation distances for Barnacle Geese in the literature appropriate to the type and scale of disturbance associated with aquaculture activities. Hötker *et al*. 2006 (in Rees, 2012) quote displacement distance from feeding areas and roost sites 30–600 m for geese at terrestrial wind farms; while Madsen *et al*. (2009) found on Svalbard that during brood rearing, families of Barnacle geese escaped from disturbance from tourists on foot at an average distance of 330m. However, neither example is directly comparable to the situation in Trawbreaga, where the landscape includes ongoing low levels of disturbance from farming practices, nearby farmyards and houses and traffic on local roads. Clearly there is a degree to which Barnacle geese habituate to patterns of disturbance in the wider landscape, with e.g. existing trestles close to shoreline feeding fields off the R242 and at Magheranaul.

6.3.2.7. Impact Assessment – Barnacle Goose

As noted, Figure 5.1, 5.2 & 7.2 illustrates the area of fields and adjoining shore generally favoured by Barnacle Geese (cumulative data from multiple sources). Recent counts have highlighted the importance of Ballyliffin – with over 2,000 birds recorded in March 2021. The recent NPWS counts noted birds at Balloor, Doagh Island (30), Strath (340), Glassagh (105) and Doon Bridge (790). All of these sites were again remote from aquaculture activity, access routes.

Historically large flocks (ca. 2007 – 2010), were recorded from Strath (57-204 & 900-1700); Magheranaul (204-900); eastern tip of Glassagh Point (204-900) and Moanrealtagh Point (south of Malin; 204-900). Fields to the

west of the access road to Glassagh Point (and adjoining shore) are also noted to be important (NPWS *pers comm*) (see Figure 6.4).

One of the areas previously highlighted (NPWS, *pers comm*) were coastal fields south and west of Malin (see Figure 6.2-6.3). This is located just to the east of the main line of trestles; a significant proportion of which are currently licenced. Eastward extension comprises sites Under Appeal and new Applications. Access to the northerly trestle blocks would be from the R242 Lagg Road approximately 1km further to the west of the favoured fields. This area also hosts a works area with sheds etc. (see Plate 5.10). Recent counts did not record birds from this area. It is not clear whether birds are being actively displaced by activity on the shore adjoining favoured fields or whether it is merely an artefact of a small number of recent counts. The favoured fields experience disturbance from road traffic, but are isolated from houses, farmyards etc. Barnacle geese can habituate to consistent patterns of activity. Thus, while appropriate screening of this access, which is located on the edge of an existing cluster of houses, at a distance from the preferred fields, is unlikely to affect continued use of favoured fields close to Malin (refer to conditions / monitoring proposals below; see also Marchant, 2014); it cannot be completely discounted.

There are no proposals to place trestles along the southern shoreline – along which Barnacle Geese are known to forage in large numbers (Figure 6.1 & 6.2). There is a proposed access point from the minor road leading to Glassagh Point to trestles mid-estuary (in subsite 0A439) (see Plate 5.4 & 5.5). While Barnacle Geese are known to occasionally roost intertidally in this area this is a rare occurrence. The large fields favoured by Barnacle Geese along the western side of Glassagh are, however, well screened from the access road to Glassagh Point by a combination of roadside hedges and areas of scrub and rough grassland not used by Barnacle Geese. Birds were recorded from southwest of Glassagh in 2021.

The other main block of trestles (also currently licenced) are located off Magheranaul; in this case the majority of licences are new applications, with a number of licence applications off Fegart Point, including one large Application north of Fegart Point. A number of access points are proposed from a minor road leading down to the shore at the western and eastern end of the trestles (see Figure 6.1). While this area is not highlighted as a key area, the 2007/08 and 2009/10 surveys did record birds feeding close to the proposed access point. It is difficult to predict how usage of the fields closest to the access lane would be affected, though it should be noted that this area is already close to a number of houses and farmyards and so would be exposed to a certain level of human activity.

While disturbance in these areas may not be significant; as noted in previous assessments no dogs are to be allowed on site; machinery are to be well maintained to avoid unnecessary noise; and no bird scaring devices are to be used on site.

In summary, Barnacle Geese numbers are continuing to increase in Trawbreaga. Birds using Trawbreaga must, however, be considered together with birds from Malin as a single ecological unit. Interchange with Dunfanaghy should also be considered. While they have clearly favoured sites it's probable that geese respond to human pressures / disturbance by moving between favoured feeding grounds around the bay (and indeed beyond to Malin) in response both to disturbance and changing patterns of food availability / needs during the winter.

As noted above, Trawbreaga Bay is also designated for Wetland and Waterbirds [A999] (pg. 3.6-3.7). The conservation objective for wetlands in Trawbreaga Bay SPA is to "*maintain the favourable conservation condition of the wetland habitat in Trawbreaga Bay SPA as a resource for the regularly occurring migratory waterbirds that utilise it*" (NPWS, 2014b/c). This bay is dominated by *muddy sand to coarse sediment with* Pygospio elegans *community complex* along with a smaller area of *Sand with* Angulus tenuis *and* Scoloplos armiger *community complex*; along with areas of saltmarsh. These also lie with the North Inishowen Coast SAC (002012); a full assessment of impacts on marine habitats is presented in the accompanying appropriate assessment of aquaculture in the North Inishowen Coast SAC (002012) (Marine Institute, 2021).

Recommendations

It should also be a condition of planning that no dogs are allowed when accessing the foreshore to avoid disturbing geese; and that vehicles must be maintained in sound working order to prevent excessive noise disturbance and that no bird scaring devices are to be used on site.

We understand that NPWS monitor geese annually at Trawbreaga Bay; it should be a condition of any expansion in oyster cultivation that this continue. This should focus in particular on whether geese continue to use Trawbreaga Bay in line with expectations; e.g. that access from Lagg Road, Magheranaul and Glassagh Point does not impact on patterns of site use by geese in these areas and that activities do not displace birds from Magheranaul / Strath or indeed areas near Glassagh. In assessing any change in numbers, the numbers of birds at Trawbreaga Bay must be considered in the wider context of the population in Ireland and Scotland; a recent decision to allow an increase in shooting of Barnacle geese on Islay could conceivably result in movement of birds from Islay to sites in Ireland.

While, based on the current proposals, the risk of negative disturbance impacts is low, development of a clear Code of Practice; close consultation with NPWS and continuation of annual monitoring of Barnacle Geese is recommended to identify and address any disturbance issues that might arise (with particular emphasis on the areas around the Magheranaul, Glassagh Point and Malin access points (Figure 6.1). The ongoing cull in Scotland further increases the importance of such monitoring studies. The site visit in February 2021 also highlighted the issue with old oyster bags and trestles being located on the shore. Their removal needs to be addressed as they are preventing access to foraging areas by birds.

6.3.3. Light-bellied Brent Goose

6.3.3.1. Review of Light-bellied Brent Goose counts

The *hrota* population of Light-bellied Brent Geese that over winter in Ireland and breed in the Canadian high Arctic have shown increases in population since the early 1990's (Boland and Crowe, 2012) with a peak population estimate of 48,000 in 2011/12, but with numbers falling as low as 32,000 birds. Over the period 2015 – 2017 the population has been between 35,000 and 40,000 birds (Lewis *et al*. 2018). In a number of recent years there has been total breeding failure (i.e. 2009, 2013 & 2017), while in other years the percentage of young exceeded 20% (i.e. 2004, 2007 & 2011) (Lewis *et al*. 2018).

Historically, between 70-240 Light-bellied brent geese used Trawbreaga Bay during the late 1960s and 1970s. This rose to 250 by the mid-1980s (from Robinson *et al*., 2004; from Hutchinson, 1979; Shepard, 1993). Peak counts fell in the 1990s, followed by a period of increase; thereafter numbers were relatively stable at 300-400 in the 1990s. Robinson *et al*., (2004) also noted that peak numbers occurred in January or February. Trawbreaga Bay is noted as being of importance for Light-bellied brent geese (Robinson *et al*., 2004). Lough Swilly, which is located to the south also supports notable numbers of Light-bellied brent geese (peak count of 984 geese between 2011 – 2015).

The site population trend for Light-bellied Brent Goose at Trawbreaga Bay published in NPWS (2014b) is calculated using IWEBS data and is based on the change between the baseline period (mean 1995/96 to 1999/00) and recent counts (mean 2007/08 to 2008/09). A mean number of 362 individuals were recorded for the baseline period with a mean number of 366 recorded from the recent period (2-yr mean 2007/2008 – 2008/2009). This represents a 1 percent increase in numbers at Trawbreaga Bay over that timeframe. As a result, the site conservation condition for Light-bellied Brent Goose at Trawbreaga Bay SPA at that time was assessed as favourable based on the increasing population (NPWS, 2014b/c).

During the NPWS waterbird survey programme in 2009/2010, a peak count of 429 Light-bellied Brent Geese was recorded in Trawbreaga Bay during the November count. This met the threshold for numbers of international importance (i.e. 400; Lewis *et al*., 2018). The average number of Light-bellied Brent Geese recorded during low tide counts was 228; though birds tend to be widely scattered and / or field feeding at low tide. A peak IWEBS count of 573 birds was recorded in 2012/13 (Lewis *et al*., 2018).

Lewis et al. 2019 (Irish Wetland Bird Survey: Waterbird Status and Distribution 2009/10 – 2015/16) noted that numbers in Donegal "*are now of national rather than international importance"*; though it noted that "*Trawbreaga Bay received low levels of survey coverage*" and that "*improved coverage in coming years might therefore reveal this site to be of similar importance to the previous period*".

Counts from the same period revealed no flocks of greater than 122 birds from Lagg Church Beach (K. Colhoun, *pers comm*). While these were not complete counts of the bay, they did highlight the possibility of a real decline in the numbers of Light-bellied brent geese at Trawbreaga Bay and were in line with feedback from NPWS (*pers comm*).

In the current study 151 Light-bellied brent geese were observed on 10th February 2021; 80 were recorded on the 12th February 2021. The location of flocks is shown on Figures 5.1 and 5.2. An IWEBS count undertaken by NPWS on the 12th February 2020 noted 128 Light bellied brent geese; while 182 were counted on the 28th November 2019. This more recent data suggests a large recent decline in numbers of Light-bellied brent goose at Trawbreaga.

Light-bellied Brent Goose is categorised as amber listed on the Birds of Conservation Concern in Ireland (Gilbert *et al*., 2021). This classification is based on the fact that the species conservation status has been listed as unfavourable on the Species of European Conservation Concern (SPEC). Light-bellied Brent Geese are listed as SPEC 3 where SPEC 3 species are those for which the global population is concentrated outside Europe. In addition, further attributes contributing to the amber list status includes the fact that Brent Geese has a localised wintering population, i.e. where 50 percent of the Irish population are located in 10 or fewer sites. The localised nature of the wintering groups makes them vulnerable and are so included on the amber list. In addition, the Irish population represents more than 20% of the European wintering population and so the species is considered to be of international importance and so qualifies for the amber list.

In the UK, Brent Geese are classified as amber conservation concern for the same reasons as those outlined above in Ireland.

Brent Geese are grazers and are known for their preference for foraging in intertidal areas with the Eelgrass, *Zostera* sp. (Robinson *et al.* 2004). Brent geese will also feed upon algae species, saltmarsh plants and will also utilise terrestrial grazing habitats such as improved grassland, parkland, etc. (NPWS, 2014b). Within Trawbreaga Bay small areas of *Zostera dominated community* are located at the southern end of the bay (in the environs of Glassagh Point) (NPWS, 2014i). There will be no impact on *Zostera* beds within the bay.

6.3.3.2. Distribution of Light-bellied Brent Goose in Trawbreaga Bay

Historical Data

Light-bellied Brent Geese were recorded in all but one subsite (0A441 – Malin) during the NPWS waterbird survey programmes. Intertidal foraging was recorded within five subsites overall: 0A438, 0A439, 0A440, 0A442 and 0A443 (NPWS, 2014b). Brent Geese were recorded most frequently in subsite 0A443 (Northwest) with geese present during all low tide counts. In addition, this subsite held the highest mean number of Brent Geese across all low tide counts (there are no aquaculture sites proposed in 0A443). There is a proposal for only a single licence (T12/511A) within 0A443. Within 0A443 Light-bellied brent geese are recorded along the northern shoreline east of the Back Strand as well as in small numbers just north of Doaghmore Point (see Figure 6.4).

The other two subsites where Brent Geese were consistently recorded in good numbers across the low tide counts (2009/2010) were 0A439 (Trawbreaga South) and 0A442 (North central). These two subsites also held high peak and mean numbers of Brent Geese. Counts are presented in Table 6.6, as is the percentage of birds (total count) occupying that subsite in a given count.

Table 6.6 Peak and mean counts and percentage occupancy of subsites where Brent Geese were recorded during low tide surveys for the NPWS waterbird survey programme.

Subsite	LT Subsite Peak Count	LT Subsite Mean Count	LT subsite % occupancy
0A438	39	11	33
0A439	158	69	83
0A440	72	13	50
0A442	156	65	67
0A443	115	70	100

Flock positions recorded the NPWS waterbird survey programme (2009/2010) showed that Brent Geese were consistently recorded at a number of locations in Trawbreaga Bay including the shoreline area south of the sand dunes at the back strand to the Meeting house bridge (0A443); another location is the intertidal sand and mud flats inside Doaghmore Point as far south as Malin (including around the existing aquaculture licenced areas) (0A442). Brent Geese were frequently recorded north of Glassagh Point and also further west, southeast of Doagh Isle (again around the area of existing aquaculture). Small numbers were also located in the southwestern bay (0A438).

The patterns of flock distribution from the NPWS waterbird survey programme were supported by additional information from site usage mapping collated by NPWS in 2007/2008 which again show high frequency of occurrence on the intertidal sand and mud flats on either side of the tidal channel west of Doaghmore Point; inside the mouth of the bay, around the estuary of Ballyboe River at Malin (usage of these habitats were not recorded by NPWS waterbird survey programme flock maps) and broadly on the intertidal sand and mud flats northwest of Glassagh Point.

The pattern of distribution of geese from 2007/2008 and 2009/2010 are shown on Figure 6.5.

Prior to and including IWEBS surveys in 2008/2009, Trawbreaga Bay was not divided into subsites. Following the baseline waterbird survey, subsequent IWEBS counts were made using a set of subsite boundaries (see note on differences above). However, Brent Geese have only been recorded on 2 partial IWEBS counts that have been undertaken in Trawbreaga Bay since the baseline waterbird survey thereby limiting the value to which IWEBS data can inform Barnacle Goose distribution across Trawbreaga Bay. For the counts made in November 2010 and 2012, Brent Geese were recorded in subsite 0A443 (Northwest) on both occasions with one count of 68 and another high count of 573 birds.

In earlier versions of this Appropriate Assessment Report a number of figures were included which summarised the distribution of geese in Trawbreaga Bay based upon the above information. However, these data are now over 10 years old.

Consultation was also undertaken with NPWS in order to draw on local experience of Light-bellied brent geese numbers and spatial distribution. This again show the areas on both sides of the tidal channel inside the mouth of the bay running southeast towards Malin to be important, as is the foreshore near Glassagh Point.

It is not known to what degree the numbers and spatial distribution Light-bellied brent geese may have been influenced by existing trestles on site at that time.

6.3.3.3. Recent Distribution Data

Figure 5.1 and Figure 5.2 illustrate the areas Light bellied brent geese were recorded in during the Atkins site surveys in 2021. On the 10th February 2021 the majority of geese were located within 0A442, with some also within the southern part of 0A443; i.e. at Lagg Church Beach / Doagh Island. 21 birds were located within 0A439 – on the southern side of Doagh Island. These are areas within which trestles are located. 37 geese were recorded on the western side of Glassagh Point.

On the 12th February 2021 69 geese were again located within 0A442, with some also within the southern part of 0A443; i.e. at Lagg Church Beach / Doagh Island. 2 birds were located within 0A439 – on the southern side of Doagh Island. These are areas within which trestles are located. 3 geese were recorded on the western side of Glassagh Point.

In counts provided by K. Colhoun (*pers comm*) Lagg Church Beach supported counts of between 12 and 122 birds; with frequent flocks of >50 birds. This now appears to be the primary site for Light bellied brent geese, with small numbers off the south Coast of Doagh Island (part of 0A439) and around Glassagh Point (within 0A439).

A summary figure has been prepared which shows areas within which Light bellied brent geese were recorded (2007/08 – 2009/10) and well as areas frequented in more recent counts (Figure 6.5).

6.3.3.4. Response of Light-bellied Brent Goose to oyster trestles

The trestle study (Gittings and O' Donoghue, 2012) concluded that Light-bellied Brent Goose showed a variable response to oyster trestles: at some sites observed numbers within the oyster trestle blocks were broadly in line with predicted numbers, while at other sites the observed numbers were generally lower than the predicted numbers. Differences between sites may reflect differences in the management of the trestles: the geese feed on algae attached to the trestles so more intensive management may reduce the food availability. There are also likely to be seasonal differences in the pattern of usage of the trestles, as algal cover of the trestles will be highest in the autumn and will gradually decline over the winter. The fieldwork for the trestle study was carried out during the late winter period, so the results of this study may underestimate Light-bellied Brent Goose usage of areas occupied by trestles. We also have some anecdotal evidence that Light-bellied Brent Goose may be more sensitive to disturbance than other waterbird species, so the intensity of husbandry activity relative to the area occupied by the trestles may affect the patterns of usage.

In recent work at Donegal Bay (Gittings and O'Donoghue, 2013b), Light-bellied Brent Goose flock distribution within trestle blocks broadly corresponded to the distribution of trestle blocks with high algal cover, and the timing of their occurrence corresponded to times when no tractors were present within the trestle blocks. However, this timing pattern could, alternatively, be explained by an association with times when the tide is flooding/ebbing over the trestle blocks, making it easier for the geese to graze on the algae, which is lifted by

the tide. Other anecdotal evidence in support of a disturbance factor being important includes the fact that at one of the sites (Ballymacoda Bay) in the trestle study where Light-bellied Brent Goose generally showed a negative response, the one day on which observed numbers were higher than predicted numbers was the only day on which there were no husbandry activity. Another supporting observation is that on a visit to Dungarvan Harbour on 17th March 2013, an exceptional count of 690 Light-bellied Brent Goose within the trestle blocks was recorded (T. Gittings, unpublished data); there was no husbandry activity taking place on this bank holiday.

More recently Inis Environmental undertook a study of Light-bellied brent geese in Carlingford Lough for the Marine Institute (Inis, 2020). Broadly speaking they found that "*The bird species using the areas are well habituated to aquaculture activity and generally undisturbed by it*". They also found that "*They forage and roost amongst and on top of the oyster cultivation structures (trestles and bags) on almost all tides (particularly Light-bellied Brent Goose geese who exploit the fact that green algae grown on the oysters)*". The latter is in line with other observations, which found that geese do often exploit green algae on trestles; often feeding on it as the tide fills in over the trestles. This is normally in the early season before water temperature drops and growth of green algae drops off. Inis (2020) did, however, find that "*Bird numbers show a slight decline in relation to previous studies, however the methodology is not directly comparable*". The relationship between Light-bellied brent geese and trestles thus would appear to be quite site specific and whilst trestles can offer a feeding resource, the overall response of geese will be informed by location and scale of trestles relative to favoured habitat; the timing and level of algal growth which will be informed by the frequency of site maintenance; levels of on-site activity etc.

6.3.3.5. Impact Assessment – Light-bellied Brent Goose

The recent peak count of 151 Light-bellied brent geese recorded by Atkins in February 2021 and IWEBS of 182 birds in November 2019 represents a significant decrease in numbers of Light-bellied brent geese at Trawbreaga Bay (this is summarised in Table 6.7). this would at a minimum equate to an Unfavourable population status (i.e. where a population has declined between 25.0 – 49.9% from the baseline reference value).

Table 6.7 Trend in Light-bellied brent geese counts.

Count	Number
Baseline Period (Mean peak 1995/96 – 1999/00)*	362 (i)
Recent Mean (2-yr mean 2007/08 – 2008/09) (IWEBS)	366 (n)
Mean Peak (2006/07 – 2008/09) (IWEBS)	433 (i)
Peak IWEBS count 2012/2013	573
Peak recent IWEBS count (November 2019)	182
Atkins, 2021 (peak count)	151

*after Robinson et al. (2004) (i) denotes numbers of international importance (using Wetlands International, 2006 for baseline period and Wetlands International, 2012 for recent time period); (n) denotes numbers of all-Ireland importance (after Crowe & Holt, 2013).

While it is noted that Light-bellied brent geese do feed in grassland areas, which are not well covered by IWEBS counts, this does seem to suggest a real decline in numbers of Light-bellied brent geese at Trawbreaga. Furthermore, it is consistent with the overall impression of Light-bellied brent geese numbers by NPWS locally (NPWS *pers comm*). Furthermore, it is our understanding that numbers of birds have increased in the neighbouring site of Lough Swilly SPA. It is not clear therefore if Light-bellied brent geese have moved away from the shore to feed on grassland or if they have been displaced from the bay by the current pattern of activities.

Recent IWEBS data indicate a 20 year positive trend of +47.50; following by a slight recent decline – 10 year decline of -16.97 (Source: Online BWI Species trends). The site specific decline at Trawbreaga, however, is in excess of this decline.

Wigeon (*Anas penelope*), which shares many of the behavioural characteristics of brent geese[11], also appear to be declining on site. The baseline population referenced in the Natura form for the SPA was 214 (5-year peak count for 1995/96 – 1999/00). Peak numbers recorded in the 2009/2010 low tide surveys was 338. While IWEBS data records 245 Wigeon in the winter of 2010/11 numbers thereafter have been lower with a peak of 92 birds in 2017/18; 204 in 2018/19 and 107 birds in 2019/20.

Only new licence applications are considered as part of this impact assessment. All existing licences and licences under appeal are assumed to be operational and to form part of the existing environment and existing activities in the SPA. There is significant ongoing aquaculture industry within the bay (see Figure 6.1). Trestles are already located or are to be located in 0A439 and 0A442.There are no proposals for trestles within 0A438, 0A440, 0A441 or 0A443.

With respect to spatial distribution of birds, the Atkins counts from February 2021 show that geese are located within 0A442 and the bordering southern part of 0A443; as well as in 0A439. Within 0A439 they have are recorded on the southern shore of Doagh Island and at Glassagh. For IWEBS subsite boundaries refer to Figure 2.2. For flock location see Figure 6.5.

Table 6.8 Numbers and spatial distribution of Light-bellied brent geese in February 2021.

Subsite	0A439	Sectors	%	0A442	%	0A443	%	Total
10/02/2021				93	61.59%	58	38.41%	151
12/02/2021	3	Glassagh	3.45%	33	37.93%	36	41.38%	87
	15	Doagh Island	17.24%					

As noted, a number of IWEBS counts from November 2019 and February 2021 included counts of brent geese, which were distributed as follows (see Table 6.9).

Table 6.9 Numbers and spatial distribution of Light-bellied brent geese in recent IWEBS counts.

Subsite	0A438	%	0A439	%	0A440	%	0A442	%	0A443	%	Total
28/11/19	43	23.6					10	5.5	129	70.9	182
12/02/21	16	12.5	1	0.8	55	43.0	33	25.7	23	18.0	128

Many of the areas which historically supported Light-bellied brent geese did not record notable numbers of birds in recent counts. Table 6.6 summarises the distribution of geese in the 2009/2010 waterbird survey programme undertaken by NPWS. For example, the low tide peak in 0A439 (of 158 birds) exceeds the total counts for the number of Light-bellied brent geese in Trawbreaga bay as a whole. Refer to Figure 6.5 for a summary of spatial distribution of birds.

These would suggest that there may be some reduction in the areas favoured by Light-bellied brent geese, with large numbers in particular found in the Lagg Beach / Doagh Island area of the bay. This would be within 0A442 and the neighbouring section of 0A443; as well as in the western section of 0A439.

As noted, it appears that Light bellied brent geese do show some degree of tolerance to oyster farming using trestles; and that they can forage on green algae growing on the trestles. However, the latter can be viewed as a gain only in areas where the physical presence of the trestles does not exclude geese from traditional foraging sites. Furthermore, it must be considered that the Licenced trestles are already in place and thus counts from February 2021 are with these trestles already in place.

As explained in the methodology the potential for displacement of birds can be considered by examining the loss of habitat following the placement of trestles. Table 6.10 summarises such losses for sector 0A442 and 0A439 for new licence applications. As noted, no trestles are to be placed in 0A443. This is based on counts presented in Table 6.6 (2009/2010 low tide counts) and the percentage of birds on a given count with either

[11] Feeding on *Zostera*, green algae and grassland (Mathers & Montgomery, 1998; 2000).

0A439 or 0A442. As can be seen the proportion of birds within the large central subsite, 0A439, that are displaced is negligible.

In contrast, based on the methods outlined above, the level of displacement from licencing more plots in 0A442 would be a potential displacement of up to 4.78% of birds counted within Trawbreaga Bay SPA (again based 2009/2010 low tide counts as set out in Table 6.6). As noted, this is on top of patterns of displacement arising from existing trestles (see Section 7.2). The low tide data from 2009/2010 give the most complete set of spatial data with which to calculate potential displacement figures. This is on top of significant declines already evidenced from recent counts. Taken together this represents a displacement of up to 5.36% of the geese using Trawbreaga Bay SPA and represents a significant negative impact on the conservation status of Light-bellied brent geese using Trawbreaga Bay SPA.

Table 6.10 Potential for displacement of Light-bellied brent geese.

Subsite	OA442	% of Intertidal habitat	% Displacement of Brent geese	OA439	% of Intertidal habitat	% Displacement of Brent geese
Intertidal habitat						
Total Area (hectares)	**151.37**			**395.42**		
Applications Area	10.8	7.13%	4.78%	2.31	0.58%	0.48%

Recommendations

As noted, significant displacement levels (i.e., 5% or greater) occur where the current long-term population decline is already equal to or greater than 25%, as is the case for Light-bellied brent geese at Trawbreaga. The proposed applications could result in just under 5% displacement in a declining population. We understand that NPWS monitor geese annually at Trawbreaga Bay; we would recommend that NPWS be consulted to ensure that any such counts focus in particular on examining the numbers and spatial distribution of Light-bellied brent geese.

We would also recommend that a full count of the bay be undertaken with a view to collecting up to date information on numbers and spatial distribution. Without a clear understanding of the spatial distribution of Light-bellied brent geese and the use of terrestrial foraging grounds within the bay and environs, it cannot be stated whether the reduced number of observed birds can be explained by birds moving to feed terrestrially or whether birds have vacated the site. It therefore cannot be stated with confidence that displaced geese can be accommodated on grassland within Trawbreaga Bay and environs.

With respect to mitigation measures, an option to be considered would be the management of areas of grassland specifically for Light-bellied brent geese. This has recently been done in Baldoyle Bay, Dublin by Fingal County Council and should be explored further with National Parks and Wildlife Service. As noted, NPWS have recently entered in a number of farm plans with local landowners.

Consideration should be given to development of a Code of Practice covering aquaculture activities within the estuary; close liaison with NPWS regarding patterns of use of Trawbreaga by both Light-bellied Brent Geese and Barnacle Geese would be a key part of this process. For example, it should be a condition of planning that no dogs are allowed when accessing the foreshore to avoid disturbing geese; that vehicles must be maintained in sound working order to prevent excessive noise disturbance and that no bird scaring devices are to be used on site.

6.4. Wetlands

The Conservation Objectives define the favourable conservation condition of the wetlands QI in the Trawbreaga Bay SPA purely in terms of habitat area. None of the activities being assessed will cause any change in the permanent area occupied by wetland habitat. Therefore, the activities being assessed are not likely to have any significant impact on this QI and it has been screened out from any further assessment.

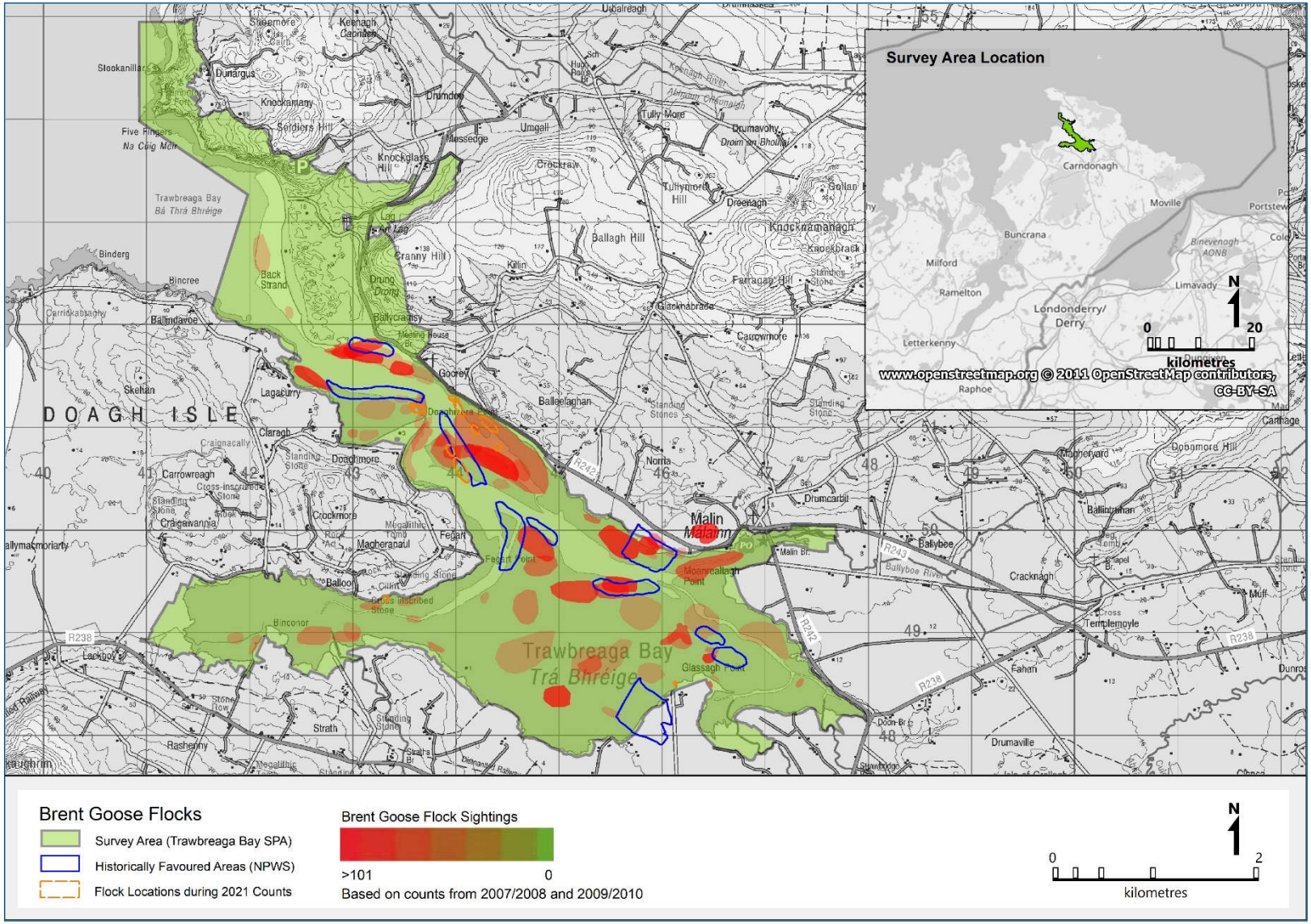


Figure 6.5 **Summary of patterns of Light-bellied brent geese distribution.**

7. In-combination effects of aquaculture with other activities

7.1. Introduction

This section presents an assessment of potential cumulative impacts from the shellfish aquaculture activities considered in this assessment in combination with other relevant activities that could potentially affect the QI species.

7.2. Aquaculture Activities

As noted, there are already operation oyster trestles operating in Trawbreaga Bay (see Figure 6.1). There are 61 existing licences covering an area of 46.55ha; as well as a further 19 plots which are either licences recently approved / or are under appeal. The latter cover an area of 14.59ha. All plots are for extensive cultivation oysters using bags and trestles and are considered active (see Figure 6.1).

As with the current applications all current licences are within IWEBS subsites 0A439 and 0A442. The relative areas with intertidal and subtidal habitat occupied by trestles in subsites 0A439 and 0A442 is summarised in Table 7.1.

Table 7.1 Total area of existing aquaculture and applications in intertidal and subtidal habitat for IWEBS subsites 0A439 and 0A442.

Category	Intertidal (hectares)	Subtidal (hectares)
Total Area in SPA	827	314
0A439		
Total Area	395.42	27.57
Licenced	17.11	5.12
Applications	2.31	0.77
In-combination total	19.42	5.89
%	4.91%	n.a.
0A442		
Total Area	151.37	87.83
Licenced	11.14	23.46
Applications	10.80	2.11
In-combination total	21.94	25.57
%	14.5%	n.a.

As noted in the methodology, the potential for displacement of birds is calculated based on the area of available intertidal habitat (as a percentage); the proportion of birds (expressed as a percentage of those counted in the SPA and the area that would be lost to the placement of trestles. Both areas are characterised by intertidal, shallow subtidal and subtidal habitats. However, as noted in the case of Light-bellied brent geese, they are capable of reaching approximately 40 cm below surface when upending and therefore can make use of shallow subtidal waters as the tide is changing (Clausen, 2000); as well as grazing on terrestrial grassland. As accurate bathymetric data are note available, the following figures focus on displacement from intertidal areas; displacement from a small area of shallow subtidal would result in a further small increase in displacement figures.

Table 7.2 summarised In-Combination levels of displacement that would arise from the proposed Applications in addition to current patterns of activity.

Table 7.2 In-combination potential for displacement of Light-bellied brent geese.

Subsite	OA442	% of Intertidal habitat	% Displacement of Brent geese	OA439	% of Intertidal habitat	% Displacement of Brent geese
Intertidal habitat						
Total Area (hectares)	**151.37**			**395.42**		
Applications Area	10.8	7.13%	4.78%	2.31	0.58%	0.48%
Licenced	11.135	7.34%	4.92%	17.11	4.33%	3.59%
Total	21.935	14.49%	9.7%	19.42	4.91%	4.08%

Taken together this represents a potential total displacement of up to 13.78% of the geese using Trawbreaga Bay SPA and represents a significant negative impact on the conservation status of Light-bellied brent geese using Trawbreaga Bay SPA.

As noted, significant displacement levels (i.e., 5% or greater) occur where the current long-term population decline is already equal to or greater than 25%, as is the case for Light-bellied brent geese at Trawbreaga. The proposed applications could result in up to 13.78% displacement in a declining population. We understand that NPWS monitor geese annually at Trawbreaga Bay; we would recommend that NPWS be consulted to ensure that any such counts focus in particular on examining the numbers and spatial distribution of Light-bellied brent geese.

7.3. Activities

7.3.1. Disturbance generating activities

Five different activities were recorded to cause disturbance to waterbirds during the NPWS waterbird survey programmes in 2009/2010. These were walking (including with dogs), motorised vehicles, bait-digging, hand-gathering of molluscs and activities associated with intertidal aquaculture (NPWS, 2014c). The two activities that were recorded most frequently causing disturbance was walking (including with dogs) and aquaculture activities (both machinery and workers walking in the intertidal area).

Other recreational and leisure disturbance activities including horse riding were mainly concentrated on the back strand area. Water sports such as wind surfing or sailing rarely caused disturbance (NPWS, 2014c).

Disturbance events were most frequently recorded in subsite 0A442 (north central) associated with aquaculture activities, both machinery and workers walking on the intertidal zone and in subsite 0A443 (back strand) and were mainly associated with recreation activities such as walkers along the shoreline and dogs.

Recorded disturbance events that had an impact on light bellied Brent Geese included humans walking along the shoreline (specifically with dogs), bait diggers, and another disturbance due to a vehicle (unclassified). Events recorded to cause disturbance to Barnacle Geese were the presence of the counter's vehicle and a flock of sheep entering a field in which the geese were present.

Additional disturbance events were noted during the site usage surveys. These included the use of 2 bangers west of Glassagh Point during counts on 08/02/2006. A further disturbance event was recorded on the same date south of Magheranaul on the east side of Doagh Isle. The nature of this disturbance event was not recorded. On a count made in 29/11/2008, a disturbance event was recorded northwest of Glassagh Point. Again, the nature of the disturbance was not recorded.

Table 7.1 Disturbance activities recorded during the NPWS baseline waterbirds surveys in 2009/2010.

Disturbance Activity									
Subsite	Human walking (Shoreline)	Dogs	Aquaculture Machinery	Bait Digging	Humans working on aquaculture	Winkle pickers	Other (see description)	Description	**Total number of events**
0A443	5	5	1	-	-	-	-	-	11
0A439	-	-	4	-	-	1	-	-	5
0A438	-	-	-	-	-	-	2	# 1 vehicle of counter and # 2 sheep being left into field	2
0A440	1	-	-	-	-	-	-	-	1
0A441	-	-	1	-	-	-	1	No details	2
0A443	2	1	-	-	-	-	1	No details	4
0A442	-	-	6	1	4	1	1	No details	13
Total number of events	8	6	12	1	4	2	5	-	-

7.3.2. Proposed Aquaculture Sheds (Planning Ref. 14/50918)

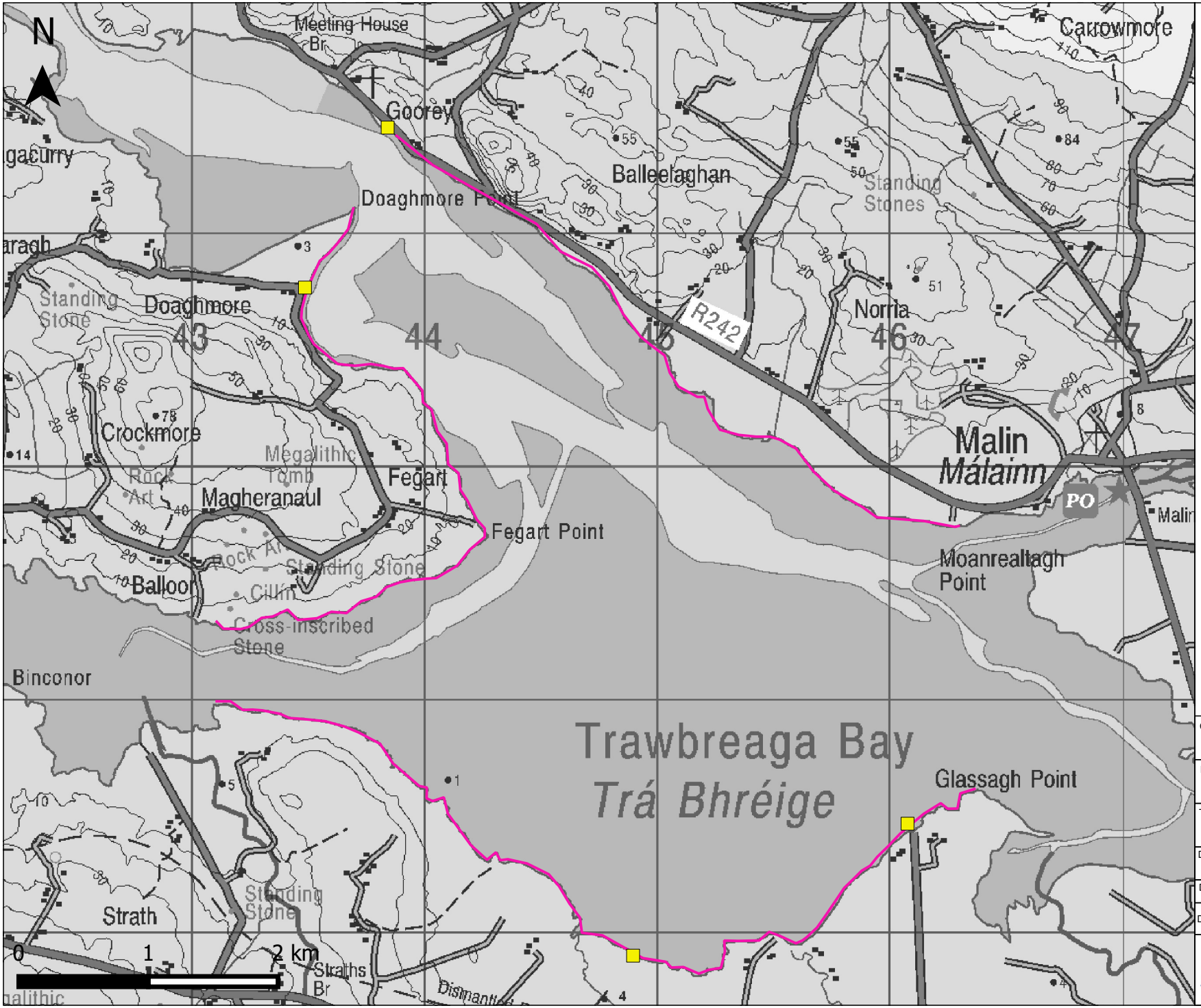
When initially assessed, a planning application had been lodged with Donegal County Council for "*The proposed development will involve the construction of four self-contained shellfish handling / sorting facilities on a single site, each of which will contain corrugated metal sheds and external working, parking and storage areas. The ground level of the site will be raised by 0.5m using unconsolidated material, and internal working areas will be surfaced with concrete. Tidal defences will be constructed on the southern site boundary, and a perimeter fence / hedgerow will be developed along the eastern boundary of the site to provide screening.*"

The Donegal County Council Planning portal indicates that application 14/50918 has been withdrawn (last accessed 14th December 2017).

7.3.3. Seaweed Harvesting

A commercial company, Oileán Glas Teo, have applied to the Department of the Environment, Community and Local Government for a Foreshore Licence for the hand-harvesting of the seaweed *Ascophyllum nodosum* from the intertidal shoreline in Trawbreaga Bay, County Donegal. Proposed harvesting areas are illustrated in Figure 7.1 (from Figure 3.1 of the NIS; Aquafact, 2013). No decision has as yet been made on this application.

If seaweed harvesting is to be licenced, we would recommend the development of a working Code of Practice (see e.g. Ecofact, 2014); including clear guidance on access, minimising disturbance; avoiding critical areas of the harbour (e.g. areas adjoining key Barnacle geese feeding fields when these are present) etc. We would also recommend that a condition of licencing would be to determine how Light-bellied Brent Geese are impacted by proposed harvesting measures and that any findings feed back into the Code of Practice. Consideration should be given to an over-arching Management Plan / Code of Practice covering both seaweed harvesting and aquaculture activities within the estuary; close liaison with NPWS regarding patterns of use of Trawbreaga by both Light-bellied Brent Geese and Barnacle Geese would be a key part of this process. Consideration would also need to be given to the potential for disturbance of field feeding Barnacle Geese, either whilst on the shore or when accessing works areas. In a similar application (Ecofact, 2014) restrictions on timing of works in ecologically sensitive areas were agreed with NPWS.



Legend

- Seaweeed Harvesting Access Points
- Proposed Seaweed Harvesting Areas

Client: Marine Institute		
Project: Appropriate Assessment of Aquaculture and Shellfisheries - Trawbreaga Bay		
Title: Proposed seaweed harvesting areas and access points in Trawbreaga Bay		
Designed/Drawn: JD	Checked: PO'D	Authorised: PO'D
Date: 30/03/21	Date: 30/03/21	Date:30/03/21
Drawing No: Figure 7.1		Rev: 0

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7.3.4. Residential / Recreational Developments

A search of the Donegal County Council online planning permission application system showed that a number of residential developments had applied for planning permission in the environs of Trawbreaga Bay in recent years.

7.3.5. Activities affecting waterbird food resources

7.3.5.1. Bait digging and shellfish collecting

None of the Qualifying Interests in Trawbreaga Bay SPA rely on infaunal or epifaunal shellfish in their diets. As a result, bait digging and shellfish collecting will not have a direct effect on the QI species. However, the presence of bait diggers and shellfish collectors along the shoreline and in the intertidal area may have an effect on QI species though disturbance.

In Trawbreaga Bay, bait digging and shell fish collecting appears to be a low intensity activity only being recorded in one subsite during the NPWS WSP low tide counts. This compares to bait digger numbers of 46-544 throughout the year in the Masero *et al*. (2006) study. Therefore, at current levels it seems unlikely that bait digging is having measurable impacts in terms of physical habitat disturbance in Trawbreaga Bay compared to other SPA which are located closer to larger population densities such as Dublin Bay, Cork Harbour or Dungarvan Bay.

7.3.5.2. Water Quality

The coastal water quality in Trawbreaga Bay has been classified as unpolluted (EPA web mapping, 2015).

A number of rivers flow into Trawbreaga Bay including the Staid River (Good status – Q4), the Donagh River (Moderate status – Q3-4), the Glennagannon River (Good status – Q4), an unnamed stream entering the bay at Malin (Poor status – Q2-3, Q3) and Ballyboe River (Poor Status – Q2-3, Q3) (EPA web mapping, 2015). A number of additional streams enter the bay, but the water quality of these waterways are not currently being monitored. NPWS (2014b) report the status of the Ballyboe River as ‘good;’ the Glennagannon River as ‘moderate’ and the Donagh River ‘good-poor’.

The quality of water entering the bay downstream of Carndonagh remains below the Water Framework Directive requirements of good or better standards despite improvements following the commissioning of a new wastewater treatment plant in 2005 (NPWS, 2014b). In addition, the Ballyboe River and unnamed river entering the bay at Malin are also failing to meet Water Framework Directive requirements. Nutrient input to the estuary is most likely contributing to the growth of green algae within the estuary that is fed on by Light-bellied Brent Geese; it is, however, a requirement under the Water Framework Directive that water quality entering and within the bay be improved.

Carndonagh-Malin waste water treatment plant is located close to the shore just east of Glassagh Point (Discharge Licence no. - D0113-01). It has an operational capacity of 5833 PE (i.e. in the plant category of 2,001 to 10,000 PE). It is a plant focusing on the treatment of urban waste water. Treatment type is secondary treatment. Primary treatment is via Mechanical screening and grit removal; while secondary treatment is via Conventional Activated Sludge. Sludge arising from the plant is taken to the Letterkenny Sludge Hub. Discharge is to Ballywilly Brook just upstream of its discharge to Trawbreaga Bay. The 2018 Annual Environmental Report (EPA, 2018) for the Carndonagh Malin plant indicates that capacity will not be exceeded with 3 years. The AER (EPA, 2018) does indicate that sewage does reach the bay via Storm Water Overflows (SWO).

Ballyliffin waste water treatment plant is located north of the village (Discharge Licence no. - D0351-01). It has an operational capacity of 400 PE. It is a plant focusing on the treatment of urban waste water. Treatment type is secondary treatment. Discharge is to a small stream which discharges to the sea at Pollan Bay, west of Doagh Island and outside of Trawbreaga Bay. The 2019 Annual Environmental Report (EPA, 2019) for the Ballyliffin plant indicates that capacity will be exceeded with 3 years. There is no treatment plant at Malin on the northern side of the bay.

8. Conclusion and Recommendations'

Chough

Overall, due to the proposed scale of oyster cultivation; the lack of any significant use of intertidal habitat by Chough; and the separation of proposed oyster cultivation from known foraging, roosting or nesting sites it is unlikely that the intertidal oyster would have a negative impact on Chough using Trawbreaga Bay SPA.

As noted, a National Survey of Chough is proposed for 2021.

Barnacle Geese

The site conservation condition of Barnacle Goose at Trawbreaga Bay SPA has been assessed as favourable based on the increasing population. Unlike Light-bellied Brent Geese, Barnacle Geese do not feed on intertidal habitats, but favour terrestrial grassland or saltmarsh. Placement of trestles will not therefore result in direct habitat loss. While there is evidence for small scale intertidal roosting, observed flocks have been small and ample alternate intertidal habitat exists to accommodate such day-time roosting.

The main potential for conflict is from access points where there may be increased activity close to feeding birds and / or from increased levels of activity on the shoreline. While the risk of negative impacts cannot be entirely discounted, geese are likely to habituate to repeated patterns of work at trestles on the intertidal close to foraging fields. A clear Code of Practice; close consultation with NPWS and continuation of annual monitoring of Barnacle Geese is recommended to identify and address any disturbance issues that may arise in the future. Furthermore, it is our understanding that NPWS intend to use data from an ongoing programme of darvic colour ringing to examine local site use and movements. Once available this should also be reviewed against ongoing patterns of aquaculture activity.

It should also be a condition of planning that no dogs are allowed when accessing the foreshore to avoid disturbing geese; that vehicles must be maintained in sound working order to prevent excessive noise disturbance and that no bird scaring devices are to be used on site; and that unused equipment (e.g. trestles; bags etc.) are removed from the foreshore.

Light-bellied brent geese

When compared to historic site counts, recent counts undertaken in 2019 and 2021 suggests a large recent decline in numbers of Light-bellied brent goose at Trawbreaga. Thus, the conservation condition of Light-bellied brent geese has been assessed as Unfavourable In Trawbreaga Bay SPA. The decline in Trawbreaga would appear to be higher than the current national trend which is a -15.5% (5 year; 2012 census); -10.2% (10 year; 2007 census) and +96 % (20 year; 1997 census). Unlike Barnacle geese, Light-bellied brent goose feed both on the foreshore and in areas of improved grassland. It is not clear whether birds i) preferentially moved to feed on grassland; ii) being displaced from the foreshore and forced to feed on grassland or iii) being displaced entirely from Trawbreaga Bay SPA to another site, such as Lough Swilly. While there is evidence of field feeding numbers involved is unknown. There is anecdotal evidence that numbers of Light-bellied brent geese at Lough Swilly have increased.

As noted, a commercial company, Oileán Glas Teo, have applied to the Department of the Environment, Community and Local Government for a Foreshore Licence for the hand-harvesting of the seaweed *Ascophyllum nodosum* from the intertidal shoreline in Trawbreaga Bay. No decision has as yet been made on this application. In a similar application in Clew Bay (Ecofact, 2014) restrictions on timing of works in ecologically sensitive areas which were included in a Code of Practice. With respect to in-combination impacts, the presence of additional people on the shore either harvesting seaweed or bait digging etc. could increase the level of disturbance on Light-bellied Brent Geese above that arising from aquaculture activities. However, there is insufficient information in the Seaweed Harvesting NIS (Aquafact, 2013) to comment on the proposed timing, level and spatial distribution of activity associated with proposed seaweed harvesting. While the potential for management of *Ascophyllum* to provide feeding opportunities for Light-bellied Brent Geese by encouraging the growth of smaller green / purple algae in short-term cycles before *Ascophyllum* regrows and out-competes them cannot be discounted, the risk of increased patterns of disturbance could result in significant negative impacts (see comments on proposed Code of Practice / monitoring recommendations).

A clear Code of Practice; close consultation with NPWS and continuation of annual monitoring of Light-bellied Brent Geese is recommended. It is important to more fully understand the use of sites and different habitats, including grassland, by Light-bellied brent geese in order to properly understand the apparent decline in numbers. As with the Barnacle geese, darvic rings have also been placed on Light-bellied brent geese. The scheme co-ordinators should be consulted for any records of birds moving from Trawbreaga to alternate sites. It may also be necessary to do some targeted searches for birds on key neighbouring sites such as Lough Swilly.

The findings of this study would inform whether areas of grassland could be managed specifically to support Light-bellied brent geese, as has recently been done by Fingal County Council. This should be done in co-operation with Farm Plans recently agreed by NPWS with a number of local landowners.

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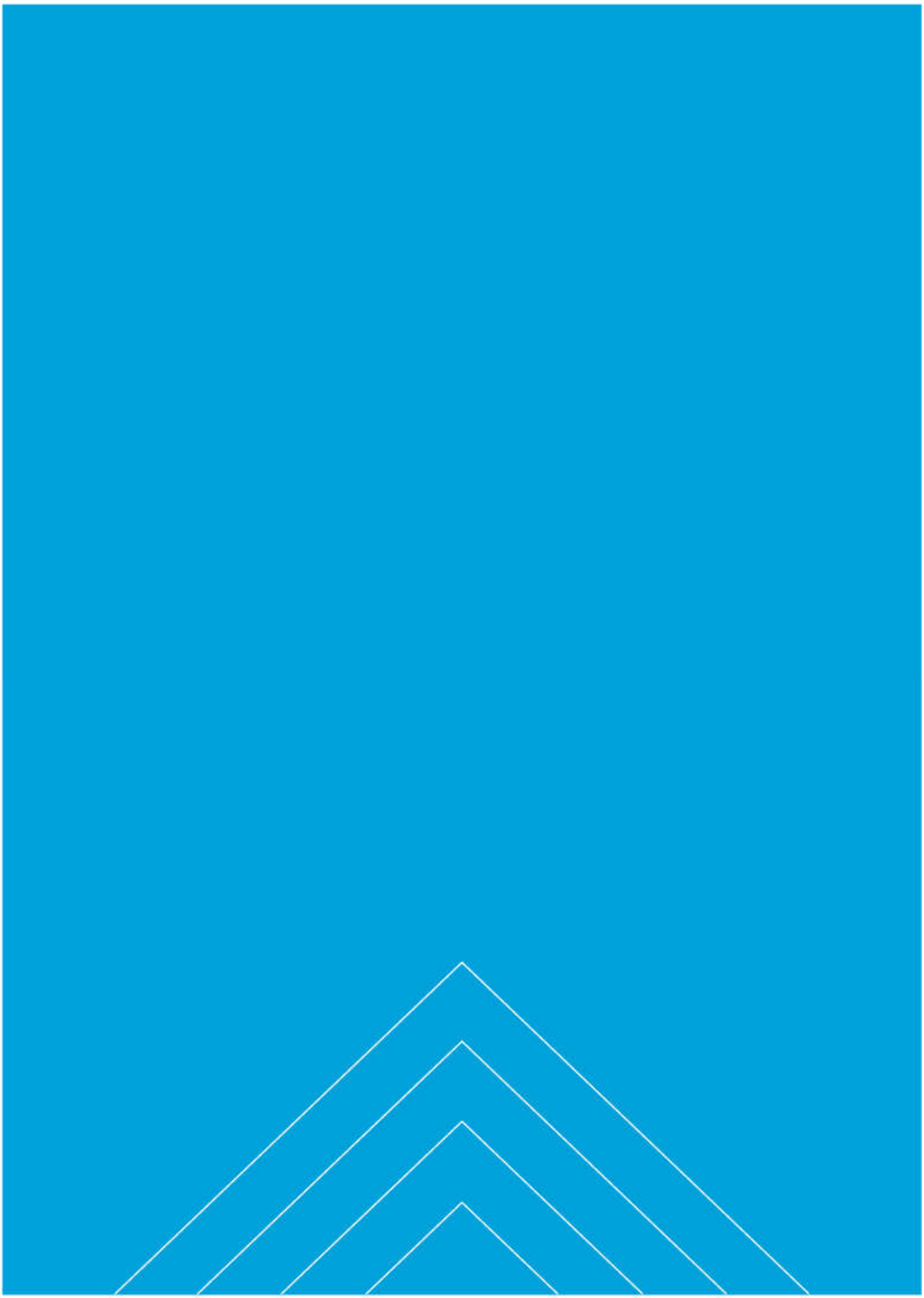

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Report Supporting Appropriate Assessment of Aquaculture in the North Inishowen Coast SAC (Site code: 002012)

Marine Institute

Rinville

Oranmore, Co. Galway

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Preface

This Report assesses the potential effects of oyster trestle aquaculture activities, fishing activity and seaweed harvesting within Trawbreaga Bay on the North Inishowen Coast Special Area of Conservation (**SAC**) (Site code: 002012) and adjacent SACs. This preface provides the legislative context in which this report was drafted.

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

There are two types of designated sites within the Natura 2000 site network, SACs which are designated under the Habitats Directive and Special Protected Areas (**SPAs**) which are designated under EC Directive EC 79/409/EEC (**Birds Directive**). Natura 2000 sites are designated due to their significant ecological importance for habitats and species protected under Annex I and Annex II respectively of the Habitats Directive and for the protection of populations and habitats of bird species protected under the Birds Directive. The features for which SACs and SPAs are designated are respectively termed as Qualifying Interests and Special Conservation Interests, which are collectively referred to as Conservation Features.

The Department of Agriculture Food and Marine (**DAFM**) is the aquaculture licensing authority under the Fisheries (Amendment) Act (1997) and determines applications for new aquaculture licences and applications for renewal of existing aquaculture licences. DAFM is also the competent authority responsible for undertaking AA of aquaculture licence applications. The AA in this report is part of an ongoing programme of AA of aquaculture activities in Ireland, as agreed with the EU Commission in 2009, and will eventually cover all aquaculture activities in all Natura 2000 sites. DAFM is responsible for licencing of aquaculture in Ireland. As part of this process DAFM must determine if the proposed aquaculture activities individually or in-combination with other activities are likely to significantly impact the Conservation Status of Qualifying interests and the integrity of the North Inishowen Coast SAC. DAFM must base its' determination on an AA and is also responsible for ensuring that an AA is carried out.

Executive Summary

Applications for 14 new aquaculture licences have been lodged with the Department for Agriculture Food and the Marine (**DAFM**) under the Fisheries (Amendment) Act (1997). These aquaculture licences are sought for intertidal oyster trestle cultivation in Trawbreaga Bay in the North Inishowen Coast Special Area of Conservation (**SAC**). In January 2021, DAFM requested the Marine Institute for an Appropriate Assessment (**AA**) report on the 14 licence application proposals as required under Article 6(3) of EC Directive 92/43/EEC (**Habitats Directive**).

The North Inishowen Coast Special Area of Conservation

The North Inishowen Coast Special Area of Conservation (**SAC**) is designated under the Habitats Directive. The site is situated on the northern coast of Donegal. The SAC is designated for a range of Qualifying Interests and the most relevant to this assessment is the habitat *mudflats and sand flats not covered by seawater at low tide (1140)*.

Activities in the SAC

The aquaculture activity in the SAC is comprised solely of intertidal trestle cultivation of the Pacific oyster *Crassostrea gigas* (**aquaculture activity[ies]**) and occurs in Trawbreaga Bay. Cockle dredging, pot fishing, seaweed harvesting and point sources of pollution are the pre-existing activities in the SAC that have the potential to combine with the effects of the aquaculture activities and degrade the integrity of the SAC.

Appropriate Assessment of Aquaculture Activities

The purpose of this report is to undertake an AA of the ongoing and proposed aquaculture activities to determine if they will be carried out in combination with incumbent fishing activities in a way that would be consistent with the Conservation Objectives for the SAC. The AA process comprises:

- Stage 1: Screening for Appropriate Assessment
    - The screening for AA is undertaken to identify potential likely significant effects to conservation features of Natura 2000 site. Where the screening exercise cannot exclude on the basis of objective information that the proposed development, individually or in combination with other plans or projects, will have a significant effect, the conservation feature of the Natura 2000 site is brought forward for further consideration in Stage 2 AA.
- Stage 2: Stage 2: Appropriate Assessment – Natura Impact Statement

- This stage considers in greater detail the aspects of the proposed project with potential for significant effects to conservation feature of a European site. If adverse effects cannot be excluded then permission/ approval for the plan or project cannot be granted.

Findings

The screening resulted in six Qualifying Interests being excluded from further consideration, five Annex I habitats and one Annex II species, by virtue of the fact no significant effects were expected to occur.

The habitats excluded screened out were:

- 1220 Perennial vegetation of stony banks
- 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts
- 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)
- 21A0 Machairs
- 4030 European dry heaths

Two of the four community complexes within the habitat 1140 Mudflats and sandflats not covered by seawater at low tide were screened out:

- Fine to medium sand with Eurydice pulchra community complex
- Zostera-dominated community

The species screened out were:

- 1014 Narrow-mouthed Whorl Snail *Vertigo angustior*
- 1335 Otter *Lutra lutra*

A full assessment was carried out on the likely interactions between existing and proposed aquaculture activities and two of the four community complexes within Qualifying Interest 1140 (*Mudflats and sandflats not covered by seawater at low tide*):

- Muddy sand to coarse sediment with *Pygospio elegans* community complex
- Sand with *Angulus tenuis* and *Scoloplos* (*Scoloplos*) *armiger* community complex

The risk of significant adverse depositional and organic enrichment effects of aquaculture sites on the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex **can be discounted**, because this community complex has been shown to be resilient to depositional and organic enrichment effects.

The risk of significant adverse sediment compaction effects along access routes on the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex **cannot be discounted**.

However, the current levels of effect along access routes are below the 15% disturbance threshold for this community complex.

The risk of significant adverse depositional and organic enrichment effects of aquaculture sites on the Muddy sand to coarse sediment with Pygospio elegans community complex **cannot be discounted**, because this community complex has never been studied in relation to the effects of oyster trestle cultivation.

The risk of significant adverse sediment compaction effects along access routes on the Muddy sand to coarse sediment with Pygospio elegans community complex **cannot be discounted**. However, the current levels of effect are below the 15% disturbance threshold for this community complex.

Recommendations

It is recommended that targeted monitoring exercises are carried out so that the effects of oyster trestle cultivation on the constituent communities of the conservation feature mudflats and sandflats not covered by high tide are carried out because:

1. No benthic monitoring exercise has been carried out in Trawbreaga previously and monitoring is required for the purpose of continuing to make evidence informed decisions in relation to oyster trestle cultivation licensing;
2. The Muddy sand to coarse sediment with Pygospio elegans community complex has not been previously studied and should be before the 15% overlap threshold is reached or exceeded by oyster trestle cultivation activities in Trawbreaga Bay.

It is also recommended that ecological carrying capacity of Trawbreaga Bay is investigated so that future licensing decisions can take this aspect of the ecological interactions of oyster trestle cultivation into account.

1. Introduction

This report sets out the Appropriate Assessment (**AA**) of the potential effects of oyster trestle cultivation activities (**aquaculture activities**) on the Qualifying Interests within the North Inishowen Coast Special Area of Conservation (**Site 002012**: See **Figure 1.1**). The AA focuses on the implications for the affected Qualifying Interests in view of their Conservation Objectives (see **Section 2.1**).

Site 002012 is a large site on the north coast of Ireland. Site 002012 stretches from Crummies Bay in the west, northeast to Malin Head and southeast to Inishowen Head. It includes a variety of coastal habitats including high rocky cliffs, offshore islands, sand dunes, salt marsh, a large intertidal bay and rocky, shingle and sand beaches.

The aquaculture activities subject to this AA are carried out exclusively within Trawbreaga Bay a large shallow inlet on the western side of Malin Head in the centre of Site 002012. The aquaculture activities are described in detail in **Section 2.2**.

1.1. Legislative Context

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

There are two types of designated sites within the Natura 2000 site network, SACs which are designated under the Habitats Directive and Special Protected Areas (**SPAs**) which are designated under EC Directive EC 79/409/EEC (**Birds Directive**). The requirements of the Habitats Directive and the Birds Directive were transposed into Irish law through the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. 477 of 2011) as amended.

Natura 2000 sites are designated due to their significant ecological importance for habitats and species protected under Annex I and Annex II respectively of the Habitats Directive and for the protection of populations and habitats of bird species protected under the Birds Directive. The features for which SACs and SPAs are designated are respectively termed as Qualifying Interests and Special Conservation Interests, which are collectively referred to as Conservation Features. This report focuses on Annex I habitats and Annex II species of the Habitats Directive and so the term Qualifying Interest will be used throughout.

Under Article 6(3) of the Habitats Directive any plan or project likely to significantly affect the integrity of a Natura 2000 site must be subject to an AA. AA focuses on the likely significant effects of a plan or project on a Natura 2000 site and considers the implications for the site in view of its' conservation objectives. Every Natura 2000 site has Conservation Objectives which are set out by the National Parks and Wildlife Service a competent authority for the management of Natura 2000 sites in Ireland. The AA process also must consider any plan or proposal in combination with other activities that have the potential to significantly affect the integrity of the Natura 2000 site.

The Department of Agriculture Food and Marine (**DAFM**) is the aquaculture licensing authority under the Fisheries (Amendment) Act (1997) and determines applications for new aquaculture licences and applications for renewal of existing aquaculture licences. DAFM is also the competent authority responsible for undertaking AA of aquaculture licence applications. The AA in this report is part of an ongoing programme of AA of aquaculture activities in Ireland, as agreed with the EU Commission in 2009, and will eventually cover all aquaculture activities in all Natura 2000 sites. DAFM is responsible for licencing of aquaculture in Ireland. As part of this process DAFM must determine if the proposed aquaculture activities individually or in-combination with other activities are likely to significantly impact the Conservation Status of Qualifying interests and the integrity of the North Inishowen Coast SAC. DAFM must base its' determination on an AA and is also responsible for ensuring that an AA is carried out.

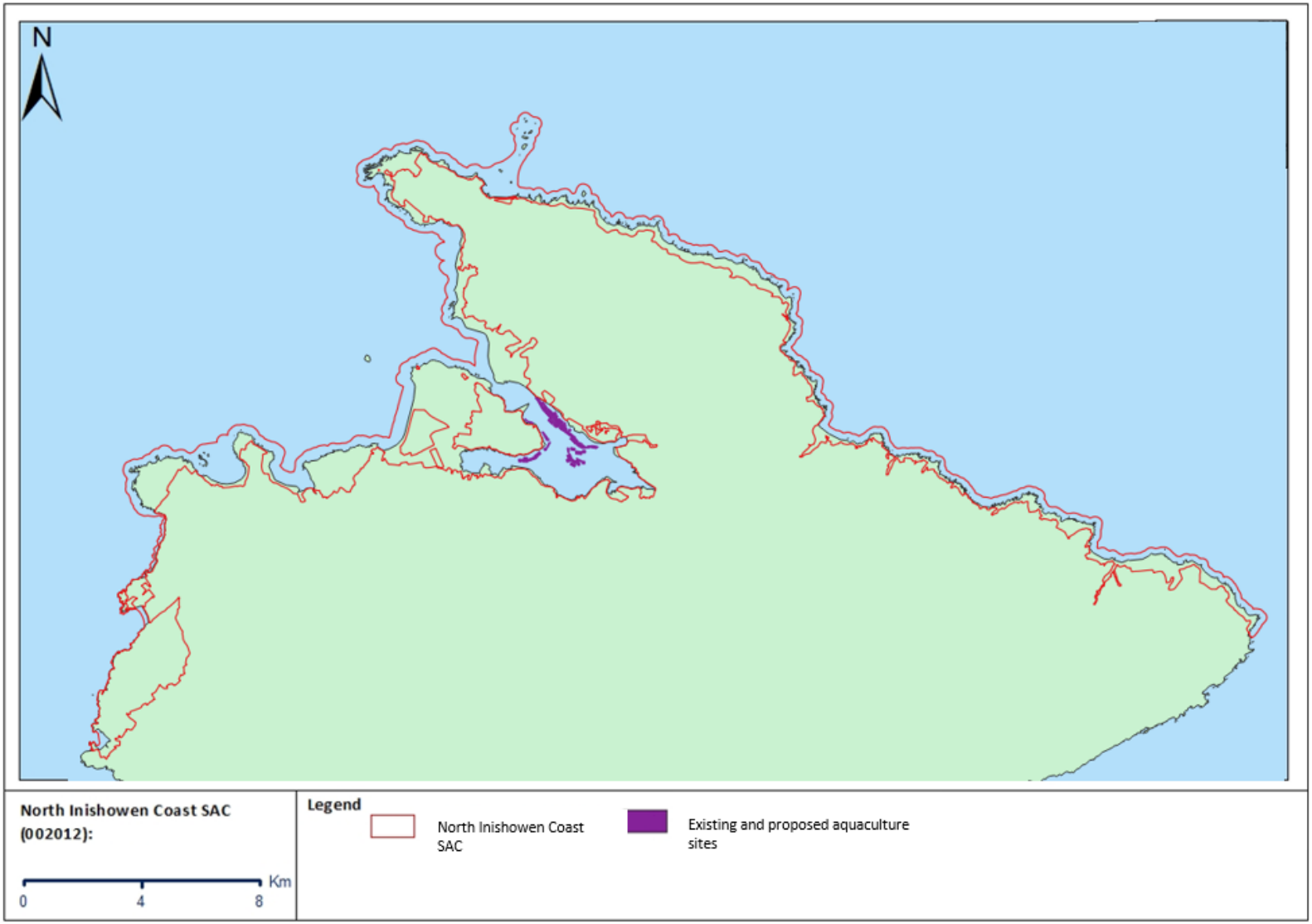

Figure 1.1: Existing and proposed aquaculture sites at Trawbreaga Bay within the North Inishowen Coast SAC (Site code: 002012).

1.2. *Appropriate Assessment Process*

The requirements for AA derive directly from Article 6(3). Articles 6(3) outlines the decision-making tests for considering plans and projects that may have a significant effect on a Natura 2000 site. No definition of the content or scope of AA is given in the Habitats Directive but the concept and approach are set out in European Commission (**EC**) guidance (EC 2000, 2002, 2006, 2018).

National guidance on Appropriate Assessment of plans and projects in Ireland was published by the Department of Environment, Heritage and Local Government (**DEHLG**) in 2009 (DEHLG, 2009). The DEHLG (2009) guidance sets out how AA of plans or proposals in in Natura 2000 sites in Ireland should be carried out in alignment with EC guidance.

DEHLG (2009) promotes a two stage process to complete the AA and outlines the issues and tests at each stage. The key procedures involved in completing the stages of the AA process follows in **Section 1.2.1** and **Section 1.2.2** below.

1.2.1. Stage 1: Screening for Appropriate Assessment

Stage I AA Screening is the process that addresses and records the reasoning and conclusions in relation whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a European site in view of its conservation objectives.

If the effects are deemed to be significant, potentially significant, or uncertain, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). Screening should be undertaken without the inclusion of mitigation. The greatest level of evidence and justification will be needed in circumstances when the process ends at screening stage on grounds of no impact.

1.2.2. Stage 2: Appropriate Assessment – Natura Impact Statement

This stage considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a European site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. This stage requires the targeted scientific examination of the plan or project and the relevant European sites, to identify and characterise any possible implications for the site in view of the site's conservation objectives, taking account of in-combination effects. If the assessment is negative, *i.e.* adverse effects on the integrity of a site cannot be excluded, then permission/ approval for the plan or project in its current form cannot be granted.

1.3. Structure of this Report

The AA process followed in this report adheres closely with the DEHLG (2009) guidance document and follows worse-case scenario principles as it is assumed that all licence areas in Site 002012 (including extant, proposed and those that are licenced but not being utilised) contain ongoing aquaculture activities. In addition, other activities (pot fishing, cockle dredging and seaweed harvesting) are considered for the purpose of assessing in-combination effects.

The report is divided into the following :

- **Section 2 -** Stage 1: Screening for Appropriate Assessment
    - Screening for AA is undertaken to identify potential likely significant effects to conservation features of Natura 2000 site. Where the screening exercise cannot exclude on the basis of objective information that the proposed development, individually or in combination with other plans or projects, will have a significant effect on a conservation feature of a Natura 2000 site is brought forward for further consideration in Stage 2 AA.
- **Section 3 -** Stage 2: Appropriate Assessment - Natura Impact Statement
    - This considers in greater detail the aspects of the proposed project with potential for significant effects to conservation feature of a European site. If adverse effects cannot be excluded, and where there is no obvious mitigation to reduce the risk of significant effects, it is advised that caution be applied in licencing decisions.
- **Section 4 – Appropriate Assessment Concluding Statement and Recommendations**
    - This section sets out the findings of the AA process and make recommendations on any further monitoring or investigations that may be necessary and, where possible, also recommends any mitigation measures. In situations where there is no obvious mitigation to reduce the risk of significant effects, it is advised that caution be applied in licencing decisions (DEHLG, 2009).

This AA has followed relevant DEHLG (DEHLG, 2009) guidance and has drawn on information from a number of sources, the principal sources being:

- The 14 applications for new aquaculture licences;
    - T12/554A
    - T12/555A
    - T12/557A
    - T12/558A
    - T12/560A
    - T12/561A
    - T12/562A
    - T12/563A
    - T12/566A
    - T12/568A
    - T12/570A
    - T12/571A

  - T12/572A
  - T12/573A

- Information on extant licences for aquaculture activities within Trawbreaga Bay (BIM, 2014, 2019, 2021).
- NPWS (2014a) Conservation Objectives Series. North Inishowen Coast SAC 002012.
- NPWS (2014b) North Inishowen Coast SAC (Site Code: 002012) Conservation objectives supporting document - Marine Habitats.
- NPWS (2014c) Site Synopsis Report for the North Inishowen Coast SAC; and
- NPWS Spatial data[1] for designated sites.

[1] NPWS spatial data. https://www.npws.ie/maps-and-data/habitat-and-species-data (accessed 23 February 2021)

2. Stage 1: Screening for Appropriate Assessment

2.1. Qualifying Interests and Associated Conservation Objectives in Site 002012

This section outlines all Qualifying Interests within Site 002012 and their associated Conservation Objectives (**Section 2.1**).

2.1.1. Qualifying Interests

The Annex I Qualifying Interest habitats and Annex II Qualifying Interest species of the Habitats Directive for which Site 002012 is designated are listed in NPWS (2014a). The Qualifying Interests are:

- Annex I Qualifying Interest Habitats
    - Marine Habitats
        - Mudflats and sandflats not covered by seawater at low tide (1140)
    - Coastal Habitats
        - Perennial vegetation of stony banks (1220)
        - Vegetated sea cliffs of the Atlantic and Baltic coasts (1230)
        - Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130)
        - Machairs (21A0)
        - European dry heaths (4030)
- Annex II Qualifying Interest Species
    - Invertebrate species
        - Narrow-mouthed Whorl Snail (*Vertigo angustior*) (1014)
    - Vertebrate species
        - Otter (*Lutra lutra*) (1355)

2.1.2. Conservation Objectives

The Conservation Objectives for the Qualifying Interests identified for the Site 002012 state that the natural condition of the designated features should be preserved with respect to their area, distribution, extent and community distribution (NPWS 2014a). The Conservation Objectives and targets of the Qualifying Interests of Site 002012 are listed in **Table 2.1** below.

Table 2.1: The Conservation Objectives and targets of the Qualifying Interests of the North Inishowen Coast SAC (NPWS 2014).

Qualifying Interest	Objectives	Target(s)[2]
Mudflats and sandflats not covered by seawater at low tide 1140	Maintain favourable conservation condition	988.31ha[4]; 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
(Fine to medium sand with *Eurydice pulchra* community complex)	Maintain favourable conservation condition	234.79ha[4]; conserve community type in natural condition
(Muddy sand to coarse sediment with *Pygospio elegans* community complex)	Maintain favourable conservation condition	542.99ha[4]; conserve community type in natural condition
(Sand with *Angulus tenuis* and *Scoloplos (Scoloplos) armiger* community complex)	Maintain favourable conservation condition	208.62ha[4]; conserve community type in natural condition
(*Zostera*-dominated community)	Maintain favourable conservation condition	1.91ha[4] and Shoots/m^2; Maintain natural extent and high quality of *Zostera* dominated communities
Perennial vegetation of stony banks 1220	Maintain favourable conservation condition	Area unknown[3]; 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.
Vegetated sea cliffs of the Atlantic and Baltic coasts 1230	Maintain favourable conservation condition	>68.0km[5]; 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	496.06ha[5]; 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	17.96ha[5]; 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.

[2] Area values based on NPWS spatial data. https://www.npws.ie/maps-and-data/habitat-and-species-data (accessed 23 February 2021)

[3] From NPWS (2014a) Conservation Objectives Series. North Inishowen Coast SAC 002012.

Qualifying Interest	Objectives	Target(s)[2]
European dry heaths 4030	Maintain favourable conservation condition	Total area of this habitat has not been calculated, but estimated to cover more than 10% of the SAC[5]; 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.
Narrow-mouthed Whorl Snail *Vertigo angustior* 1040	Maintain favourable conservation condition	There are two known sites for this species and targets relate to maintaining adult and sub-adult densities and overall habitat quality.
Otter *Lutra* 1355	Maintain favourable conservation condition	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. Habitat extents are: Terrestrial above high water 146.6ha and 61.3ha along river banks/ ponds, Marine 10.99.2ha Freshwater river 30.9km Freshwater lake 2.7ha

2.2. *Details of Aquaculture Activities in Site 002012*

Aquaculture activities within Site 002012 focus on the cultivation of the Pacific oyster, *C. gigas* in Trawbreaga Bay. Oyster production has been operational in Trawbreaga Bay since the late 1990's, however it was not until the early 2000's that licenses were first issued for the area. In 2001 there were 26 licences to farm oysters in the Trawbreaga Bay area. In Trawbreaga Bay there are currently a total of 80 licenced sites and applications for licences for a further 14 sites.

2.2.1. Husbandry

Current oyster cultivation within Site 002012 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 arrayed in double rows with wide gaps between the paired rows to allow for access. Trestles used are made from steel are typically 3 in length, 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 two and five 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 Trawbreaga Bay when G4 to G8 (6 – 10mm, respectively) oyster seed is brought to the service site

either in spring or late summer of each year. The mesh size in the mesh bags can vary (4mm, 6mm, 9mm and 14 mm) depending on oyster stock grade. For example, 6mm seed is put into 4mm mesh bags at a ratio of 1000 to 1500 seed per bag. Both Diploid and Triploid oysters are grown in Trawbreaga Bay. Though the majority of producers are now moving into triploid production for all their stock as it appears to perform well in the area. The oyster seed is bought in from oyster nurseries in France or the UK and include: GrainOcean, France Turbot, Satmar and France Nissian

Oysters are thinned out and graded as they grow and will be taken to the handling / sorting facility twice per year for grading and re-packing then returned to the trestles. In the final stage they will be 'hardened[4]' in the upper intertidal area, before removal, grading, bagging and delivery. Time to harvest, depending on intake size, ranges from 2.5 to 4 years, where they will have reached 60 or 80 to the kilo in instances that they are moved to other sites for on-growing, and even heavier if being sent to market. At reaching market size oysters are in bags of about 120. Some farmers also take in half grown hatchery produced oysters (from Dungloe, Co. Donegal) and grow under contract for local farmers in the area.

New (oyster) applicants, have indicated their source of seed will be from hatcheries currently used by existing farms within the Bay. All new applicants propose to use bag and trestles (intensive) as the method of cultivating their oysters. Currently DAFM only permit triploid oysters to be grown in the North Inishowen SAC.

2.2.2. Aquaculture Sites in Trawbreaga Bay

Aquaculture sites on the intertidal area are typically accessed during spring tides (at low tide) using tractors and trailers. Preparatory work is always conducted in onshore 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 Trawbreaga Bay there are currently a total of 80 licenced sites and applications for licences for a further 14 sites. Of the 80 licenced sites 19 are under appeal to the Aquaculture Licence Appeals Board. The location of licenced sites and application sites relative to Qualifying Interest 1140 are shown in **Figure 2.1**. The extent of spatial overlap with Qualifying Interest 1140 is presented in **Table 2.2** and **Table 2.3**.

[4] The process of hardening allows daily periods of exposure to air and generally takes place in the intertidal zone or in shallow water where tidal range is sufficient. Aerially exposed oysters have higher meat content and better keeping qualities once harvested.

It should be noted that the values presented in **Table 2.2** and **Table 2.3** represent the total overlap of the aquaculture sites with Qualifying Interest 1140. There are some sites or part of sites that do not overlap with Qualifying Interest 1140.

2.2.3. Maximum Production Tonnage of Oysters as Estimated for Licences

The current maximum annual production tonnage based on production estimates on licences (including appeals) is estimated to be 1837 T, and the proposed max annual production tonnage within the licence applications is estimated to be 216. The percentage increase in total tonnage licence applications are approved will be 11.75%.

2.2.4. Aquaculture Site Access and Routes

The existing and proposed aquaculture sites are accessed by tractor and trailers. Given the size and location of the existing licenced aquaculture sites on the intertidal zone, it is likely that these sites are accessed by tractors on a proportion of low tides, rather than on every low tide. It is unknown, however, how many tractors and trailers and access routes are currently used by producers.

It is proposed that existing access routes will be used to access the proposed sites and that there will be no increase in the area of seabed used for access to the trestles. This is true for access to the proposed sites along established access routes but access to the exact location of the proposed sites will in some instances require vehicles to use new areas of seabed as access routes. These new areas will be small relative to established access routes but they will result in an overall increase in access route area. Albeit a relatively small increase in access route area, there is some uncertainty around the magnitude of this increase. It should be noted that although the proposed sites will result in an increase in access route area, the intensity of the vehicle traffic along these new access routes will be far lower than along established primary access routes used for multiple sites

Existing access routes are shown in **Figure 2.2** relative to the Qualifying Interest 1140. The estimated width of these access route is 10m. The spatial extent of existing access routes overlapping the Qualifying Interest 1140 is presented in **Table 2.4**.

As is the case for aquaculture sites, it should be noted that some segments of the access routes do not overlap with Qualifying Interest 1140 or its' constituent communities.

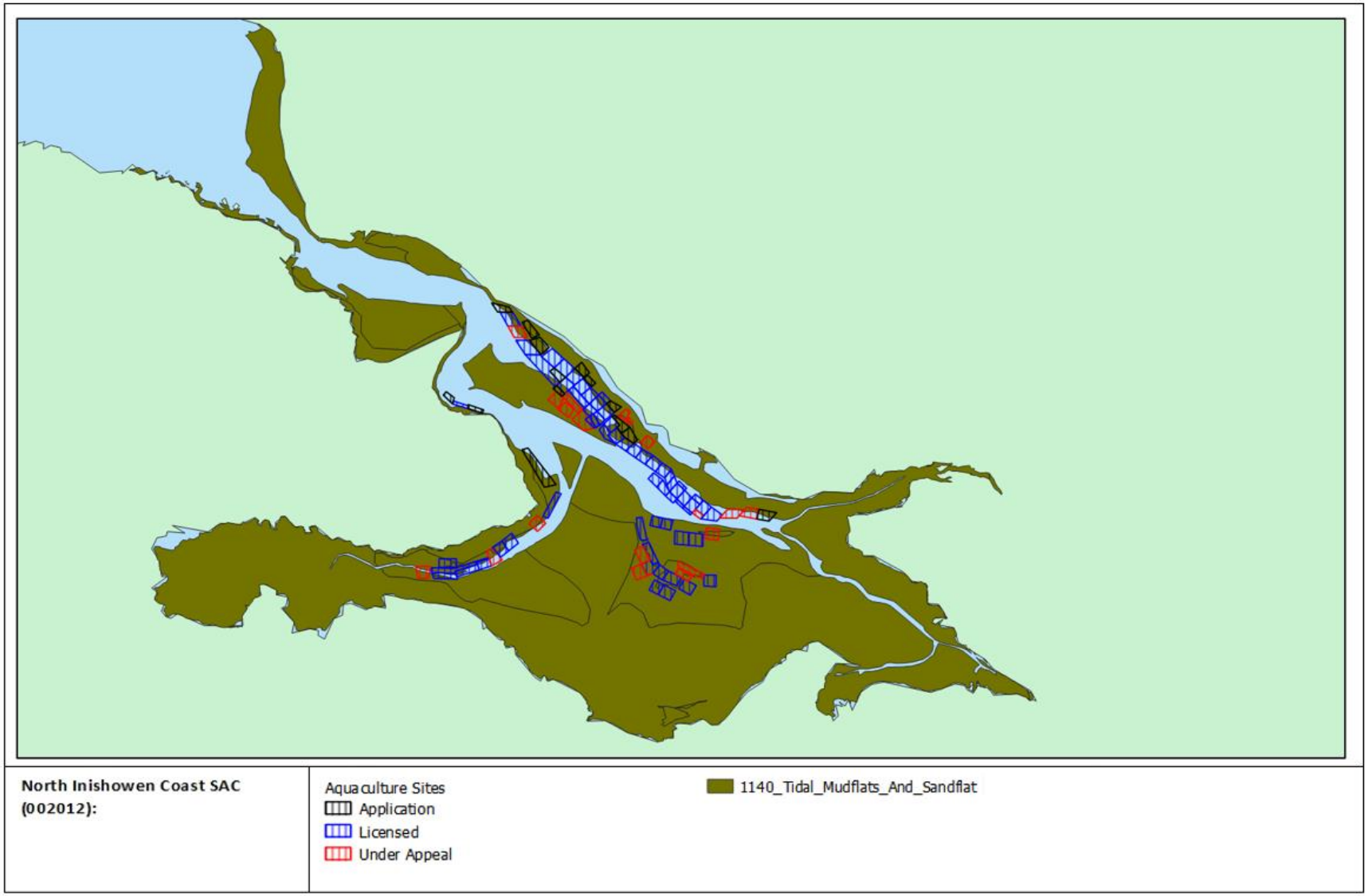

Figure 2.1: Aquaculture sites relative to Qualifying Interest 1140 in Site 002012.

Table 2.2: Spatial extent of licenced and under appeal aquaculture sites overlapping with Qualifying Interest 1140 in Site 002012.

		Licensed (61 sites)	Licensed - Under Appeal (19 sites)	Total
1140 - Mudflats and sandflats not covered by seawater at low tide (988.31ha)	**Area (ha)**	39.65ha	14.28ha	**63.14ha**
	% Qualifying Interest	4.01**%**	1.45**%**	**6.39%**

Table 2.3: Spatial extent of proposed aquaculture sites overlapping with Qualifying Interest 1140 in Site 002012.

		Applications (14 sites)
Habitat 1140 - Mudflats and sandflats not covered by seawater at low tide (988.31ha)	**Area (ha)**	9.21ha
	% Qualifying Interest	0.93**%**

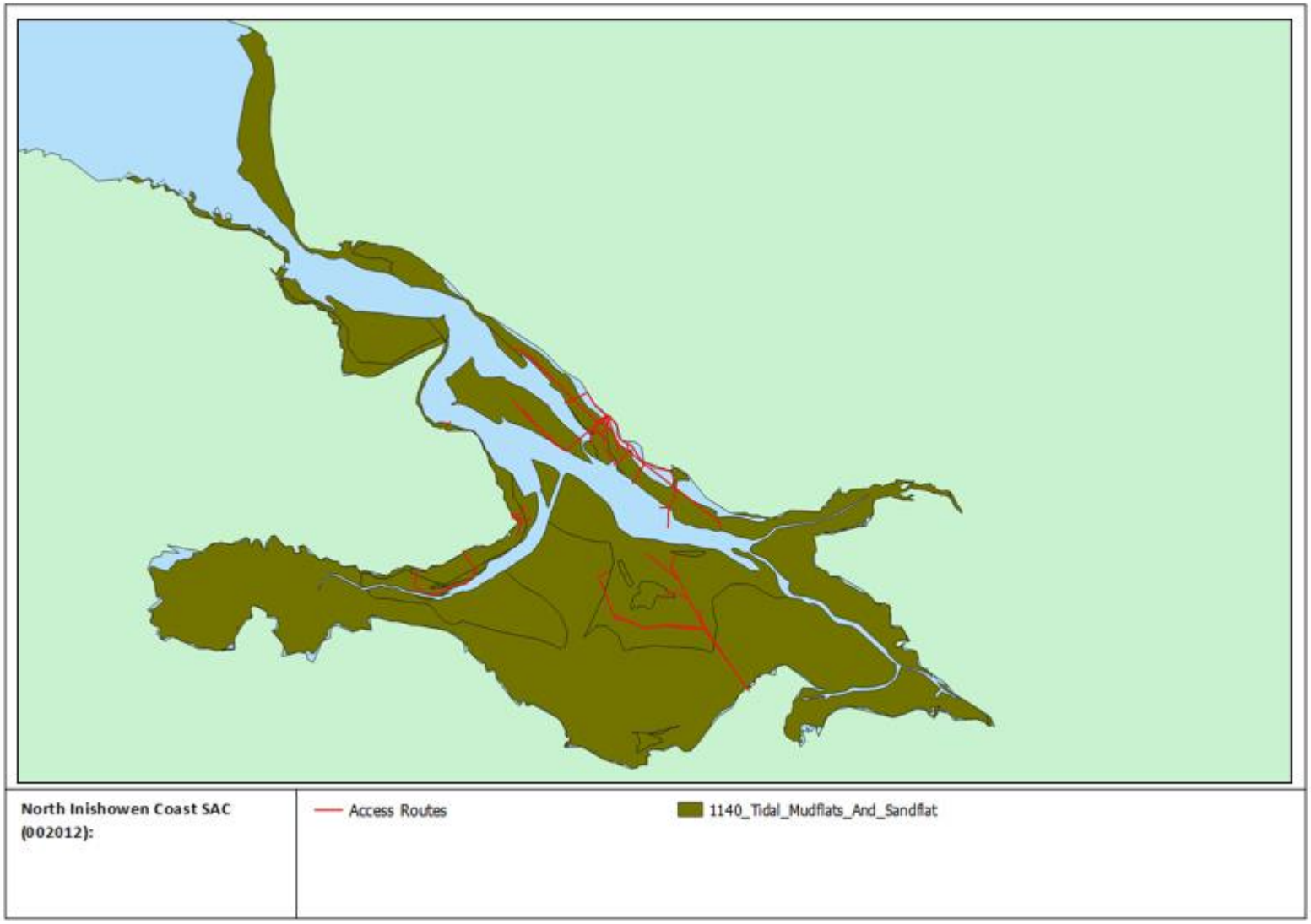

Figure 2.2: Access routes relative to Qualifying Interest 1140 in Site 002012.

Table 2.4: Spatial extent of access routes overlapping with Qualifying Interest 1140 in Site 002012.

		Access routes
Habitat 1140 - Mudflats and sandflats not covered by seawater at low tide (988.31ha)	**Area (ha)**	12.25ha
	% Qualifying Interest	1.24**%**

2.3. Screening of Potential *In Situ* and *Ex Situ* Interactions Between Aquaculture Activities and Qualifying Interests

2.3.1. Potential *In Situ* Interactions with the Qualifying Interests of Site 002012

This section presents a preliminary screening of the potential interaction between aquaculture activities and the Qualifying Interests in Site 002012. If an interaction is identified this indicates the potential for significant *in situ* effects of aquaculture activities on a Qualifying Interest[s]. **Table 2.5** contains the preliminary screening of potential interaction between aquaculture activities and Qualifying Interests in Site 002012.

In summary, aquaculture activities have the potential to interact with two Qualifying Interests only, Qualifying Interest 1140 and the Qualifying Interest 1335 (**Table 2.5**). Potential interactions with all other Qualifying Interests in Site 002012 were excluded based on distance from the aquaculture activities. The Qualifying Interests 1140 and 1355 were advanced to the next stages of the AA screening process (**Sections 2.4**).

Table 2.5: Qualifying Interests of the North Inishowen Coast SAC (NPWS 2014). Qualifying Interests brought forward to the Screening for AA are in bold.

Qualifying Interest	Preliminary screening
Mudflats and sandflats not covered by seawater at low tide 1140	**As shown in Section 2.2 above the aquaculture sites and access route overlap parts of the Qualifying Interest 1140 within the North Inishowen Coast SAC. Consequently, there is potential for aquaculture activities to interact with the Qualifying Interest .** **The Qualifying Interest 1140 is advanced to the next stage of the screening process.**
Perennial vegetation of stony banks 1220	The Qualifying Interest has been recorded at a total of 18 sub-sites, none of which are located in close proximity to the aquaculture sites (NPWS 2014a). Given location of the sub-sites, and the nature of aquaculture activities, potential interactions can be excluded– the Qualifying Interest is screened out from further assessment.
Vegetated sea cliffs of the Atlantic and Baltic coasts 1230	Sea cliffs are a feature of the SAC, with the best examples found in the west of the SAC (Dunree to Leenan Head and Dunaff Head) and in the area to the north-west of Glengad Head (NPWS 2014c). The closest sea cliffs to the aquaculture sites are located at the entrance of Trawbreaga Bay (NPWS 2014a). Given the distance of the sea cliffs from the aquaculture sites in inner Trawbreaga Bay potential interactions with aquaculture activities can be excluded – the Qualifying Interest is screened out from further assessment.

Qualifying Interest	Preliminary screening
Fixed coastal dunes with herbaceous vegetation (grey dunes) 2130	The closest area mapped for the Qualifying Interest 2130 is located at the entrance of Trawbreaga Bay (NPWS 2014a). Given the distance of the habitat from the aquaculture sites in inner Trawbreaga Bay potential interaction with aquaculture activities can be excluded – the Qualifying Interest is screened out from further assessment
Machairs (*priority habitat in Ireland) 21A0	The Qualifying Interest 21A0 are located on the north coast at the entrance to Trawbreaga Bay (NPWS 2014a). Given the distance of the habitats from the aquaculture sites in inner Trawbreaga Bay potential interaction with aquaculture activities can be excluded – the Qualifying Interest is screened out from further assessment.
European dry heaths 4030	This terrestrial habitat occurs in mosaic with other habitats such as wet heath/blanket bog and exposed rock and Vegetated sea cliffs of the Atlantic and Baltic coasts (1230). There is no potential for interaction between activities at the aquaculture sites and the Qualifying Interest – the Qualifying Interest is screened out from further assessment.
Narrow-mouthed Whorl Snail *Vertigo angustior* 1040	The closest area mapped for the Narrow-mouthed Whorl Snail is located at the entrance of Trawbreaga Bay. Given the distance of the area from the aquaculture sites in inner Trawbreaga Bay potential interaction with aquaculture activities can be excluded – the Qualifying Interest is screened out from further assessment.
Otter *Lutra* 1335	**Trawbreaga Bay supports extensive area of otter commuting habitat. There is potential that the species may occur within the aquaculture sites. Consequently, there is potential for aquaculture activities to interact with the Qualifying Interest.** **The Qualifying Interest Otter *Lutra* (1335) is advanced to the next stage of the screening process.**

2.3.2. Potential *Ex-Situ* Interactions with the Qualifying Interests of Adjacent SACs

This section presents a preliminary screening of the potential interaction between aquaculture activities at Trawbreaga and the Conservation Objectives of the Qualifying Interests of adjacent SACs (*i.e.* potential for *ex situ* effects).

SACs sites occurring within 15 km of the aquaculture sites at Trawbreaga were considered. The 15 km buffer zone was chosen to ensure that all potentially affected SACs were considered in the process. Two SACs are located within 15km of the existing and proposed aquaculture sites at Trawbreaga Bay (**Figure 2.3**). The SAC sites are:

- Magheradrumman Bog SAC (**Site 000168**)
- Inishtrahull SAC (**Site 000154**)

The Qualifying Interests of the Site 000168 and Site 000154 sites are identified in **Table 2.6** where a preliminary screening is carried out on the likely interaction with aquaculture activities.

In summary, as there is no potential for any interaction between the Qualifying Interests of Site 000168 and Site 000154 and the aquaculture activities, potential effects on the Qualifying Interests of Site 000168 and Site 000154 sites can be excluded. The Qualifying Interests can be screened out of this assessment.

Table 2.6: Qualifying Interests of SAC sites within 15km of the existing and proposed aquaculture sites at Site 002012 - initial screening assessment on likely interactions.

Natura site	Qualifying Interest	Preliminary screening
Magheradrumman Bog SAC	Northern Atlantic wet heaths with *Erica tetralix* (4010)	No spatial overlap or likely interactions of the Qualifying Interest with aquaculture activities within North Inishowen Coast SAC – Qualifying Interest screened out from further assessment.
	Blanket bogs (* if active bog) (7130)	No spatial overlap or likely interactions of the Qualifying Interest with aquaculture activities within North Inishowen Coast SAC – Qualifying Interest screened out from further assessment.
Inishtrahull SAC	Vegetated sea cliffs of the Atlantic and Baltic coasts (1230)	No spatial overlap or likely interactions of the Qualifying Interest with aquaculture activities within North Inishowen Coast SAC – Qualifying Interest screened out from further assessment.

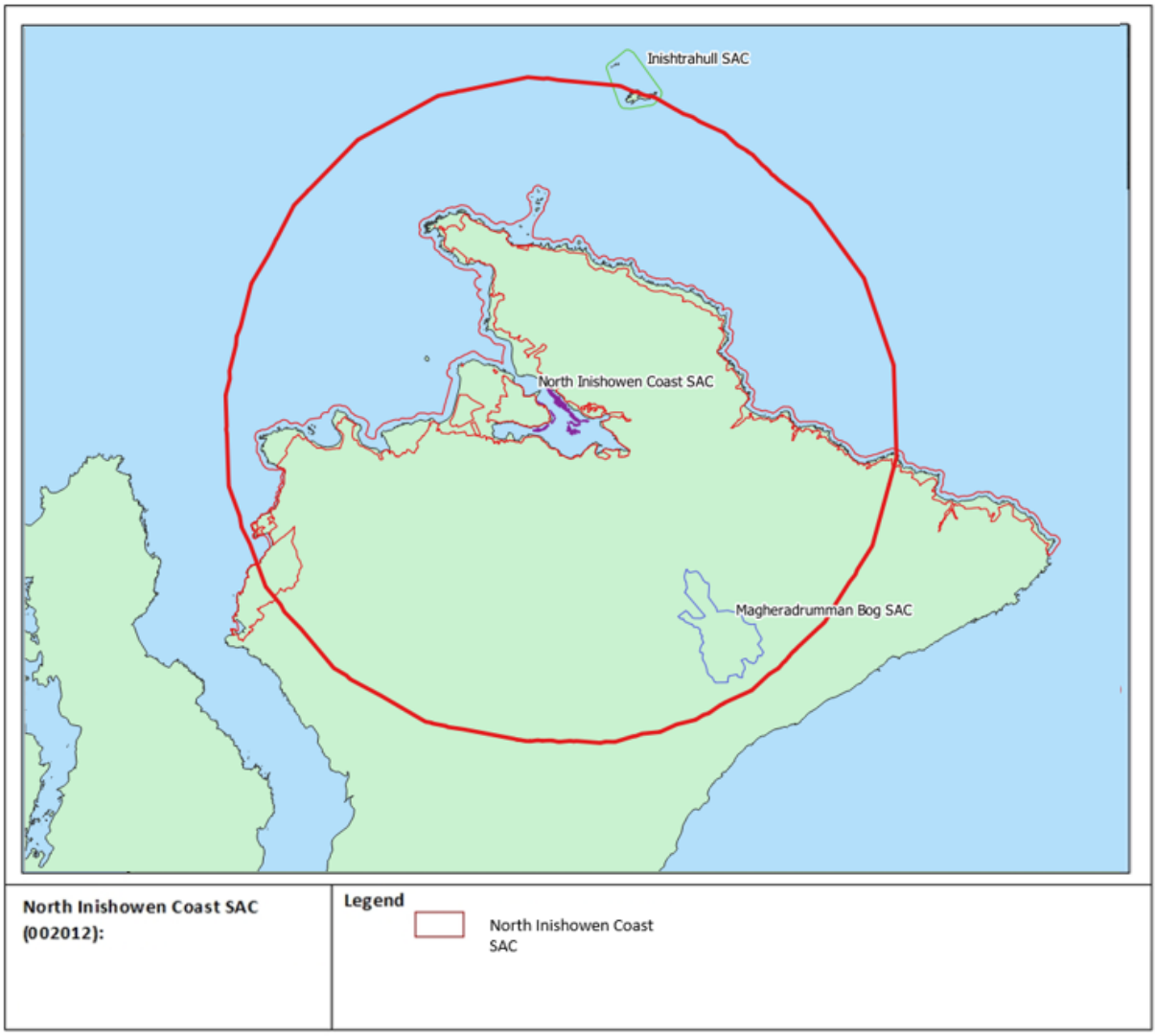

Figure 2.3: SACs within 15km of the existing and proposed aquaculture sites at the north Inishowen Coast SAC (Site code: 002012)

2.4. Screening of the Potential Effects of Aquaculture Activities on Identified Qualifying Interests

Potential effects of intertidal aquaculture with regard to benthic habitats (such as those in Qualifying Interest 1140) are described in **Section 2.4.1** while potential effects to Otter (Qualifying Interest 1335) are described in **Section 2.4.2.**

Screening assessments of whether or not the potential interactions could result in significant effects on Qualifying Interest 1140 and Qualifying Interest 1335 are provided in **Section 2.4.3** and **Section 2.4.4** respectively.

2.4.1. Potential Effects on Benthic Habitats - Qualifying Interest 1140

Filter feeding organisms, for the most part, feed at the lowest trophic level, usually relying primarily on ingestion of phytoplankton. Culture of filter feeding bivalve is a extractive process 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. The degree of deposition and accumulation of biologically derived material on the seafloor is a function of factors discussed below.

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. Whether material accumulates beneath oyster trestles is dictated by a number of factors, including: -

1. **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.
2. **Turbidity of water** – 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 an increase build-up of material beneath structures.
3. **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.

4. **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/mussel 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.

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

Oyster culture poses a risk in terms of the introduction of the non-native species Pacific oyster (*C. gigas*). Wild recruitment of *C. gigas* has been documented in a number of bays on the west and north coasts of Ireland and the species appear to have become naturalised in these areas (i.e. establishment of a breeding population) (Kochmann et al., 2012, 2013; Zwerschke et al., 2017). Naturalised population 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 and the establishment of 'wild' breeding populations.

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 the production site. 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' at Trawbreaga, 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/).

Non-native (alien) species may be introduced to environments accidentally or deliberately. Aquaculture activities, as well as shipping (commercial and recreational), are the main vectors for the introduction of alien species. Aquaculture is responsible for the introduction of alien species intended for culture and as a result of unintended transmissions arising from imports or movements of aquaculture stock.

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. **Table 2.7** summarises the potential effects of aquaculture activities on benthic habitats.

2.4.2. Potential Effects on Otter - Qualifying Interest 1335

There is little literature regarding otter and its potential interactions with aquaculture. According to the NPWS (2009) habitat destruction and degradation, water pollution and accidental death/ persecution are considered the major threats to this species.

The most recent otter survey in Ireland was carried out in 2010/11 (Reid *et al*., 2013) found that otter densities had declined from 70.5% in 2004/05 to 63.3%, following an initial reduction from 90% in 1980. However, the known distribution of otters remains widespread as there was a 51.7% increase in the known distribution of the species. According to Reid *et al*. (2013) the known range of otter increased by 31% from 1993-2006 to 2007-2011 while the population estimate of 7,800 [95%CI 7,200 – 10,200] breeding females during 2010/11 was not significantly different from that established as a baseline. Modelling of species-habitat associations suggested that available habitat was not limiting and no putative pressures recorded at survey sites negatively impacted species occurrence. Thus, under the statutory parameters for assessing a species' conservation status, *i.e.* range, population, habitat and future prospects, the otter was judged to be in Favourable or 'Good' status.

In the threat response plan NPWS (2009) state 'Little evidence has come to light in recent studies to suggest that disturbance by recreation is a significant pressure'. Recreation in the NPWS report is defined as angling, boating and aquaculture.

There is potential for aquaculture activities to affect otter through exclusion and/or displacement of the species from habitat area, disturbance due to human, boat and vehicular traffic, entanglement with aquaculture structures and equipment (**Table 2.8**).

Table 2.7: Potential effects of aquaculture activities on benthic habitats - Qualifying Interest 1140

Activity	Pressure Category	Pressure	Potential Effects	Equipment/ Gear	Duration (days)	Time of Year	Factors constraining the Activity
Aquaculture Activities	Physical	Current alteration	Structures may alter the current regime and resulting increased deposition of fines or scouring	Trestles and bags and service equipment	365	All year	Spatial extent and location of structures used for culture
		Surface disturbance	Ancillary activities at sites, *e.g*. servicing, transport increase the risk of sediment compaction resulting in sediment changes and associated community changes.				
		Shading	Prevention of light penetration to seabed potentially impacting light sensitive species				
		Seston filtration	Alteration of phytoplankton and zooplankton communities and potential impact on carrying capacity eg. Affecting growth rates and structure of wild populations through competition for food.				
	Biological	Non-native (alien) species introduction	Potential for non-native species (*C. gigas*) 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				

Table 2.8: Potential Effects of Aquaculture Activities on otter - Qualifying Interest (1335)

Culture Method	Pressure Category	Pressure	Potential Effects	Equipment	Duration (days)	Time of Year	Factors constraining the activity
Aquaculture Activities	Physical	Habitat Exclusion	Structures may result in a barrier to movement of otters.	Bags and trestles	365	All Year	Spatial extent and location of structures used for culture
		Disturbance	Ancillary activities at sites increase the risk of disturbance to otter.	Site services, human, boat and vehicular traffic	365	All Year	Seasonal levels of activity relating to husbandry including harvesting
		Entanglement	Entanglement of otters from ropes or material used on structures or during operation of farms	Trestles, bags, and/or ropes used in day to day	365	All Year	Farm management practices
		Ingestion	Ingestion of waste material used on farm	Ties used to secure bags and secure bags to trestle	365	All Year	Farm management practices

2.4.3. Screening of Effects on Qualifying Interest 1140

For habitats, the screening assessment of aquaculture activities is based primarily on spatial overlap with Qualifying Interests *i.e.* if the proposed activities overlap with the habitat then significant effects on the habitat cannot be excluded (not screened out) except where there is absolute and clear rationale for doing so. Where there is spatial overlap, full assessment is warranted and the habitat is brought forward a more detailed assessment of potential effects in **Section 3**. Likewise, if there is no spatial overlap and no likely interactions, then the possibility of significant impact is excluded and further assessment of possible effects is deemed not to be necessary.

Qualifying Interest 1140 which covers an area of 988.31ha within Trawbreaga Bay in Site 002012 hosts four benthic community types:

1. Fine to medium sand with *Eurydice pulchra* community complex (234.79ha)
2. Muddy sand to coarse sediment with *Pygospio elegans* community complex (542.99ha)
3. Sand with *Angulus tenuis* and *Scoloplos* (*Scoloplos*) *armiger* community complex (208.99ha)
4. *Zostera*-dominated community (1.91ha)

The overlap of aquaculture sites and access routes with community complexes and community types within Site 002012 are shown in **Figure 2.7** and **Figure 2.8** while the spatial extent of overlap is presented in **Table 2.10** and **Table 2.11**.

Aquaculture sites and access routes do not overlap the community type **1.** Fine to medium sand with *Eurydice pulchra* community complex or **4.** *Zostera*-dominated community; consequently, potential effects on these community types can be screened out.

In contrast, aquaculture sites and access routes overlap the community types **2.** Muddy sand to coarse sediment with *Pygospio elegans* community complex and **3.** Sand with *Angulus tenuis* and *Scoloplos* (*Scoloplos*) *armiger* community complex; consequently, potential significant effects cannot be screened out. The potential effects to these community type are further assessed in **Section 3** below.

2.4.4. Screening of Effects on Qualifying Interest 1335

For otter, the screening assessment against the aquaculture activities considers the behaviour of the species and the potential for the species to interact with the aquaculture activities. Where interaction with aquaculture activities unlikely to occur, then the possibility of an effect is excluded and further assessment of possible effects is deemed unnecessary.

Otters forage and feed within 80m to 100m of the coastline (Kruuk & Moorhouse, 1991; De Jongh & O'Neill, 2010) and can travel distances up to 500m across estuaries or between islands (De Jongh & O'Neill, 2010). The diving depth of otters typically ranges from 10-12m with the majority of dives

being <3m and lasting <20 seconds (Kruuk *et al.,* 1985). Kruuk & Moorhouse (1991) reported that small benthic fish, eels and crustaceans are common prey items for otters, and they appear to have a strong preference for hunting in areas with dense seaweed cover in shallow, rocky environments. Inner Trawbreaga Bay is noted as being well used by otters, with vegetation providing lying up spots and holts. The distribution of mapped otter commuting habitat within Trawbreaga Bay relative to aquaculture sites and access routes is shown in **Figure 2.9**.

As the aquaculture site and access route activities overlap spatially with otter territory, these activities may have negative effects on the abundance and distribution of populations of the species as otter may migrate in and out of the area.

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

- 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?
- The schedule of operations on the site – is the frequency such that they can cause disturbance to the animals?

Negative effects from intertidal oyster cultivation can be excluded on the basis that the proposed activities will not lead to any modification of the following attributes for otter:

- Extent of habitat (terrestrial, marine and/or freshwater habitat) primarily because The oyster culture structures are raised from the seabed (0.5m -1m) and are oriented in rows, thus allowing free movement through and within the aquaculture sites.
- The activity involves net input rather than extraction of fish biomass as fish are attracted to the trestles and provide foraging opportunities for otters, as such, 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. Shellfish production activities are unlikely to pose any risk to otter populations through entrapment or direct physical injury.
- Disturbance associated with vessel and foot traffic at oyster cultivation sites could potentially affect the distribution of otters at the site. However, the level of disturbance is likely to be very low given that the likely encounter rates will be low and dictated primarily by tidal state and in daylight hours.
- Oyster culture operations are likely to be carried out in daylight hours. The interaction with the otter is likely to be minimal given that otter are mainly active in the early morning and/ or late evening. Given this behaviour, it is unlikely that the species will be active at the

aquaculture site and access routes during operations and encounter rates will be low; consequently, significant disturbance effects will not occur.

Potential effects of aquaculture activities to otter can be screened out.

2.5. In-combination Effects

2.5.1. Fisheries

2.5.1.1. Overview

Putative fisheries activities occurring in the SAC include dredge fishing for cockles and pot fishing for crustaceans (lobster and crab). An overview of fishing activities occurring in the Site 002012 is presented in **Section 2.5.1.2** below while an assessment of potential effects is presented in **Section 2.5.1.3**.

What follows is a summary of a description prepared by the Marine Institute (Marine Institute, 2015) of fisheries occurring within SAC and SPAs sites on the west and south coast.

Lobster fishing occurs on all coasts from Erris into Donegal Bay to Inver Bay and on the Donegal coastline north to Malin. Over 200 vessels are actively involved in the fishery off Donegal the majority of which are <10m in length. Approximately 57 vessels fish between Erris Head and Sligo. The latter vessels use on average 350 pots each and fish for over 100 days per year between Mar and Nov. This fishery occurs throughout the year, but activity increases during spring and peaks in summer. There is an intensive v-notching programme in the area with up to 3.7 tonnes of lobster v-notched and released per annum in recent years (Marine Institute, 2015).

Cockle beds may exist in intertidal mud and sand flats in Loughrous Beg, Gweebarra and Trawenagh in south west Donegal. Harvesting of cockles in Drumcliff Bay is by hand gathering and not by dredging. Razor clam stocks may occur in Rutland Channel and Gweedore Bay. These stocks do not have a microbiological classification and are not fished (Marine Institute, 2015).

The brown crab fishery extends from the coast offshore to the 200m depth contour both off the north Mayo coast and the north west Donegal coast. There are approximately 50 vessels and 50000 pots in the Donegal fishery. The offshore crab fleet in Donegal is an over 18m vivier fleet while the offshore fleet working out of Mayo is mainly 18m) have also declined as this fleet now spends a proportion of the year fishing in the southern north Sea. Effort hours (VMS) by this fleet in the area declined from 5714hrs in 2006 to 2238hrs in 2014 (Marine Institute, 2015).

A trap fishery for whelk has developed off the Inishowen peninsula in recent years. Up to 10 vessels may participate in this seasonal fishery in spring and summer depending on the relative market strength for whelk, lobster and crab (Marine Institute, 2015).

2.5.1.2. Effects of Fisheries on Qualifying Interest 1140

Cockle Dredging

Based general accounts of fishing in the area a putative cockle dredge fishing area at Trawbreaga was identified (see **Figure 2.4**).

Figure 2.5 and **Figure 2.6** respectively show the putative dredge fishery area relative to the Qualifying Interest 1140 and constituent marine community types.

The putative dredging areas overlaps 15.66% of Qualifying Interest 1140 (see **Table 2.9**) and with 14.43% and 35.15% respectively of Muddy sand to coarse sediment with *Pygospio elegans* community complex, and Sand with *Angulus tenuis* and *Scoloplos* (*Scoloplos*) *armiger* community complex) (see **Table 2.9**).

Soft sediment communities, particularly suspension feeders and crustaceans, are sensitive to fishing pressure from dredging. Recovery time is prolonged (measured in years) compared to coarser substrates due to the fact that such habitats are mediated by a combination of biological, chemical and physical processes compared to coarse substrates which are dominated by physical processes (ABPMer 2013e).

Table 2.9: Spatial extent of cockle dredge fisheries activities overlapping with Qualifying Interest 1140 and with constituent communities.

Qualifying Interest	**Overlap**	
	Area (ha)	**% Qualifying Interest**
Mudflats and sandflats not covered by seawater at low tide (988.31ha)	151.78	15.66
Community Type	**Overlap**	
	Area Ha	**% Community type**
Muddy sand to coarse sediment with *Pygospio elegans* community complex (542.99ha)	78.33	14.43
Sand with *Angulus tenuis* and *Scoloplos (Scoloplos) armiger* community complex [208.53ha]	73.14	35.15

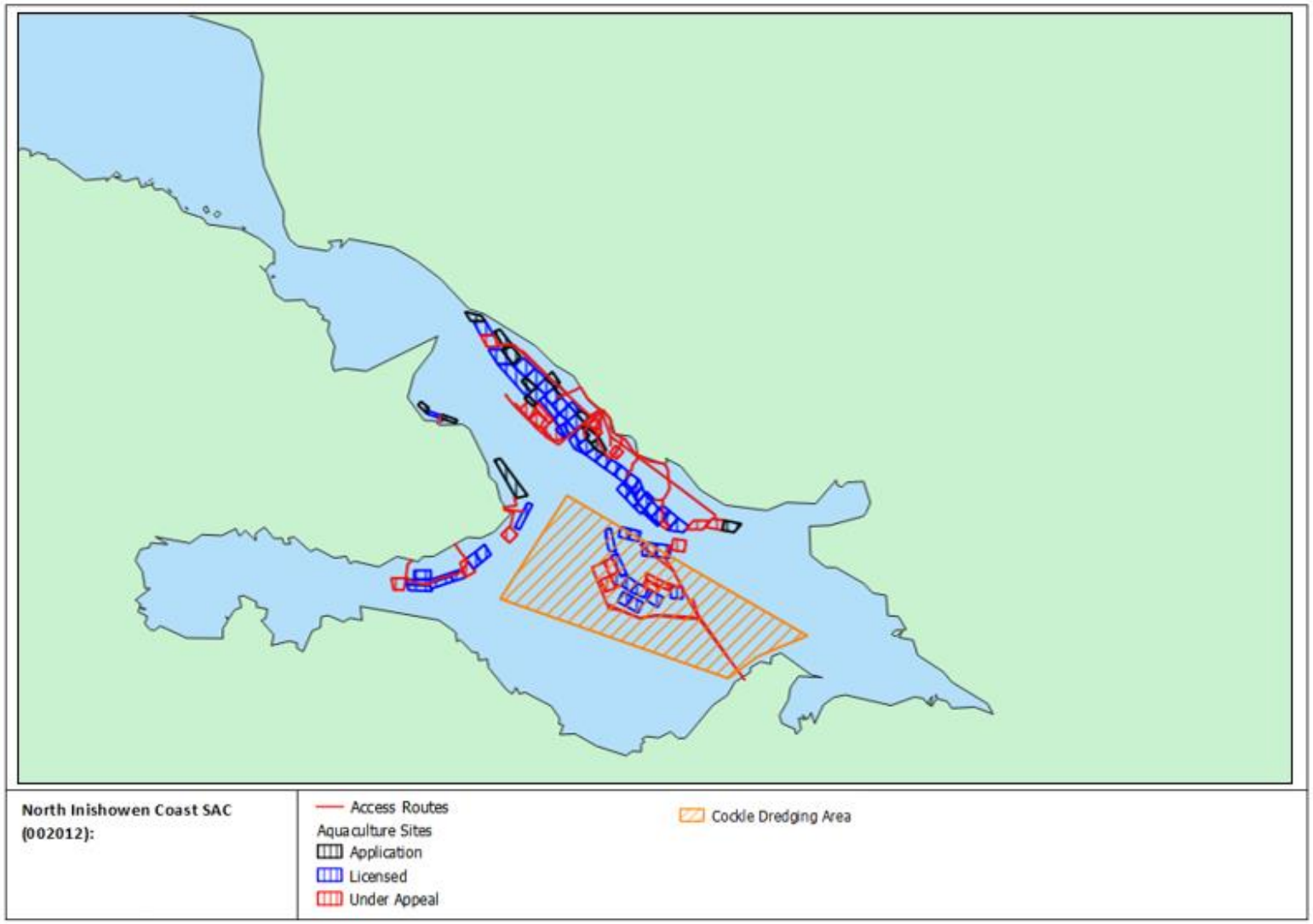

Figure 2.4: Aquaculture activity and putative dredge fishing at Trawbreaga

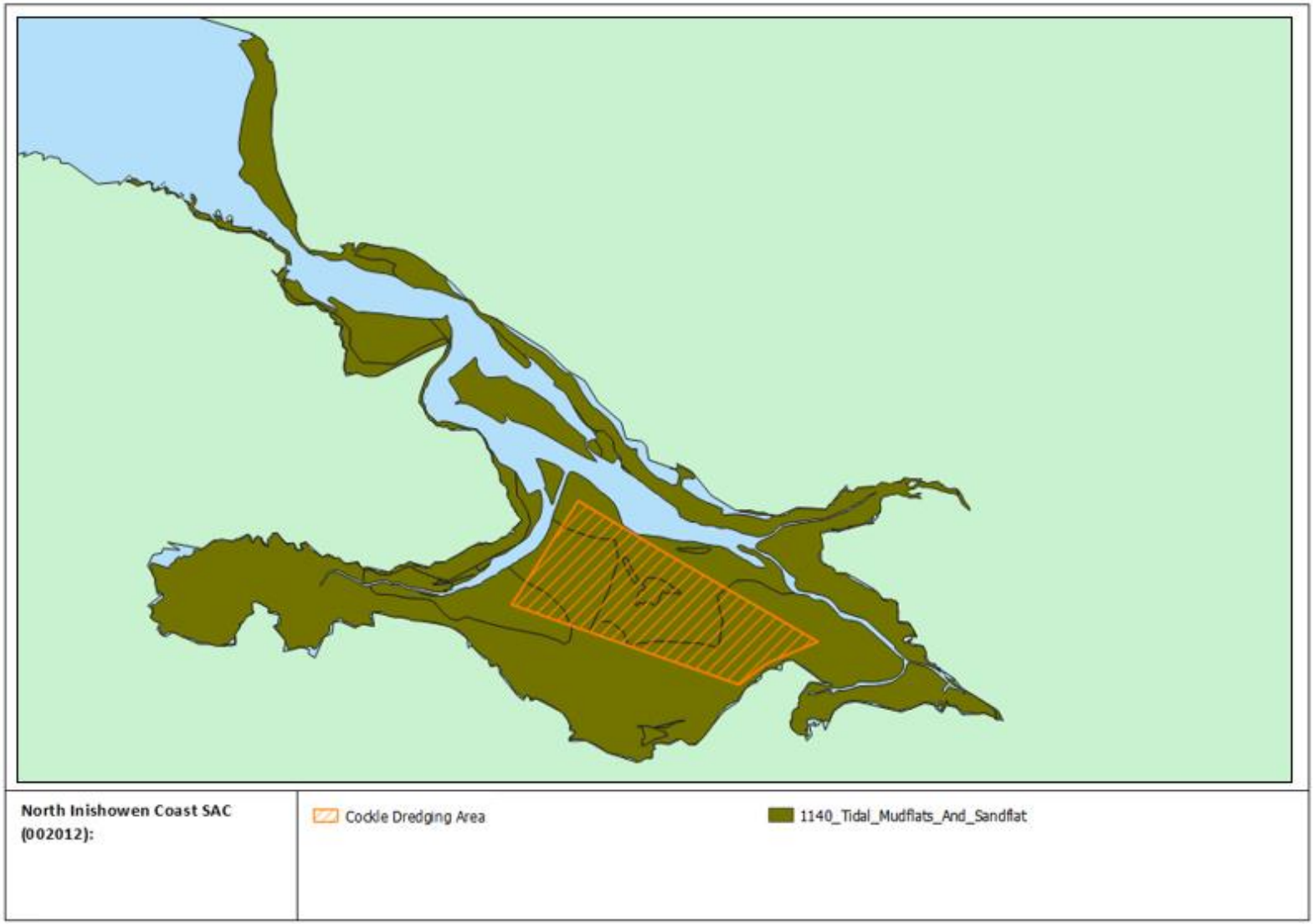

Figure 2.5: Putative dredge fishing area relative to Qualifying Interest 1140

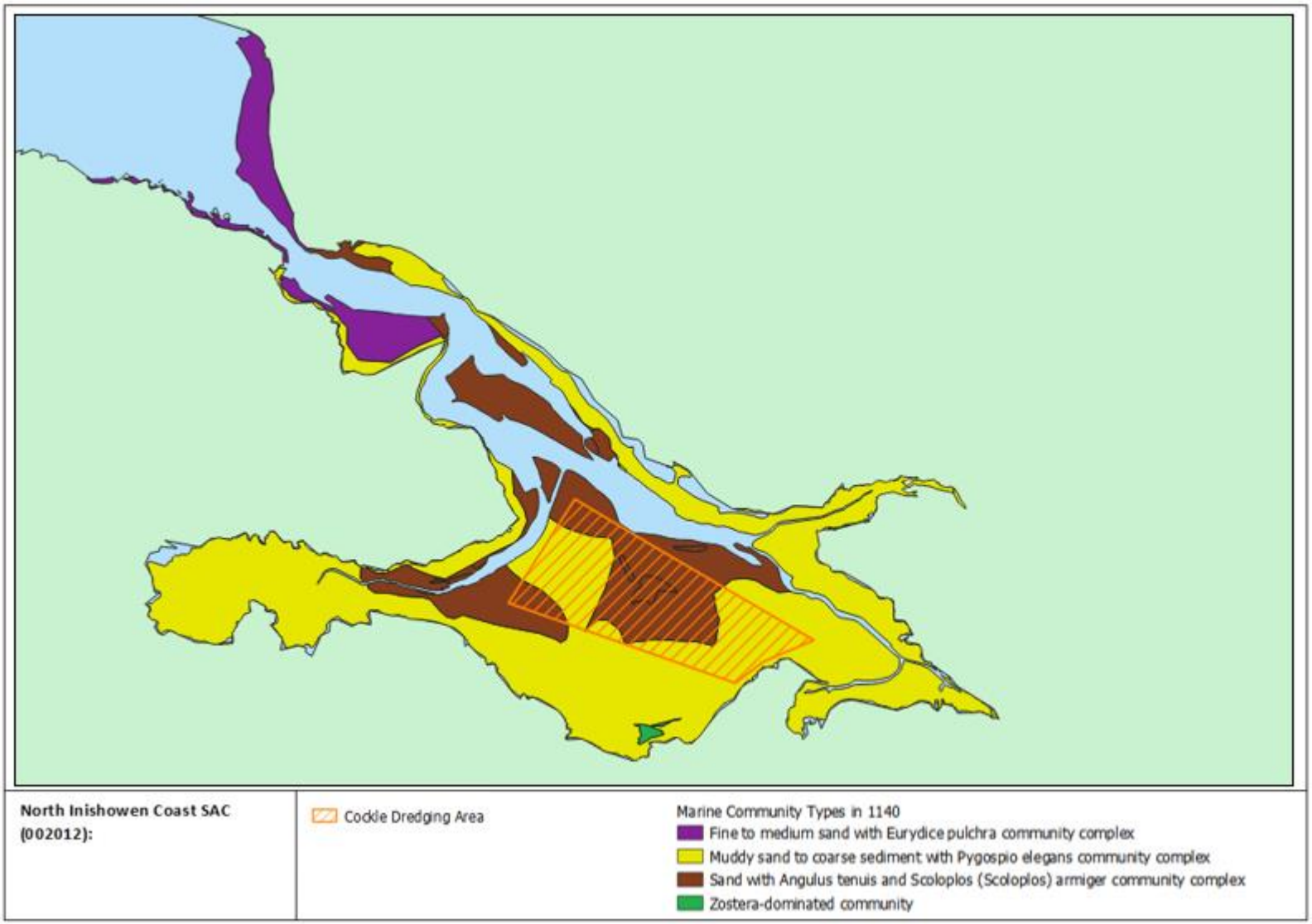

Figure 2.6: Putative cockle dredge fishing area relative to community types comprising Qualifying Interest 1140

Pot Fishing

Pot fishery at Trawbreaga overlaps with 0.26% of Qualifying Interest 1140 and with 1.10% of the constituent marine community type Fine to medium sand with *Eurydice pulchra* community complex.

Pot fisheries may cause localized abrasion and disturbance which may be significant for habitats that are highly sensitive to such pressures (*e.g.* maërl and seagrass meadows). In many instances, pots are retrieved via tractor or other vehicles as opposed to exclusively by boat. However, given the spatial scale of and low intensity of this fishery practice the risk posed by the crustacean pot fishery to muddy sand and sandy mud habitats is deemed to be low and insignificant (ABPMer 2013e).

2.5.1.3. Effects of Fisheries on Qualifying Interest 1140

Cockle Dredging

The level of coverage presented in **Table 2.9** is unlikely to be a true reflection of dredge fishing in the area for the following reasons:

- Dredge fishing activities are typically confined to deeper water and is unlikely to occur in shallow subtidal and intertidal areas;
- The presence of oyster trestles in existing licenced areas will preclude the operation of a dredge in the area identified;
- The intertidal nature of part of the putative cockle dredge fishing area would be impractical for dredging activity relative to adjacent subtidal habitats;
- The area identified for putative dredging is not suitable for dredging given the high abundance of boulders and rocks found in the (sedimentary) intertidal areas of the SAC.
- There are no known applications for a fishery or a proposed fishery plan for the area.

Given the above reasons, significant effects of dredge fishing on designated Qualifying Interest 1140 and its' constituent community types can be excluded from further assessment.

Future fisheries activities will be subject to full risk assessment should an application be presented.

Pot Fishing

In comparison to bottom fishing using dredges, which are specifically designed to disturb the upper few centimetres of sediments, benthic habitats are relatively resilient to physical disturbance associated with the deployment and retrieval of pots and creels. In addition, the actual footprint of static gear such as creels and pots will be much lower than the percentage of the area over which the fishery might occur. Given the low level of spatial overlap, and the relative resilience of the habitat and community types to disturbances from pot fisheries, significant effects can be excluded.

2.5.1.4. Screening of In-combination Effects

Qualifying Interest 1140

Given that interactions between Qualifying Interest 1140 and fishing activities are unlikely to occur, in-combination effects of fishery aquaculture activities are screened out.

2.5.2. Intertidal Seaweed Harvesting

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 effects on intertidal habitats may also occur as a consequence of travel across the shore to harvest sites. Removal of seaweed cover may alter local hydrodynamic conditions and change wave exposure regimes which, in turn, can modify sedimentation rates.

There are anecdotal accounts of seaweed harvesting occurring along reefs and also from boulders and cobbles scattered on top of intertidal sediments in areas near Community 2. There are currently foreshore applications for seaweed harvesting decisions pending, the full consideration of this un-licenced activity in combination with existing (and proposed) aquaculture activities is not possible at this stage.

It is understood that any seaweed harvesting that occurs is infrequent and dependant on market prices and weather. These two factors serve to make this an infrequent source of disturbance and given that harvesting occurs on hard substrates then neither Community 1 or Community 2 can be affected as these communities are sedimentary and not characterised by the presence of boulders or cobbles.

2.5.2.1. Screening of In-combination Effects

Given that no direct interaction between either Community 1 or 2 with seaweed harvesting any adverse in-combination effects can be screened out.

2.5.3. Pollution Pressures

There are a number of activities which are terrestrial in origin that might result in impacts on the conservation features of the North Inishowen Coast SAC. Primary among these are point source discharges from domestic sewage outfalls distributed along the harbour and a single municipal urban waste water treatment plant at Carndonagh in the southern extent of the SAC. 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.

2.5.3.1. Screening of In-combination Effects Screening

The Environmental Protection Agency has classified water quality in Trawbreaga Bay as unpolluted. Furthermore, pressures resulting from aquaculture activities are primarily localised compaction of sediment along access routes. 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 can be screened out.

2.6. Screening Outcome

The screening assessment investigates the potential for the existing and proposed aquaculture activities to have significant *in situ* and/ or *ex situ* effects on SACs sites within the Natura 2000 network.

The screening exercise has determined, in light of best available scientific data, that there is potential for significant *in situ* effects on Qualifying Interest 1140 of Site 002012. The Qualifying Interest and site are screened in for further detailed consideration of the potential for effects in **Section 3**. The likelihood of significant *in situ* and *ex situ* effects on all other Qualifying Interests of SAC sites have been excluded (screened out).

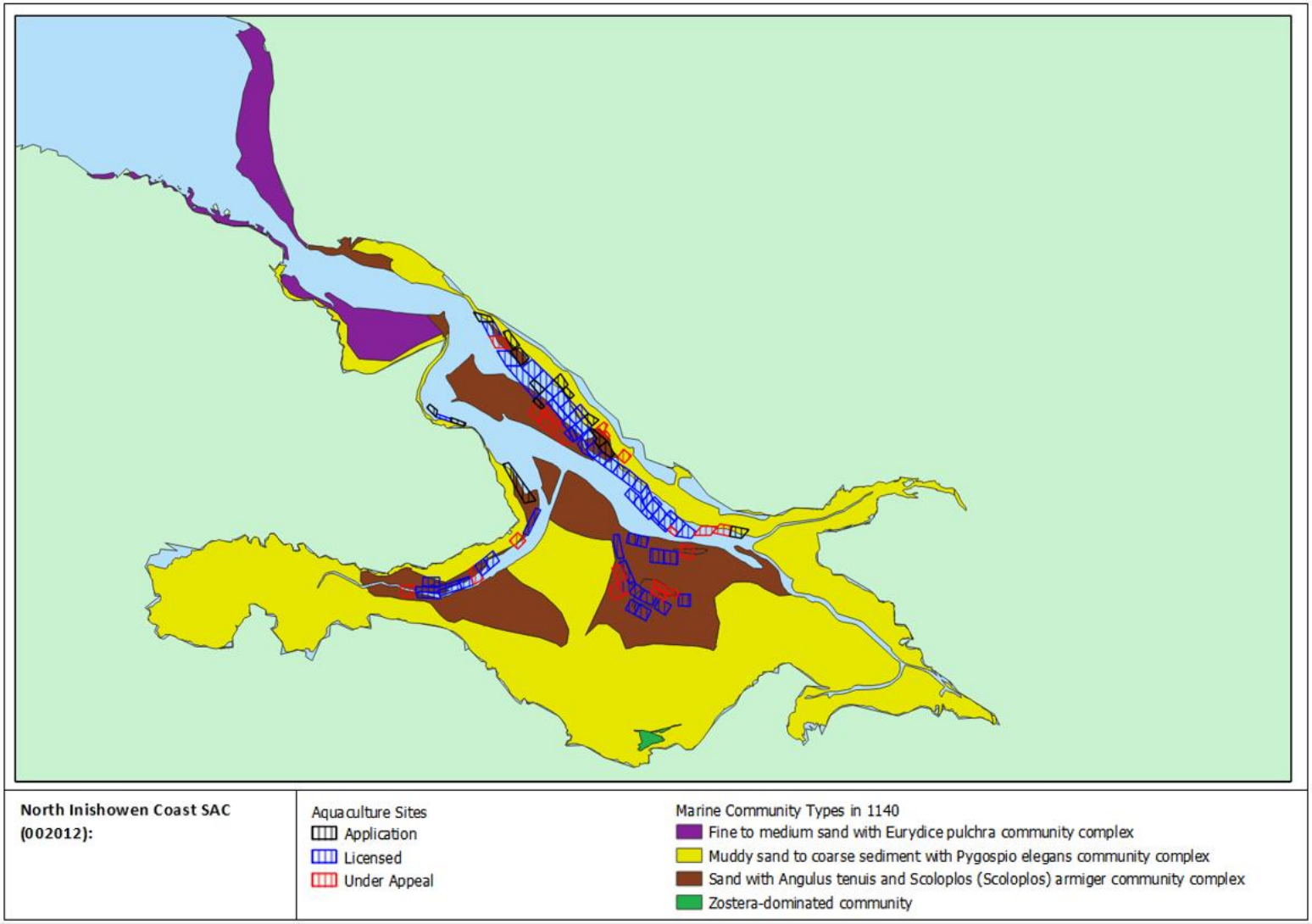

Figure 2.7: Aquaculture sites relative to benthic communities in Qualifying Interest 1140, Trawbreaga Bay.

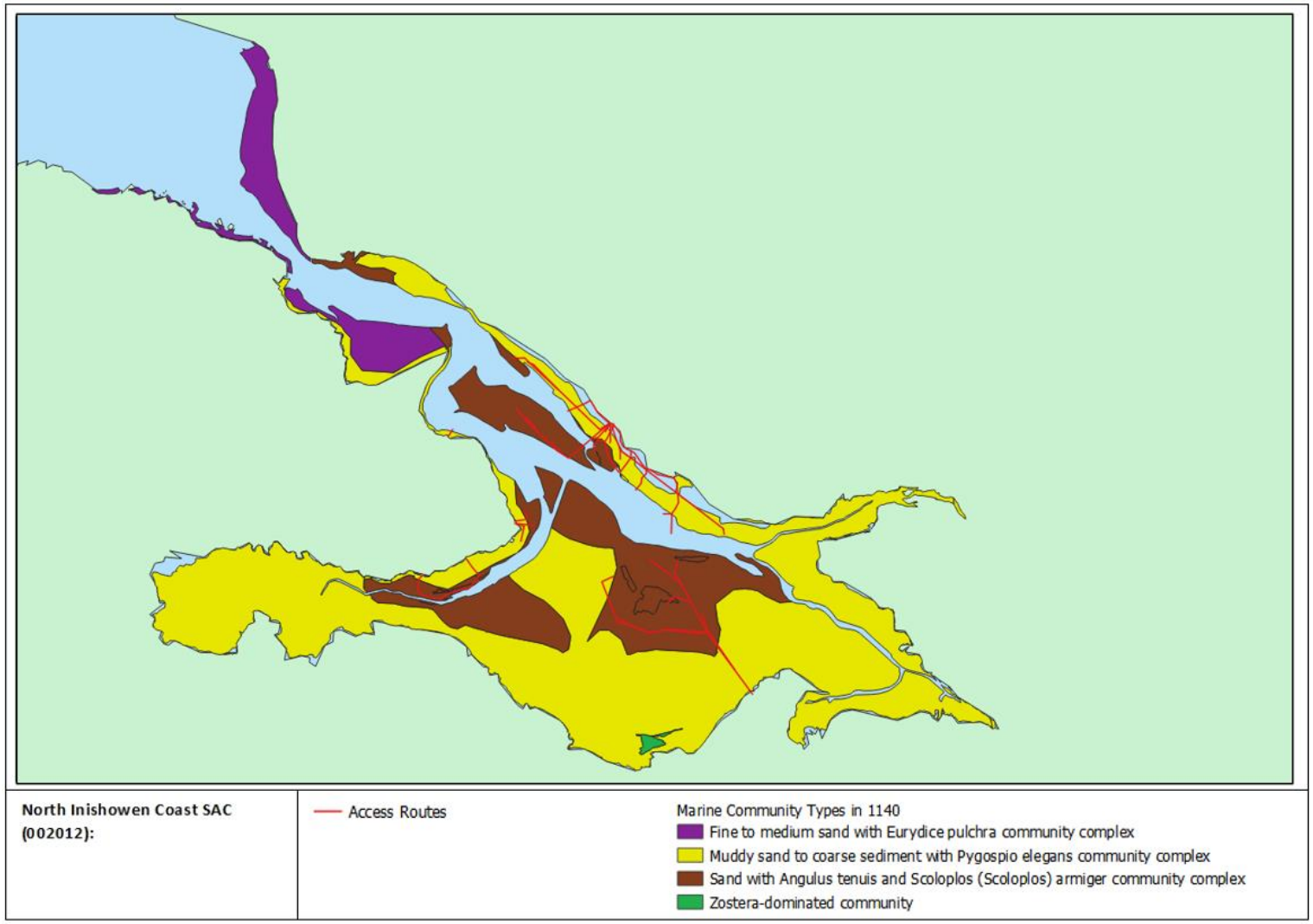

Figure 2.8: Access routes relative to benthic communities in Qualifying Interest 1140, Trawbreaga Bay .

Table 2.10: Spatial Extent of Aquaculture sites overlapping communities within Qualifying Interest 1140 in Site 002012.

		Licensed (61 sites)	Licensed - Under Appeal (19 sites)	Total Licenced (80 sites)	Applications (14 sites)	Combined Licenced and Applications (94 sites)
Fine to medium sand with *Eurydice pulchra* community complex (234.79ha)	**Area (ha)**	-	-	**-**	-	-
	% of community complex	-	-	**-**	-	-
Muddy sand to coarse sediment with *Pygospio elegans* community complex (542.99ha)	**Area (ha)**	15.21ha	5.56ha	**20.77ha**	8.90ha	**29.67ha**
	% community complex	2.80**%**	1.02**%**	**3.82%**	1.64**%**	**5.46%**
Sand with *Angulus tenuis* and *Scoloplos (Scoloplos) armiger* community complex (208.99ha)	**Area (ha)**	33.07	11.91	**44.98ha**	5.84	**50.82ha**
	% community complex	15.82%	5.70%	**21.52%**	2.79%	**24.31%**
***Zostera*-dominated community (1.91ha)**	**Area (ha)**	-	-		-	-
	% community	-	-		-	-

Table 2.11: Spatial extent of access routes overlapping communities within Qualifying Interest 1140 in Site 002012.

		Access routes
Fine to medium sand with *Eurydice pulchra* community complex (234.79ha)	**Area (ha)**	-
	% community complex	-
Muddy sand to coarse sediment with *Pygospio elegans* community complex (542.99ha)	**Area (ha)**	11.13ha
	% community complex	2.05%
Sand with *Angulus tenuis* and *Scoloplos (Scoloplos) armiger* community complex (208.99ha)	**Area (ha)**	7.66ha
	% community complex	3.66%
***Zostera*-dominated community (1.91ha)**	**Area (ha)**	-
	% community	-

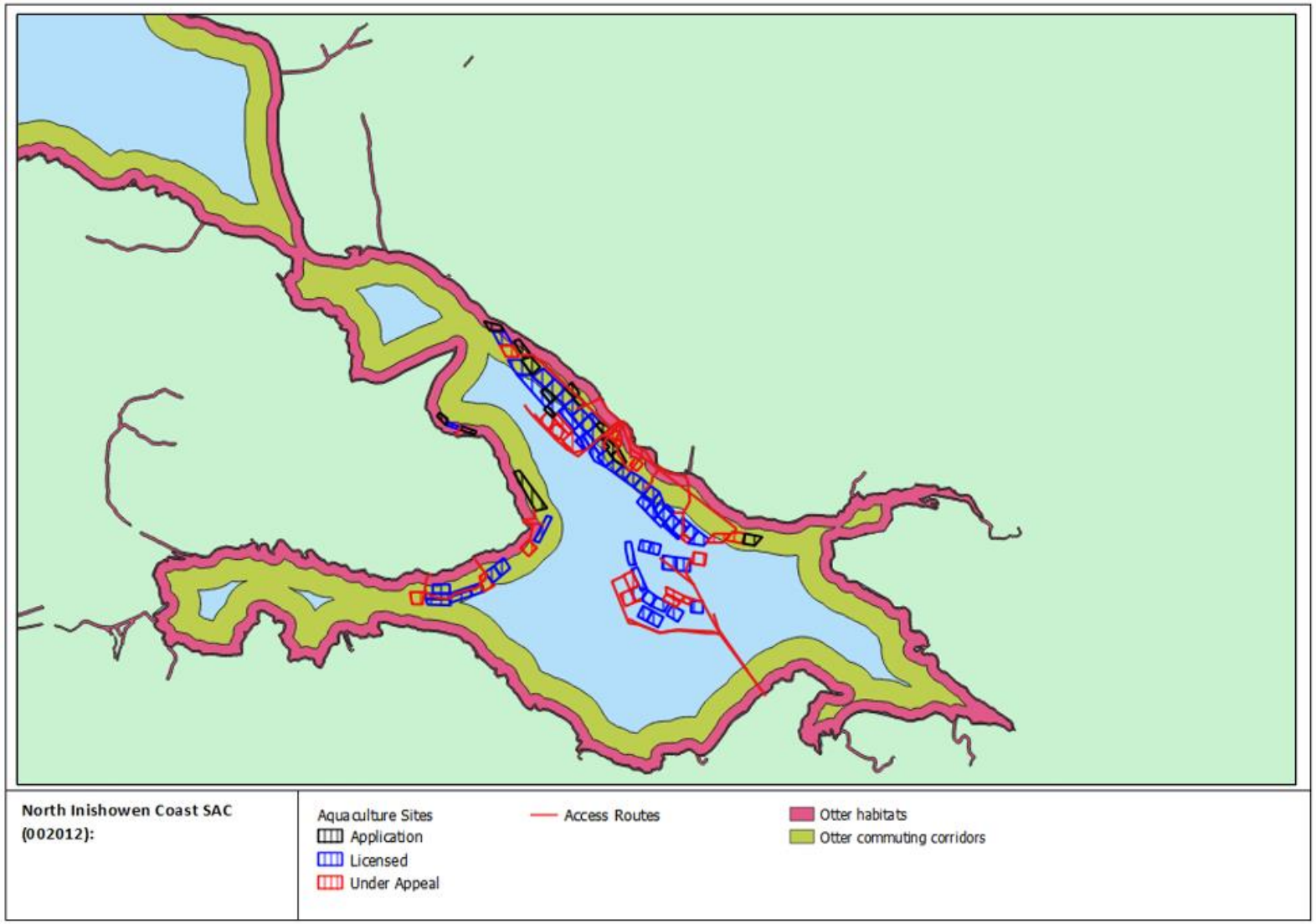

Figure 2.9: Aquaculture sites and access routes relative to mapped otter habitats and commuting corridors.

3. Appropriate Assessment Natura Impact Statement

3.1. Overview

The screening presented in **Section 2** screened out *in situ* and *ex situ* and in-combination effects on Qualifying Interests of SACs with the exception of the potential for *in situ* effects on the Qualifying Interest 1335 and Qualifying Interest 1140 in Site 002012.

Aquaculture sites and access routes overlap two community types within the Qualifying Interest 1140 of Site 002012. The community types are Muddy sand to coarse sediment with Pygospio elegans community and the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community.

Due to the overlap, potential significant effects to the Qualifying Interest 1140 could not be screened out. This section provides a determination of the significance of the possible effects of aquaculture activities on these community types. The significance of effects is determined on the basis of Conservation Objective guidance for constituent community complexes of 1140 provided in NPWS 2014a and NPWS 2014b.

3.2. Direct Effects of Aquaculture on Habitats

3.2.1. Overview

For Site 002012, NPWS (2014a) and NPWS (2014b) provide guidance on the interpretation of the Conservation Objectives which are, in effect, management targets for the Qualifying Interests of the SAC. The 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 Qualifying Interest 1140, NPWS (2014a) and NPWS (2014b) include Conservation Objectives and targets for the constituent community types of the Qualifying Interest.

For the practical purpose of management of sedimentary habitats, a 15% threshold of overlap between a disturbing activity and the community type is given in the NPWS guidance (NPWS 2014b). 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.

3.2.2. Determining Significance

The significance of effects is determined on the basis of guidance for constituent habitats (NPWS 2014a, NPWS, 2014b) in particular the disturbance thresholds set for community types.

A schematic outlining the determination of significant effects on habitats and marine community types is presented in **Figure 3.1.**

For habitats and community types significance of impact is determined in relation to, first and foremost, spatial overlap. Subsequent disturbance and the persistence of disturbance are considered as follows:

- The degree to which the activity will disturb the Qualifying Interest;
    - In this instance a disturbance results in a change in the characterising species, as listed in the Conservation Objective guidance (NPWS 2014a and NPWS 2014b) 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 3.2.3** below).
- 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.
- 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.

NPWS 2014b outlines that effects are 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.

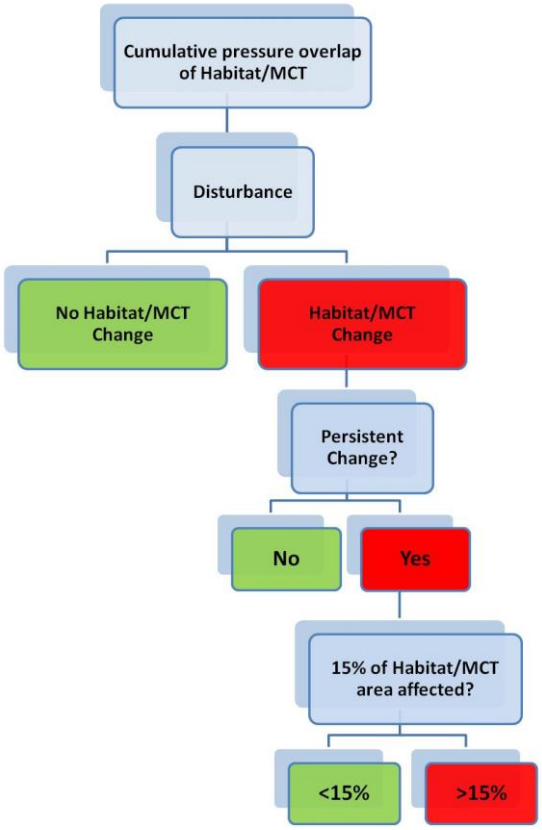

Figure 3.1: Schematic outlining the determination of significant effects on habitats and marine community types (MCT) (following NPWS 2014b).

3.2.3. Sensitivity and Assessment Rationale

This assessment used a number of sources of information in assessing the sensitivity of the characterising species of the community types recorded within the benthic habitats of Site 002012 that are overlapped by aquaculture sites and access routes.

One source of information is a series of reviews commissioned 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, they application of conservation targets to these would be difficult. 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.* Maerl 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 disturbed if more than 15% of the community is thus exposed (NPWS 2014b).
- 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 Site 002012 to pressures similar to those caused by aquaculture (*e.g.* smothering, organic enrichment and physical disturbance) are identified in **Table 3.1**. 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 3.2**. 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).

Table 3.1: Matrix showing the characterising sensitivity scores x pressure categories for intertidal communities (or surrogates) in the Site 002012 (ABPMer 2013a-h) (Table 3.3 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
Muddy sand to coarse sediment with *Pygospio elegans* community complex (A2.23 – Polychaete/amphipod-dominated fine sand shore)	NS (*)	L (*)	L (*)	NS (*)	L-NS (*)	L-M (*)	L-M (*)	L-M (*)	L-M (*)	M (*)	L-M (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	L-NS (*)	L-NS (*)	NS (***)	NS (*)	NS (*)	NS (*)	NS (*)	L (*)	NS (*)
Sand with *Angulus tenuis* and *Scoloplos (Scoloplos) armiger* community complex (A2.24 – Polychaete/bivalve dominated fine sand shores)	NS (***)	L (*)	L (***)	NS (*)	L (*)	L-M (*)	L-M (*)	L-M (*)	L-M (*)	NS (*)	L-M (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	L (*)	L (*)	H (***)	NS (*)	NS (*)	NS (*)	NS (*)	L (*)	NS (*)

Table 3.2: Matrix showing the characterising species sensitivity scores x pressure categories for taxa (or surrogates) in Site 002012 (ABPMer 2013a-h) (Table 3.3 provides the code for the various categorisation of sensitivity and confidence.)

Species	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
Angulus tenuis	NS (*)	L (*)	L (***)	NS (*)	L (*)	M (*)	NS (*)	H (*)	M-H (*)	NS (*)	L-M (*)	L (*)	NS (*)	NS (*)	NEv	L-NS (*)	NEv	NEv	M (*)	NS (*)	NS (*)	NS (*)	NEv	NEv	NS (*)
Arenicola marina	NS (*)	NS ***	L-M ***	NS ***	NS ***	L-M (*)	NS (*)	L-M (*)	L-M (***)	L-M (***)		NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS ***	NS ***	M (*)	L-M (*)	NS (*)	NS ***	L (**)		NS (*)
Capitella sp.	L (*)	L (**)	L (**)	L ***	L (*)	L (*)	L (*)	NS (*)	NS (*)	NS (***)	NS (*)	NS (*)	NS (*)	NS ***	NS ***	NS *	L ***	L ***	NS (*)	NS (*)	NS (*)	NS ***	L ***	NS ***	NS (*)
Cerastoderma edule	L (*)	L-M (*)	L-M (***)	L-M ***	L-M (*)	L-H (*)	L ***	L-M (*)	L-H (*)	NS (*)	L (*)	NS (*)	NS (*)	NS (*)	NS (**)	L-NS (*)	L-M (*)	L-M (*)	M (*)	M (*)	NS (*)	NS (*)	NEv	L-M (*)	NS (*)
Corophium volutator	L ***	L ***	L ***	L (*)	L (*)	L (*)	L ***	L ***	M (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS **	NS **	NS (*)	L ***	L ***	Nev	NS (*)	NS (*)	NA	NEv	L ***	NS (*)
Hediste diversicolor	NS (*)	L-M (**)	L-H (**)	NS (*)	L (*)	L-H (*)	NS ***	L-M (*)	M-H (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (**)	NS (**)	NS (*)	NS (**)	NS (**)	L-M (*)	L-M (*)	NS (*)	NS (*)	M-H (**)	M-H (**)	NS (*)
Lanice conchilega	NS (*)	NS-L ***	NS-L (***)	NS (*)	NS-L (*)	M-H (*)	NS (*)	M-H (*)	NS (*)	NS (***)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	M (*)	M (*)	M-H (*)	NS (*)	NS (*)	NS (*)	NEv	L ***	NS (*)

Species	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
Nemtoda	NS ***	NS ***	NS (***)	NS ***	NS (*)	L (*)	NS (*)	NS ***	NS (***)	NS (***)	NS (*)	NS (*)	NS (*)	NS (*)	NS ***	NS (*)	L ***	L ***	NS ***	NS (*)	NS (*)	NS ***	Nev	L ***	NS (*)
Pygospio elegans	L (*)	L (**)	M (***)	L (*)	L (*)	L-M (*)	L ***	L-M ***	L-M (*)	NS (**)	L-M (*)	NS (*)	NS (*)	NS (*)	NS ***	NS (*)	L (**)	L (**)	M (*)	NS (*)	NS (*)	NS (*)	NEv	NEv	NS (*)
Scoloplos (Scoloplos) armiger	NS (*)	L (*)	L-M (*)	NS (*)	L (*)	H (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS ***	NS ***	NS (*)	M ***	M ***	M (*)	M (**)	NS (*)	NS (*)	NEv	NEv	NS (*)
Scolelepis (Scoloplos) squamata	NS (*)	NS ***	NS (*)	NS (*)	NS (*)	L-M (*)	L-M ***	L-M ***	NS (*)	NS (*)	NS (*)			NS (*)	NS ***	NS (*)	L (*)	L (*)		NS (*)	NS (*)	Nev	Nev		NS (*)
Scrobicularia plana	NS (*)	NS (**)	M-H (*)	NS (**)	L (**)	M-H (*)	NS-L (*)	M-H (*)	M-H (*)	NS (*)	NS (*)	L (*)	NS (*)	M (*)	M (*)	NS (*)	NS (*)	NS (*)	M (*)	NS (*)	NS (*)	NS (*)	NA	L (*)	NS (*)
Spio sp.	L (*)	L ***	L (***)	L (*)	L (*)	L-M (*)	NS (*)	M (*)	L-M (*)	L-M (*)	NS (*)	NS (*)	NS (*)	NS (*)	NS ***	NS (*)	NEv	NEv	VH (*)	NS (*)	NS (*)	NS (*)	NEv	NS ***	NS (*)
Tubificoides sp.	NS (*)	NS (*)	L (**)	L (*)	L (*)	M (*)	NS (*)	L (*)	NS (*)	NS (*)	NS ***	NS (*)	NS (*)	NS ***	NS ***	NS (*)	NS ***	NS ***	NS (*)	NS (*)	NS (*)	NS (**)	Nev	Nev	NS (**)

Table 3.3: Codes of sensitivity and confidence applying to species and pressure interactions presented in Table 3.1 and Table 3.2.

Pressure interaction codes	
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

3.2.4. Assessment of the Effects

Aquaculture pressures on a given habitat are related to vulnerability to the pressures induced by culture activities. Consequently, the following are important factors to be considered when assessing risk of disturbance to habitats and species:

- type of activity;
- location and orientation of structures associated with the culture organism;
- density of cultured organisms; and
- duration of the culture activity.

NPWS (2014a) and NPWS (2014b) identify the species characteristic of benthic communities that are defined in the Conservation Objectives.

The species defined are typical of fine sedimentary habitats as well as where relevant, intertidal habitats (tolerant of desiccation and physical stress). For the most part, these intertidal communities are typically impoverished with low numbers of species and overall abundances.

As described in the Conservation Objectives document for the sites (NPWS 2014b), Favourable Conservation Status is defined by targets set for attributes of the Annex I habitat.

The attributes are:

1. Habitat Area and
2. Community distribution

Assessment of the potential effects on Qualifying Interest 1140 with respect to attribute **1.** and attribute **2.** are presented in **Section 3.2.4.1** and **Section 3.2.4.2.**

3.2.4.1. Habitat Area

For attribute 1, the target for Qualifying Interest 1140 is to ensure that the permanent habitat area is stable or increasing, subject to natural processes. As outlined in NPWS (2014b), this target refers to activities or operations that propose to permanently remove habitat from a site, thereby reducing the permanent amount of habitat area. It does not refer to long or short term disturbance of the biology of a site.

The potential effects of aquaculture activities on benthic habitats are described in **Section 2.4.1**. In summary, aquaculture activities may alter the characteristics of sediments in the vicinity of the trestle due to the release and subsequent deposition of oyster faeces and pseudo-faeces, while the physical presence of the trestle structures may alter the current regime in the immediate surrounding of the sites resulting in increased deposition of fines or scouring changing the local sediment characteristics. Vehicle movements at the trestle sites and along access routes may result in sediment compaction resulting in sediment changes.

The effects described above have potential to result in long or short term disturbance to discrete areas within or immediately adjacent to the aquaculture sites and access routes and, will not act to permanently reduce habitat area.

3.2.4.2. Community Distribution

Attribute 2 relates to the distribution of communities identified within the Annex I habitats. The constituent communities of the Qualifying Interest 1140 overlapped by the aquaculture sites and access route are Muddy sand to coarse sediment with *Pygospio elegans* community complex and, Sand with *Angulus tenuis* and *Scoloplos* (*Scoloplos*) *armiger* community complex. As outlined in NPWS (2014b), this target requires that community types are conserved in a natural condition, and that significant continuous or ongoing disturbance of communities should not exceed an approximate area of 15% of the interpolated area of each community type. The spatial overlap of aquaculture sites and access route with the constituent community types is presented in **Table 3.4** and **Table 3.5**.

Aquaculture sites

The possible effects of the aquaculture sites on Muddy sand to coarse sediment with Pygospio elegans community complex and, Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex were considered because aquaculture activities directly overlap with these community types**.** The Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex has been shown to be resilient to any potential depositional or organic enrichment effects under oyster trestles in previous studies of this community type in other bays around Ireland (Forde *et al*., 2015 and O'Carroll *et al*., 2016). There is significant overlap between the Sand with Angulus tenuis and Scoloplos

(Scoloplos) armiger community complex and aquaculture sites with current levels being 21.52%, and proposed levels = 24.31% which is greater than the 15% threshold set by NPWS (NPWS 2014b). However, the 15% threshold set by NPWS is a disturbance threshold and given the evidence on the resilience of this community to depositional and organic enrichment effects the existing and proposed overlap of trestles will not result in significant adverse effects or disturbance.

The level of overlap between oyster trestle sites and the Muddy sand to coarse sediment with Pygospio elegans community complex are low (current levels = 3.82% and proposed levels = 5.46%), but there is no existing data on the sensitivity of this community type to depositional and organic enrichment effects. Given that the Muddy sand to coarse sediment with Pygospio elegans community complex has not been studied in terms of its resilience it cannot be determined if this community is resilient to depositional and organic enrichment effects. It is possible that this community complex is sensitive and where overlap between this community and aquaculture sites occurs that significant adverse effects will arise. Given this lack of information the risk of depositional and organic enrichment effects arising from the overlap between aquaculture sites and the Muddy sand to coarse sediment with Pygospio elegans community complex the risk of adverse effects cannot be discounted.

There is also potential that current and proposed levels of activity within the bay exceed the natural ecological carrying capacity of the bay with regard to the availability of phytoplankton within the water column to filter feeding species (including the cultured oysters). As well as directly adversely impacting filter feeding organisms comprising the biological communities of the bay, there is potential that exceeding the carrying capacity of the bay and depleting available levels of phytoplankton, would increase the time required for culture oysters to attain harvestable size.

Access Routes

With respect to access routes, it is reported in Forde *et al*. (2015), O'Carroll *et al*. (2016) and De-Grave *et al*. (1998), that activities at access routes in intertidal areas, presumably by virtue of persistent compaction of the sedimentary habitats by heavy vehicles, are considered disturbing to habitats.

For the previous AA reports prepared by the Marine Institute to support DAFM aquaculture licencing decisions, the Marine Institute has concluded that the activity at access routes is non-disturbing to intertidal habitats where the spatial overlap is less than the disturbance thresholds identified by NPWS in Conservation Objectives (*i.e.* where overlap is below 15%).

In the case of Trawbreaga the access routes overlap 2.05% and 3.66% respectively of the. The level of overlap of access routes is below the disturbance threshold.

The level of overlap of access routes with the Muddy sand to coarse sediment with *Pygospio elegans* community complex and the Sand with *Angulus tenuis* and *Scoloplos* (*Scoloplos*) *armiger* community complex is 2.05% and 3.66% respectively and within these areas both communities are likely to be significantly affected. It is proposed that the same access routes will be used to access the proposed sites and that there will be no increase in the area of seabed used for access to the trestles. This is true for access to the proposed sites along established access routes but access to the exact location of the proposed sites will in some instances require vehicles to use new areas of seabed as access routes. These new areas will be small relative to established access routes but they will result in an overall increase in access route area. Albeit a relatively small increase in access route area, there is some uncertainty around the magnitude of this increase. It should be noted that although the proposed sites will result in an increase in access route area, the intensity of the vehicle traffic along these new access routes will be far lower than along established primary access routes used for multiple sites and therefore any compaction effects will also be less intense. The level of uncertainty around the magnitude of the increase in access route area and associated effects is not such that would warrant the precautionary approach to be followed in this instance but it should be noted for future reference that compaction effects beyond the area of the established access routes in Trawbreaga Bay will increase with each new licence granted. Overall, the risk of significant effects on both community complexes of access routes to the proposed sites cannot be discounted.

3.2.4.3. Ecological Carrying Capacity of Trawbreaga

Due to the large maximum production tonnage licenced for Trawbreaga Bay and the enclosed nature of the Bay, ecological carrying capacity is now an important consideration for the licensing of aquaculture in Site 002012. Ecological carrying capacity issues arise when wild populations such as benthic filter feeders are out competed for resources such as phytoplankton to a degree that results in measurable adverse effects on ecosystem processes at the Bay scale (Nunes et al., 2011). Extensive aquaculture practices such as oyster trestle cultivation results in a net extraction of carbon and phytoplankton from the ecosystem and if at a high enough density, can exert top-down control on phytoplankton dynamics at the bay-scale (Gibbs, 2005). Every unit mass of phytoplankton removed from the system is forgone to wild zooplankton, benthic filter feeders, and demersal fish species that prey on benthic filter feeders which can have significant effects on energy transfer through the food web and nutrient recycling in the ecosystem (Gibbs, 2005). Further investigations into the ecological carrying capacity of Trawbreaga Bay and other bays containing aquaculture, is required before a determination on the likelihood of ecological carrying capacity being exceeded can be made.

3.2.5. Conclusion on Effects on Communities of Qualifying Interest 1140

3.2.5.1. Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex

The risk of significant adverse depositional and organic enrichment effects of aquaculture sites on the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex **can be discounted**, because this community complex has been shown to be resilient to depositional and organic enrichment effects.

The risk of significant adverse sediment compaction effects along access routes on the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex **cannot be discounted**. However, the current levels of effect are below the 15% disturbance threshold for this community complex.

3.2.5.2. Muddy sand to coarse sediment with Pygospio elegans community complex

The risk of significant adverse depositional and organic enrichment effects of aquaculture sites on the Muddy sand to coarse sediment with Pygospio elegans community complex **cannot be discounted** because this community complex has never been studied in relation to the effects of oyster trestle cultivation.

The risk of significant adverse sediment compaction effects along access routes on the Muddy sand to coarse sediment with Pygospio elegans community complex **cannot be discounted**. However, the current levels of effect are below the 15% disturbance threshold for this community complex.

Given the lack of data on the sensitivity of this community complex to oyster trestle cultivation activities monitoring should be carried so that an understanding of the effects on this community complex is established before the 15% threshold is exceeded by potential future sites.

Table 3.4: Spatial extent of aquaculture site overlapping constituent communities and community complexes within the Qualifying Interest 1140.

		Licensed (61 sites)	Licensed - Under Appeal (19 sites)	Total Licenced (80 sites)	Applications (14 sites)	Combined Licenced and Applications (94 sites)
Muddy sand to coarse sediment with *Pygospio elegans* community complex (542.99ha)	**Area (ha)**	15.21ha	5.56ha	**20.77ha**	8.90ha	**29.67ha**
	% community complex	2.80%	1.02%	**3.83%**	1.64%	**5.46%**
Sand with *Angulus tenuis* and *Scoloplos (Scoloplos) armiger* community complex (208.99ha)	**Area (ha)**	33.07	11.91	**44.98ha**	5.84	**50.82ha**
	% community complex	15.82%	5.70%	**21.52%**	2.79%	**24.32%**

Table 3.5: Spatial extent of access routes overlapping constituent communities and community complexes within the Qualifying Interest 1140.

		Access routes
Muddy sand to coarse sediment with *Pygospio elegans* community complex (542.99ha)	**Area (ha)**	11.14ha
	% community complex	2.05%
Sand with *Angulus tenuis* and *Scoloplos (Scoloplos) armiger* community complex (208.99ha)	**Area (ha)**	7.66ha
	% community complex	3.66%

3.3. Effect of Non-Native Species on Habitats

3.3.1. Overview

Aquaculture activity has the potential to act as a vector for the introduction of non-native species to Site 002012. It should be noted, however, that the cultivation of oysters grown in other bays in Ireland and 'finished' at the Trawbreaga sites do not present a significant risk of introduction of non-native species.

In contrast, on-growing in bay of half-grown stock which have been grown for extended periods in places outside of Ireland present a higher risk.

3.3.2. Determining Significance

As outlined in **Table 3.1** intertidal and subtidal sand are sensitive to the introduction of non-native species. Aquaculture has been identified as a vector for the introduction and/ or spread of a number of non-native species in Irish waters that have the potential to impact Qualifying Interest habitats and species of designated SACs.

Non-native species accidentally introduced/ spread to bays via aquaculture activities present a risk to the Qualifying Interest 1140. Specifically, there is potential that invasive species may alter community structure thus impacting the attributes defined for habitats defined in the Conservation Objectives. At high densities, impact from alien species may result from competition to resident benthic species for food and space (JNCC 2002). In addition, sediment characteristics may be altered through the removal of large volumes of suspended organic material from the water column, and depositing filtered material on the bottom as pseudofaeces (Thieltges *et al*., 2003).

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 (>21 days) 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 recruitment, with higher cover resulting in lower recruitment. Oyster production in Site 002012 does not fulfil these criteria in that, the residence time is approximately 10 days (Dabrowski 2011) and there is heavy cover of macroalgae in intertidal areas. Furthermore, the use of triploid oysters reduces the risk of successful spawning and establishment of viable non-native oyster populations. Therefore, the risk of successful establishment of the pacific oyster in Trawbreaga Bay portion of in Site 002012 is

considered low. However, Trawbreaga Bay (oyster culture area within the SAC) effectively flows into the broader Lough Swilly this presents a risk to the Lough Swilly SAC (**Site 002287**) and the factors identified by Kochmann et al (2013) facilitating the successful establishment of populations has been identified for Lough Swilly and indeed, non-native oysters have established in this bay. Therefore, it is recommended that triploid oysters only are grown in in Site 002012 in order to minimise any risk to Site 002287.

With strict adherence to relevant legislation and best practice guidelines, there will be no likely significant adverse effects of invasives on Site 002012.

3.3.3. Conclusion Summary

The site is at low risk from the introduction of non-native species on and among culture stock. To manage the risk of introduction of alien species to the Qualifying Interest 1140 and associated constituent community types, all stock movement in the bay follow should strictly adhere to relevant legislation and follow best practice guidelines. In addition, operators should undertake monitoring for alien species.

4. Concluding Statement and Recommendations

The screening resulted in six Qualifying Interests being excluded from further consideration, five Annex I habitats and one Annex II species, by virtue of the fact no significant effects were expected to occur.

The habitats excluded screened out were:

- 1220 Perennial vegetation of stony banks
- 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts
- 2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)
- 21A0 Machairs
- 4030 European dry heaths

Two of the four community complexes within the habitat 1140 Mudflats and sandflats not covered by seawater at low tide were screened out:

- Fine to medium sand with Eurydice pulchra community complex
- Zostera-dominated community

The species screened out were:

- 1014 Narrow-mouthed Whorl Snail *Vertigo angustior*
- 1335 Otter *Lutra lutra*

A full assessment was carried out on the likely interactions between existing and proposed aquaculture activities with the remaining two community complexes within Qualifying Interest 1140 (*Mudflats and sandflats not covered by seawater at low tide*):

- Muddy sand to coarse sediment with *Pygospio elegans* community complex
- Sand with *Angulus tenuis* and *Scoloplos* (*Scoloplos*) *armiger* community complex

The risk of significant adverse depositional and organic enrichment effects of aquaculture sites on the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex **can be discounted**, because this community complex has been shown to be resilient to depositional and organic enrichment effects.

The risk of significant adverse sediment compaction effects along access routes on the Sand with Angulus tenuis and Scoloplos (Scoloplos) armiger community complex **cannot be discounted**. However, the current levels of effect are below the 15% disturbance threshold for this community complex.

The risk of significant adverse depositional and organic enrichment effects of aquaculture sites on the Muddy sand to coarse sediment with Pygospio elegans community complex **cannot be discounted**, because this community complex has never been studied in relation to the effects of oyster trestle cultivation.

The risk of significant adverse sediment compaction effects along access routes on the Muddy sand to coarse sediment with Pygospio elegans community complex **cannot be discounted**. However, the current levels of effect are below the 15% disturbance threshold for this community complex.

Recommendations

It is recommended that targeted monitoring exercises are carried out so that the effects of oyster trestle cultivation on the constituent communities of the conservation feature mudflats and sandflats not covered by high tide are carried out because:

1. No benthic monitoring exercise has been carried out in Trawbreaga previously and monitoring is required for the purpose of continuing to make evidence informed decisions in relation to oyster trestle cultivation licensing;
2. The Muddy sand to coarse sediment with *Pygospio elegans* community has not been previously studied and should be before the 15% overlap threshold is reached or exceeded by oyster trestle cultivation activities in Trawbreaga Bay.

It is also recommended that ecological carrying capacity of Trawbreaga Bay is investigated so that future licensing decisions can take this aspect of the ecological interactions of oyster trestle cultivation into account.

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Classifieds

PLANNING NOTICES

PLANNING APPLICATION TO DONEGAL COUNTY COUNCIL

Rossnowlagh Upper or Crockahany Td., Rossnowlagh, Co. Donegal.

I, Andrew Daly, am applying to Donegal County Council for permission to construct a dormer dwelling house with connection to the main public sewer and all associated site development works at this site at Rossnowlagh Upper or Crockahany, Rossnowlagh, Co. Donegal, in the townland of Rossnowlagh Upper or Crockahany. The application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of the Planning Authority, Donegal County Council, County House, Lifford during its public opening hours, and that a submission or observation in relation to the application may be made to the Authority in writing, on payment of the prescribed fee within the period of 5 weeks beginning on the date of receipt by the Authority of the application.

DONEGAL COUNTY COUNCIL

Hall Demesne, Mountcharles, Co. Donegal.

Peter Kennedy is making an application to Donegal Co. Council for Planning Permission for the development of land at Hall Demesne, Mountcharles , Co. Donegal in the townland of Hall Demesne, Mountcharles. The Development consists of an extension to the existing house, Domestic Garage to the Rear of the house and associated site works. The planning application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy at the offices of the planning authority during its public office opening hours at County House Lifford Co. Donegal. Submissions or observations in relation to the application may be made on payment of the prescribed fee within the period of 5 weeks beginning on the date of receipt by the authority of the application.

DONEGAL COUNTY COUNCIL

Ardagh, St. Johnston, Co. Donegal.

I, Derek McClintock am applying to Donegal County Council for planning permission for development at Ardagh, St. Johnston, Co. Donegal, in the townland of Ardagh. The development will consist of the construction of a cattle underpass across the L-5194-2 public road and all associated site works. The planning application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of the Planning Authority at the County House, Lifford, Co. Donegal during its public opening hours. A submission or observation in relation to the application may be made in writing to the Planning Authority on payment of the prescribed fee, within the period of five weeks beginning on the date of receipt by the Planning Authority of the application.

LEGAL NOTICES

Clonleigh Co-Op

CASTLEFIN/NEWTOWN

The ANNUAL GENERAL MEETING
of above Society will be held in
Kee's Hotel, Stranorlar
Thursday 12th January 2023
8.00pm
A good attendance of members is requested

PLANNING NOTICES

PLANNING APPLICATION TO DONEGAL COUNTY COUNCIL

Muntermellan, Dunfanaghy, Co. Donegal

I, Mr Gareth Brady, intend to apply for permission for an extension and alterations to an existing two storey dwelling house at Muntermellan, Dunfanaghy, Co. Donegal. The planning application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of the Planning Authority, Donegal County Council, County House, Lifford during its public open hours.A submission or observation in relation to the application may be made in writing to the planning authority on payment of the prescribed fee, €20.00, within the period of 5 weeks beginning on the date of receipt by the authority of the application, and such submissions or observations will be considered by the planning authority in making a decision on the application. The planning Authority may grant permission subject to or without conditions, or may refuse to grant permission.

PLANNING APPLICATION TO DONEGAL COUNTY COUNCIL

Ballykillowen Td., Laghey, Co. Donegal.

I, James Candland, am applying to Donegal County Council for permission to construct a single storey extension to my existing dwelling house and all associated site development works at this site at Ballykillowen, Laghey, Co. Donegal, in the townland of Ballykillowen. The application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of the Planning Authority, Donegal County Council, County House, Lifford during its public opening hours, and that a submission or observation in relation to the application may be made to the Authority in writing, on payment of the prescribed fee within the period of 5 weeks beginning on the date of receipt by the Authority of the application.

PLANNING NOTICES

PLANNING APPLICATION TO DONEGAL COUNTY COUNCIL

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I, Ruth Daly, am applying to Donegal County Council for permission for the following, (1) reconstruct, modify and incorporate the existing derelict farm building into domestic accommodation as part of the dwelling house, (2) construct a single storey entrance hall and utility room extension to link both buildings, (3) internal reconstruction and external alterations to the front fenestration of the existing dwelling house, (4) installation of a wastewater treatment system with final effluent disposal to the main public sewer and (5) all associated site development works at this site at Rossnowlagh Upper or Crockahany, Rossnowlagh, Co. Donegal, in the townland of Rossnowlagh Upper or Crockahany. The application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of the Planning Authority, Donegal County Council, County House, Lifford during its public opening hours, and that a submission or observation in relation to the application may be made to the Authority in writing, on payment of the prescribed fee within the period of 5 weeks beginning on the date of receipt by the Authority of the application.

PLANNING NOTICES

DONEGAL COUNTY COUNCIL

LOUGH ESKE CASTLE HOTEL, BARNESMORE

Notice is hereby given that Application is being made by Lough Eske Developments Ltd to Donegal County Council for Planning Permission to construct a two-storey extension to the Lough Eske Castle Hotel providing an additional 24 Suites and 4 Bedrooms.
This is a protected structure RPS Reg No. 40909401
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Fisheries (Amendment) Act, 1997 (No. 23) Notice of Decision to Refuse An Aquaculture Licence.

The Minister for Agriculture, Food and the Marine has made a determination on an Aquaculture Licence application as set out in the table below in Loughros Beg Bay, Co. Donegal.

Site Ref No	Applicants	Species & Method	Minister's Decision
T12/565A	Loughros Beg Specials Ltd. Castledoherty, Ardara, Co. Donegal	Pacific Oysters using bags & trestles	Refuse to Grant Licence

The reasons for this decision are elaborated on the Department's website at: www.gov.ie

An appeal against the Aquaculture Licence decision may be made in writing, within 30 days of the date of its publication, to THE AQUACULTURE LICENCES APPEALS BOARD, Kilminchy Court, Portlaoise, Co. Laois, by completing the Notice of Appeal Application Form available from the Board, phone 057 86 31912, e-mail info@alab.ie or website at www.alab.ie/

As marine aquaculture operations require separate Aquaculture and Foreshore Licences, a separate determination on the foreshore licence application will be made once the licensing authority, or if appealed, the Aquaculture Licences Appeals Board (ALAB) have made a determination on the aquaculture licence application.

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

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T12/557A	Oceanic Organic Oysters Ltd 14 Lough View Park, Harbour View, Greencastle Co. Donegal	Pacific Oysters using bags & trestles	Refuse to Grant Licence
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T12/568A	Oceanic Organic Oysters Ltd 14 Lough View Park, Harbour View, Greencastle, Co. Donegal	Pacific Oysters using bags & trestles	Refuse to Grant Licence
T12/570A	Oceanic Organic Oysters Ltd 14 Lough View Park, Harbour View, Greencastle, Co. Donegal	Pacific Oysters using bags & trestles	Refuse to Grant Licence
T12/560A	Hurrikayn Oysters Ltd Bree, Malin Head, Co. Donegal	Pacific Oysters using bags & trestles	Refuse to Grant Licence
T12/561A	James Ball Carrowmore, Malin, Co. Donegal	Pacific Oysters using bags & trestles	Refuse to Grant Licence
T12/571A	James Ball Carrowmore, Malin, Co. Donegal	Pacific Oysters using bags & trestles	Refuse to Grant Licence
T12/562A	Atlantic Crab Ltd Puttle Hall, Letter, Clonmany, Co. Donegal	Pacific Oysters using bags & trestles	Refuse to Grant Licence
T12/563A	Atlantic Crab Ltd Puttle Hall, Letter, Clonmany, Co. Donegal	Pacific Oysters using bags & trestles	Refuse to Grant Licence
T12/572A	Foylantic Ltd Cuan na Mara, Carrowtrasna, Greencastle Co. Donegal	Pacific Oysters using bags & trestles	Refuse to Grant Licence
T12/573A	Foylantic Ltd Cuan na Mara, Carrowtrasna, Greencastle Co. Donegal	Pacific Oysters using bags & trestles	Refuse to Grant Licence

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An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

Classifieds

PLANNING NOTICES

PLANNING APPLICATION TO DONEGAL COUNTY COUNCIL

Rossnowlagh Upper or Crockahany Td., Rossnowlagh, Co. Donegal.

I, Andrew Daly, am applying to Donegal County Council for permission to construct a dormer dwelling house with connection to the main public sewer and all associated site development works at this site at Rossnowlagh Upper or Crockahany, Rossnowlagh, Co. Donegal, in the townland of Rossnowlagh Upper or Crockahany. The application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of the Planning Authority, Donegal County Council, County House, Lifford during its public opening hours, and that a submission or observation in relation to the application may be made to the Authority in writing, on payment of the prescribed fee within the period of 5 weeks beginning on the date of receipt by the Authority of the application.

DONEGAL COUNTY COUNCIL

Hall Demesne, Mountcharles, Co. Donegal.

Peter Kennedy is making an application to Donegal Co. Council for Planning Permission for the development of land at Hall Demesne, Mountcharles , Co. Donegal in the townland of Hall Demesne, Mountcharles. The Development consists of an extension to the existing house, Domestic Garage to the Rear of the house and associated site works. The planning application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy at the offices of the planning authority during its public office opening hours at County House Lifford Co. Donegal. Submissions or observations in relation to the application may be made on payment of the prescribed fee within the period of 5 weeks beginning on the date of receipt by the authority of the application.

DONEGAL COUNTY COUNCIL

Ardagh, St. Johnston, Co. Donegal.

I, Derek McClintock am applying to Donegal County Council for planning permission for development at Ardagh, St. Johnston, Co. Donegal, in the townland of Ardagh. The development will consist of the construction of a cattle underpass across the L-5194-2 public road and all associated site works. The planning application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of the Planning Authority at the County House, Lifford, Co. Donegal during its public opening hours. A submission or observation in relation to the application may be made in writing to the Planning Authority on payment of the prescribed fee, within the period of five weeks beginning on the date of receipt by the Planning Authority of the application.

LEGAL NOTICES

Clonleigh Co-Op

CASTLEFIN/NEWTOWN

The ANNUAL GENERAL MEETING
of above Society will be held in
Kee's Hotel, Stranorlar
Thursday 12th January 2023
8.00pm
A good attendance of members is requested

PLANNING NOTICES

PLANNING APPLICATION TO DONEGAL COUNTY COUNCIL

Muntermellan, Dunfanaghy, Co. Donegal

I, Mr Gareth Brady, intend to apply for permission for an extension and alterations to an existing two storey dwelling house at Muntermellan, Dunfanaghy, Co. Donegal. The planning application may be inspected or purchased at a fee not exceeding the reasonable cost of making a copy, at the offices of the Planning Authority, Donegal County Council, County House, Lifford during its public open hours.A submission or observation in relation to the application may be made in writing to the planning authority on payment of the prescribed fee, €20.00, within the period of 5 weeks beginning on the date of receipt by the authority of the application, and such submissions or observations will be considered by the planning authority in making a decision on the application. The planning Authority may grant permission subject to or without conditions, or may refuse to grant permission.

PLANNING APPLICATION TO DONEGAL COUNTY COUNCIL

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PLANNING NOTICES

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PLANNING NOTICES

DONEGAL COUNTY COUNCIL

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An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

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An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

An Bord Achomharc Um Cheadúnais Dobharshaothraithe
Aquaculture Licences Appeals Board

Mr. Charlie McConalogue T.D.
Minister for Agriculture, Food and the Marine
Agriculture House
Kildare Street
Dublin 2

06 March 2023

Our Ref: AP3/2023
Site Ref: T12/572A

Re: Appeal against the decision of the Minister for Agriculture, Food and the Marine to refuse an Aquaculture and Foreshore licence to Foylantic Ltd, for the cultivation of Pacific Oysters using bags & trestles on the inter-tidal foreshore on site ref T12/572A in Trawbreaga Bay, Co. Donegal

Dear Minister,

Please find attached copy of the Notice of Appeal received for determination in accordance with Section 43(1) of the Fisheries Amendment Act 1997, ("the Act"). The Notice of Appeal documents may be viewed on the ALAB website at the following link:

https://www.alab.ie/appeals-open/donegal

Please submit to the Board **within 14 days of receipt of this letter** (as required by Section 43(2) of the Act):

(a) A copy of the aquaculture licence concerned and of any drawings, maps, particulars, evidence, environmental impact statement, other written study or further information received or obtained from the applicant for the licence in accordance with a requirement of or under regulations under the Act.
(b) A copy of any report prepared for you in relation to the application, revocation, or amendment and
(c) A copy of any document recording your decision in respect of the application, revocation, or amendment and of the notification of the decision given to the applicant.

Please include, as part of the above, a location map of the surrounding area to include:

(i) Sites under application
(ii) Sites lapsed

(iii) Licensed sites
(iv) Sites currently under appeal (if any).

Section 44(2) of the Act entitles you and each other party, except the appellant, to make submissions or observations in writing to the Board in relation to the appeal within a period of 30 days beginning on the day on which a copy of the Notice of Appeal is sent to that party by the Board.

In accordance with the foregoing, I would be grateful if you would:

(i) Acknowledge receipt of the Board's letter and forward the necessary documentation and
(ii) Make, if necessary, any submission(s) or observations in accordance with Section 44(2) of the Act in writing to be received by the Board on or before **05 April 2023**.

Yours sincerely,

Margaret Carton

_____

Margaret Carton
Secretary to the Board

cc: Mr Ultan Waldron, Aquaculture and Foreshore Management Division