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

Date 03/01/23

Johnny Neville & Jeannette Brugman,
Danescastle,
Wellingtonbridge,
Co. Wexford.

Ref: T03/095A

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

Dear Mr. Neville & Ms. Brugman,

I would like to inform you that the Minister for Agriculture, Food and the Marine has approved the granting to you of a 10-year Aquaculture Licence, for the cultivation of Pacific Oysters on bag and trestles on site no. T03/095A (see attached information note). I enclose a copy of the public notice of the decision which **the Department** has arranged to have published in the "Wexford People".

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 one month beginning on the date of the publication of the decision.

The Licence will be issued to you as soon as possible after the end of the period of one month from the date of publication of the notice in "Wexford People", if there is no appeal.

Please also find enclosed a draft copy of the Aquaculture Licence that may be issued by the Minister.

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

Bernie McDonald

Aquaculture and Foreshore Management Division
An Lárionad Bia Mara Náisiúnta, An Cloichín, Cloich na Coillte, Corcaigh, P85 TX47
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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

REFERENCE NO:	**T03/095A**
APPLICANT:	**Ballyteigue Oysters Ltd**
AQUACULTURE TO WHICH DECISION RELATES:	Cultivation of Pacific oysters using bag and trestles on site T03/095A on the foreshore in Ballyteigue Bay.
NATURE OF DECISION:	Grant of Aquaculture Licence.
DATE OF DECISION:	**21/12/2022**
CONDITIONS OF LICENCE:	See attached.
DURATION OF LICENCE:	10 years
ISSUE OF LICENCE:	The licence will be dated and issued as soon as practicable after the end of the period of one month from the date of publication of a notice in a newspaper circulating in the vicinity of the aquaculture, if no appeal is made to the Aquaculture Licences Appeals Board (ALAB) within that period, under Section 40 and 41 of the Fisheries (Amendment) Act, 1997.

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, the Aquaculture Licences Appeals Board (ALAB) have made a determination on the aquaculture licence application.

To be inserted in the "Wexford People".

FISHERIES (AMENDMENT) ACT, 1997 (NO. 23) NOTICE OF DECISIONS 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;

Site Ref No	Applicant	Species & Method	Minister's Decisions	Location
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
T03/095A	Johnny Neville & Jeannette Brugman, Danescastle, Wellingtonbridge, Co. Wexford	Oysters using bags and trestles	Grant new Licence	Ballyteigue Bay

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

An appeal against the Aquaculture Licence decision may be made in writing, within one month 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/

Note: As marine aquaculture operations require separate Aquaculture and Foreshore Licences, a separate determination on the foreshore licence applications 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.

Submission AGR 01629-22: Recommendation to grant an Aquaculture Licence for 1 site (T03/095A)

TO:	Minister	AUTHOR:	Nyhan, Jennifer
STATUS:	Completed	OWNER:	Nyhan, Jennifer
PURPOSE:	Approval	REVIEWERS:	McLoughlin, PatrickM Waldron, Ultan Beamish, Cecil Foley, MarkW
DIVISION:	Aquaculture and Foreshore Management Division		
DECISION BY:			

Final comment

approved by Minister

Action required

Ministerial Determination on Aquaculture Application (T03/095A)

Executive summary

The Minister's determination is requested in relation to an application for an Aquaculture Licence from Johnny Neville & Jeannette Brugman, Danescastle, Wellingtonbridge, Co. Wexford. The application is for the cultivation of Pacific Oysters using bags and trestles on Site T03/095A totalling 1.6459 hectares on the foreshore in Ballyteigue Bay, Co. Wexford.

It is recommended that the Minister determines that the Aquaculture Licence sought **be granted** to Johnny Neville & Jeannette Brugman for the reasons outlined in the 'Detailed Information' section below.

Detailed information

The Minister's determination is requested in relation to an application for an Aquaculture Licence from Johnny Neville & Jeannette Brugman, Danescastle, Wellingtonbridge, Co. Wexford. The application is for the culture of Pacific Oysters on bags and trestles on site T03/095A, totalling 1.6459 hectares on the foreshore in the coastal lagoon of Ballyteigue Burrow in Ballyteigue Bay, Co Wexford.

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 **(TAB A)** for an Aquaculture Licence has been received from the applicants referred to above (in conjunction with an application for a Foreshore Licence) for the cultivation of Pacific Oysters using bags and trestles in relation to a 1.6459 hectare site the foreshore in the coastal lagoon of Ballyteigue Burrow in Ballyteigue Bay, Co Wexford, (numbered T03/095A -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):

MED have no objection to the licensing of this site .

This site is located in the coastal lagoon of Ballyteige Burrow in Ballyteige Bay, Co Wexford in sheltered waters. Aquaculture has taken place adjacent to this site for many years, which indicates that the hydrodynamic regime is suitable for this type of aquaculture.

This is an application for the cultivation of oysters using typical bag and trestle.

Access to the site will be from an adjacent public road and traverse the upper foreshore to the aquaculture site at this location.

The inlet is tidal with very limited navigational access due to the nature of the coastline, tides and seabed at this location. There is no vessel activity at this location. The corners of the site should be marked with administrative markers.

The Wexford County Development Plan describes the area around Ballyteigue Burrow as a Coastal Landscape of Greater Sensitivity. The views of this aquaculture site are obscured from scenic routes. The proposed farm layout and type of structures adheres to the best practices outlined in the Guidelines for Landscape and Visual Impact Assessment of Marine Aquaculture, 2001.
There is no significant visual impact due to this application.

There is existing aquaculture adjacent to this site. There is no fishing or marine leisure in the area.
An Appropriate Assessment for Ballyteige Burrow SAC [Site Code 000696] and Ballyteige Burrow SPA [Site Code 004020] is required to permit licencing and manage aquaculture activities in compliance with the EU Birds and Habitats Directives.

Marine Survey Office (MSO):

The MSO has no objection to this development from a navigational viewpoint.

MSO advised that in order for charts and nautical publications to be updated the applicant is required to inform the British Admiralty Hydrographic Office at Taunton, UK, of the location and nature of the site.

The applicant is also required to apply to the Commissioners of Irish Lights for sanction to establish the following marks:

Four posts, projecting two meters above sea level at highest astronomical tide and with a topmark of a diagonal St. Andrews cross, painted yellow, should be erected at the four corners of the development.

These requirements will be addressed by way of licence conditions should a licence be granted for the proposed site.

They also stated that no excess trestles should be stored on the site. Unused equipment should be removed from the site and stored at a suitable location above the high-water mark.

It is proposed to insert a specific condition covering MSO matters in any licence which may issue as follows:

"The Minister's determination in respect of this licence is conditional upon immediate full compliance by the Licensee in respect of all

requirements and conditions which are imposed under the relevant legal provisions applicable to the Marine Survey Office."

MED provided the following comment on the MSO's submission:

"With regards to the navigational marking of the sites, MED does not recommend marking the sites individually as outlined in the submissions from MSO. If these sites are licenced, MED recommends including a condition requiring the operators to mark the sites in accordance with a local SUMS for the bay which should be approved by MSO and CIL."

Sea Fisheries Protection Authority (SFPA):

SFPA stated no significant impacts anticipated on existing wild fisheries in the area or on shellfish growing areas adjacent to or within the area.
Ballyteigue is classified for the production of oysters and as such the food safety risk is defined. As the proposed site is new, the sampling plan and monitoring point may need to be amended to account for its location.

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.

Observations/Comments were received from the following Statutory bodies.

Marine Institute (MI):

The site is located in the Ballyteigue Bay Bivalve molluscan production area. Oysters in Ballyteigue Bay currently have a "B" Classification. The site is not located within any Shellfish Growing Waters. It is recommended that the implications of licencing sites that are not located within a designated Shellfish Growing Waters Area should be fully considered by DAFM as part of the licence determination process.

The MI stated the cultivation of shellfish at this site will likely produce faeces and pseudofaeces. On the basis of open nature of the culture system and the relatively low density of oysters held in the bags, it is the view of the Marine Institute that organic matter be unlikely to accumulate. The impact of this culture method on the majority of community types is considered not significant.

No chemicals or hazardous substances will be used during the production process.
The MI stated that 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 they are 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.

In making the final determination with respect to this application it is recommended that DAFM take full account of any conclusions and recommendations of the Appropriate Assessment report and any proposed mitigation measures set out in the Department's draft Natura Conclusion Statement.

In relation to the proposed production of *C. gigas* at site T03/95A, the MI recommend that, in the event of a positive licence determination, any conclusions and mitigation measures set out in the draft Natura Conclusion statement are implemented in full.

The MI also noted that Site T03/095A is located within the Ballyteigue Burrow Special Area of Conservation (SAC) and Special Protected Area (SPA) and the findings of the Appropriate Assessment report and the Licensing Authority's draft Natura Conclusion Statement.

The MI made the following recommendations:

The initial source of half-grown oysters 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.

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. Prior to the commencement of operations at this site, the Licensee is required to draw up a Contingency Plan, for the approval of DAFM, which shall identify 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.

The Marine Institute recommends that oyster culture utilise triploid oysters only in order to mitigate the risk of the reproduction of the Pacific oyster in the bay.

A Fish Health Authorisation as required under Council Directive 2006/88/EC must be in place prior to the commencement of the aquaculture activities proposed.

These issues can be dealt with by way of licence conditions to this effect.

Commissioners of Irish Lights (CIL):

CIL have no objection to the development from a navigational viewpoint.

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 recommended that aids to navigation as sanctioned are in place prior to the development on the site commences.

CIL request the following conditions be included in the Licence if granted:

- 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.

An Taisce:

An Taisce raised some issues with this application. An Taisce stated that there was uncertainty for the Special Protected Area (SPA). It maintained it could adversely effect the Grey Plover, Light-bellied Brent Geese and Wigeon. They state that the impacts to other species are discounted. There is potential for full occupation of the aquaculture sites to cause significant displacement impacts to the Light- bellied Brent Goose and to Wigeon and Grey Plover.

They also stated that there are no adequate mitigation measures provided to offset any of the identified potential impacts, that the SPA report is a "catalogue of clearly expressed uncertainties" and based on the data provided in the documentation "it would be an impossibility for the relevant authority to lawfully reach a conclusion of no adverse impacts on the relevant SPAs."

With regards to Special Areas of Conservation (SAC), it also had concerns regarding the 15% threshold outlined in the NPWS guidance. It stated that the assessment of impact in this case is flawed by a reliance on an arbitrary overlap threshold, and a more nuanced and rigorous approach should be required to rule out any potential impact to SAC communities.

The submission was sent to the Department's scientific advisors in the MI for comment.

The MI feels that the conclusions reached in the AA reports relating to the conservation features of the SPA and SAC, which informed the conclusions reached by DAFM in its AA Conclusion Statement, are sound and based on the best scientific information available at the time.

BIM: have no objection to this application.

Irish Water:

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

Wexford Harbour Commissioners:

The Marine Officer recommends the installation of two special marks, with St Andrews Cross attached, on each site for safety of

navigation, which should be mounted on poles on the seaward side of the area as well as a public information sign at the access road.

Wexford Co Council:

In response to the statutory consultation email sent from the Department on the 09 November 2021 which was in relation to both Ballyteigue applications, Wexford County Council gave this reply:-

With regard to the environment section we also have no objections to the proposed development, and in fact welcome it as its presence will be used to highlight the need for good water quality to people upstream in the catchment and the need for them to carry out farming, licensed discharges etc in a sustainable manner.

Department of Housing Local Government and Heritage (DHLGH):

With respect to the Special Protection Area, it is noted that the Appropriate Assessment Conclusion statement concludes that there is a high likelihood of significant displacement to Grey Plover but it is assumed that the actual level of displacement to this species will likely be substantially lower than expected. This assumption is based on the observation that Grey Plover population has not demonstrated a negative impact from increasing oyster trestle cover over the period 2008-2016. The above assumption is made despite the fact that, if both applications are fully developed, then there will be

(i) a four-fold increase in the total cover of trestles compared to the mapped extent in 2010 and

(ii) trestles that will exist in areas of the bay where they previously have not.

This assumption carries a high level of risk given the predicted negative response by Grey Plover (4.6-4.9% displacement) and the species' known highly negative response to oyster trestles, as well as the generally narrow estuarine channel of the SPA. Thus, there is a high risk of negatively impacting the distribution attribute of the Conservation Objective for Grey Plover at Ballyteigue Burrow SPA.

Given the available information and the absence of certainty that the Grey Plover will not be negatively affected, it is recommended that a licence only be provided for existing aquaculture operations within the bay.

It is also recommended that any licence include conditions for strict adherence to licenced/approved access ways.

With respect to the management of invasive species and minimising risk to the conservation objectives for the SAC, the Department requests the following also be attached as condition of consent:

- Adherence to the practice and principles advocated in the guidance generated by the Invasive Species Ireland Project (https://invasivespeciesireland.com/biosecurity/aquaculture/) is required as part of Operational Conduct of the licensee.
- Compliance with the latest guidance generated by BIM in relation to invasive marine species (https://bim.ie/aquaculture/sustainability-and-certification/marine-invasivespecies/).
- That Authorised Officers under Regulation 4 of the European Communities (Birds and Natural Habitats) Regulations (SI 477 of 2011) may inspect the facility in respect of undertaking surveillance for the conservation status of Ballyteige Burrow SAC and SPA.

These comments were sent to the Department's scientific advisors in the MI for comment.

The MI are of the view that the DHLGH has interpreted the findings in the AA conclusion statement as being based on a single assumption that the "… Grey Plover population has not demonstrated a negative impact from increasing oyster trestle cover over the period 2008-2016. The MI is confident that the species sensitivity and the full extent of proposed trestles sites was considered in the assessment in the SPA AA report and that Grey Plover will not be displaced to the extent that it's conservation objectives in the Ballyteigue Burrow SPA could not be met.

Fáilte Ireland:

No observations were received.

Inland Fisheries Ireland (IFI):

No observations were received.

Public Consultation

The application was publicly advertised using a composite public notice covering aquaculture and foreshore elements in the 'Wexford People' on 16 November 2021. The application and supporting documentation were available for inspection at Kilmore Quay and Wexford Garda Stations for a period of four weeks from the date of publication of the notice in the newspaper.

There were two submissions received from the public consultation process one from the Irish Wildlife Trust (IWT) and the other from SWC Promotions. The submissions can be summarised as follows:

IWT raised concerns about the impact of this site on the Natura site Special Area of Conservation (SAC) and Special Protected Area (SPA). It also had concerns regarding the 15% threshold outlined in the NPWS guidelines, poor water quality and the Appropriate Assessment not adequately assessing the risk posed by the aquaculture activity.

SWC Promotions also raised queries on the site not being within Designated Shellfish Waters Area, not compatible with current biodiversity and nature conservation objectives.

The submissions were sent to the Department's scientific advisors in the MI for comment and the MI stated that they would strongly refute the claim by IWT that the culture of *C. gigas* would in some way exacerbate water quality issues in the area by reference to a substantial evidence base to the contrary.

The MI concluded that the proposed oyster trestle cultivation does not have the potential to alter the flow regime in the Burrow to this extent given the findings in the body of literature on potential enrichment under trestles in similar sandy habitats in Ireland and the small scale of the proposed activities. For these reasons organic enrichment of sediments in the Burrow due to oyster trestle cultivation is not considered likely or to pose a risk to benthic habitats.

The MI are satisfied that sufficient scientific rigour attaches to the likely impacts of the activities of the activities and the sensitivity of receiving environment.

With reference to the submission from SWC Promotions the MI feels that the conclusions reached in the AA reports relating to the conservation features of the SPA and SAC, which informed the conclusions reached by DAFM in its AA Conclusion Statement, are sound and based on the best scientific information available at the time.

Applicant response to Statutory and Public Consultation.

In accordance with statutory requirements, copies of the observations received during the consultation process were forwarded to the applicant for comment.

The applicant provided a response to the submissions received during the consultation period **(see Tab D).**

MI – The applicants are in agreement with the MI that the impact of their culture method on the community types is not significant and that they do not use chemicals or hazardous substances.

They also agree with the MI view that there will be no significant impacts on the marine environment and the quality status of the area will not be adversely impacted. They intend to use triploid seed. The applicants state that they:

- will follow the best available practice for the control of alien species as per the oyster industry nationally;
- is not adverse to working with other licenced producers under CLAMS;
- will apply for a Fish Health Authorisation follow a successful application and prior to establishment of activities on the site.

Wexford County Council- The applicants welcome the response from the Environment Section of Wexford County Council.

The Harbour Master- The applicants will apply for planning permission exemption for the installation of a Public Awareness sign at the access road with the assistance of the BIM Regional Officer who has experience in this (e.g. Bannow Bay).

BIM – The applicants welcome the support stated by BIM and agree they are correct in stating that they are expert oyster farmers through spending all of their working career working for other licensed oyster farmers and that they have selected the best area for growing oysters intertidally in Ballyteigue.

Irish Water – The applicants state oysters have been grown in the bay for many decades and they have been part of a microbiological control program run by the SFPA and the bay is a steady B classification area and they don't envisage that to deteriorate. They don't see any wastewater treatment infrastructure prohibiting their business from commencing there.

Commissioners of Irish Lights - The applicants will mark their site as requested by the CIL and the MSO with the assistance of BIM who have expertise in this area. They will also as per CIL advice submit details of marks to the UK Hydrographic Office.

Department of Transport, Tourism and Sport -The applicants will seek the advice of the BIM Regional Officer to apply to the Commissioners of Irish Lights for Statutory Sanction of IALA standard marks as suggested by Capt. Neil Forde and once approved they will install with the help of BIM expertise and notify the British Admiralty Office so that admiralty charts etc are updated accordingly.

Capt. Phil Murphy, Senior Marine Officer Wexford County Council - As per the response to Capt. Neil Forde and they will also apply for planning permission exemption for the installation of a Public Awareness sign at the access

Piers and Harbours Office of Wexford County Council - As per response to both Capt. Neil Forde and Capt. Phil Murphy.

Development Applications Unit (Department of Housing Local Government and Heritage) – The applicants state that the development of their site should it be licensed is not a four-fold increase in trestle cover since 2016 which was the last year that showed no demonstrated negative impact on Grey Plover from increasing trestle cover. The submission notes that DAU are referring back to 2010 but that is an incorrect point to refer back to.
In regard to access and egress from the site should it be licenced, it is the applicants intention to use only a tractor to initially deploy trestles and bags and for harvesting of them. At all other times (which is over 90% of the time) they will be operating on site on foot turning bags etc. So, their presence will very much be very low key. Furthermore, they do not intend to work the site at night time thus wildlife will not be disturbed at night.

IWT – The applicants maintain oysters remove nitrogen and phosphorus from the waterbody during growth and at harvest.

The applicants intend to use triploid oysters but note that historically before triploid oysters became available diploid oysters were used in the bay and there has never been a settlement of gigas oysters in the bay.

The applicants state oysters drive ecosystems away from eutrophication by top down control of phytoplankton and through direct and indirect removal of nutrients.

SWC – The applicants state if their site is licenced the required marks will be put in as recommended in the submissions by the relevant authorities and they will certainly be availing of BIM expertise when it comes to marking sites.

They also state the fact that site is not in Shellfish Designated Area does not prevent them from aquaculture farming.

The applicants maintain that oyster farming does not exacerbate the biodiversity crisis. It is underpinning the ecosystem health by mitigating against negative nutrient inputs from land.

The applicant notes that not all of SWC's comments on the SPA AA are correct. Regarding the displacement of Brent Geese, the applicants state that they often sees the Brent Geese feeding on existing trestles even when workers are on site turning bags not more that 20m away from them. The applicant also disagrees with SWC's statement regarding the impact on fish.

An Taisce – The applicants state that their application for a licence has been made prior to any SPA AA and therefore has been made on its own merit without reference to any uncertainties. The applicants also note the positive ecosystem services provided by oyster farming in such a bay as Ballyteigue such as mitigating the negative impacts of considerable nutrient inputs from land-based activities.

CRITERIA IN MAKING LICENSING DECISIONS

The Licensing Authority, in considering an application, is required by statute to take account, as appropriate, of the following points and 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 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 Ballyteigue Burrow SAC and SPA. An Article 6 Appropriate Assessment has been carried out in relation to aquaculture activities in this SAC and 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 E).***

(ii) Shellfish Waters

The proposed site is not located within the Ballyteigue Shellfish Growing Waters area. 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 employment, the 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 Ballyteigue Bay and in the Licensing Authority's Conclusion Statement.

(f) The effect on the environment generally

The Department's Scientific Advisors, the Marine Institute, are 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.

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

RECOMMENDATION

It is recommended that the Minister:

approves the granting of an Aquaculture Licence (see **Tab F**) to Johnny Neville & Jeannette Brugman, Danescastle, Wellingtonbridge, Co Wexford for a period of ten (10) years for the purpose of cultivating pacific oysters using bags and trestles in accordance with the terms and conditions of the attached draft Aquaculture Licence.

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 –T03/095A

Johnny Neville & Jeannette Brugman, Danescastle, Wellingtonbridge, Co Wexford have applied for authorisation to cultivate pacific oysters using bags and trestles on the intertidal foreshore on a 1.6459 hectare site in the coastal lagoon of Ballyteigue Burrow in Ballyteigue Bay, Co Wexford.

The Minister for Agriculture, Food and the Marine has determined that it is in the public interest to grant an Aquaculture and Foreshore Licences for this site. 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. Such matters include any submissions and observations received in accordance with statutory provisions.

The following are the reasons and considerations for the Minister's determination to **grant** the licences sought: -

a. *Scientific advice is to the effect that the waters are suitable;*
b. *Public access to recreational and other activities can be accommodated by this project;*
c. *The proposed site should have a positive effect on the economy of the local area;*
d. *All issues raised during the public and statutory consultation phase;*
e. *There are no effects anticipated on the man-made environment heritage of value in the area;*
f. *No significant effects arise regarding wild fisheries;*
g. *The site is located within the Ballyteigue Bay Special Area of Conservation (SAC) and Special Protected Area (SPA). An Article 6 Appropriate Assessment has been carried out in relation to aquaculture activities in the SAC and SPA. The Licensing*

Authority's Conclusion Statement (available on the Department's website) outlines how aquaculture activities including this site, are being licensed and managed so as not to significantly and adversely affect the integrity of the Ballyteigue Bay SAC and SPA;

h. *Scientific observations related to the Appropriate Assessment received during the licensing consultation process are addressed in the Licensing Authority's Appropriate Assessment Conclusion Statement;*

i. *Taking account of the recommendations of the Appropriate Assessment the aquaculture activity at this site is consistent with the Conservation Objectives for the SAC/SPA;*

j. *No significant impacts on the marine environment and the quality status of the area will not be adversely impacted;*

k. *The updated Aquaculture licence contains terms and conditions which reflect the environmental protection required under EU and National law."*

Related submissions

There are no related submissions.

User details

INVOLVED: Nyhan, Jennifer
McLoughlin, PatrickM
Waldron, Ultan
Beamish, Cecil
Sub Sec Gens Office
eSub Sec Gen
eSub Ministers Office
eSub Minister

READ RECEIPT: Nyhan, Jennifer
McLoughlin, PatrickM
Waldron, Ultan
Beamish, Cecil
Smith, Ann
Foley, MarkW
Whelan, Paul

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

AQUACULTURE - LICENSING UNDER

FISHERIES (AMENDMENT) ACT 1997 as amended

and

FORESHORE ACT 1933 as amended

Application Form for an Aquaculture and Foreshore Licence for a single specific site.
If a Licence is required for more than one site a separate application form must be completed for each site.

Important Note

Section 4 of the Fisheries and Foreshore (Amendment) Act, 1998 (No. 54 of 1998) prohibits any person making an application for an Aquaculture Licence from commencing aquaculture operations until duly licensed under the Fisheries (Amendment) Act, 1997 (No. 23 of 1997), and provides that a breach of that prohibition will cause the application to fail.

A copy of an Environmental Impact Statement and Natura Impact Statement should be enclosed, if required, with all new, review and renewal applications. See Guidance Notes Section 3.

Aquaculture & Foreshore Management Division,
Department of Agriculture, Food and the Marine,
National Seafood Centre,
Clonakilty, Co. Cork
Telephone: (023) 8859500
Fax: (023) 8821782

Revised 2014

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. T3/95

Date of Receipt (Dept. Stamp):

Aquaculture & Foreshore Management Division
8 APR 2016
Dept. 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) JOHNNY NEVILLE + JEANNETTE BRUGMAN .
1.
Address: [redacted]
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: BALLYTEIGUE

(ii) County: WEXFORD

(iii) OS Map No: SCALE MAPS PROVIDED BY BIm REGIONAL OFFICER .

(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.]
SEE ATTACHED COORDINATES SHEET IRISH GRID .

(v) Size of Site (hectares): 1.6459 Ha

(vi) Species (common and scientific name) and whether native or non-native species: (see Guidance Notes 3.3.1)
CRASOSTREA
PACIFIC OYSTERS (GIGAS).

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

(viii) Please supply details of (a) source of seed e.g. wild hatchery and location and (b) means of collection and introduction to culture.
HATCHERY (DIPLOID +/OR TRIPLOID). 15g oyster starting point
WILD SEED IN THE EVENT OF NO HATCHERY SEED AVAILABLE

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) BAG + TRESTLE .

(x) Proposed number of ~~lines/ropes~~/trestles as per site layout drawing
600 MAX.

(xi) Proposed Production Tonnage:

Year 1	5T	Year 2	10 T	Year 3	20T	Year 4	40T	Year 5	60T

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

GOOD ACCESS. GOOD FOOD IN WATER. GOOD GROUND .
I HAVE EXPERIENCE OF WORKING IN THE BAY FOR OYSTER FARMERS FOR 29 YEARS NOW.

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

EASY ACCESS, SHELTERED, GOOD GROUND, GOOD FLOW.

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

GROWING FROM HALF-GROWN → FULL GROWN. SELLING TO FRANCE OR IRELAND TO BE PURIFIED BY BUYER.

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

NO FLOATATION DEVICES. TRESTLES ONLY VISIBLE AT LOW WATER.

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

Yes [ ] No [✓]

If **yes** give details.

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

WATER QUALITY IS GOOD ENOUGH FOR OYSTER CULTIVATION. BAY WAS NEVER DESIGNATED.

(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 - PRODUCTION AREA CODE - WYKBE CLASS B WATERS.

(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 WITHIN BALLYTEIGUE NATURE RESERVE. SPA CODE 004020 SAC CODE 000696

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

(xix) Methods used to harvest the shellfish and details of any subsequent processing of shellfish TRACTOR + TRAILER FOR HARVESTING. MAIN ACCESS BY FOOT FOR TURNING ETC. ON SITE

(xx) Describe any proposed purification facilities to be used: NONE AT MOMENT.

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

BIRDS, GREEN CRAB (SMALL AMOUNT).

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

OYSTERS IN BAGS (MAX MESH SIZE WILL BE 9MM).

No 14MM BAGS.

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

2.6 Employment, Qualifications, Experience, etc
TO BE FILLED IN BY ALL AQUACULTURE APPLICANTS

(i) Please provide details of experience/qualifications of the applicant and any key personnel which are relevant to the aquaculture now proposed:

29 YEARS EXPERIENCE WORKING ON OYSTER FARMS IN BALLYTEIGUE + BANNOW BAY. UNDERSTAND MANAGING OYSTER FARMS FROM START TO FINISH, AND EXPERT ON THE PHYSICAL LAYOUT OF THE BAY.

(ii) If a new application please provide details of projected employment creation during first four years of the proposed aquaculture project:

(iii) In the case of a renewal please provide current and future details:

SEE TABLE BELOW.

FULLTIME JOBS

Year 1:	1	Year 2:	1	Year 3:	1	Year 4:	1

PART TIME JOBS

Year 1:	1	Year 2:	1	Year 3:	1	Year 4:	1

PART 3 B. PARTNERSHIP

Partnership Name: _____

Please list names, addresses, and Personal Public Service No.'s of partners:

Partner 1: Name and Address _____

_____

_____

Personal Public Service No. _____

Date of Birth: _____

Partner 2: Name and Address _____

_____

_____

Personal Public Service No. _____

Date of Birth: _____

Partner 3: Name and Address _____

_____

_____

Personal Public Service No. _____

Date of Birth: _____

Partner nominated for contact purposes: _____

Full Name: _____

Address: _____

_____

Phone No. _____

Mobile No._____

E-mail Address: _____

PART 3 C. CO-OPERATIVE

Co-operative Name: _____

Address: _____

_____

Co-operative Registered No._____

Is this Co-operative a limited company within the meaning of the Companies Act 1963 (as amended)? Yes ____ No ____

If Yes complete Part 3D only

VAT No. _____

Phone No. _____

Mobile No._____

E-mail Address:_____

Please list below the names and Personal Public Service No's of the Board of Directors/Committee of Management of the Co-operative

Name: _____ Personal Public Service No. _____

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 Members of the Co-op 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 3 D. LIMITED COMPANY

Company Name: _____

Address: _____

_____

Company Registered No. (CRO No.)_____

VAT No. _____

Phone No. _____

Mobile No._____

E-mail Address:_____

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

Name: _____ Personal Public Service No. _____

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
1	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)	✓		
2	Scale drawing of the structures to be used and the layout of the farm (recommended scales normally 1:100 for structures and 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.			✓

1:10560 ACCESS ROUTE MAP (OSMAP + ORTHOPHOTOGRAPH BACKGROUND)
1:30000 OVERVIEW MAP. (OS MAP + ORTHOPHOTOGRAPH BACKGROUND)

GOOGLE EARTH OVERVIEW MAP → INCLUDED TO SHOW MISSING LAND NOT SHOWN ON OSMAP.
GOOGLE EARTH ACCESS ROUTE MAP → ORTHOPHOTOGRAPH NOT AVAILABLE FOR MISSING LAND.

SITE LAYOUT MAP 1:1500
TRESTLE STRUCTURAL DIAGRAM 1:25
TRESTLE LAYOUT WITHIN ROW PLAN VIEW 1:25.
COORDINATE SHEET FOR VERTICES IN IRISH GRID

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. I/We enclose an application fee* of € 95.23 with this application.

Signature(s) of Applicant(s):
(Please state capacity of persons signing on behalf of a Company/Co-op)

John Neville.

J Brennan.

Date: 5-4-2016

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

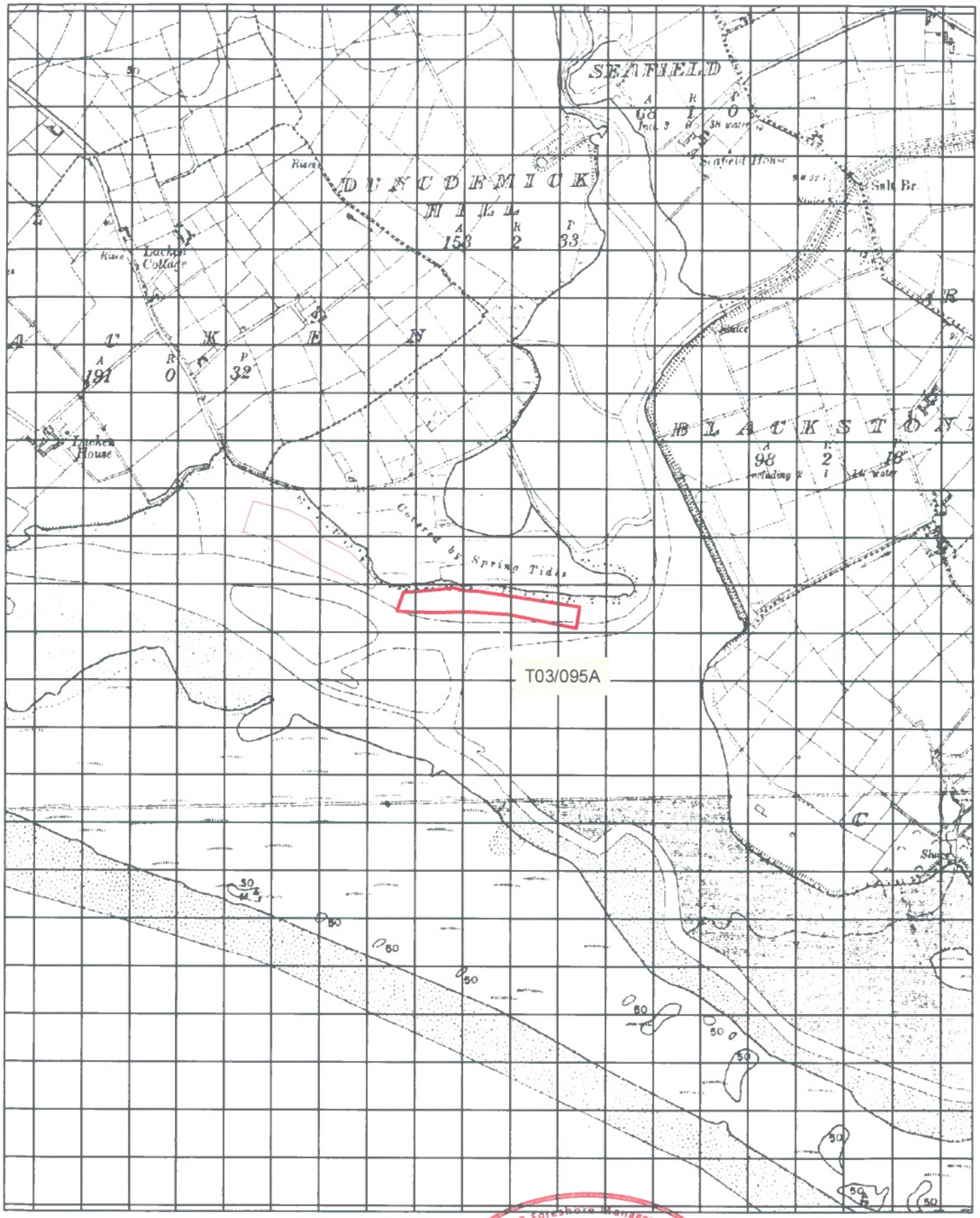
1 NO. SITE AT BANNOW BAY CO.WEXFORD

Co-ordinates & Area

Site T03/095A (1.6459 Ha)

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

291775, 107684 to Irish National Grid Reference point
201787, 107683 to Irish National Grid Reference point
291846, 107689 to Irish National Grid Reference point
291879, 107692 to Irish National Grid Reference point
291902, 107687 to Irish National Grid Reference point
291933, 107685 to Irish National Grid Reference point
292146, 107654 to Irish National Grid Reference point
292138, 107609 to Irish National Grid Reference point
291995, 107636 to Irish National Grid Reference point
291911, 107642 to Irish National Grid Reference point
291841, 107641 to Irish National Grid Reference point
291777, 107643 to Irish National Grid Reference point
291760, 107644 to the first mentioned point.



Aqua Culture Sites

<all other values>

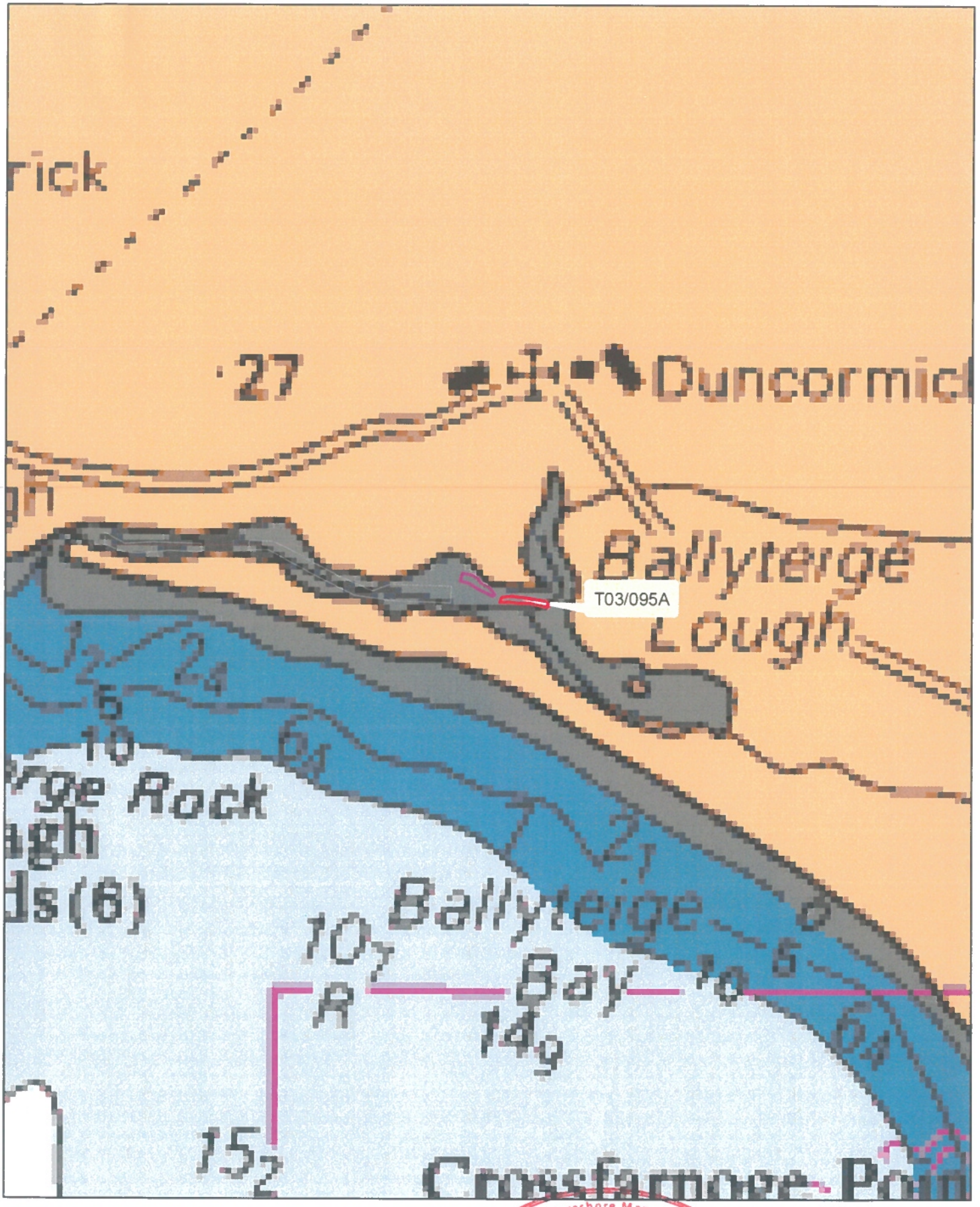
Site_Status

- Application
- Lapsed
- Licensed
- Refused
- Renewal
- Revoked
- Surrendered
- Withdrawn
- 100 Meter Reference Grid

1:10,560

Sites highlighted in red denotes Application

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



Aqua Culture Sites

<all other values>

Site_Status

- Application
- Lapsed
- Licensed
- Refused
- Renewal
- Revoked
- Surrendered
- Withdrawn

1:40,000

Sites highlighted in red denotes Application

Part of Admiralty Chart No =1410-0
Not to be used for Navigation

Aquaculture & Foreshore Management Division
17 MAY 2016
Dept. of Agriculture, Food & the Marine

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

Johnny Neville & Jeannette Brugman
Application Coordinate Details.

Vertex	Easting	Northing
1	291775.05	107683.6345
2	291786.8973	107682.892
3	291846.3638	107689.1343
4	291878.8897	107692.0912
5	291901.8879	107686.8345
6	291932.771	107684.8632
7	292145.5496	107654.0326
8	292138.453	107608.8249
9	291994.8659	107636.2386
10	291910.7586	107641.6268
11	291840.8903	107641.0551
12	291776.7124	107642.6781
13	291760.1998	107643.6835
14	291775.05	107683.6345

Coordinates in Irish Grid.

John Neville.

JBrugman.

5-4-2016

Johnny_Neville_Application Overview_Map_1_in30000

5-4-2016
JBergman.
John Neville

Legend

- Johnny_ Neville_Application
- Johnny_Neville_Access_Route

3,000 1,500 0 3,000 Meters

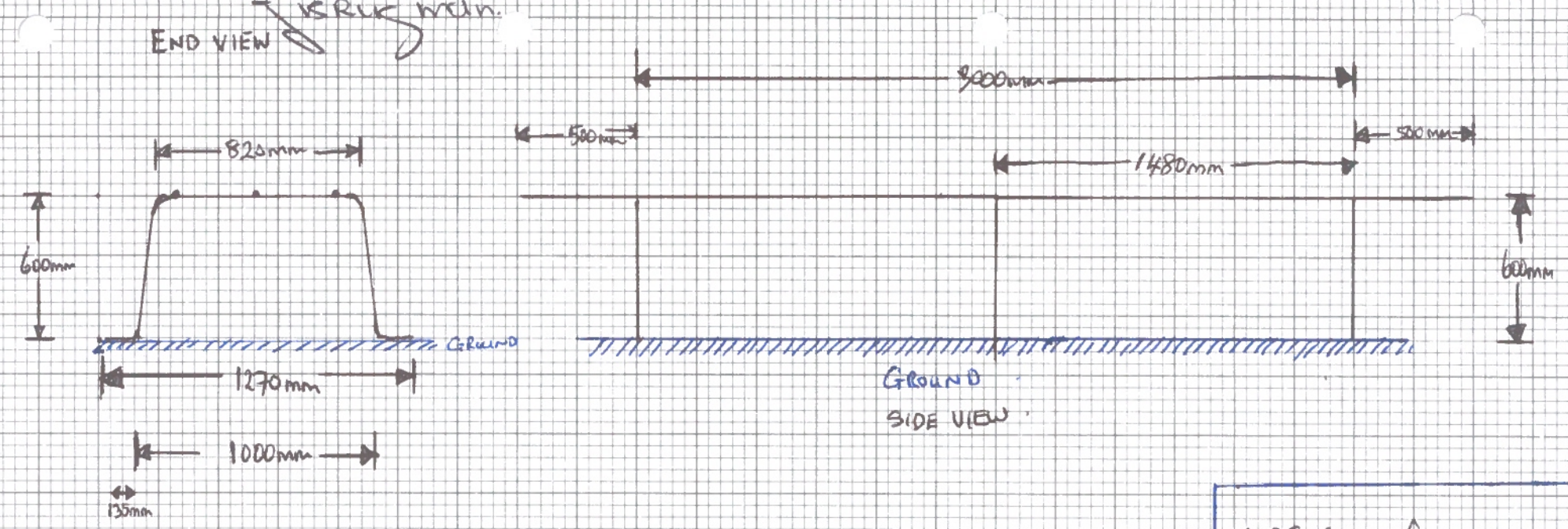
Ortho_photographs and OS Background_used_under BIM_licence with OSI.


Johnny_Neville_Application
Access_Route_Map_1_in10560
ick
Salt Br.
Riverstown
Blackstone
Reahouse
Legend
Johnny_ Neville_Application
Johnny_Neville_Access_Route
1,000
500
0
1,000 Meters
Ortho_photographs and OS Background_used_under BIM_licence with OSI.


Duncormick
Johnny Neville & Jeannette Brugman Application against Google Earth Image 21/04/2011 OVERVIEW
© 2016 Google
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2016 DigitalGlobe
Image © 2016 TerraMetrics
Imagery Date: 4/21/2011 52° 12.777' N 6° 39.286' W

Johnny Neville & Jeannette Brugman Application against Google Earth Image 21/04/2011. Showing land not recorded on OS Background Map.

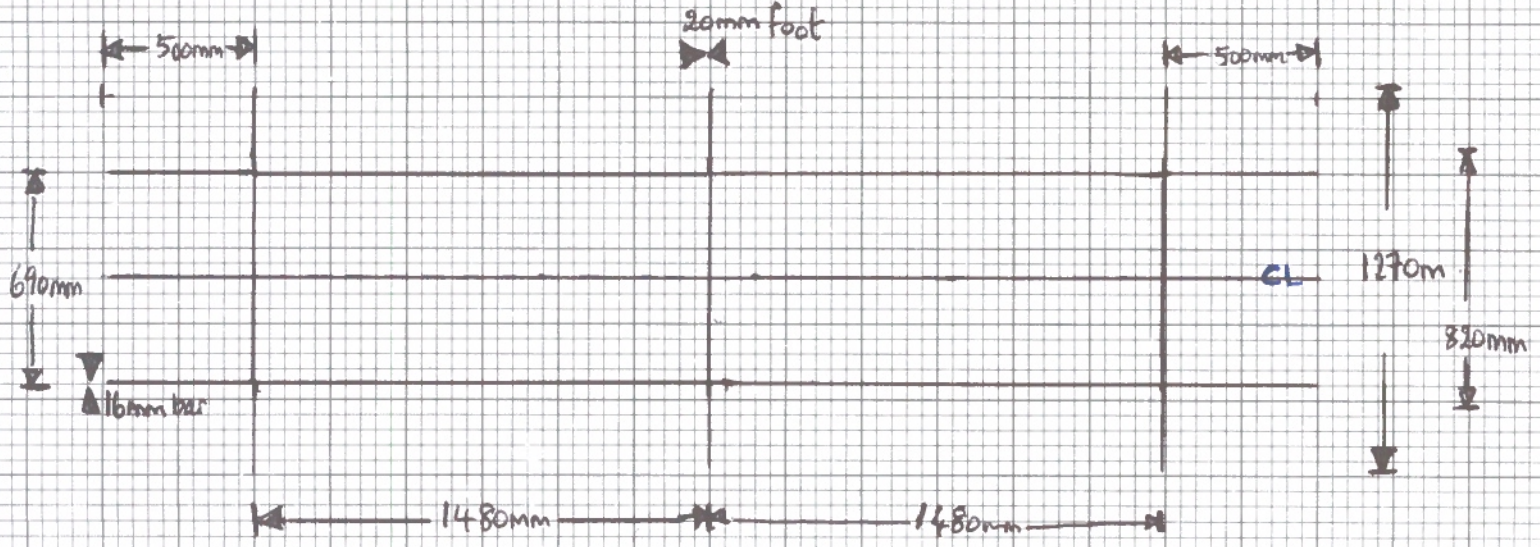
5-4-2015 John Neville.



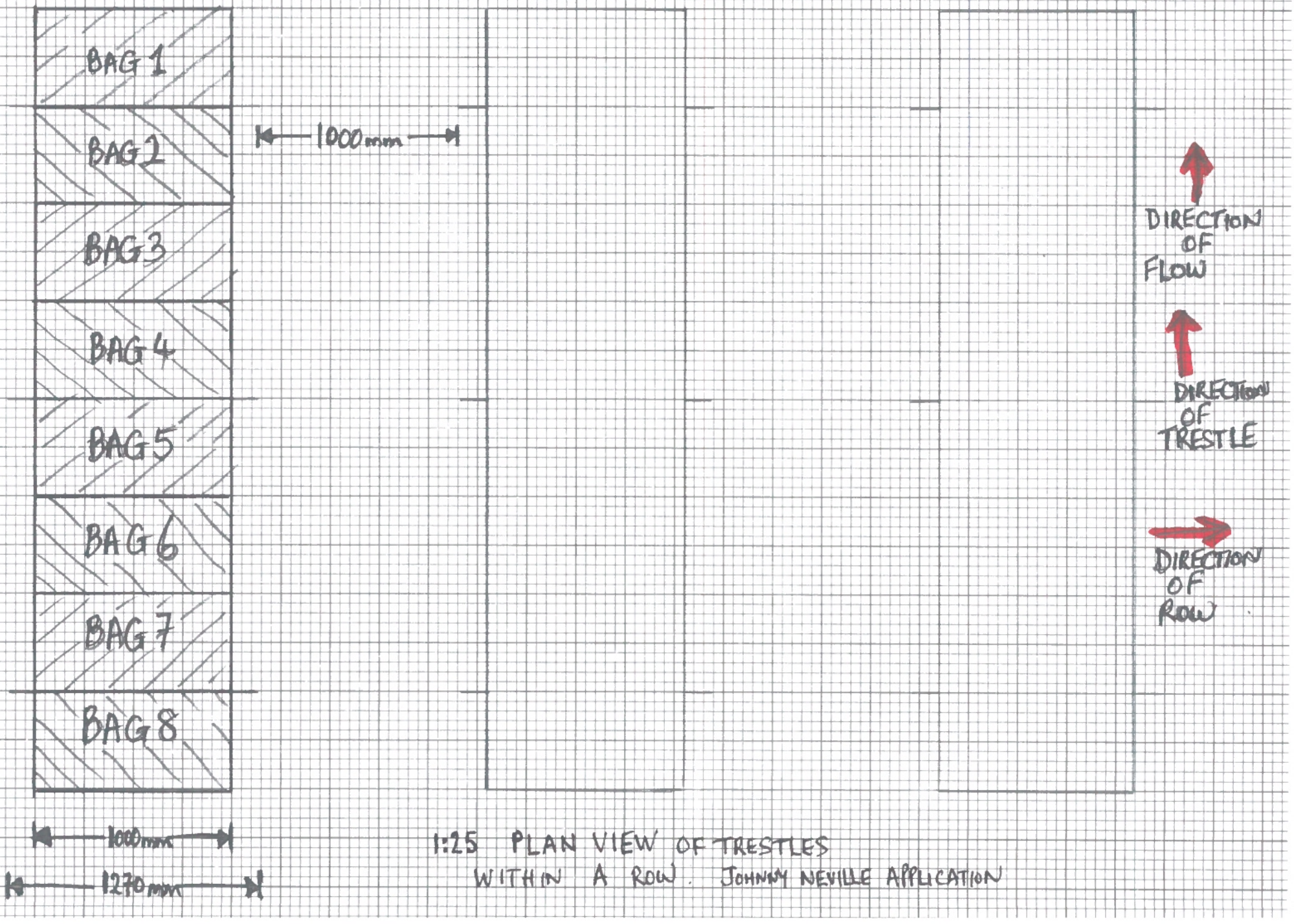
1:25 Views of Trestle to be used by Johnny Neville and Jeannette Brugman IN BALLYTEIGUE BAY.

20mm leg diameter

16mm diam. top bars



PLAN VIEW.



1:25 PLAN VIEW OF TRESTLES WITHIN A ROW. JOHNNY NEVILLE APPLICATION

Johnny_Neville_Application Site_Layout_Map_1_in1500

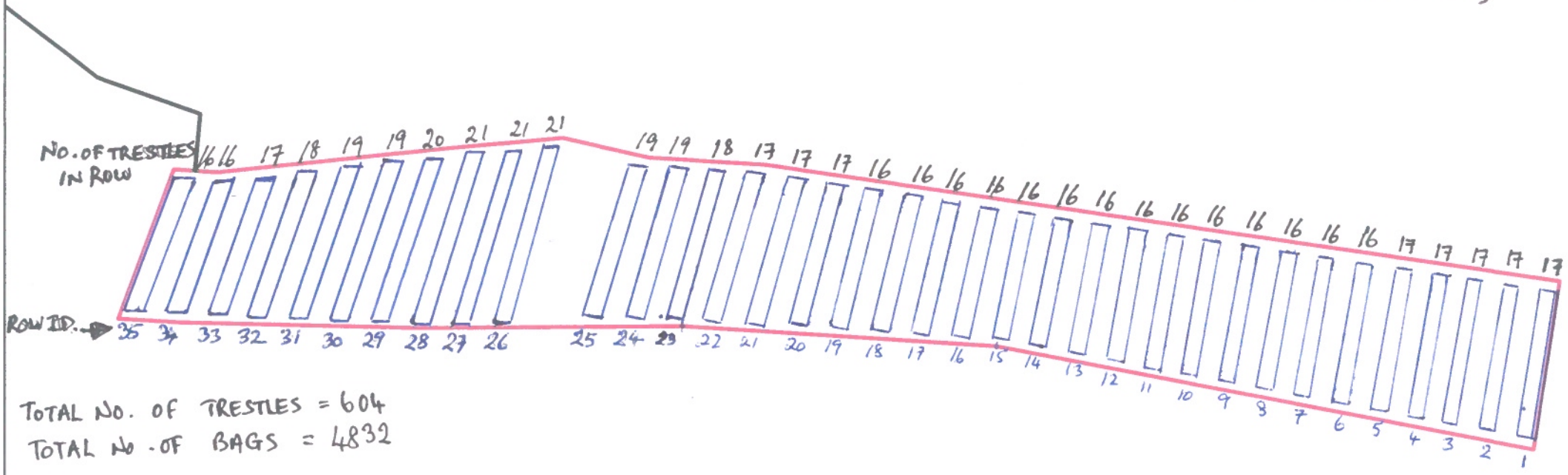
Distance Between Rows = 6m

Gap Between Rows 25 + 26 For maneuvering trestles.

5-4-2016

J Brennan.

John Neville.



TOTAL NO. OF TRESTLES = 604

TOTAL NO. OF BAGS = 4832

Legend

- Johnny_ Neville_Application
- Johnny_Neville_Access_Route

150 75 0 150 Meters

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

Marine Engineering Division

Report on Aquaculture Licence Application

Application Reference No: T03/095

Report Prepared By:	**Raphael Crowley**
Date:	18 January 2019
Applicant	Johnny Neville and Jeannette Brugman, Danescastle, Wellington Bridge, Co. Wexford
Location	Ballyteige Bay, County Wexford
Applicant Type	Aquaculture/Foreshore Licence Application
Sites	T03/095
Site Area (Ha)	1.65
Species	Pacific Oysters (Crassostrea Gigas)
Cultivation Method	Trestle and Bag
Intertidal/Non-Intertidal	Intertidal
Source of Seed / Spat	Not Specified
Annual Production Estimates	60 Tonnes
Shellfish Waters Designation	Yes ☐ No ☒
Reference:	No Designation
Environmental Designation	Yes ☒ No ☐
Reference:	Ballyteige Burrow SAC [Site Code 000696] Ballyteige Burrow SPA [Site Code 004020]
Development Plans	Yes ☒ No ☐
Reference:	Wexford County Development Plan 2013-2019, Sections 6.4.7, 13.10
Pre-Consultation Meeting	Yes ☐ No ☒
	Date:

Drawing Validation Sheet

OSI Maps — **Yes** ☒ **No** ☐
Comment: 1:10,560 scale maps prepared by GIS Mapping Section attached.

BA Chart — **Yes** ☒ **No** ☐
Comment: BA Charts 1:24,000 prepared by GIS Mapping Section attached.

Farm Layout Drawing — **Yes** ☒ **No** ☐

Directional Arrow	Yes	☒	No	☐
Scale	Yes	☒	No	☐
Title Block	Yes	☒	No	☐
Date	Yes	☒	No	☐

Comment: Drawings are adequate.

Drawings of structures — **Yes** ☒ **No** ☐
Comment: Detail provided is adequate.

Details of Proposed Navigation Marking — **Yes** ☐ **No** ☒
Comment: There is no vessel activity at this location.

Site Access Indicated — **Yes** ☒ **No** ☐
Comment: Site access indicated.

Site Co-Ordinates Indicated — **Yes** ☒ **No** ☐
Comment:

Site Overlap — **Yes** ☐ **No** ☒
Comment:

Oyster Fishery Order Overlap — **Yes** ☐ **No** ☒
Comment:

☒ **The application is submitted with each of the requirements listed and is therefore deemed to be a valid application.**

☐ **AFMD should be aware that insufficient details have been submitted as per above.**

Site Suitability Assessment

Site Location
This site is located in the coastal lagoon of Ballyteige Burrow in Ballyteige Bay, Co Wexford in sheltered waters. Aquaculture has taken place adjacent to this site for many years, which indicates that the hydrodynamic regime is suitable for this type of aquaculture. The consistency of the seabed at this location is of hard sand overlaying a firm substrata and suitable for the aquaculture proposed.

Site Management
This is an application for the cultivation of oysters using typical bag and trestle. There is no activity on this site at present.

Proposed Site Layout and Structures
This application is for the cultivation of oysters using the bag and trestle method. The farm site layout drawings have been prepared and are suitable for attachment to any licence issued for the site. The detail of structures provided is suitable for attachment to any licence issued for the site.

Land Based Facilities / Site Access
The operator proposes to access the site from an adjacent public road and traverse the upper foreshore to the aquaculture site at this location. Details of the access routes were included with the application.

Navigation
The inlet is tidal with very limited navigational access due to the nature of the coastline, tides and seabed at this location. There is no vessel activity at this location. The corners of the site should be marked with administrative markers.

Visual Impact
The Wexford County Development Plan describes the area around Ballyteige Burrow as a Coastal Landscape of Greater Sensitivity. The views of this aquaculture site are obscured from scenic routes. The proposed farm layout and type of structures adheres to the best practices outlined in the Guidelines for Landscape and Visual Impact Assessment of Marine Aquaculture, 2001.
There is no significant visual impact due to this application.

Impact / Cumulative Impact
There is existing aquaculture adjacent to this site. There is no fishing or marine leisure in the area.
An Appropriate Assessment for Ballyteige Burrow SAC [Site Code 000696] and Ballyteige Burrow SPA [Site Code 004020] is required to permit licencing and manage aquaculture activities in compliance with the EU Birds and Habitats Directives.

MED has no objection to the licencing of this site, subject to the recommendations of the Appropriate Assessment Conclusion Statement for Ballyteige Burrow.

Ann McCarthy

AFMD

Friday, 05 August 2016

T3 / 95

This office has no objection to this development from a navigational viewpoint.

The applicant is required to apply to the Commissioners of Irish Lights (Fax: 01 271 5566, email: marine@cil.ie) for sanction to establish the following marks: four posts, projecting two meters above sea level at highest astronomical tide and with a topmark of a diagonal St.Andrews cross, painted yellow, should be erected at the four corners of the development .

Statutory sanction forms are available at
http://www.commissionersofirishlights.com/cil/home/local-aids-to-navigation.aspx

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

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

No excess trestles should be stored on the site. Unused equipment should be removed from the site and stored at a suitable location above the high water mark. Storing trestles onsite is particularly hazardous as it creates a high point in an area that would otherwise allow safe surface navigation at certain stages of the tide.

We note that there may be observations from fishing , bottom culture developers and other interests at the public consultation phase.

Capt.Neil Forde

Nautical Surveyor, for and on behalf of the Department of Transport, Tourism and Sport

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

Aquaculture & Foreshore Application Observations

Application No: T03/95A	**Applicant Name & Area:** Johnny Neville & Jeanette Brugman Ballyteigue Bay, Wexford
Application Category	
Aquaculture: Y	Foreshore:

Sea Fisheries Protection Officer Observations

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 significant impacts anticipated.

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 significant impacts anticipated.

3. *Possible impacts, if any, on seafood safety.*

Ballyteigue is classified for the production of oysters and as such the food safety risk is defined. As the proposed site is new, the sampling plan and monitoring point may need to be amended to account for its location.

Name: Damian Allen **Sea Fisheries Protection Officer** **Port: Dunmore East**	**Date:17/12/2021** **Signature: __(Damian Allen)____**

25/01/22

[redacted]

Deirdre O' Flynn

Aquaculture & Foreshore Management Division

Department of Agriculture, Food and the Marine

National Seafood Centre

Clogheen

Clonakilty

Co. Cork

P85 TX47

Re: Application for Aquaculture Licence in Ballyteigue Bay, Co. Wexford (T03/095)

Dear Deirdre,

Thank you for forwarding on the submissions made on my application referenced above and affording me the opportunity to respond to them.

Response to the submission by the Marine Institute (MI):

The MI are correct in stating that Ballyteigue Bay is a bivalve molluscan production area and is classified as 'B' class for oysters (see link below).

https://www.sfpa.ie/LinkClick.aspx?fileticket=HPMo53Df9Q8%3d&portalid=0&resourceView=1

I agree with the MI that the impact of our culture method on the majority of community types is not significant and that we do not use chemicals or hazardous substances.

I also agree with the MI view that there will be no significant impacts on the marine environment and the quality status of the area will not be adversely impacted.

In regard to half grown importation I ask that I am afforded the same rights as other oyster growers in Ireland that use triploid oysters.

I will follow the best available practice for the control of alien species as per the oyster industry nationally.

In regard to establishing a Coordinated Local Aquaculture Management System (CLAMS) should I be licenced I am not averse to working with any other licenced producer towards common goals as

envisaged under CLAMS. Should that time come I will ask the BIM Regional Officer for advice on CLAMS.

I will of course apply for a Fish Health Authorisation follow a successful application and prior to establishment of activities on the site.

Response to the submission from Wexford County Council Environment Section:

I welcome the response from the Environment Section of Wexford Co. Co. and the positive impact that my licensed activity (should it be granted) might have on land users discharging into the catchment. Furthermore, I am of a firm belief and I am backed up by numerous academic papers that oysters are beneficial to water quality and ecosystem health by removing Nitrogen and Phosphorous during growth and through harvest thus protecting sensitive transitional ecosystems from moving towards a eutrophic status. Thus, oyster farming is helping with Water Framework Directive Compliance. It is clear from the Wexford Co. Co. response that they see the value of our potential ecosystem service that we could provide.

Response to the submission from An Bord Iascaigh Mhara (BIM):

I welcome the support stated by BIM and they are correct in stating that I am an expert oyster farmer through spending all of my working career working for other licensed oyster farmers and that I have selected the best area for growing oysters intertidally in Ballyteigue.

Response to the submission from Irish Water:

Oysters have been grown in the bay for many decades now and they have been part of a microbiological control program run by the SFPA and the bay is a steady B classification area and I don't envisage that to deteriorate. Thus, I don't see any wastewater treatment infrastructure prohibiting my business from commencing there.

Response to the submission by the Commissioners of Irish Lights:

We will mark our site as requested by the CIL and the MSO with the assistance of BIM who have expertise in this area. We will also as per CIL advice submit details of marks to the UK Hydrographic Office.

Response to the submission by the Department of Transport, Tourism and Sport:

I will seek the advice of the BIM Regional Officer to apply to the Commissioners of Irish Lights for Statutory Sanction of IALA standard marks as suggested by Capt. Neil Forde and once approved I will install with the help of BIM expertise and notify the British Admiralty Office so that admiralty charts etc are updated accordingly.

Response to the submission by Capt. Phil Murphy, Senior Marine Officer Wexford County Council:

As per the response to Capt. Neil Forde and I will also apply for planning permission exemption for the installation of a Public Awareness sign at the access road with the assistance of the BIM Regional Officer who has experience in this (e.g. Bannow Bay).

Response to the submission by the Piers and Harbours Office of Wexford County Council:

As per response to both Capt. Neil Forde and Capt. Phil Murphy.

Response to the submission by the Development Applications Unit (Department of Housing Local Government and Heritage):

The development of my site should it be licensed is not a four-fold increase in trestle cover since 2016 which was the last year that showed no demonstrated negative impact on Grey Plover from increasing trestle cover. They are referring back to 2010 but that is an incorrect point to refer back to.

In regard to access and egress from the site should it be licenced: it is my intention to use only a tractor to initially deploy trestles and bags and for harvesting of them. At all other times (which is over 90% of the time) I will be operating on site on foot turning bags etc. So, my presence will very much be very low key. Furthermore, I do not intend to work the site at night time thus wildlife will not be disturbed at night.

Response to the submission by Irish Wildlife Trust (IWT):

I note that the waterbody in which my site is located is referred to as IE_SE_080_0100 under the Water Framework Directive and its latest status for Water Quality is Intermediate in the 2018-2020 assessment period. It is not 'bad' which the IWT submission seems to be stating. I enclose a screenshot from the Catchments.ie website below. Oysters remove nitrogen and phosphorus from the waterbody during growth and at harvest. This is very well established in scientific peer reviewed scientific papers (see Summary end section and references). IWT refer to an unpublished and not peer reviewed internal paper that the National Parks and Wildlife Service have written in 2019. Note also that oysters from Ballyteigue Bay have previously won BIM oyster awards and the product produced receives the highest prices in France and beyond. Water quality is actually very conducive here for top class oysters which could easily be developed locally with Wexford Co. Co. into a food tourist trail akin to Taste the Atlantic initiative in the Wild Atlantic Way.

It is true to say that the waterbody that they do refer to as 'bad' water quality under the 2013-2018 WFD status is named IE_SE_080_0200 and is an almost enclosed channel with poor flow (see image below (the red channel). The reason for this status is not due to oyster farming and indeed it is oysters in Ballyteigue bay proper that are mitigating against the pressure exerted by this channel. Oysters drive ecosystems away from eutrophication by top down control of phytoplankton and through direct and indirect removal of nutrients.

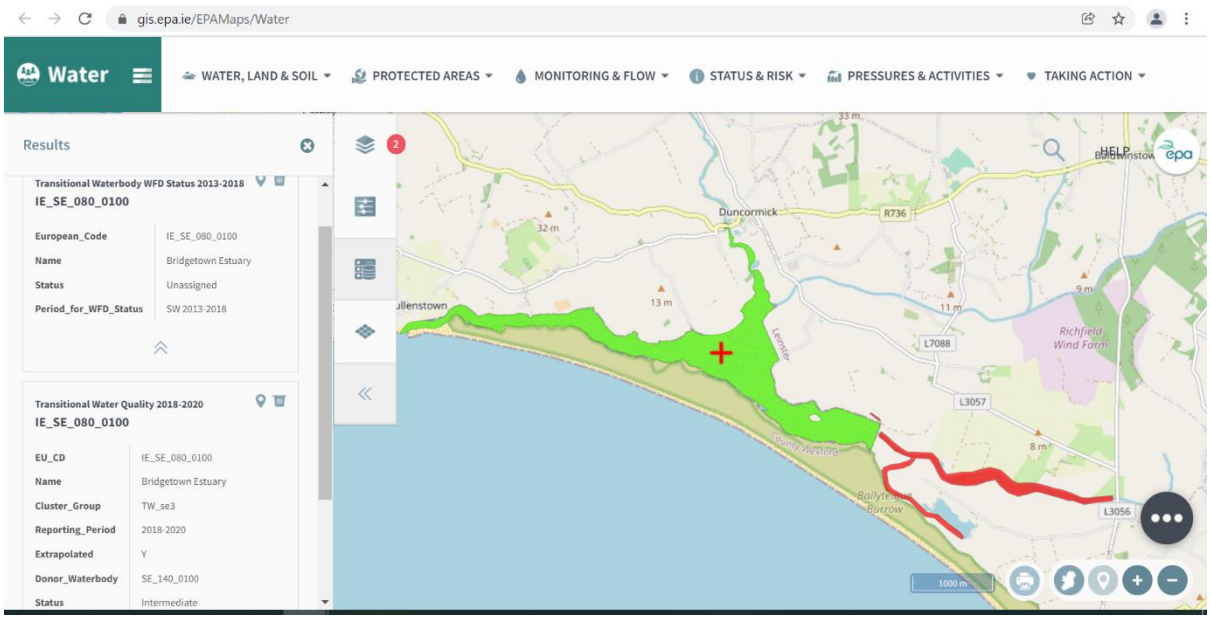


Image (above) from Catchments.ie showing the 'bad' channel in red that IWT refer to and the intermediate water body (green) which contains my oyster farm. The two water bodies are distinct.

So, when IWT refer to in combination effects with existing activities e.g. land-based agriculture they completely fail to understand that oyster farming is mitigating against the impact of land-based agriculture on water quality. Oyster farming does not cause nutrient enrichment of sediments. It uses no artificial feed, it removes nutrients from the water column, drives the ecosystem away from eutrophication thus avoiding oxygen depletion caused by otherwise excessive alga growth. Enhanced bacterial denitrification can occur under oyster farms thus removing even more nitrogen from the transitional water body. The complete opposite of land-based agriculture. How IWT can state that oyster farming is adding to the problems caused by land-based agriculture in an ecosystem like Ballyteigue shows a breath- taking lack of understanding of oyster farming.

We plan to use triploid oysters but note that historically before triploid oysters became available diploid oysters were used in the bay and there has never been a settlement of gigas oysters in the bay and this can be verified in a PHD study by Judith Kochmann (*Into the Wild: Documenting and Predicting the Spread of Pacific Oysters (Crassostrea gigas) in Ireland)* in 2012 which found not only no settled wild gigas in Ballyteigue but none in the south coast of Ireland. So that would have been written about 30 years after oyster farming had already been in Ballyteigue. That's plenty of time for settlement to occur but didn't.

In regard to details of what we want to have there we have stated everything very clearly on our application (even the exact number of trestles and bags). Brent Geese not only feed on top of the oysters bags at another site in the bay when they arrive they also feed at any location that has green algae growing on the shore. Our proposed operation is not depriving any Brent Geese from access to any green algae in fact we are adding an additional source of feeding for them by virtue of the fact that our oyster bags will be a substrate for the growth of green macro algae such as *Enteromorpha sp* which they eat. Without our proposed structures there wouldn't be any green algae at that location.

The Appropriate Assessment that my licence application was subjected to for the SAC (with its 15% rule) is very strict and it was deemed that we are not a significant threat to the SAC.

One thing is for certain: if my site is licenced then the bay will be protected even further from becoming eutrophic which will have major positive consequences for the SAC (not just 15% of it but

all of it) and as an indirect result will positively impact on all SPA species. And in many ways secure a future for them.

I'm very glad that IWT have focussed so much of their submission on water quality. Water quality is the most important parameter for my proposed business as it underpins the whole health of the ecosystem. I am as concerned about negative water quality pressures from waste water treatment plants and land-based agriculture as they are. However as stated I take comfort in the fact that oyster farming mitigates against these pressures and that I am backed up by a wealth of peer reviewed scientific literature.

In addition to promoting ecosystem health by improving water quality as described above I would also point out that oyster farming increases biodiversity by providing structures that create additional habitats for marine life in an area that would otherwise be a relatively barren mudflat. Fish often shelter in numbers underneath the bagged trestles. Other filter feeders settle on the structures and remove additional nitrogen and phosphorus in addition to the oysters.

Response to Submission by SWC Promotions:

As far as I am aware no oyster farm application can be refused by virtue of the fact that the area has not be designated as a Shellfish Designated Waterbody. SWC appear to be claiming that the latter must precede the former which isn't the natural order of events. Furthermore, existing oysters in the bay have been tested systematically for microbiological and biotoxin status and are compliant. Furthermore, SWC claim that a Special Unified Marking Scheme (SUMS) is required before an application can be made. Once again this is not the natural order of events. Sites are licenced first then a SUMS is devised for the sites. Note the plural. SUMS are not required for one site but can be *considered* for more than one site. There is no legal requirement for a SUMS. However, if my site is licenced the required marks will be put in as recommended in the submissions by the relevant authorities and I will certainly be availing of BIM expertise when it comes to marking sites.

Oyster farming does not exacerbate the biodiversity crisis that exists in Ireland and beyond today. It is underpinning ecosystem health by mitigating against the impacts from nutrient inputs from land thus protecting against eutrophication. This is something that is sadly lost on most wildlife agencies and private objectors in Ireland. It is not however lost on the Marine Institute nor the International Academic Community involved in ecosystem science. The Marine Institute in their conclusion to the appropriate assessment of mussel aquaculture in Wexford Harbour state that mussels are mitigating against eutrophication. The text below is from the concluding statement:

> *-The filtration capacity of the mussels may have a beneficial impact on the eutrophication status of the bay and the habitat provision by mussels can be beneficial to the ecological function of the system.*
>
> *-The addition of more mussels to the system (with new applications) should have additional benefit in terms of reducing effects of eutrophication and may mitigate the water quality status in the Lower Slaney water-body.*

Oysters act in a similar manner and one could argue are even better for biodiversity due to the structures used and in the gentle harvest method employed. So, for SWC to say that Aquaculture has been 'identified by the competent authorities for nature conservation as a threat to conserving habitat quality in the protected area…' is just incorrect.

All of my proposed aquaculture activities are clearly stated in my application. It couldn't be any more transparent. They were considered in the SAC Appropriate Assessment, contrary to what SWC are claiming.

I am not aware of any imported invasive alien species to date despite oysters having been grown in the bay for decades and has not caused the settlement of wild gigas oysters (as has been demonstrated in a PHD study). Oyster farming is currently under more regulation than ever before in this regard through the Fish Health Authorisation and Shellfish Gatherers Documents process. Oyster farming with *Crassostrea Gigas* occurs in other bays around Ireland under licence after strict Appropriate Assessment and with tight Regulatory Oversight. Given all of the above I do not believe that my proposed business is a threat in this regard.

Regarding the various SPA Appropriate Assessment comments that SWC make it is clear that not all of these comments are correct e.g. we often see Brent Geese feeding on existing trestles even when workers are on site turning bags not more that 20m away from them. This is also seen in other oyster farming bays in the southeast. So, for the SPA AA to say that the impacts on Brent Geese are significant is rather concerning. It is well known that Brent Geese use multiple areas for feeding (fields, green areas of stony shore near freshwater inputs). Just because they happen to be at these locations and not on the oysters when the bird monitoring commences does not mean that there is a displacement impact. I have never seen Brent Geese feeding at the location of my proposed site. However, I would be fairly certain if I get licenced and have oyster bags there then I will see them feeding on top of the bags. There is a significant distortion of the truth in the SPA AA comment and the subsequent promotion of that comment as a valid argument by SWC.

Further attempts to distort the truth arise in relation to impacts on fish. SWC are trying to claim that filter feeders are eating fish eggs and larvae. Firstly, mussel farming has been in Wexford Harbour since the 1970 (in its present format) and yet Inland Fisheries Ireland say that the Harbour is a very important area as a Sea Bass nursery. It doesn't appear to be the case that that thousands of tonnes of mussel cultivation are impacting on fish populations in Wexford Harbour over the last 52 years and is in stark contradiction to the SWC argument. Similarly, I haven't seen any observable decline in fish stocks in Ballyteigue over the years when oyster farming has been there. As a keen sea angler, myself I have first-hand experience with the quality of fishing in the bay. Ballyteigue bay is renowned for its flounder and holds the record for heaviest specimen flounder caught on rod and line. I have worked at oysters in Ballyteigue Bay since 1988 and in that time, I have talked with and seen hundreds of fellow sea anglers catch sea bass, sea trout, mullet, flounder and several other species in abundance. On a calm sunny day when the water is like glass you will literally see hundreds of fish breaking the water's surface with some jumping completely out. For some reason it's usually triggered by the turning of the tides. At low water you will see shoals of fish under the trestles. I was talking to a ghillie who makes a living bringing out sea anglers on his boat. He said, " He's never seen anything like the shoals of fish taking refuge under the trestles". His theory is one of three:

1 The fish use the trestles for sanctuary and shelter from the hot sun.

2 the oysters or marine organisms growing on the bags emit a smell that attract the fish.

3 That there is an abundance of food under the trestles for the fish to feed on.

Could it be that by maintaining ecosystem health through nutrient removal oysters (and mussels) are actually improving the environment for fish? The answer is yes. Are oyster farming structures

providing additional shelter for fish and for marine life that fish feed on? Yes. Will there be additional feeding resources for marine life on my structures if I get a licence? Yes, there will be, as the epifauna and flora are food for other marine life who are food for fish.

SWC refer to the precautionary principle. Have the decades of oyster farming here not shown that the precautionary principle is no longer relevant as there is one thing clear and that is that there haven't been any negative impacts that SWC are claiming. In fact, I believe that oyster farming here has actually protected the ecosystem.

Response to the Submission by An Taisce (The National Trust for Ireland):

An Taisce refer to the level of uncertainties stated in the SPA Appropriate Assessment and somehow go on to state that 'the *applicant is seeking to rely on this very uncertainty to cast doubt on their finding that there may be significant displacement of species.'* If by 'applicant' they mean me I can assure you that my application for a licence has been made prior to any SPA AA and therefore has been made on its own merit without reference to any uncertainties.

There never will be any certainty in an SPA AA as there are factors greater than my proposed oyster farm which control bird behaviour, and which are operating at national and international scale such as global warming.

An Taisce then delve into the legalities of the SPA/SAC AA which is beyond my knowledge. However, it is clear that they clearly lack any knowledge of the positive ecosystem services provided by oyster farming in such a bay as Ballyteigue such as mitigating the negative impacts of considerable nutrient inputs from land-based activities. In their effort to score a legal victory over DAFM I believe that not only will I and the people that I propose to employ lose out, but the ecosystem will be the big loser and as such all of those things that An Taisce seek to protect will in fact suffer. They are so anti-aquaculture that they are willing to let the ecosystem be a victim in their quest to rid Ireland of aquaculture. They seem to forget that hundreds of years ago all of these bays and many around Ireland were full to the brim with shellfish. They are a keystones species which underpin a healthy marine environment. But they choose to ignore that.

In Summary:

Above I have responded directly to the submissions in turn. Below is an elaboration with references of the crucial ecosystem services that oyster farming provides as understood by academic experts who have looked at this objectively.

Although nitrogen is the main driver for eutrophication a dual-nutrient reduction strategy for Nitrogen and Phosphorus in Irish estuaries has been advocated (O' Boyle et al 2015). There are numerous studies calculating the nitrogen and phosphorus content of bivalve shellfish some of which are tabulated in a Review by Van der Schatte Olivier et al 2020 who calculate that on average, the dry weight of bivalve tissue contains 44.9% carbon, 9.3% nitrogen and 0.9% phosphorus, while shell contains 11.7% carbon, 0.3% nitrogen and 0.04% phosphorus and through harvesting considerable quantities of these nutrients can be removed from the marine ecosystem.

However, Ferreira *et al* argue that harvest weight alone underestimates the annualized ecosystem service of nitrogen removal at the population level (three year grow out on farms) and has calculated that 11280 tons of oysters in Ireland remove 431.7 tons of nitrogen per year (Ferreira et al, 2016) or 38.27 kgN/ton of oysters. Hernández-Sancho calculates a shadow price for nitrogen removal of €30.93 Kg of N (conservative cost as it does not include capital costs of waste water treatment plant) (Hernandez-Sancho, 2010) and this is used by Norton in Irish ecosystem evaluations (Norton, 2018). So as an example, 10,000 tons of oysters would remove 382700Kg of N costing € 11,836,911 using the shadow cost of removal. This estimate is probably quite conservative given that costs for upgrades to wastewater treatment and urban stormwater collection in the USA can be as high as 7610 and 3629 US$ /lb in the USA (Rose, 2014) or €14764 and €7041/kg N respectively.

In addition, bivalve shellfish enhance denitrification in sediments beneath them thus removing additional Nitrogen as harmless N2 gas. Humphries determines that the denitrification rate for aquaculture oysters is 346 µmol N2-N m2h-1 (Humphries, 2016) which is 0.0096926 grams of Nitrogen/m2/h-1 using a standard conversion. Rates of around 20 and some up to 1600 µmol N2-N m2h-1 have been calculated by other researchers (Piehler, 2011), (Kellogg, 2013).

Under the 4th Nitrates Action Plan there is a Phosphorus (P) build up allowance for soil index types 1 and 2 for grasslands with a stocking rate above 130kg /Ha.Thus any proposed intensification of agriculture could lead to increased levels of P in estuarine waters. The shadow cost of P removal is 93.63kg (Sebastiano, 2015) and is quoted by Norton in Valuing Ireland's Blue Ecosystem Services (Norton et al 2018). So although there is less P removed by shellfish the shadow cost of removal is three times higher than for N. Thus, shellfish aquaculture is unique in providing the removal of N and P and could be involved in nutrient trading with agriculture.

Using the above conservative shadow prices, I would hope to remove (when at full production in year 4) about 4200Kg of N per annum nett valued at 130,000 Euro (excluding the amount of Nitrogen removed through enhanced benthic-pelagic coupling) and also approximately 420 kg of P per annum nett valued at 39,000 Euro. Of course, the cost of remediating a nutrient sensitive marine ecosystem that falls into a eutrophic state with associated oxygen depletions and widespread benthic dead zones, fish kills and removal of food resources to birds would be absolutely huge. Thus, there is an additional inherent economic value to the proposed service that my farm would provide by further preventing such a catastrophe.

Shellfish aquaculture is at the very low end of the carbon footprint scale. A recent (September 2021) study published in Nature '*Environmental Performance of Blue Foods*' shows this clearly. https://www.nature.com/articles/s41586-021-03889-2

Add in the fact that some seaweed growth occurs on oyster farming structures and my proposed business could theoretically be carbon neutral. Surely this is the way forward for sustainable environmentally friendly protein production. The EU in their latest round of funding are advocating sustainable food production whilst protecting the global environment.

Other regulating services such as reducing turbidity allowing for increased light transmission with positive impact on submerged aquatic vegetation, removal of microbial pathogens, dissipation of wave energy and reducing laminar water flow leading to reduced coastal erosion. These services are less well understood especially in terms of economic value but are nonetheless a feature of oyster farming.

So, there is an overwhelming body of academic studies advocating for shellfish farming particularly in ecosystems that are nutrient sensitive such as Ballyteigue. It is clear that my application has a considerable amount of support in some of the submissions. To bow down to the type of anti-aquaculture legal threats that An Taisce is making would be to the detriment of the health of the ecosystem and would be particularly devasting to me as I know I would make my business successful and I am an environmentalist by nature and I know that the habitats and species will benefit by having me there oyster farming.

Date: 26/01/22

Signed: Johnny Neville

Signed: Jeannette Brugman

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Appropriate Assessment Conclusion Statement by Licensing Authority for aquaculture activities in the Ballyteigue Burrow Special Area of Conservation (SAC) (Natura 2000 Site Code 000696) and the Ballyteigue Burrow Special Protection Area (SPA) (Natura 2000 Site Code 004020).

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 Habitats and Birds Directives.

1.2 Aquaculture in these Natura sites will, if approved, be licensed in accordance with the standard terms and conditions as set out in the aquaculture licence templates.[1] Should any licences be issued, they will also incorporate specific conditions so as to accommodate Natura 2000 requirements, as appropriate.

1.3 The SAC and SPA reports were prepared by AQUAFACT International Services Ltd. and Atkins Ecology respectively, for the Marine Institute on behalf of the Department of Agriculture, Food and the Marine. These Appropriate Assessment Reports assessed the potential ecological impacts of aquaculture activities on Natura features in both the SAC and the SPA.

1.4 The information upon which the Appropriate Assessment is based is the definitive list of 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 aquaculture activities

2.1 Aquaculture activity within Ballyteigue Burrow SAC focuses on the cultivation of the Pacific oyster (*Crassostrea gigas*) on trestles in intertidal areas of the Bay. There are two applications for the intertidal cultivation of Pacific Oysters (*Crassostrea gigas*) on sites in the bay. The proposed area covered by the site applications is 3.3 ha. The two aquaculture sites are located in the middle of Ballyteigue Bay on the northern side of the main tidal channel.

3. The Special Area of Conservation

3.1 The Ballyteigue Burrow Special Area of Conservation (SAC) is located on the south coast of Co. Wexford. The SAC site extends eastwards and northwards from the village of Kilmore

[1] Aquaculture Licensing Templates,https://www.gov.ie/en/publication/fcd20-aquaculture-foreshore-management/#aquaculture-licensing

Quay. The site consists of a long, narrow spit of coarse sand and gravel with a sand dune system, the Ballyteigue Burrow, which forms most of the seaward boundary.

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

1. [1130] - Estuaries
2. [1140] - Mudflats and sandflats not covered by seawater at low tide
3. [1150] - Coastal lagoons (*priority habitat under the Habitats Directive)
4. [1210] - Annual vegetation of drift lines
5. [1220] - Perennial vegetation of stony banks
6. [1310] - *Salicornia* and other annuals colonising mud and sand
7. [1330] - Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
8. [1410] - Mediterranean salt meadows (*Juncetalia maritimi*)
9. [1420] - Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*)
10. [2110] - Embryonic shifting dunes
11. [2120] - Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)
12. [2130] - Fixed coastal dunes with herbaceous vegetation (grey dunes) (*priority habitat under the Habitats Directive)
13. [2150] - Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) (*priority habitat under the Habitats Directive)

3.3 The constituent community types recorded within the qualifying interest Annex 1 marine habitats consist of:

(a) Mixed sediment to sand with nematodes and *Tubificoides benedii* community: Located in both Estuaries (1130) and Mudflats and sandflats not covered by seawater at low tide (1140)
(b) Sand with crustaceans and *Nephtys hombergli* community complex: Located in Estuaries (1130)

3.4 For the practical purpose of management of sedimentary habitats, a 15% threshold of overlap between any disturbing activities and a habitat is given in the NPWS guidance[2]. Below this threshold disturbance is deemed to be non-significant.

4. Appropriate Assessment Screening of Ballyteigue Burrow Special Area of Conservation

4.1 A screening assessment is an initial evaluation of the possible impacts that activities may have on the Qualifying Interests.

[2] NPWS (2014b) Conservation objectives supporting document - Marine Habitats Ballyteige Burrow SAC 000696. Version 1. National Parks and Wildlife Service, Department of Arts, Heritage and the Gaeltacht.

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

- [1130] Estuaries
- [1140] Mudflats and sandflats not covered by seawater at low tide

Therefore, these Qualifying Interests were carried forward for a full assessment of the interactions.

5. Findings of the Appropriate Assessment of Aquaculture in relation to the Ballyteigue Burrow Special Area of Conservation

5.1 Based upon the spatial overlap and sensitivity analysis, it is concluded that aquaculture activities at trestle sites do not pose a risk of significant disturbance to the conservation of the habitat features of Estuaries [1130] and Mudflats and sandflats not covered by seawater at low tide [1140] or their associated community types.

5.2 Aquaculture activity has the potential to act as a significant vector for the introduction of non-native species to the SAC, that have the potential to impact Qualifying Interest habitats and species for which the SAC is designated. With strict adherence to the relevant legislation and best practice guidelines, there will likely be no significant adverse effects.

5.3 There is one access route in Ballyteigue Bay used by tractors and trailers to access main production areas of the Bay. Access routes overlap 0.17% of the Qualifying Interest 1130 and 0.20% of the Qualifying Interest 1140. While access routes are considered disturbing, the extent of this disturbance is considered small and is considerably lower than the 15% disturbance threshold (which must account for all likely disturbing activities). No other disturbing activities were identified that act in-combination with the aquaculture activity (see Section 10 below).

6. Screening of Adjacent Special Areas of Conservation

6.1 There are six SAC sites proximate the Ballyteigue Burrow SAC; Bannow Bay SAC, Hook Head SAC, Lower River Suir SAC, River Barrow and River Nore SAC, Saltee Islands SAC and Tacumshin Lake SAC. As it was deemed that there are no ex-situ effects and no likely effects on features in adjacent SACs all Qualifying Interests of the adjacent SAC sites were screened out.

7. Ballyteigue Burrow Special Protection Area

7.1 The report assesses the potential impact of the development of the two aquaculture sites on the Special Conservation Interests (SCIs) of the Ballyteigue Burrow SPA, and on the SCIs of other SPAs where these SCIs may have connectivity with Ballyteigue Bay. The potential for

cumulative impacts from development of these aquaculture sites in combination with other relevant activities and plans is also assessed.

7.2 The Qualifying Interests of the Ballyteigue Burrow SPA are: Light-bellied Brent Goose, Shelduck, Golden Plover, Grey Plover, Lapwing, Black-tailed Godwit and Bar-tailed Godwit.

7.3 The conservation objectives for the Light-bellied Brent Goose, Shelduck, Golden Plover, Grey Plover, Lapwing, Black-tailed Godwit and Bar-tailed Godwit SCIs of the Ballyteigue Burrow SPA are to maintain their favourable conservation condition.

7.4 In addition to the Ballyteigue Burrow SPA, the Bannow Bay, Keeragh Islands, Saltee Islands and Tacumshin Lake SPAs are also within 15km of the aquaculture sites in Ballyteigue Bay. There is also potential connectivity with the Lady's Island Lake, the Raven and the Wexford Harbour SPAs.

8. Appropriate Assessment Screening of Ballyteigue Burrow Special Protection Area and adjacent Special Protection Areas

8.1 A screening exercise was carried out to screen out Qualifying Interest 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 Ballyteigue Burrow SPA were carried forward for full Appropriate Assessment. The conservation objectives for the Cormorant breeding population in the Keeragh Islands SPA are to maintain or restore its favourable conservation condition. The conservation objective for the Lesser Black-backed Gull breeding population in the Saltee Islands SPA is to maintain its favourable conservation condition. The Cormorant SCI of the Keeragh Islands SPA, and the Lesser Black-backed Gull and Herring Gull SCIs of the Saltee Islands SPA, were found as likely to have significant spatial overlap with the aquaculture sites in Ballyteigue Bay. However, Herring Gull has a neutral/positive response to oyster trestle cultivation and was therefore screened out from further assessment.

9. Findings of the Appropriate Assessment Report in Ballyteigue Burrow Special Protection Area

9.1 There is likely to be a measurable displacement impact to Grey Plover, and this may be significant when potential displacement due to disturbance is considered. It should, however, be noted that the population trend data for Grey Plover does not show any evidence of impacts from increasing levels of oyster trestle culture over the period 2008-2016. On this

basis, it is likely the displacement impact will be substantially lower than the calculated impacts for the two sites assessed (4.6-4.9%).

9.2 The predicted displacement impacts to Light-bellied Brent Goose (6.7-7%) and Wigeon (6.7-7%) are significant. However, there is a high level of uncertainty about this prediction due to the variable nature of their responses to oyster trestle cultivation, and the likely significant overestimation of sub-site occupancy levels in the displacement calculations.

9.3 The predicted displacement impacts to Shelduck, Lapwing, Curlew, Black-tailed Godwit, Bar-tailed Godwit, Dunlin and Redshank are not significant. The predicted displacement impact to Golden Plover is negligible. The limited data available for assessment means that there is a moderate level of uncertainty about these predictions. However, the Report has not identified any specific factors that would suggest a significant underestimation of displacement impacts for any of these species. For Curlew and Redshank there may be no net displacement impact due to the variable nature of their responses to oyster trestle cultivation.

9.4 Oyster trestle cultivation is likely to have a neutral or positive impact on prey resources for Cormorants, and they will only utilise the areas around the aquaculture sites at high tide when no husbandry activity will be taking place. Therefore, no negative impacts are predicted for this species.

9.5 Due to lack of information on the diet of the Saltee Islands Lesser Black-backed Gull colony, the occurrence of Lesser Black-backed Gull in Ballyteigue Bay during the summer, and/or the response of Lesser Black-backed Gull to oyster trestles, it was not possible to make an assessment of the potential impact of aquaculture activities in Ballyteigue Bay on the colony. A follow up investigation on the Lesser Black-backed Gull's use of intertidal habits within Ballyteigue Bay during important breeding season was conducted (during 2020). During the course of the survey a single Lesser Black-backed Gull was observed foraging intertidally in Ballyteigue Bay. On this basis, it can be concluded that the intertidal habitat in Ballyteigue Bay is unlikely to be a significant foraging resource for Lesser Black-backed Gulls from the Saltee Islands colony. No negative impacts are predicted for this species.

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.

10.2 There are no know applications for a fishery or proposed fishery plans for the Ballyteigue Burrow SAC. On this basis, there are not likely to be any in-combination impacts between fishery and aquaculture activities.

10.3 As pressures resulting from point discharge locations would not significantly impact chemical parameters in the water column, any in-combination effects with aquaculture activities are considered to be minimal or negligible in the SAC.

10.4 Recreational activities are likely to occur on the seaward side of the SPA and are, therefore, unlikely to impact on the shoreline of Ballyteigue Bay where the majority of shorebirds are to be found.

10.5 Shellfish gathering and bait digging will also involve activity in the intertidal zone. However, the levels of these activities appear to be low and they are unlikely to cause significant disturbance impacts.

10.6 The available information indicates that non-aquaculture related disturbance generating activities in the SPA are unlikely to be causing significant impacts to the species covered in the assessment. Therefore, it is not necessary to consider potential in-combination effects with oyster trestle cultivation.

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.

A. AA Conclusion Statement in Relation to Grey Plover - There is a high risk of negatively impacting the distribution attribute of the Conservation Objective for Grey Plover at Ballyteige Burrow SPA

Response:

The Department is confident that the species sensitivity and the full extent of proposed trestles sites was considered in the assessment in the SPA AA report and that Grey Plover will not be displaced to the extent that it's conservation objectives in the Ballyteigue Burrow SPA could not be met.

B. Environmental Issues at Ballyteigue Burrow - At Ballyteige Burrows, the water quality of the channels leading into the estuary are in a 'bad' status according to the EPA's Water Framework Directive 2013 – 2018

Response:

Bivalve shellfish such as *C. gigas* are known to provide positive ecosystem services in waterbodies enriched by terrestrial nutrient run-off, by reducing phytoplankton levels via filtration during feeding. Increasing the number of filter feeders in Ballyteigue Bay is likely to have a small but positive effect on water quality especially given the WFD status of the channels leading into the estuary at Ballyteigue Burrow.

C. The Appropriate Assessment – The appropriate assessment (AA) for the SAC does not adequately assess the risk posed by the aquaculture activity, neither individually nor in combination with the existing activities (e.g. land-based)." The submission takes issue with the SAC AA report findings in relation to water quality effects and invasive species.

Response:

Water Quality

The AA concluded that the proposed oyster trestle cultivation does not have the potential to alter the flow regime in the Burrow to this extent given the findings in the body of literature on potential enrichment under trestles in similar sandy habitats in Ireland and the small scale of the proposed activities. For these reasons organic enrichment of sediments in the Burrow due to oyster trestle cultivation is not considered likely or to pose a risk to benthic habitats.

Given the high rate of flushing within the Burrows and the small scale of the proposed aquaculture activities this is extremely unlikely to occur and therefore extremely unlikely to exacerbate existing water quality issues.

Invasive Species

The Ballyteigue Burrow empties on most tides with just a channel of freshwater remaining during the majority of low tides. This renders this site as likely unsuitable for the successful settlement and establishment of *C. gigas* larvae.

The risk of introduction of other non-native species is highly unlikely as the application documents indicate that *C. gigas* seed will be sourced either from hatcheries or other sites within Ireland thereby minimising the risk of non-natives being introduced to the site.

D. 15% Threshold

Response:

The 15% threshold is clearly defined in NPWS guidance document. The Department is satisfied that sufficient scientific rigour attaches to the likely impacts of the activities and the sensitivity of receiving environment. These facts allied with the guidance provided allow for definitive findings. The SAC AA report should be considered in conjunction with the AA conclusion statement which is the vehicle wherein the conclusions of the AA report are married with management (including mitigation) actions.

E. Ballyteigue Burrow is a protected natura area and non-compatibility with aquaculture due to current biodiversity crisis.

Response:
An Appropriate Assessment of the SPA and SAC was undertaken.

F. SAC AA -Potential for oyster trestle cultivation to have environmental effects on the surrounding environment and finding that impacts relating to physio-chemical effects are not likely to be significant

Response:

In the absence of specific information on total trestle cultivation coverage within a licence area, worst case assumptions are followed, and it is assumed that the entire licence area will be occupied by operational trestles. This approach is applied widely and deals adequately with any gaps in the specifics of an oyster trestle cultivation proposal.

The report assesses the likelihood of the effects occurring based on multiple factors such as site suitability, sensitivity of habitats, and the scale of the proposed aquaculture sites relative to the community complexes they overlap with.

The submission disputes the literature used to underpin the findings of the SAC AA report. The primary literature underpinning the conclusions in relation to benthic habitats is underpinned by the findings of field based studies which assessed the environmental interactions of oyster trestle cultivation activities on intertidal sediment habitats at multiple sites around Ireland.

G. SPA AA - Constraints on analyses

Response:

Any data constraints were adequately dealt with via the adoption of worst-case assumptions in the analysis and prediction of displacement impacts. The worst-case scenario was adopted to account for the potential that SCIs may gather along the channel proximal to the licence areas. In addition, it is assumed that the aquaculture sites are fully occupied by trestles.

H. Findings in relation to Grey Plover, Light-bellied Brent Goose, Lesser Black-backed Gull and Fish.

Response:

Grey Plover

The positive short and long-term population trends in the Ballyteigue Burrow SPA (38% and 59% respectively) relative to the overall negative trend of the national population of Grey Plover (-54%) are presented. These lines of evidence provide a good indication that this SCI will not be significantly affected by the proposed aquaculture activities.

The assessment of potential displacement effect of the proposed aquaculture activities in the SPA AA report followed worst-case principles by adopting the following assumptions:

- 100% trestle occupation within both aquaculture sites;

- Assuming the maximum, instead of mean, rate of occupancy in the two bird count subsites; and
- Increased the categorical 'Assessment of significance" in Table 7.5 from not significant/ measurable (4.6% – 4.9%) to significant, on the basis that Grey Plover are known to exhibit negative behavioural responses to trestle cultivation.

Light-bellied Brent Goose
In the case of Light-bellied Brent Geese the worst-case scenario impact was predicted to be significant:

- This is highly likely to be an over-estimation of impact;
- That the population trend for this species in Ireland in the long-term has been strongly positive (96% increase); and
- The population has increased by 35% at Ballyteigue Burrow SPA in the last decade.

Light-bellied Brent Geese using the areas are well habituated to aquaculture activity and generally undisturbed by it.

Light-bellied Brent Goose will forage and roost amongst and on top of the oyster cultivation structures (trestles and bags) on almost all tides.

Lesser Black-backed Gull
In the case of Lesser Black-backed Gulls, field survey work was undertaken over three survey visits to cover the three main phases of the Lesser Black-backed Gull breeding season: 5th June 2020 (incubation period), 6th July 2020 (chick provisioning period), and 20th July 2020 (fledging period). The only record of a Lesser Black-backed Gull possibly foraging in tidal habitats in Ballyteigue Bay was of a single bird in subtidal water in the uppermost section of the bay. Therefore, it can be concluded that intertidal habitat in Ballyteigue Bay is unlikely to be a significant foraging resource for Lesser Black-backed Gulls from the Saltee Islands SPA (004002) colony.

Fish
In the case of fish, no conclusions were made in relation to fish as no fish are designated as conservation features in the Ballyteigue SAC.

I. Uncertainty for SPAs - Grey Plover, Light-bellied Brent Geese, other species.
The submission comments that it is clear from the SPA report that this aquaculture activity could adversely impact on a number of SCIs of nearby SPAs. There is likely to be a measurable displacement impact to Grey Plover, and this may be significant when potential displacement due to disturbance is factored. Light-bellied Brent Geese and Wigeon are similarly at risk.
Impacts to other species are discounted.

Response:

The worst-case scenario was adopted to account for the potential that SCIs may gather along the channel proximal to the licence areas. In addition, it is assumed that the aquaculture sites are fully occupied by trestles, which is highly unlikely to occur in reality.

For Grey Plover, the worst-case scenario impact was predicted as measurable. Other relevant considerations in addition to this are the positive short and long-term population trends in the Ballyteigue Burrow SPA (38% and 59% respectively) relative to the overall negative trend of the national population of Grey Plover (-54%). These lines of evidence provide a good indication that this SCI will not be significantly affected by the proposed aquaculture activities.

In the case of Light-bellied Brent Geese the worst-case scenario impact was predicted to be significant, but it is essential to note that:

- This is highly likely to be an over-estimation of impact;
- That the population trend for this species in Ireland in the long-term has been strongly positive (96% increase); and
- the population has increased by 35% at Ballyteigue Burrow SPA in the last decade.

Recent studies on Carlingford Lough in 2020 on behalf of the Marine Institute, further explored the relationship between Light-bellied Brent geese and oyster trestles, and concluded that:

- Light-bellied Brent Geese using the areas are well habituated to aquaculture activity and generally undisturbed by it;
- 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 who exploit the fact that green algae grown on the oysters).

This evidence gives further confidence that Light-bellied Brent Geese will not be negatively affected by the proposed aquaculture activity.

Bird species have been shown by some studies to develop a level of tolerance, to become accustomed to aquaculture activities and even to develop positive foraging behaviours among trestles (in the case of Light-bellied Brent Geese).

In relation to Golden Plover, Lapwing, Black-tailed Godwit and Bar-tailed Godwit the statement in paragraph 10.6 of the SPA AA report is incorrect. The analyses found displacement impacts to potentially be negligible for the Golden Plover and not significant for Lapwing, Black-tailed Godwit and Bar-tailed Godwit. This error has been acknowledged and corrected.

12. Summary of Mitigation Measures and Management Actions that are being implemented as a consequence of the findings

Taking account of the recommendations of the Appropriate Assessment, as well as additional scientific/technical observations, the following measures are being taken in relation to licensing in SAC/SPA:

- A licence condition will require full implementation of the measures set out in the draft Marine Aquaculture Code of Practice prepared by Invasive Species Ireland (e.g. http://invasivespeciesireland.come/cops/aquaculture).
- The movement of stock in and out of the SAC/SPA should adhere to relevant fish health legislation.
- A licence condition requiring strict adherence to the identified access routes over intertidal habitat will apply to any licences issued in order to minimise habitat disturbance.
- A licence condition will require that all operators shall adhere to any recommendations that may arise in order to avoid adverse impacts on the integrity of the SAC/SPA.
- The source of seed and any changes to the source of seed are to be approved by the Department of Agriculture, Food and the Marine in advance.
- The Aquaculture and Foreshore Licences contain terms and conditions which reflect the environmental protection required under EU and National law.

13. Conclusion

13.1 Having considered the conclusions and recommendations of the Appropriate Assessment process, the Licensing Authority is satisfied that, from a Natura 2000 perspective, a decision can be taken in favour of licensing proposed aquaculture operations in Ballyteigue Burrow SAC/SPA, subject to the mitigation measures referenced above. Accordingly, the Licensing Authority is satisfied that the proposed licensing of aquaculture in the Bay is not likely to significantly and adversely affect the integrity of Ballyteigue Burrow SAC/SPA.

November 2022

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

T03/095A

AQUACULTURE LICENCE

AQUACULTURE MARINE SHELLFISH INTER/SUB-TIDAL (Structures e.g. trestles)

Johnny Neville & Jeannette Brugman

[redacted]

TABLE OF CONTENTS

T03/095A

AQUACULTURE LICENCE NO. XXXX

GRANTED UNDER THE FISHERIES (AMENDMENT) ACT, 1997 (NO. 23 of 1997)

The Minister for Agriculture, Food and the Marine (hereinafter referred to as the "Minister"), in exercise of the powers conferred on him by the Fisheries (Amendment) Act, 1997 (No. 23 of 1997) (hereinafter referred to as the "Act"), grants an Aquaculture Licence to:

Johnny Neville & Jeanette Brugman

[redacted]

(hereinafter referred to as the "Licensee") for the cultivation of Pacific Oysters on a site in the coastal lagoon of Ballyteigue Burrow in Ballyteigue Bay, Co. Wexford as specified in Schedule 1 attached (numbered T03/95A) and indicated by a red line on the attached map in accordance with the plans and drawing(s) in Schedule 2 attached as approved of by the Minister, subject to the Act and Regulations made under the Act and to the terms and conditions set out in the attached pages.

This Aquaculture Licence shall remain in force for a maximum period of ten (10) years provided for so long as the Foreshore Licence granted, under Section 3(1) of the Foreshore Act 1933 (No.12 of 1933) in respect of the same site for the purpose referred to is in force.

A person authorised under Section 15(1) of the Ministers and Secretaries Act 1924 to authenticate the Seal of the Minister for Agriculture, Food and the Marine.

TERMS AND CONDITIONS APPLYING TO THIS AQUACULTURE LICENCE

1. **Licensed Area**

1.1 The area specified in ***Schedule 1*** attached (1.6459 hectares) (labelled T03/095A) and outlined in red on the map(s) in ***Schedule 1***.

1.2 The co-ordinates for the site are based on the Irish National Grid Co-ordinate System.

2. **Species, Cultivation and Method Licensed**

2.1. Species to be farmed: Pacific Oysters (*Crassostrea Gigas*)

2.2. Method: Bag and Trestle subject to the stocking and/or deployment limits as may be specified in ***Schedule 4*** attached.

2.3. The introduction of seed to the site shall comply with the legislation relating to fish health.

3. **Infrastructure and Site Management**

Indemnity

3.1. The Licensee shall indemnify and keep indemnified the State, the Minister, his officers, servants or agents against all actions, loss, damage, costs, expenses and any demands or claims howsoever arising in connection with the construction, maintenance or use of any structures, apparatus, equipment or any other thing used in connection with the licensed operation in the licensed area or in the exercise of the rights granted under the licence and the Licensee shall take such steps as the Minister may specify in order to ensure compliance with this condition.

3.2. The duty of maintenance and responsibility for the upkeep and safety of the site rests with the Licensee.

Design, Arrangement and Maintenance of Structures

3.3. The Licensee shall ensure that the equipment (including all flotation, mooring and anchoring devices) is placed within the licensed area only. Storage or placement of equipment or stock on the foreshore or seashore outside the licensed area is not permitted under any circumstances.

3.4. The Minister may direct as to the deployment of apparatus and flotation devices and their colour, within the site.

3.5. The Licensee shall obtain the prior approval of the Minister to any proposed material change to the plan/drawings or equipment as approved being used during the licensing period as specified in ***Schedule 2*** attached.

3.6. The Licensee shall at all times for the duration of the licence keep all equipment used for the purposes of the licensed operations in a good and proper state of repair and condition to the satisfaction of the Minister or other competent State authority.

3.7. The Licensee shall ensure that each trestle grouping/pole and all flotation and mooring devices in the licensed area legibly bear the Aquaculture Licence Number in an indelible weatherproof format.

Operational Conduct

3.8. The Licensee shall conduct its operations in a safe manner and with regard for other persons in the area and the environment and shall ensure that the operations are not injurious to adjacent lands or the public interest (including the environment) and do not interfere with navigation or other lawful activity in the vicinity of the licensed area, and shall comply with any lawful directions issued by the Minister and any other competent State authority in that regard.

3.9. The Licensee shall ensure that any aquaculture or other activity conducted under this licence does not adversely affect the integrity of the Natura 2000 network (if applicable) through the deterioration of natural habitats and the habitats of species and/or through disturbance of the species for which the areas have been designated in so far as such a disturbance may be significant in relation to the stated conservation objectives of the site concerned.

3.10. The Licensee shall ensure that tractors (or other vehicles) accessing and leaving the site adhere strictly to approved access and egress routes as specified in Schedule 1 attached. Full compliance is required in order to minimise disturbance to the foreshore and habitat. All drivers shall be made fully aware of the specific route approved.

3.11. The Licensee shall ensure that journeys back and forth on the approved access and egress routes are kept to the minimum necessary.

3.12. The Licensee shall ensure that all tractors/towing vehicles to be used for aquaculture purposes on the foreshore are fitted with efficient exhaust/silencers/mufflers and that vibration noise from tractors and machinery is kept to a minimum.

3.13. The Licensee shall ensure that all vehicles are properly maintained so as to prevent leakages of oils, fuels, grease etc.

3.14. The Licensee shall ensure that all vehicles move slowly at all times on the foreshore, that engine revolution is kept to a minimum and that engines are turned off when not in use.

3.15. The Licensee shall ensure that if more than one vehicle is needed on the shore that all vehicles, where possible, arrive and depart together.

3.16. The Licensee shall so organise its operations in consultation with other licensed operators to ensure that the total number of vehicles and harvesting machines on the foreshore on any one day is kept to the minimum necessary.

3.17. The Licensee shall ensure that when carrying out aquaculture work on the foreshore, dogs owned or under the control of the Licensee shall not be present, in order to minimise disturbance to the birdlife in the area.

3.18. The Licensee shall ensure that best practice is employed to keep structures and netting clean at all times and any biofouling by alien invasive species shall be removed and disposed of in a responsible manner. In particular, in 'Natura 2000' sites care must be taken to ensure that any biofouling by alien invasive species will not pose a risk to the conservation features of the site. Measures to be undertaken are set out in the draft Marine Code of Practice prepared by Invasive Species Ireland and can be found on the web site at: **http://invasivespeciesireland.com/**.

Waste Management

3.19. The Licensee shall ensure that the licensed and adjoining area shall be kept clear of all redundant structures (including apparatus, equipment and/or uncontained stock), waste products and operational litter or debris and shall make provision for the prompt removal and proper disposal of such material. If the Licensee refuses or fails to do so, the Minister may cause the said structures, apparatus, equipment or other thing to be removed and the licensed area restored and shall be entitled to recover from the Licensee as a simple contract debt in any court of competent jurisdiction all costs and expenses incurred by him in connection with the removal and restoration.

Inspection

3.20. The licensed area and any equipment, structure, thing, or premises wherever situated used in connection with operations carried out in the licensed area shall be open for inspection at any time by an authorised person (within the meaning of Section 292 of the Fisheries (Consolidation) Act 1959) (No. 14 of 1959) (as amended by Fisheries Act 1980) (No. 1 of 1980), a Sea Fisheries Protection Officer (within the meaning of Sea Fisheries and Maritime Jurisdiction Act 2006) (No. 8 of 2006) or any other person appointed in that regard by the Minister or other competent State authority.

3.21. The Licensee shall give all reasonable assistance to an authorised officer or a Sea Fisheries Protection Officer or any person duly appointed by any competent State authority to enable the person or officer enter, inspect, examine, measure and test the licensed area and any equipment, structure, thing or premises used in connection with the operations carried out in the licensed area and to take whatever samples may be deemed appropriate by that person or officer.

3.22. The Licensee shall keep and maintain in the State for inspection on demand by the Minister or a competent State authority, at all times, records of all operations including compliance monitoring and any required follow up action. These records

shall be produced by the Licensee on demand by the Minister or other competent State authority and in any event not later than 24 hours from the making of that demand.

3.23. The Licensee shall furnish to the Minister or other competent State authority in the form and at the intervals determined by the Minister or other competent State authority, such information relating to the licensed area as may be required to determine compliance by the Licensee with the terms of this licence and applicable legislation.

4. **Navigation and Safety**

4.1. The Licensee shall ensure that Statutory Sanction from the Commissioners of Irish Lights is in place prior to the commencement of operations, regarding all aids to navigation. Statutory Sanction forms are available at http://www.cil.ie/safety-navigation/statutory-sanction.aspx.

4.2. The Licensee shall ensure that the site is marked in accordance with the requirements of both the Marine Survey Office and the Commissioners of Irish Lights as specified in ***Schedule 3***.
The navigation marking detail is as illustrated in ***Schedule 3***.

4.3. The Licensee shall comply with any specification requirement relating to navigational aids, flotation and mooring devices, supporting/marking posts/poles, as required by the Minister or any other competent State authority.

4.4. The Minister's determination in respect of this licence is conditional upon immediate full compliance by the Licensee in respect of all requirements and conditions which are imposed under the relevant legal provisions applicable to the Marine Survey Office.

4.5. Prior to commencement of operation the Licensee shall inform the UK Hydrographic Office at Taunton, of the location and nature of the site in order that charts and nautical publications can be updated. Tel: 00 44 1823322352 Email sdr@ukho.gov.uk and the Licensee shall submit proof to the Department within 14 days of the date of this licence that the UK Hydrographic Office has been so informed.

5. **Monitoring**

5.1. The Licensee shall undertake and/or partake in monitoring, in particular environmental monitoring, as directed by the Minister or other competent State authority.

6. **Fish Health / Mortality Management / Movement of Fish**

Fish Health Regulations

6.1. Before the site is stocked the Licensee shall ensure that a Fish Health Authorisation under statutory provisions giving effect to Council Directive No. 2006/88/EC, as amended, or any other legislative act that replaces that Directive on animal health

requirements for aquaculture animals and their products, and on the prevention and control of certain diseases in aquatic animals, is in place.

Disposal of Mortalities

6.2. The Licensee shall dispose of dead fish in accordance with the applicable statutory provisions and requirements.

Movement of Fish

6.3. The Licensee shall comply with any regulations in force governing the movement of fish.

7. Duration, Cessation, Review, Revocation, Amendment, Assignment

Duration, Cessation

7.1. This Licence shall remain in force as long as the accompanying Foreshore Licence remains in force.

Review

7.2. The Licensee may apply for a review of the licence at any time after the expiration of three years since the granting of the licence or its last renewal in accordance with section 70 of the Act.

Revocation, Amendment

7.3. Subject to the Act, the Minister may revoke or amend the licence if:–

(a) he considers that it is in the public interest to do so,
(b) he is satisfied that there has been a breach of any condition specified in the licence e.g., operating outside the licensed area,
(c) the licensed area to which the licence relates is not being properly maintained,
(d) water quality results or general performance in the licensed area do not meet the standards set by the Minister or the competent State authority.

Assignment

7.4. This Licence shall not be assigned without the prior written consent of the Minister and may not be assigned during the period of three years, dating from the commencement or renewal of this licence, unless the Minister determines that it may be assigned under condition 7(5) or the condition set out in 7(6) applies.

7.5. A Licensee, who considers that there are exceptional reasons for the assignment of the Licence during the first three years, may apply to the Minister, giving those reasons, for a determination that the Licence may be assigned. The Minister may, at his discretion, having considered the reasons given by the Licensee, determine whether or not the Licence may be assigned. The determination of the Minister in this regard is final.

7.6. Where the Licensee is a company (within the meaning of the Companies Acts) and goes into Liquidation (within the meaning of the Companies Acts) in the first three years dating from the commencement of the licence, the Liquidator shall, with the

consent of the Minister, be entitled to assign the licence to enable him to discharge any debts of the liquidated company.

7.7. This licence is issued subject to any order that the High Court may make under section 218 of the Companies Act 1963 or otherwise with regard to the assignment of this licence.

8. **Fees**

8.1. The Licensee shall pay to the Minister an annual aquaculture licence fee in accordance with the Aquaculture (Licence Application and Licence Fees) Regulations 1998(S.I. No. 270/1998) as amended by the Aquaculture (Licence Fees) Regulations 2000 (S.I. No. 282 of 2000) or an amount payable under Regulations made under section 64 of the Act.

8.2. The Minister may revoke the licence where the Licensee fails to pay the aquaculture licence fees on demand.

9. **General Terms and Conditions**

9.1. The Licensee shall at all times comply with all laws and protocols applicable to aquaculture operations.

9.2. Any reference to a statute or an act of an institution of the European Union (whether specifically named or not) includes any amendments or re-enactments in force and all statutory instruments, orders, notices, regulations, directions, bye-laws, certificates, permissions and plans made, issued or given effect under such legislation shall remain valid.

9.3. If any condition or part of a condition in this licence is held to be illegal or unenforceable in whole or in part, such condition shall be deemed not to form part of this licence but the enforceability of the remainder of this licence is not affected.

9.4. The Licensee shall at all times hold all necessary licences, consents, permissions, permits or authorisations associated with any activities of the Licensee in connection with the licensed area.

Notification

9.5. Without prejudice to any other remedy under the licence or in law, if the Minister is of the view that the Licensee is in breach of any obligation under this licence, the Minister may, by notice in writing, require that the Licensee rectifies such breach, within such time as is specified by the Minister. The Licensee shall comply with any direction of the Minister within the time specified in the notice.

9.6. Any notice to be given by the Minister may be transmitted through the Post Office addressed to the Licensee at the last known address of the Licensee.

9.7. The Licensee shall notify the Minister within 7 days of any change in the Licensee's address, telephone, e-mail or facsimile number.

Tax Clearance Certificate

9.8. During the term of this licence the Licensee shall provide to the Minister on demand a current tax clearance certificate.

Companies and Co-operatives

9.9. In the event of the licence being granted to a company (within the meaning of the Companies Acts), control of the licensee company shall not change in any respect from the control of the company as existed on the date that the licence was granted so long as this licence shall remain in force save with the prior written permission of the Minister.

9.10. In the event of a licence being granted to a company that has been incorporated outside this State, the licensee company shall register with the Companies Registration Office within one month of the establishment of a place of business in the State or alternatively, within one month of the establishment of a branch of the said company in the State and the licensee company shall submit proof to the Department within 14 days of the end of that month that it has been so registered.

9.11. Where the licensee is a company within the meaning of the Companies Acts, the licensee company shall ensure that it does not become dissolved within the meaning of the Companies Acts for so long as this licence shall remain in force.

9.12. In the event of the licence being granted to a society (within the meaning of section 2 of the Industrial and Provident Societies (Amendment) Act 1978 (No.23 of 1978) the following conditions shall apply:-

9.12.1. The rules relating to membership of the society shall enable any resident of the State to become a member of it where the resident fulfils all the conditions laid down by the society for membership of it and the rules shall not lay down different conditions for different classes of people;

9.12.2. The rules relating to the society as submitted to the Minister before the grant of this licence shall not be amended subsequently other than with the written permission of the Minister; and

9.12.3. The Minister may, if he considers it necessary in the interests of good management of the licensed area, direct that an amendment may be made to the rules of the society, and the Licensee shall amend the rules in accordance with that direction.

Clearance of Site

9.13. The Licensee shall, at the Licensee's own expense, if so required by written notice from the Minister and within three weeks after receipt of such notice or on cessation of the licence for any other cause, remove the structures, apparatus, equipment or any other thing to the satisfaction of the Minister. If the Licensee refuses or fails to do so, the Minister may cause the said structures, apparatus, equipment or other thing to be removed and the licensed area restored and shall be entitled to recover from the Licensee as a simple contract debt in any court of competent jurisdiction

all costs and expenses incurred by him in connection with the removal and restoration. The Licensee shall take such steps as the Minister may specify in order to secure compliance with this condition.

SCHEDULE 1

Schedule 1 contains:

- **the co-ordinates of the site based on the Irish National Grid Co-ordinate System and the area of the site**
- **site map(s) which also shows the access/egress route to and from the site**
- **a chart showing the location of the site in relation to the surrounding area.**
- **access to site**

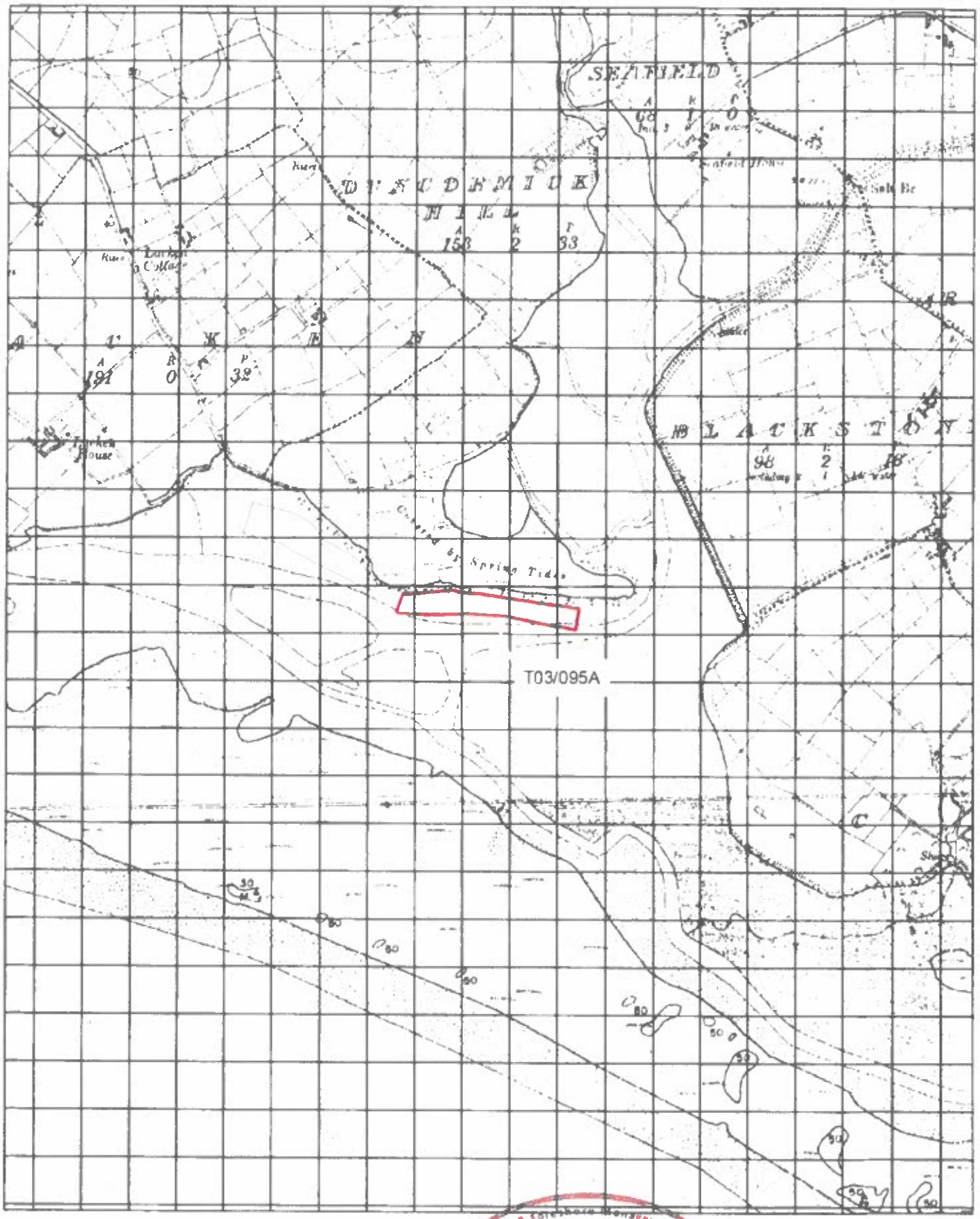
1 NO. SITE AT BANNOW BAY CO.WEXFORD

Co-ordinates & Area

Site T03/095A (1.6459 Ha)

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

291775, 107684 to Irish National Grid Reference point
201787, 107683 to Irish National Grid Reference point
291846, 107689 to Irish National Grid Reference point
291879, 107692 to Irish National Grid Reference point
291902, 107687 to Irish National Grid Reference point
291933, 107685 to Irish National Grid Reference point
292146, 107654 to Irish National Grid Reference point
292138, 107609 to Irish National Grid Reference point
291995, 107636 to Irish National Grid Reference point
291911, 107642 to Irish National Grid Reference point
291841, 107641 to Irish National Grid Reference point
291777, 107643 to Irish National Grid Reference point
291760, 107644 to the first mentioned point.



Aqua Culture Sites

<all other values>

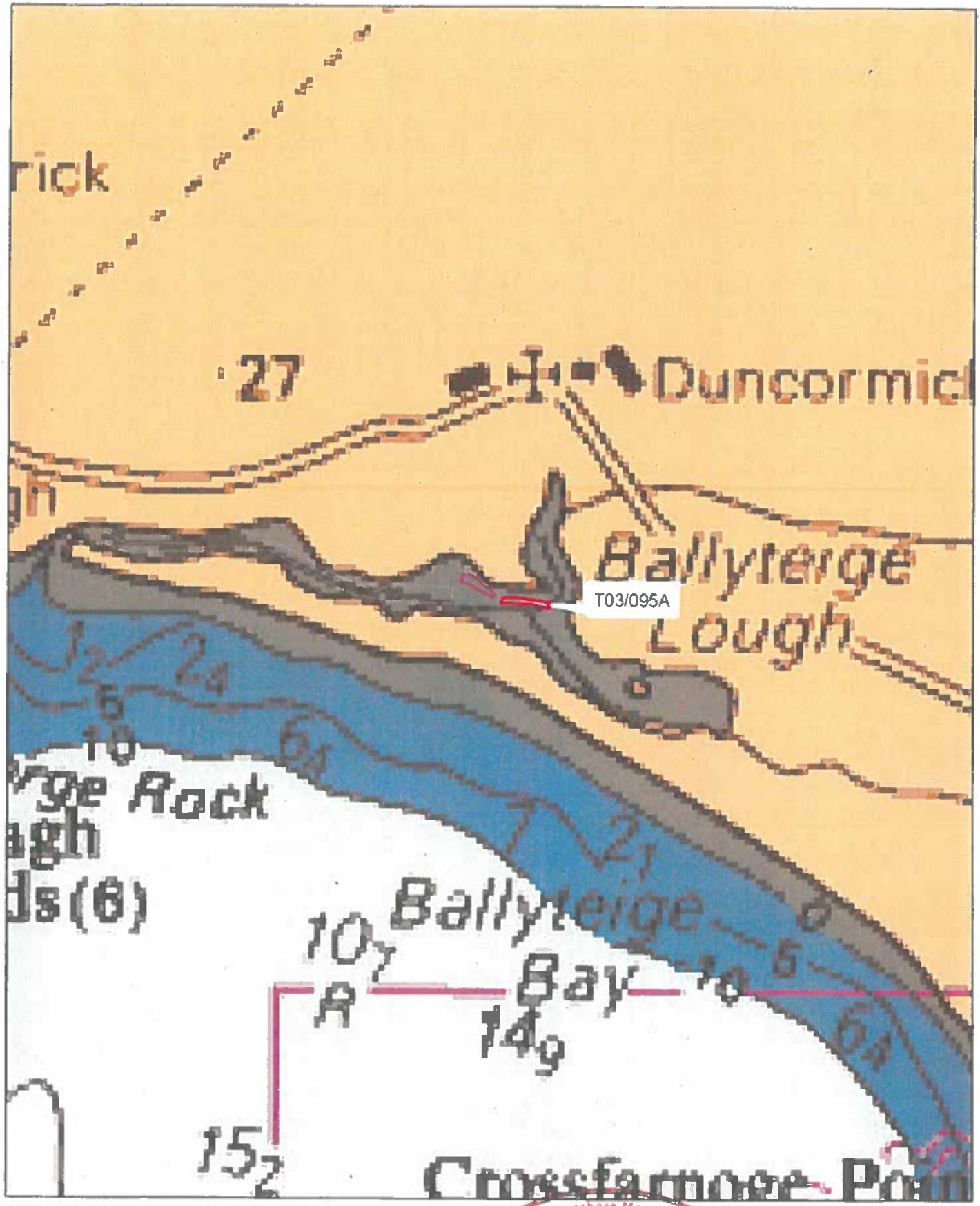
Site_Status

- Application
- Lapsed
- Licensed
- Refused
- Renewal
- Revoked
- Surrendered
- Withdrawn
- 100 Meter Reference Grid

1:10,560

Sites highlighted in red denotes Application

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



Aqua Culture Sites
<all other values>

Site_Status
- Application
- Lapsed
- Licensed
- Refused
- Renewal
- Revoked
- Surrendered
- Withdrawn

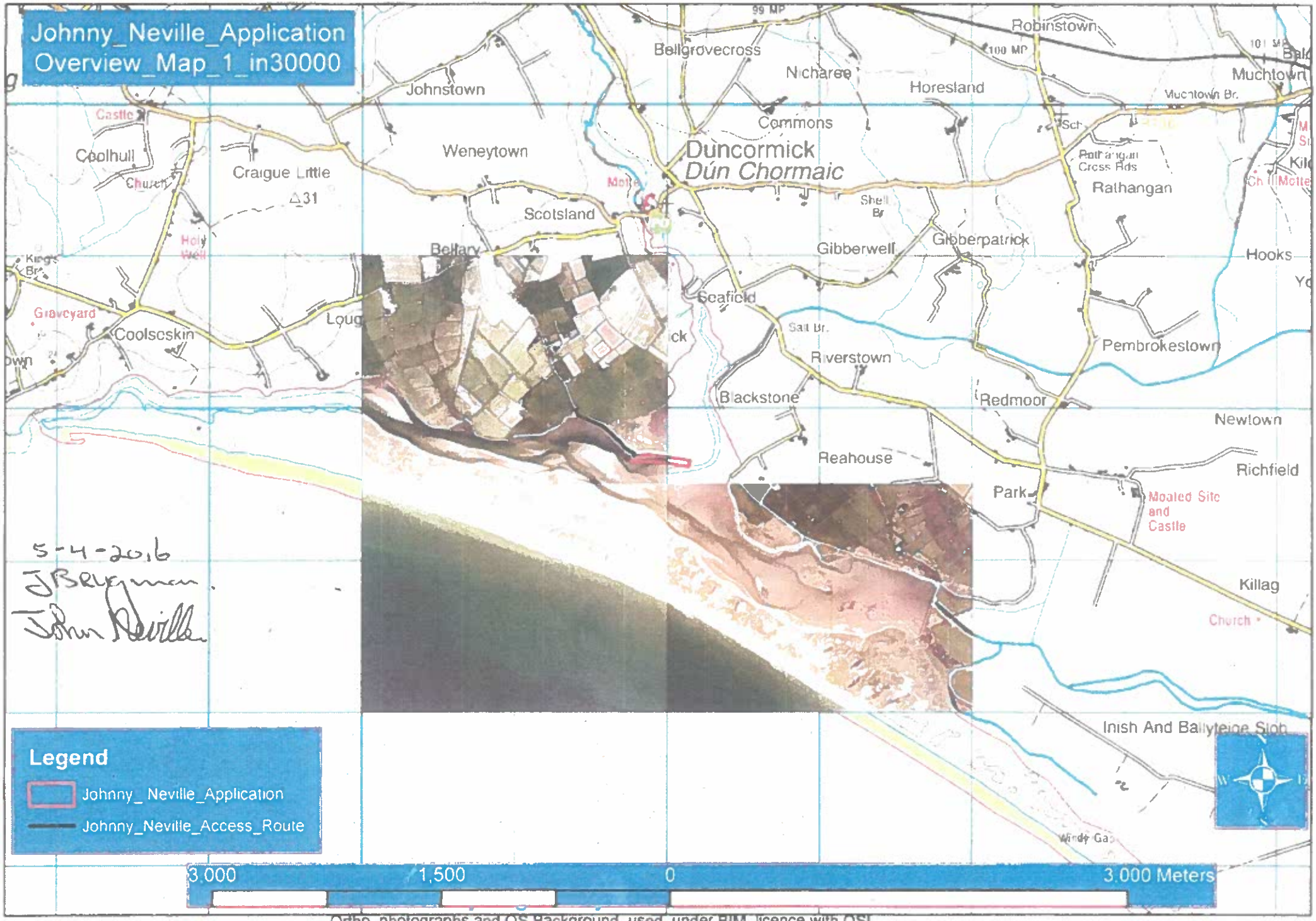
1:40,000

Sites highlighted in red denotes Application.

Part of Admiralty Chart No =1410-0
Not to be used for Navigation

Agriculture & Foreshore Management Division
17 MAY 2016

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



Ortho_photographs and OS Background_used_under BIM_licence with OSI

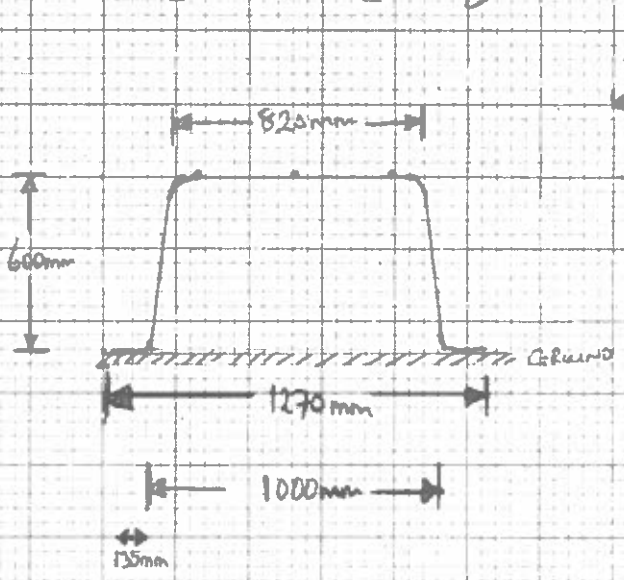
SCHEDULE 2

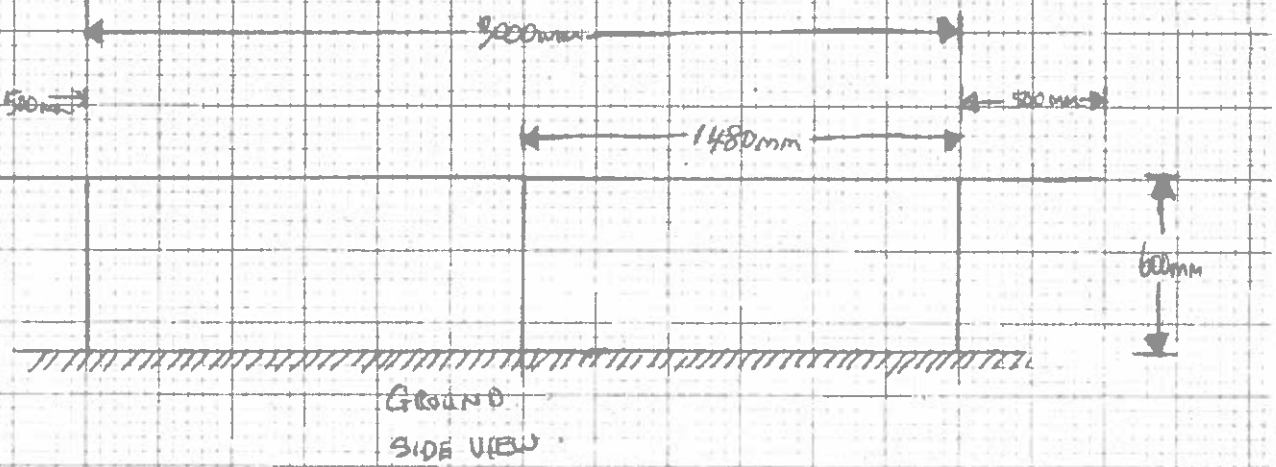
Schedule 2 contains:

- **the approved plans and drawing(s)**

STH-2016 John Neville

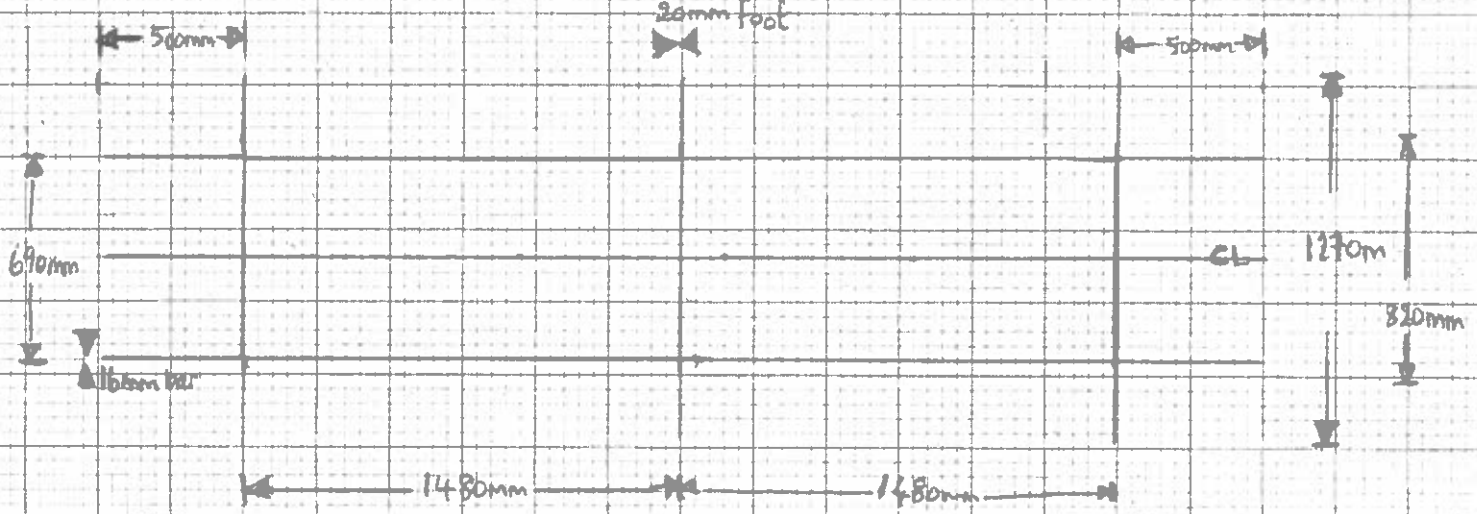
END VIEW



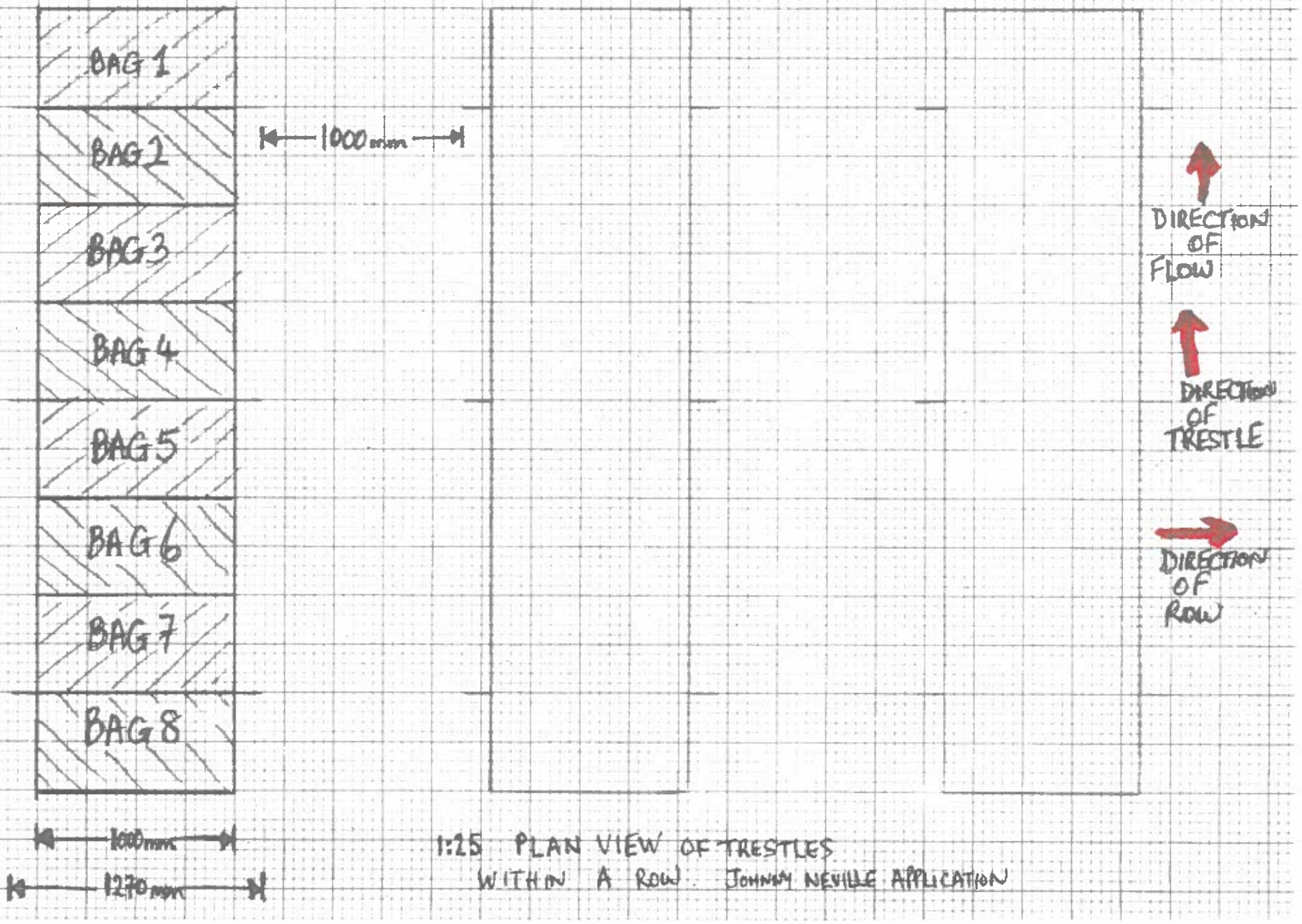


SIDE VIEW

1:25 Views of Trestle to be used by Johnny Neville and Jeannette Brugman IN BALLYTEIGUE BAY.
20mm leg diameter
16mm diam top bars



PLAN VIEW



1:25 PLAN VIEW OF TRESTLES WITHIN A ROW. JOHNNY NEVILLE APPLICATION

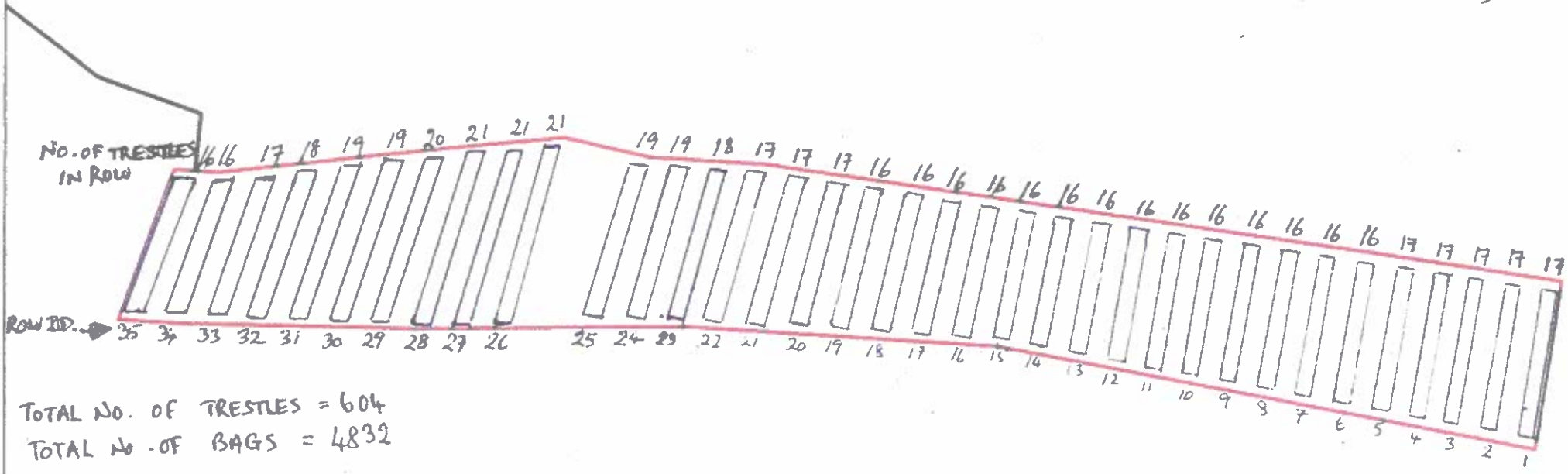
Johnny_Neville_Application Site_Layout_Map_1_in1500

Distance Between Rows = 6m

Gap Between Rows 25 + 26 For maneuvering trestles.

5-4-2016

John Neville.



TOTAL NO. OF TRESTLES = 604

TOTAL NO. OF BAGS = 4832

Legend

- Johnny_ Neville_Application
- Johnny_Neville_Access_Route

150 75 0 150 Meters

SCHEDULE 3

Schedule 3 contains:

- **requirements of the MSO and/or CIL**
- **the navigation marking detail.**

- The Licensee is to apply to the Commissioners of Irish Lights for sanction to establish the following marks: four posts, projecting two meters above sea level at highest astronomical tide and with a topmark of a diagonal St.Andrews cross, painted yellow, shall be erected at the four corners of the development.

- The Licensee shall request approval for the size and specification of aids to navigation from the Marine Survey Office and must be agreed in advance with the Commissioners of Irish Lights.

- 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.

SCHEDULE 4

Schedule 4 contains conditions specific to this licence:

- **the stocking and/or equipment deployment conditions (if applicable).**

- The Licensee shall adhere strictly to the licenced/approved designated access route.

- The Licensee shall ensure at the initial source of halfgrown oysters and other sources which may be used in the future must be approved by the Department of Agriculture, Food and the Marine.

- Triploid seed must only be used.

- The Licensee shall, prior to commencement of operations, draw up a Contingency Plan, for the approval of the Department of Agriculture, Food and the Marine, which will identify methods for the removal from the environment of any invasive non-native species introduced as a result of operations at the site. If such an event occurs, the Contingency Plan shall be implemented immediately.

- Compliance with the latest guidance generated by BIM in relation to invasive marine species.

- To manage the risk of introduction of alien species to the Qualifying Interest habitats and associated constituent community types, all stock movement in the bay must strictly adhere to relevant legislation and follow best practice guidelines.

- The Licensee shall adhere to any existing or future recommendations that may arise in order to avoid adverse impacts on the integrity of the Ballyteigue Burrow SAC and Ballyteigue Burrow SPA /or adjacent SACs and SPA.

- No excess trestles shall be stored on the site. Unused equipment must be removed from the site and stored at a suitable location above the high water mark.

Marine Institute
Foraí na Mara

Rinville,
Oranmore,
Co. Galway

Deirdre O'Flynn
Aquaculture and Foreshore Management Division
Department of Agriculture, Food and the Marine
Clogheen,
Clonakilty
Co. Cork.

Advice on Aquaculture Licence Application

Applicant	Johnny Neville and Jeannette Brugman
Application type	New
Site Reference No	T03/095A
Species	Pacific Oster (*C. gigas*) using bags on trestles
Site Status	Located within the Ballyteigue Burrow SAC Located within the Ballyteigue Burrow SPA

Dear Deirdre

This is an application for an aquaculture licence for the cultivation of the Pacific oyster (*Crassostrea gigas*) using bags on trestles in the intertidal zone at Site T03/095A on the foreshore Ballyteigue Bay, Co. Wexford. The area of foreshore at Site T03/095A is 1.65ha.

The site is located within the Ballyteigue Bay Bivalve molluscan production area.

Under Annex II of EU Regulation 854/2004 oysters in Ballyteigue Bay currently has a "B" Classification[1].

The site is not located within any Shellfish Growing Water. It is recommended that the implications of licencing sites that are not located within a designated Shellfish Growing Waters Area should be fully considered by DAFM as part of the licence determination process.

The cultivation of shellfish at this site will likely produce faeces and pseudofaeces. On the basis of open nature of the culture system and the relatively low density of oysters held in the bags, it is the view of the Marine Institute that organic matter be unlikely to accumulate. The impact of this culture method on the majority of community types is considered not significant.

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.

Site T03/095A is located within the Ballyteigue Burrow SAC (Site Code 001190) and SPA (Site Code 004020). We note the findings of the Appropriate Assessments reports and the Department's draft Natura

[1] https://www.sfpa.ie/What-We-Do/Molluscan-Shellfish/Classified-Areas

conclusion statement in regard to the impacts on the Conservation Objectives within the aforementioned Natura sites.

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 report and any proposed mitigation measures set out in the Department's draft Natura Conclusion Statement.

In relation to the proposed production of *C. gigas* at site T03/095A, the MI recommend that, in the event of a positive licence determination, any conclusions and mitigation measures set out in the draft Natura Conclusion statement are implemented in full.

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 half-grown oysters 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.

The Marine Institute recommends that oyster culture utilise triploid oysters only in order to mitigate the risk of the reproduction of the Pacific oyster in the bay.

It is 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.

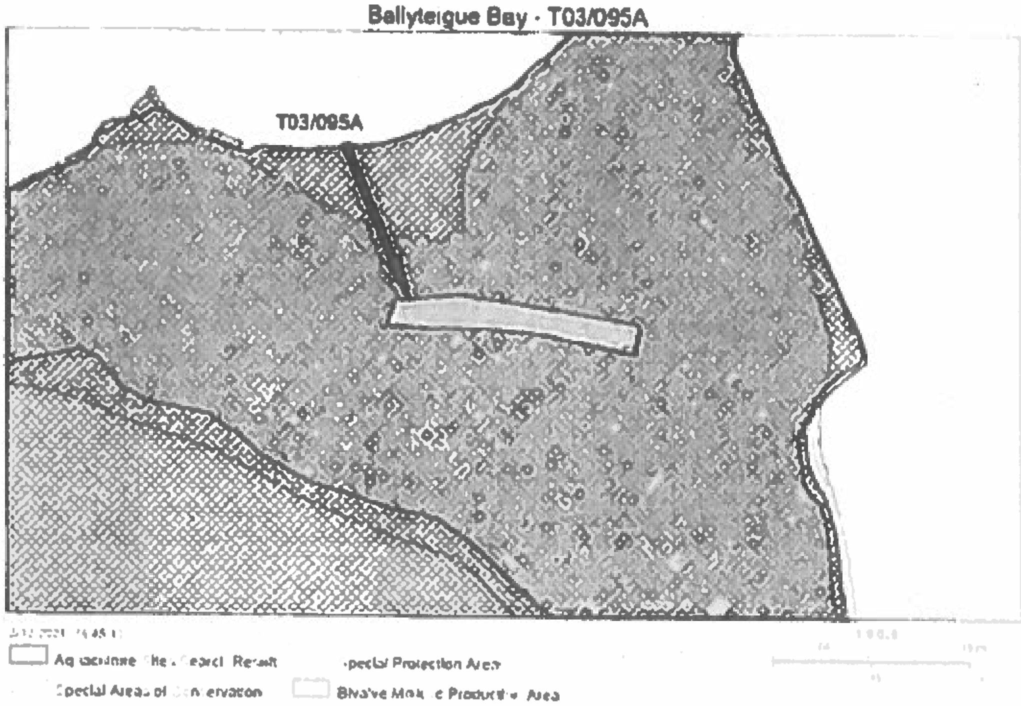
Kind regards,

Francis O'B

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

Date: 6th December, 2021

Ballyteigue Bay - T03/095A



Commissioners of IRISH LIGHTS | Navigation and Maritime Services

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info@irishlights.ie
www.irishlights.ie

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

Your Reference	**T03/095**
Our Reference	**LA:0064 7175**
Date	**30/05/2016**

LL: LA0064 7175
Applicant: Johnny Neville & Jeannette Brugman
Site: Ballyteigue Bay, Co Wexford

Dear Ms McCarthy,

Thank you for your letter advising us of this application

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. Harry Duggan
for Director of Operations and Navigation

Aquaculture & Foreshore Management Division
30 MAY 2016
Dept of Agriculture Food & the Marine

cc Capt N. Forde Dept of Transport Tourism & Sport, Marine Survey Office

An Taisce
The National Trust for Ireland

Department of Agriculture, Food & the Marine,
Aquaculture and Foreshore Management Division,

National Seafood Centre,

Clonakilty,

Co. Cork.

14th December 2021

Submission pursuant to the provisions of Section 10 of the Aquaculture (Licence Application) Regulations, 1998 (SI No. 236 of 1998)

A Chara,

Thank you for referring this notification to An Taisce in accordance with Section 10 of the Aquaculture (Licence Application) Regulations, 1998 (SI No 236 of 1998).

An Taisce has reviewed the applications T03/038 & T03/095 in Ballyteigue Bay in Wexford. We would like to raise the following issues

1. Uncertainty for SPAs

It is clear from the SPA report that this aquaculture activity could adversely impact on a number of SCIs of nearby SPAs. Firstly, there are significant risks to Grey Plover, as indicated in Section 9.1 of the AA Conclusion Statement:

"9.1 There is likely to be a measurable displacement impact to Grey Plover, and this may be significant when potential displacement due to disturbance is factored."

Light Bellied Brent Geese and Wigeon are similarly at risk (section 9.2 of AA Conclusion Statement):

> *"9.2 The predicted displacement impacts to Light-bellied Brent Goose (6.7-7%) and Wigeon (6.7-7%) are significant"*

Impacts to other species are discounted thus:

> *"9.4 The predicted displacement impacts to Shelduck, Lapwing, Curlew, Black-tailed Godwit, Bar-tailed Godwit, Dunlin and Redshank are not significant. The predicted displacement impact to Golden Plover is negligible. The limited data available for assessment means that there is a moderate level of uncertainty about these predictions."*

We would observe that there are a striking number of references to uncertainty throughout the SPA report, and in the conclusions (section 7), some of the latter we will now quote:

> *"**7.27** The predicted displacement impacts to Light-bellied Brent Goose and Wigeon are significant. However, there is a **high level of uncertainty** about this prediction due to the variable nature of their responses to oyster trestle cultivation, and the likely significant overestimation of subsite occupancy levels in the displacement calculations.*
>
> *7.28 The predicted displacement impacts to all the other species are either negligible or not significant. The limited data that was available for this assessment means that there is a **moderate level of uncertainty** about these predictions (see Chapter 2). However, we have not identified any specific factors that would suggest a significant underestimation of displacement impacts for any of these species. For two of the species (Curlew and Redshank) there may be no net displacement impact due to the variable nature of their response to oyster trestle cultivation. "*

And again, in Section 10 in regard to other SPA SCI species:

> ***Light-bellied Brent Goose 10.3** There is potential for full occupation of the aquaculture sites to cause significant displacement impacts to this species. However, there is a **high level of uncertainty** about the likelihood of this impact as this species may not be adversely affected by oyster trestle cultivation.*

Wigeon 10.14 *There is potential for full occupation of the aquaculture sites to cause significant displacement impacts to this species within the Ballyteige Burrow SPA. However, there is a* ***high level of uncertainty*** *about the likelihood of this impact as this species may not be adversely affected by oyster trestle cultivation*

10.6 *This assessment for the Ballyteige Burrow SPA concluded that there is potential for full occupation of the aquaculture sites to cause significant (Light-bellied Brent Goose and Grey Plover), or the potential for such impacts* ***cannot be discounted beyond reasonable scientific doubt*** *(Golden Plover, Lapwing, Black-tailed Godwit and Bar-tailed Godwit).*

10.9 *The calculated displacement impacts within the Ballyteige Burrow SPA from full occupation of the aquaculture sites would be non-significant but measurable. Given the uncertainty about the assessment, due to the limited data, the potential for significant displacement impacts within the Ballyteige Burrow SPA* ***cannot be discounted beyond reasonable scientific doubt.***

In many of these instances, the applicant is seeking to rely on this very uncertainty to cast doubt on their finding that there may be significant displacement of a species. The precautionary principle should apply in all instances, and the worst-case scenario should be assumed unless it can be robustly discounted.

In regard to certainty, the law is very clear in regard to the requirements for Appropriate Assessment. It is now very well established in law that approval can only be granted for plans and projects when it has been established beyond all reasonable scientific doubt that the subject proposal will not adversely impact any Natura 2000 sites. In Case C-258/11, Sweetman & Others v An Bord Pleanála & Others, it was held that:

> *"authorisation for a plan or project ....may therefore be given only on condition that the competent authorities ....are certain that the plan or project will not have lasting adverse effects on the integrity of the site. That is so where* ***no reasonable scientific doubt remains*** *as to the absence of such effects"* [emphasis added].

In regard to the attempted reliance on uncertainty of the magnitude of impact to cast doubt on the adverse impact conclusion, there is a requirement for complete, precise and definitive

findings. If they cannot be provided, this nullifies the Appropriate Assessment process, as per recent court rulings. In Kelly v An Bord Pleanála & Ors. [2013 No 802 J.R.], with reference to Commission v Spain c-404/09, the High Court held in para 36 that the competent authority must carry out an AA for a plan or project in light of the best scientific knowledge in the field and that the final determination of the competent authority must include complete, precise and definitive findings. The case repeated the conclusion of CJEU at para. 44 in Case C-258/11, namely that an AA:

> *"cannot have lacunae and must contain complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt."*

There are no adequate mitigation measures provided to offset any of the identified potential impacts. Despite this, the AA Conclusion Statement indicates a favourable disposition to licencing:

> *"12.1 Having considered the conclusions and recommendations of the Appropriate Assessment process, the Licensing Authority is satisfied that, from a Natura 2000 perspective, a decision can be taken in favour of licensing proposed aquaculture operations in Ballyteigue 7 Burrow SAC/SPA, subject to the mitigation measures referenced above. Accordingly, the Licensing Authority is satisfied that the proposed licensing of aquaculture in the Bay is not likely to significantly and adversely affect the integrity of Ballyteigue Burrow SAC SPA."*

We would respectfully submit that the SPA report is a catalogue of clearly expressed uncertainties, and as such it is entirely inadequate for removing all reasonable scientific doubt. Given the clearly expressed uncertainty throughout the report, it is our considered opinion that, based on the data provided in the documentation for this licensing application, it would be an impossibility for the relevant authority to lawfully reach a conclusion of no adverse impact on the relevant SPAs. To do so would be in clear contravention of Article 6(3) of the Habitats Directive and attendant jurisprudence.

2. 15% threshold

The AA report for the SAC outlines that:

> *"For the practical purpose of management of sedimentary habitats, a 15% threshold of overlap between a disturbing activity and a habitat is given in the NPWS guidance. Below this threshold disturbance is deemed to be non-significant."*

And concludes thus:

> *"8.1.9 Conclusion Summary Based upon the spatial overlap and sensitivity analysis, it is concluded that aquaculture activities at trestle sites and along access routes do not pose a risk of significant disturbance to the conservation of the habitat features of Estuaries (1130) and Mudflats and sandflats not covered by seawater at low tide (1140) or their associated constituent community types. "*

The source of this 15% threshold is unknown. The Commission framework on which it is allegedly based has not been included in the application documents, and it has not been possible to examine it. More fundamentally, it is not referred to in Article 17 of the Habitats Directive. It is also not referred to in Article 6(3) of the Habitats Directive which sets out the obligation for Appropriate Assessment. And it is not anywhere referred to in the case law of the EU Court of Justice. On the contrary, several judgements of the Court of Justice set out very clearly very specific requirements in relation to site specific considerations and the thresholds of scientific certainty required for each of the different tests required to be addressed under Article 6(3) as clarified by the CJEU. The court's consideration of the case specific context for how effects need to be considered relies in large part on the specific ecological considerations at issue for the habitat or species at issue, and the nature of impacts. For example, in Case C258/11 Sweetman, the loss of approximately 1% of the protected habitat was considered to be an adverse effect on the integrity of the site. Furthermore, in assessing the potential effects of a plan or project, their significance must be established in the light, inter alia, of the characteristics and specific environmental conditions of the site concerned by that plan or project as clarified by the CJEU in case c-127/02 Waddenzee. So, both the project and site characteristics are required to be considered which is quite opposite to the very generic approach proposed with this 15% rule by the NPWS.

As such, we submit that the assessment of impact in this case is flawed by a reliance on an arbitrary overlap threshold, and a more nuanced and rigorous approach should be required to rule out any potential impact to SAC communities.

3. Recommendation

An Taisce submit that these sites cannot be lawfully licensed based on the above arguments. It is our considered opinion that the licencing authority does not have the necessary evidence in front of them to make a legally robust decision. We submit that granting of this licence would be in non-compliance with Article 6(3) of the Habitats Directive, and will leave the relevant authority open to appeal proceedings.

We should be grateful if you would take account of these concerns in considering this application. If approved, An Taisce maintains the right to appeal this application should we be dissatisfied with the approval and/or any conditions attached.

We would appreciate if you would provide to us in due course: an acknowledgement of this submission; the nature of the decision; the date of the decision; in the case of a decision to grant an approval, any conditions attached thereto, and the main reasons and considerations on which the decision is based; and, where conditions are imposed in relation to any grant of approval, the main reasons for the imposition of any such conditions.

Is mise le meas,

Elaine McGoff,

Natural Environment Office,

An Taisce – The National Trust for Ireland

McDonald, Bernie

From: Campbell, Rory <rory.campbell@bim.ie>
Sent: Friday 17 December 2021 09:25
To: OFlynn, Deirdre
Subject: FW: Aquaculture Licence Applications, Ballyteigue Bay, Co. Wexford

Importance: High

Follow Up Flag: Follow up
Flag Status: Flagged

Deirdre,
RE T03/038 and T03/095
Having consulted within BIM, we would support the applications based on their location and the expertise of the promoters.
Best regards,
Rory

Rory Campbell
Seafood Technical Services Director
BIM

T +353 01 214 4129
M +353 87 7657164
E rory.campbell@bim.ie

Bord Iascaigh Mhara,
Crofton Road, Dún Laoghaire,
Co. Dublin, A96 E5A0

Ireland's Seafood Development Agency
bim.ie

From: O'Donovan, Vera
Sent: 17 December 2021 09:04
To: Campbell, Rory
Subject: FW: Aquaculture Licence Applications, Ballyteigue Bay, Co. Wexford
Importance: High

From: OFlynn, Deirdre <Deirdre.OFlynn@agriculture.gov.ie>
Sent: 09 November 2021 15:48
To: 'environmentalplanning@fisheriesireland.ie' <environmentalplanning@fisheriesireland.ie>; O'Loan, Brian <Brian.OLoan@bim.ie>; Morrison, Catherine <catherine.morrison@bim.ie>; 'foreshore@housing.gov.ie' <foreshore@housing.gov.ie>; 'planning@failteireland.ie' <planning@failteireland.ie>; 'naturalenvironment@antaisce.ie' <naturalenvironment@antaisce.ie>; 'fem.dau@chg.gov.ie' <fem.dau@chg.gov.ie>; 'franciscobeirne@marine.ie'

Your Ref: [redacted] T03/095A

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

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

Date: 29/11/2021

Re: Application for Aquaculture Licences

Dear Sir/Madam,

We refer to your email notification of the 09/11/2021 regarding the above applications for aquaculture licences and make the following observations.

It is noted that the applications refer to developments that are not within a designated shellfish water.

Table 1 shows the coordinates of existing discharges operated by Irish Water which are located within 10km of the proposed aquaculture sites

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

Application No.		Easting	Northing
[redacted] T03/095A	Primary Discharge	289757	108704
	Primary Discharge	285263	113436
	Primary Discharge	291884	109136
	Primary Discharge	287578	109788
	Primary Discharge	299954	109993
	Primary Discharge	296598	102988
	Secondary Discharge	289792	108685

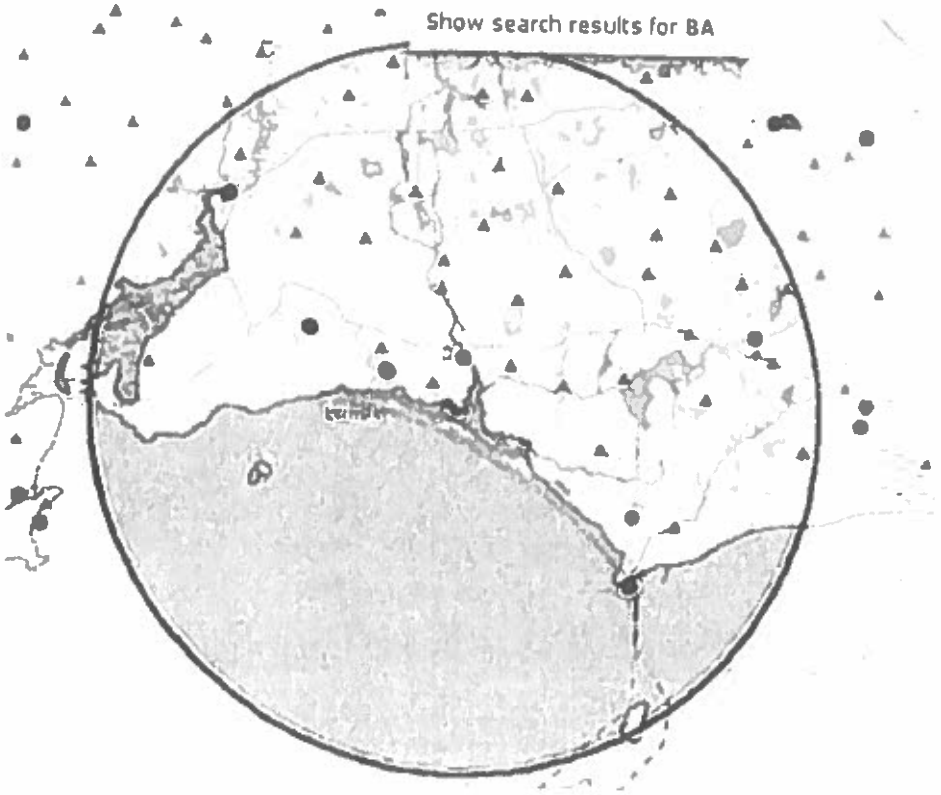
The Department may wish to consider the proximity of the discharge points to the proposed aquaculture developments when making a decision on these applications

Yours faithfully,

Sheila Convery

Spatial Analyst
Irish Water

[redacted] T03_095A




Show search results for BA
Speightstown
Bridgetown

Comhairle Contae
Loch Garman

Wexford Harbour, Ballast Office,
Crescent Quay, Wexford Y35 E6TR

Wexford County Council

00353(0) 53 9122300
harbourmaster@wexfordcoco.ie

Ms Deirdre O'Flynn
EO, Aquaculture and Foreshore Management Division
Department of Agriculture, Food and the Marine
National Seafood Centre, Clogheen, Clonakilty
Co Cork

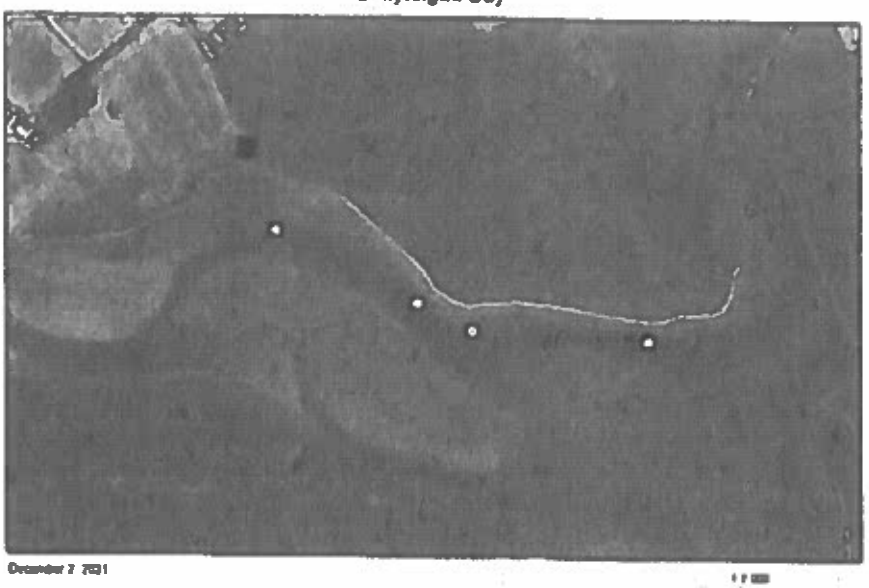
02nd December 2021

Dear Ms O'Flynn,

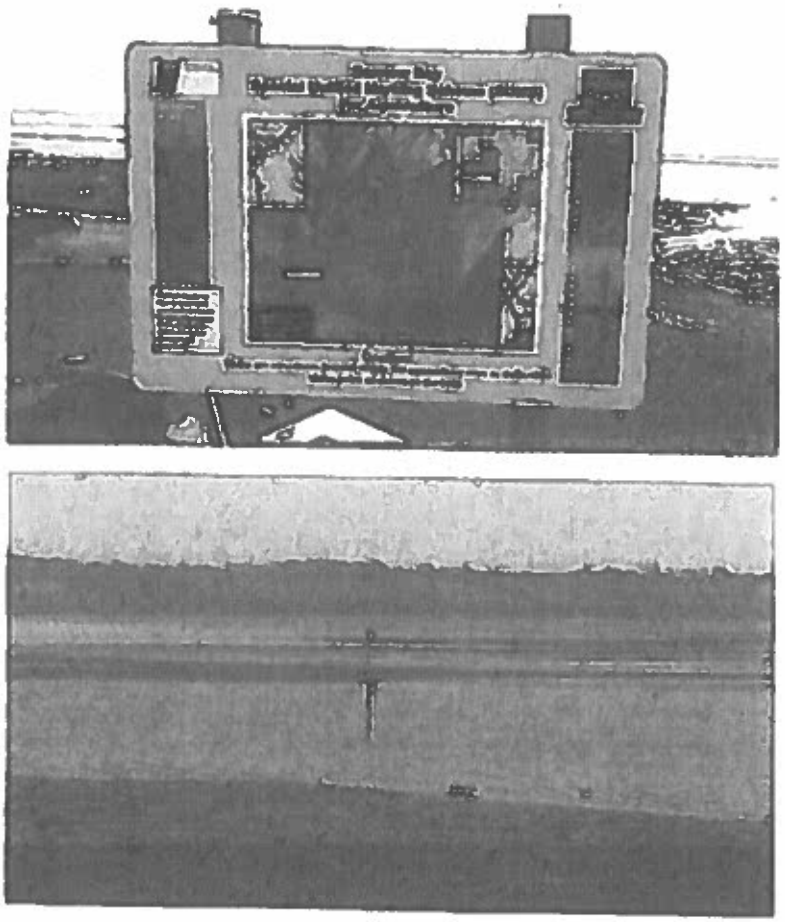
Your ref: [redacted] & T3/95 Johnny Neville / Jeannette Brugman

Further to the application for an Aquaculture and Foreshore licence of oysters in Ballyteigue Bay. I would recommend the installation of two special marks, with St Andrews Cross attached, on each site for safety of navigation, which should be mounted on poles on the seaward side of the area, as well as a public information sign at the access road, see aerial view of approximate locations.

Ballyteigue Bay



An example of this marking scheme can be seen in the Bannow Bay Estuary.



Capt Phil Murphy
Senior Marine Officer
Wexford County Council

Nyhan, Jennifer

From: Brendan Cooney <brendan.cooney@wexfordcoco.ie>
Sent: Monday 6 December 2021 12:46
To: OFlynn, Deirdre
Subject: FW: Aquaculture Licence Applications, Ballyteigue Bay, Co. Wexford
Attachments: Application for Aquaculture Licence for a Site in Ballyteigue Bay, Co. Wexford.pdf; Oyster Farm T3 38.docx; Oyster Farm T3 38 a.docx

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Deirdre
Attached find submissions from Wexford Co Co.
With regard to the environment section we also have no objections to the proposed development, and in fact welcome it as its presence will be used to highlight the need for good water quality to people upstream in the catchment and the need for them to carry out farming, licensed discharges etc in a sustainable manner.
Kind regards

Brendan Cooney B.Sc.Env; Dip. Chem.; M.Sc.(Ag); H. Dip Pub. Admin.
Senior Executive Scientist
Environment Section
Wexford County Council
Carricklawn
Wexford
Y35 WY93
Phone: + 353 53 919 6326 | e-mail: brendan.cooney@wexfordcoco.ie | web: www.wexfordcoco.ie

From: Capt Phil Murphy
Sent: Thursday 2 December 2021 15:43
To: Brendan Cooney
Subject: FW: Aquaculture Licence Applications, Ballyteigue Bay, Co. Wexford
Brendan,

As attached, my submission on foot of this morning's site visit, also see previous submission in Dec 2015 in respect of Ballyteigue Oysters Ltd.
Brgds
Phil

Capt Phil Murphy |Senior Marine Officer | Oifigeach Sinsearach Mara
Wexford County Council, Ballast Office , Crescent Quay, Wexford Y35 E6TR
Comhairle Contae Loch Garman, Oifig Ballasta, Ce Crescent, Loch Garman
☎ 053 9122300 | ✉ harbourmaster@wexfordcoco.ie | www.wexfordharbour.com

From: Capt Phil Murphy
Sent: 09 November 2021 16:35
To: Brendan Cooney <brendan.cooney@wexfordcoco.ie>; Gerry Forde <Gerry.Forde@wexfordcoco.ie>; George Colfer <George.Colfer@wexfordcoco.ie>; Marine Officer <Marine.Officer@wexfordcoco.ie>; Assistant Marine Officer (AMO) <Assistant.MarineOfficer@wexfordcoco.ie>
Subject: FW: Aquaculture Licence Applications, Ballyteigue Bay, Co. Wexford
Need information and advice on COVID-19? Go to www.hse.ie/coronavirus
Capt Phil Murphy | Senior Marine Officer | Oifigeach Sinsearach Mara
Wexford County Council, Ballast Office , Crescent Quay, Wexford Y35 E6TR
Comhairle Contae Loch Garman, Oifig Ballasta, Ce Crescent, Loch Garman
053 9122300 | harbourmaster@wexfordcoco.ie | www.wexfordharbour.com

From: OFlynn, Deirdre <Deirdre.OFlynn@agriculture.gov.ie>
Sent: 09 November 2021 15:48
To: 'environmentalplanning@fisheriesireland.ie' <environmentalplanning@fisheriesireland.ie>; 'oloan@bim.ie' <oloan@bim.ie>; 'catherine.morrison@bim.ie' <catherine.morrison@bim.ie>; 'foreshore@housing.gov.ie' <foreshore@housing.gov.ie>; 'planning@failteireland.ie' <planning@failteireland.ie>; 'naturalenvironment@antaisce.ie' <naturalenvironment@antaisce.ie>; 'fem.dau@chg.gov.ie' <fem.dau@chg.gov.ie>; 'francisxobeirne@marine.ie' <francisxobeirne@marine.ie>; 'IERosslareHarbourMaster@irishrail.ie' <IERosslareHarbourMaster@irishrail.ie>; Capt Phil Murphy <harbourmaster@wexfordcoco.ie>; Planning Counter <planning@wexfordcoco.ie>
Subject: Aquaculture Licence Applications, Ballyteigue Bay, Co. Wexford

To all Stat Consultees
Our Ref: [redacted]**T03/095**

Application for Aquaculture Licence for a Site in Ballyteigue Bay, Co. Wexford

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 for permission to carry out aquaculture activities on a site in Ballyteigue Bay, Co. Wexford.

Details of the application and all other relevant documentation may be viewed on the Department's website at:
https://www.gov.ie/en/collection/6ee2f-aquaculturforeshore-licence-applications-wexford/

I would be grateful for any observations you wish to make on the above proposals 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 lodged in this matter by you the applicant will be given an opportunity to comment thereon.
Yours sincerely,
Deirdre O'Flynn
EO, Aquaculture and Foreshore Management Division
An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine
National Seafood Centre, Clogheen, Clonakilty, Co. Cork, P85 TX47
An Lárionad Bia Mara Náisiúnta, An Cloichín, Cloich na Coillte, Corcaigh, P85 TX47
T +353 (0) 23 8859529
www.agriculture.gov.ie

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

[redacted] T03-095A

(Please quote in all related correspondence)

10 December, 2021

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

via email

Re: Oyster culture at Ballyteige Burrow, Co Wexford

A chara

I refer to correspondence sent to the Department in November, 2021 which was received in connection with the above proposed aquaculture developments

The Department has the following observations on the above-referenced aquaculture applications

With respect to the Special Protection Area, it is noted that the Appropriate Assessment Conclusion statement concludes that there is a high likelihood of significant displacement to Grey Plover but it is assumed that the actual level of displacement to this species will likely be substantially lower than expected. This assumption is based on the observation that Grey Plover population has not demonstrated a negative impact from increasing oyster trestle cover over the period 2008-2016. The above assumption is made despite the fact that, if both applications are fully developed, then there will be

(i) a four-fold increase in the total cover of trestles compared to the mapped extent in 2010 and

(ii) trestles that will exist in areas of the bay where they previously have not.

This assumption carries a high level of risk given the predicted negative response by Grey Plover (4.6-4.9% displacement) and the species' known highly negative response to oyster trestles, as well as the generally narrow estuarine channel of the SPA. Thus, there is a high risk of negatively impacting the distribution attribute of the Conservation Objective for Grey Plover at Ballyteige Burrow SPA.

Given the available information and the absence of certainty that the Grey Plover will not be negatively affected, it is recommended that a licence only be provided for existing aquaculture operations within the bay, *i.e.* for the licencing of existing trestles only within application T03/38.

It is also recommended that any licence include conditions for strict adherence to licenced/approved access ways.

With respect to the management of invasive species and minimising risk to the conservation objectives for the SAC, the Department requests the following also be attached as condition of consent:

- Adherence to the practice and principles advocated in the guidance generated by the Invasive Species Ireland Project (https://invasivespeciesireland.com/biosecurity/aquaculture/) is required as part of Operational Conduct of the licensee.
- Compliance with the latest guidance generated by BIM in relation to invasive marine species(https://bim.ie/aquaculture/sustainability-and-certification/marine-invasive-species/).
- That Authorised Officers under Regulation 4 of the European Communities (Birds and Natural Habitats) Regulations (SI 477 of 2011) may inspect the facility in respect of undertaking surveillance for the conservation status of Ballyteige Burrow SAC and SPA.

Is mise le meas,

Michael Murphy
Administration
Development Applications Unit

Marine

Date: 4 March 2022

To: Jennifer Nylan - AFMD

From: Jack O'Carroll, Marine Institute

CC: Francis O'Beirn – MI; Therese O'Keefe, AFDM-DAFM

Re: An Taisce Submission on Aquaculture Licence Applications in Ballyteigue Burrow SPA

An Taisce's Submission

The Marine Institute (MI) has been asked to comment on the submission lodged on 14 December 2021 by an Taisce relating to aquaculture licence applications for Pacific oyster trestle cultivation in the Ballyteigue Burrow Special Protection Area (SPA) and Ballyteigue Burrow Special Conservation Area (SAC).

The MI notes that an Taisce's submission references two applications; [redacted] T03/095, both of which have been subject to Appropriate Assessment (AA) process

1. **Uncertainty for SPAs**

An Taisce highlights a number of findings made in the SPA AA report which refer to potential for significant effects of the proposal on certain Special Conservation Interests (SCIs). An Taisce note the following findings in relation to SCIs of Ballyteigue Burrow SPA and SCIs of adjacent SPAs:

Grey Plover

> *"It is clear from the SPA report that this aquaculture activity could adversely impact on a number of SCIs of nearby SPAs. Firstly, there are significant risks to Grey Plover, as indicated in Section 9.1 of the AA Conclusion Statement:*
>
> > *'9.1 There is likely to be a measurable displacement impact to Grey Plover, and this may be significant when potential displacement due to disturbance is factored [excerpt from SPA AA report]'."*

Light bellied Brent Geese and Wigeon

> *"Light Bellied Brent Geese and Wigeon are similarly at risk (section 9.2 of AA Conclusion Statement):*

'9.2 The predicted displacement impacts to Light bellied Brent Goose (6.7-7%) and Wigeon (6.7-7%) are significant [excerpt from SPA AA report]'."

Other Species

"Impacts to other species are discounted thus:

'9.4 The predicted displacement impacts to Shelduck, Lapwing, Curlew, Black-tailed Godwit, Bar-tailed Godwit, Dunlin and Redshank are not significant. The predicted displacement impact to Golden Plover is negligible. The limited data available for assessment means that there is a moderate level of uncertainty about these predictions [excerpt from SPA AA report]'."

References to Uncertainty

An Taisce also highlighted the frequency of reference to uncertainty in information underpinning the findings of the report. The following are two examples of the four raised by an Taisce:

"The predicted displacement impacts to Light bellied Brent Goose and Wigeon are significant. However, there is a ***high level of uncertainty*** *about this prediction due to the variable nature of their responses to oyster trestle cultivation, and the likely significant overestimation of subsite occupancy levels in the displacement calculations.*

The predicted displacement impacts to all the other species are either negligible or not significant. The limited data that was available for this assessment means that there is a ***moderate level of uncertainty*** *about these predictions (see Chapter 2). However, we have not identified any specific factors that would suggest a significant underestimation of displacement impacts for any of these species."*

Reasonable Scientific Doubt

An Taisce also highlights the conclusions within the SPA AA report which state:

"This assessment for the Ballyteige Burrow SPA concluded that there is potential for full occupation of the aquaculture sites to cause significant (Light-bellied Brent Goose and Grey Plover), or the potential for such impacts ***cannot be discounted beyond reasonable scientific doubt (Golden Plover, Lapwing, Black-tailed Godwit and Bar-tailed Godwit).***

The calculated displacement impacts within the Ballyteige Burrow SPA from full occupation of the aquaculture sites would be non-significant but measurable. Given the uncertainty about

the assessment, due to the limited data, ***the potential for significant displacement impacts within the Ballyteige Burrow SPA cannot be discounted beyond reasonable scientific doubt*** *"*

Legal Interpretations and Precedent

An Taisce also highlight a number of findings from case law relating to the AA process and jurisprudence.

2. **15% Threshold**

An Taisce also highlight the use of the NPWS recommended 15% disturbance threshold as part of the SAC AA process and challenge its legality.

3. **Recommendation**

An Taisce submitted its opposition to the decision grant licences on the basis that:

> *"the licencing authority does not have the necessary evidence in front of them to make a legally robust decision. We submit that granting of this licence would be in non-compliance with Article 6(3) of the Habitats Directive, and will leave the relevant authority open to appeal proceedings".*

MI Response to an Taisce's Submission

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, are sound and based on the best scientific information available at the time.

It is important to deal with an error in the SPA AA from the outset. An Taisce quote the paragraph 10.6 of the SPA AA report:

> *"This assessment for the Ballyteige Burrow SPA concluded that there is potential for full occupation of the aquaculture sites to cause significant (Light-bellied Brent Goose and Grey Plover), or the potential for such impacts cannot be discounted beyond reasonable scientific doubt (Golden Plover, Lapwing, Black tailed Godwit and Bar tailed Godwit)"*

This statement is partially incorrect and does not align with the actual findings of the SPA AA report which are set out in Table 7.5 of that report. In relation to Light Bellied Brent Goose and Grey Plover,

[1] Report Supporting Appropriate Assessment of Aquaculture n the Ballyteigue Burrow SAC, Aquafact International Services Ltd, on behalf of Marine Inst tute, Apr 2020

[2] Marine Institute Bird Studies, Ballyte ge Bay: Appropriate Assessment of Aquaculture, Atkins, November 2019

this statement is correct in that the analyses found these species to be potentially significantly impacted/ displaced as highlighted in Table 7.5. In relation to Golden Plover, Lapwing, Black tailed Godwit and Bar-tailed Godwit the statement in paragraph 10.6 of the SPA AA report is incorrect. The analyses found displacement impacts to potentially be negligible for the Golden Plover and not significant for Lapwing, Black Tailed Godwit and Bar-tailed Godwit. The MI acknowledges this error and trusts that this issue has been clarified. The following MI responses to issues raised by an Taisce reflect the findings as they appear in Table 7.5 of the SPA AA report.

1. Uncertainty

Invariably, there is a margin of error around any result derived from a scientific analysis, that is the nature of making predictions through statistical inference. To categorically state that a result derived from a study such as those carried out in Ballyteigue Burrow SPA is free from uncertainty would be factually untrue and incongruent with empirical scientific epistemology. Acknowledging the uncertainty around a prediction or estimate is part of the scientific process in that it is a declaration of the potential limits of the study. In doing so a scientist is being transparent and cannot be perceived as potentially concealing bias within their results. The acknowledgement of uncertainty around the results of a study is not necessarily a declaration that the results are unreliable but that they need to be considered within the full context of the scientific question posed.

In this instance the overarching question is if, when filled with trestles and operational, the proposed licence areas will significantly affect SCIs to the extent that their conservation objectives cannot be met?

An important piece of context is the fact that similar aquaculture activities have been occurring in this area for greater than 10 years and during this time any observed declines in SCI populations within the Ballytegue SPA are less than the national average rate of decline. This is an indication that where these populations are declining the decline in Ballyteigue Burrow SPA is no greater than elsewhere and potentially unattributed to trestle aquaculture activities (See paragraphs 7.23, 7.24 and Table 7.4 of the SPA AA report).

That aquaculture has been ongoing in this area for greater than 10 years is an important point, as bird species have been shown by some studies to develop a level of tolerance, to become accustomed to aquaculture activities and even to develop positive foraging behaviours among trestles (in the case of Light Bellied Brent Geese).

Another important piece of context is that the analytical approach adopted followed worst case principles and it was highlighted in the SPA report as being almost certain that the assumed "*waterbird*

occupancy of the subsites containing the aquaculture sites is a large overestimate of the..." actual *"mean waterbird occupancy levels of these subsites"*. The worst-case scenario was adopted to account for the potential that SCIs may gather along the channel proximal to the licence areas. In addition, it is assumed that the aquaculture sites are fully occupied by trestles, which is highly unlikely to occur in reality. This lead to a prediction that the proposed aquaculture may displace some SCIs in this area, but, the authors highlighted the fact that "there is uncertainty about whether oyster trestle cultivation will have any net displacement impact..." on SCIs and that if *"a net displacement impact occurs, the predicted displacement impact is likely to be a significant overestimate of the likely displacement impact waterbird occupancy levels of these subsites"*.

The worst-case scenario predictions in Table 7.5 of the SPA AA report indicates the potential for displacement impact of 6.7% - 7% for Light Bellied Brent Goose and Wigeon and 4.6% - 4.9% for Grey Plover. It's important to note the definitions of displacement impact magnitude are *"measureable"*, which equals <5% displacement, or, *"significant"*, which equals >5% displacement. The term *"significant"* in this instance relates to an arbitrary threshold established by the MI in cooperation with ornithology experts which was deemed as highly conservative (very low threshold for impact) but necessary given the absence of guidance from the competent authority for Natura 2000 in Ireland. Findings of significance such as this cannot automatically be extrapolated to legal tests under the Habitats and Birds Directives. To do so would negate other relevant considerations of a plan/project's context, scale, intensity and magnitude. The determination as to significance *sensu* the Habitats and Birds Directives as part of the AA process is made at the Departmental level, the purpose of the SPA AA report is to support DAFM's decision making as the competent authority.

For Grey Plover, the worst-case scenario impact was predicted as measurable. Other relevant considerations in addition to this are the positive short and long term population trends in the Ballyteigue Burrow SPA (38% and 59% respectively) relative to the overall negative trend of the national population of Grey Plover (-54%). These lines of evidence provide a good indication that this SCI will not be significantly affected by the proposed aquaculture activities

In the case of Light-Bellied Brent Geese the worst-case scenario impact was predicted to be significant, but it is essential to note that:

- This is highly likely to be an over-estimation of impact;
- That the population trend for this species in Ireland in the long-term has been strongly positive (96% increase); and
- The population has increased by 35% at Ballyteigue Burrow SPA in the last decade.

Furthermore, it is noted that the species shows a variable response to oyster trestles. Recent studies on Carlingford Lough in 2020 on behalf of the Marine Institute, further explored the relationship between Light-bellied brent geese and oyster trestles and concluded that:

- Light-bellied brent geese using the areas are well habituated to aquaculture activity and generally undisturbed by it;
- 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 who exploit the fact that green algae grown on the oysters);

This evidence gives further confidence that Light-bellied Brent Geese will not be negatively affected by the proposal.

2. Legal Interpretations and Precedent

An Taisce highlights a number of items relating to legal interpretations of 'reasonable scientific doubt' and a number of findings from case law relating to the AA process and jurisprudence. Such legal matters are beyond the remit of the MI and no further comment is provided.

3. 15% Threshold

This is a recurring theme in An Taisce submissions. The 15% threshold is clearly defined in NPWS guidance document[3]. Similarly, it is beyond the scope of the MI to comment on legal standing of the guidance documents. Suffice it to say, the Marine Institute is satisfied that sufficient scientific rigour attaches to the likely impacts of the activities and the sensitivity of receiving environment. These facts allied with the guidance provided allow for definitive findings. Furthermore, it is important the consultees realise that the AA report should be considered in conjunction with the AA conclusion statement which is the vehicle wherein the conclusions of the AA report are married with management (including mitigation) actions.

[3] https://www.npws.ie/sites/default/files/publications/pdf/Ballyteige%20Burrow%20SAC%20(000696)%20Conservation%20objectives%20supporting%20document%20-%20marine%20habitats%20[Version%201].pdf

Marine

Date: 4 March 2022

To: Jennifer Nylan - AFMD

From: Jack O'Carroll, Marine Institute

CC: Francis O'Beirn – MI; Therese O'Keefe, AFDM-DAFM

Re: Department of Housing Local Government and Heritage Submission on Aquaculture Licence Applications in Ballyteigue Burrow SPA

DHLGH's Submission & MI Respnse

The Marine Institute (MI) has been asked to comment on the submission lodged on 10 December 2021 by the Department of Housing Local Government and Heritage (DHLGH) relating to aquaculture licence applications for Pacific oyster trestle cultivation in the Ballyteigue Burrow Special Protection Area (SPA) and Ballyteigue Burrow Special Conservation Area (SAC).

The MI notes that IWT's submission references two applications; [redacted]T03/095, both of which have been subject to Appropriate Assessment (AA) process

1. **AA Conclusion Statement in Relation to Grey Plover**

DHLGH raised the following in relation to the AA conclusion statement and the Grey Plover bird species:

> *"With respect to the Special Protection Area, it is noted that the Appropriate Assessment Conclusion statement concludes that there is a high likelihood of significant displacement to Grey Plover but it is assumed that the actual level of displacement to this species will likely be substantially lower than expected. This assumption is based on the observation that Grey Plover population has not demonstrated a negative impact from increasing oyster trestle cover over the period 2008-2016. The above assumption is made despite the fact that, if both applications are fully developed, then there will be*
>
> > *(i) a four-fold increase in the total cover of trestles compared to the mapped extent in 2010 and*
> >
> > *(ii) trestles that will exist in areas of the bay where they previously have not.*

This assumption carries a high level of risk given the predicted negative response by Grey Plover (4.6—4.9% displacement) and the species known highly negative response to oyster trestles, as well as the generally narrow estuarine channel of the SPA. Thus, there is a high risk of negatively impacting the distribution attribute of the Conservation Objective for Grey Plover at Ballyteige Burrow SPA."

MI Response

DHLGH has interpreted the findings in the AA conclusion statement as being based on a single assumption that the "*... Grey Plover population has not demonstrated a negative impact from increasing oyster trestle cover over the period 2008-2016*". It also states that the proposed extent of trestles within the two proposed sites in the Ballyteigue Burrow were not considered in the assessment. This is not the case. The assessment of potential displacement effect of the proposed aquaculture activities in the SPA AA report followed worst-case principles by adopting the following assumptions:

1. 100% trestle occupation within both aquaculture sites;
2. Assuming the max instead of mean rate of occupancy in the two bird count subsites; and
3. Increased the categorical 'Assessment of significance" in Table 7.5 from not significant/ measurable (4.6% – 4.9%) to significant on the basis that Grey Plover are known to exhibit negative behavioural responses to trestle cultivation.

On this basis the MI is confident that the species sensitivity and the full extent of proposed trestles sites was considered in the assessment in the SPA AA report[1] and that Grey Plover will not be displaced to the extent that it's conservation objectives in the Ballyteigue Burrow SPA could not be met.

[1] Marine Institute Bird Studies, Ballyteige Bay: Appropriate Assessment of Aquaculture, Atkins, November 2019.

Marine

Date: 4 March 2022

To: Jennifer Nylan - AFMD

From: Jack O'Carroll, Marine Institute

CC: Francis O'Beirn – MI; Therese O'Keefe, AFDM-DAFM

Re: Irish Wildlife Trust Submission on Aquaculture Licence Applications in Ballyteigue Burrow SPA

IWT's Submission & MI Response

The Marine Institute (MI) has been asked to comment on the submission lodged on 13 December 2021 by the Irish Wildlife Trust (IWT) relating to aquaculture licence applications for Pacific oyster trestle cultivation in the Ballyteigue Burrow Special Protection Area (SPA) and Ballyteigue Burrow Special Conservation Area (SAC).

The MI notes that IWT's submission references two applications; T03/038 & T03/095, both of which have been subject to Appropriate Assessment (AA) process.

1. **Environmental Issues at Ballyteigue Burrow**

In relation to environmental issues at Ballyteigue Burrow IWT raise the following:

> *"The protected habitats rely on good water quality in order to reach Good Environmental Status under the Marine Strategy Framework Directive (MSFD), Favourable Conservation Status under the Habitats Directive and Good Ecological Status under the Water Framework Directive (WFD). Currently, the Habitats Directive Annex I marine habitat features 'estuaries' and 'tidal mudflats and sandflats' have been classed as 'inadequate', while coastal lagoons are classed as 'bad' in a recent national analysis under the Habitats Directive1. At Ballyteige Burrows, the water quality of the channels leading into the estuary are in a 'bad' status according to the EPA's Water Framework Directive 2013 – 2018 water quality status (see catchments.ie)."*

MI response

Bivalve shellfish such as *C. gigas* are well known to provide positive ecosystem services in waterbodies enriched by terrestrial nutrient run-off, by reducing phytoplankton levels via filtration during feeding

Increasing the number of filter feeders in Ballyteigue Bay is likely to have a small but positive effect on water quality especially given the WFD status of the channels leading into the estuary at Ballyteigue Burrow. If IWT is asserting that the culture of *C. gigas* would in some way exacerbate water quality issues in the area the MI would strongly refute this claim by reference to a substantial evidence base to the contrary[1], [2].

2. The Appropriate Assessment

IWT state that it is its "*... view that the appropriate assessment (AA) for the SAC does not adequately assess the risk posed by the aquaculture activity, neither individually nor in combination with the existing activities (e.g. land-based).*" It takes issue with the SAC AA report findings in relation to water quality effects and invasive species.

MI response

Water Quality

IWT misquotes the SAC AA report[3] by claiming that on page 28 of the SAC report it is stated that increased organic enrichment and concomitant decreases in sediment oxygen levels are "*likely*" outcomes of aquaculture. This is not true, these outcomes can arise due to aquaculture, but they are highly contingent on physical characteristics of the site in question.

The Ballyteigue Burrow is a well flushed embayment which empties to the extent that only a freshwater channel remains during most low tides. The sediment in the area is characterised as mixed or sandy which is indicative that this area is not highly depositional. For comparison, muddy sediments are considered indicative of depositional environments. It is true that structures in the water column can obstruct flow, thereby increasing deposition in areas where current velocities are reduced. However, it can be concluded that the proposed oyster trestle cultivation does not have the potential to alter the flow regime in the Burrow to this extent given the findings in the body of literature on potential enrichment under trestles in similar sandy habitats in Ireland[4,5] and the small scale of the

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[1] SMILE: Sustainable Mariculture in Northern Ireland Lough Ecosystems (http://nora.nerc.ac.uk/id/eprint/521595/)

[2] Smaal AC, JG Ferreira, J Grant, JK Petersen, O Strand. 2019. Goods and Services of Marine Bivalves. Springer Open. https://link.springer.com/book/10.1007/978-3-319-96776-9

[3] Report Supporting Appropriate Assessment of Aquaculture in the Ballyteigue Burrow SAC, Aquafact International Services Ltd, on behalf of Marine Institute, April 2020.

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

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

proposed activities. For these reasons organic enrichment of sediments in the Burrow due to oyster trestle cultivation is not considered likely or to pose a risk to benthic habitats.

For oxygen levels in the sediment and water to become depleted due to aerobic digestion of organic matter on the seabed, significant volumes of organic matter would need to be produced by the oysters, settle and remain on the seabed for at least a number of days. Given the high rate of flushing within the Burrows and the small scale of the proposed aquaculture activities this is extremely unlikely to occur and therefore extremely unlikely to exacerbate existing water quality issues.

Invasive Species

For *C. gigas* to become established as a wild non-native population certain environmental conditions are required such as long residency time of an embayment (ca. 20 days) and consistent presence of marine (salt) water. The Ballyteigue Burrow empties on most tides with just a channel of freshwater remaining during the majority of low tides. This renders this site as unsuitable for the successful settlement and establishment of *C. gigas* larvae.

The risk of introduction of other non-native species is highly unlikely as the application documents indicate that *C. gigas* seed will be sourced either from hatcheries or other sites within Ireland thereby minimising the risk of non-natives being introduced to the site.

The SAC AA report also recommends adherence to relevant laws and guidance relating to invasive species. On the understanding that licence conditions will hold the operators to sourcing hatchery or Irish based seed and require the operators to adhere to best practice in relation to invasive species the MI is satisfied that the risk of invasive species is suitably mitigated.

3. **15% Threshold**

The 15% threshold is clearly defined in NPWS guidance document[6]. Similarly, it is beyond the scope of the MI to comment on legal standing of the guidance documents. Suffice it to say, the Marine Institute is satisfied that sufficient scientific rigour attaches to the likely impacts of the activities and the sensitivity of receiving environment. These facts allied with the guidance provided allow for definitive findings. Furthermore, it is important the consultees realise that the SAC AA report should be considered in conjunction with the AA conclusion statement which is the vehicle wherein the conclusions of the AA report are married with management (including mitigation) actions.

[6] https://www.npws.ie/sites/default/files/publications/pdf/Ballyteige%20Burrow%20SAC%20(000696)%20Conservation%20objectives%20supporting%20document%20-%20marine%20habitats%20(Version%201).pdf

Marine

Date: 4 March 2022

To: Jennifer Nylan - AFMD

From: Jack O'Carroll, Marine Institute

CC: Francis O'Beirn, Joe Silke – MI; Therese O'Keefe, AFDM-DAFM

Re: SWC Promotions Submission on Aquaculture Licence Applications in Ballyteigue Burrow SPA

SWC Promotion's Submission

The Marine Institute (**MI**) has been asked to comment on the submission lodged on 9 December 2021 by SWC Promotions relating to aquaculture licence applications for Pacific oyster trestle cultivation in the Ballyteigue Burrow Special Protection Area (**SPA**) and Ballyteigue Burrow Special Conservation Area (**SAC**).

The MI notes that SWC Promotions submission references two applications; T03/038 & T03/095, both of which have been subject to an Appropriate Assessment (**AA**) process.

1. **Ballyteige Burrow is not a Designated Shellfish Waters Area**

SWC Promotions states in its submission that the Ballyteigue Burrow Bay is not a designated Shellfish Water Area.

2. **Ballyteige Burrow is a protected nature area**

SWC Promotions draws on multiple examples from case law to build its argument that aquaculture is legally incompatible with the legal status of Ballyteigue Burrow as an SPA or SAC.

3. **Current Biodiversity Crisis**

SWC Promotions make reference to the *"... biodiversity crisis declared in Dáil Éireann in May 2019"* suggesting that on this basis the applications should *"... therefore, not be permitted"*.

4. **SAC AA**

In relation to the SAC AA report[1], SWC Promotions raise a number of issues:

a) A lack of specific details regarding the proposed activities;
b) The potential for oyster trestle cultivation to have environmental effects on the surrounding environment;
c) That there is overlap between the proposed aquaculture sites and conservation features of the SAC;
d) The 15% disturbance threshold;
e) *C. gigas* as a non-native species and the risk of introduction of other non-native species, and
f) The finding that impacts relating to physico-chemical effects are not likely to be significant

5. **SPA AA**

In relation to the SPA AA report[2] SWC Promotions raise a number of issues:

a) That the aquaculture sites exist within the SPA;
b) Constraints on analyses; and
c) Findings in relation to grey Plover, Light Bellied Brent Goose, Wigeon, Lesser-Black Backed Gull and fish.

MI Response to SWC Promotions Submission

The MI feels that the conclusions reached in the AA reports relating to the conservation features of the SPA and SAC, which informed the conclusions reached by DAFM in its AA Conclusion Statement, are sound and based on the best scientific information available at the time.

1. **Ballyteige Burrow is not a Designated Shellfish Waters Area**

While Ballyteigue Burrow is not designated Shellfish Waters Directive area it is a Bivalve Mollusc Production Area with a current Class B status .

[1] Report Supporting Appropriate Assessment of Aquaculture in the Ballyteigue Burrow SAC, Aquafact International Services Ltd, on behalf of Marine Institute, April 2020
[2] Marine Institute Bird Studies, Ballyteige Bay: Appropriate Assessment of Aquaculture, Atkins, November 2019

2. **Ballyteige Burrow is a protected nature area**

The focus of this section of SWC Promotions submission on legalities rather than scientific aspects of the protected status of the Ballyteigue Burrow SAC and SPA means that it is beyond the MI's remit to provide comment.

3. **Current Biodiversity Crisis**

This issue pertains to non scientific political/ legal aspects of biodiversity and conservation rather than scientific aspects. For this reason, the MI cannot provide any further comment.

4. **SAC AA**

In relation to the SAC AA report SWC Promotions raise a number of issues:

a) A lack of specific details regarding the proposed activities;

Oyster trestle cultivation techniques are very similar from site to site. To date, this kind of aquaculture has been subject of hundreds of applications which have been assessed in the manner of that carried out in the SAC AA report. In the absence of specific information on total trestle cultivation coverage within a licence area, worst case assumptions are followed and it is assumed that the entire licence area will be occupied by operational trestles. This approach is applied widely and deals adequately with any gaps in the specifics of an oyster trestle cultivation proposal.

b) The potential for oyster trestle cultivation to have environmental effects on the surrounding environment;

SWC Promotions selected a single paragraph from the entire SAC AA report which when read out of context could be misinterpreted as being a conclusion of the assessment. The selected paragraph refers to the potential for oyster trestle cultivation activities to have environmental effects. The remainder of the report assesses the likelihood of these effects occurring based multiple factors such as site suitability, sensitivity of habitats and the scale of the proposed aquaculture sites relative to the community complexes they overlap with. In doing so the potential effects of the proposed aquaculture were then determined to be negligible and less than the NPWS 15% threshold (when considered in combination with other pressures).

c) That there is overlap between the proposed aquaculture sites and conservation features of the SAC;

If a proposed aquaculture plan or project is proximal to or overlapping with the conservation features of a Natura 2000 site then an AA is required to accompany an aquaculture licence application. The MI feels that this is not an issue with the application but a fundamental aspect of the AA process.

d) The 15% disturbance threshold,

The 15% threshold is clearly defined in NPWS guidance document[3]. Similarly, it is beyond the scope of the MI to comment on legal standing of the guidance documents. Suffice it to say, the Marine Institute is satisfied that sufficient scientific rigour attaches to the likely impacts of the activities and the sensitivity of receiving environment. These facts allied with the guidance provided allow for definitive findings. Furthermore, it is important the consultees realise that the AA report should be considered in conjunction with the AA conclusion statement which is the vehicle wherein the conclusions of the AA report are married with management (including mitigation) actions.

e) *C. gigas* as a non-native species and the risk of introduction of other non native species;

For *C. gigas* to become established as a wild non native population certain environmental conditions are required such as long residency time of an embayment (*ca.* 20 days) and consistent presence of marine (salt) water. The Ballyteigue Burrow empties on most tides with just a channel of freshwater remaining during the majority of low tides This renders this site as unsuitable for the successful settlement and establishment of *C. gigas* larvae

The risk of introduction of other non-native species is highly unlikely as the application documents indicate that *C. gigas* seed will be sourced either from hatcheries or other sites within Ireland thereby minimising the risk of non-natives being introduced to the site.

The SAC AA report also recommends adherence to relevant laws and guidance relating to invasive species. On the understanding that licence conditions will hold the operators to sourcing hatchery or Irish based seed and require the operators to adhere to best-practice in relation to invasive species the MI is satisfied that the risk of invasive species is suitably mitigated.

f) The finding that impacts relating to physio-chemical effects are not likely to be significant.

SWC Promotions disputes the literature used to underpin the findings of the SAC AA report. The excerpt of the SAC AA report it selected to make this point was preceded by a series of studies that are literature reviews. SWC Promotions negates to acknowledge that the primary literature

[3] https://www.npws.ie/sites/default/files/publications/pdf/Ballyteige%20Burrow%20SAC%20(000696)%20Conservation%20objectives%20supporting%20document%20-%20marine%20habitats%20[Version%201].pdf

underpinning the conclusions in relation to benthic habitats is underpinned by the findings of a number of field based studies which assessed the environmental interactions of oyster trestle cultivation activities on intertidal sediment habitats at multiple sites around Ireland, including Bannow Bay (an adjacent SAC and SPA)[4] [5] [6].

6. **SPA AA**

In relation to the SPA AA report SWC Promotions raise a number of perceived issues:

a) That the aquaculture sites exist within the SPA;

If a proposed aquaculture plan or project is proximal to or overlapping with the conservation features of a Natura 2000 site then an AA is required to accompany an aquaculture licence application. The MI feels that this is not an issue with the application but a fundamental aspect of the AA process.

b) Constraints on analyses;

Any data constraints were adequately dealt with via the adoption of worst-case assumptions in the analysis and prediction of displacement impacts. It was highlighted in the SPA report as being almost certain that the assumed *"waterbird occupancy of the subsites containing the aquaculture sites is a large overestimate of the..."* actual *"... mean waterbird occupancy levels of these subsites"*. The worst case scenario was adopted to account for the potential that SCIs may gather along the channel proximal to the licence areas. In addition, it is assumed that the aquaculture sites are fully occupied by trestles, which is highly unlikely to occur in reality. This lead to a prediction that the proposed aquaculture may displace some SCIs in this area, but, the authors highlighted the fact that *"there is uncertainty about whether oyster trestle cultivation will have any net displacement impact..."* on SCIs and that if *"... a net displacement impact occurs, the predicted displacement impact is likely to be a significant overestimate of the likely displacement impact waterbird occupancy levels of these subsites"*.

The adoption of worst-case principles in the instance that there is limited data availability is common practice and appropriate in this instance given the small scale of the proposed aquaculture activities.

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

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

[6] De Grave, S., Moore, S J and Burnell, G , 1998. Changes in benthic macrofauna associated with intertidal oyster, Crassostrea gigas (Thunberg) culture. Journal of Shellfish Research, 17(4), pp.1137-1142.

c) Findings in relation to Grey Plover, Light Bellied Brent Goose, Lesser-Black Backed Gull and fish.

The worst-case scenario predictions in Table 7.5 of the SPA AA report indicates the potential for displacement impact of 6.7% - 7% for Light Bellied Brent Goose and Wigeon and 4.6% - 4 9% for Grey Plover. It's important to note the definitions of displacement impact magnitude are *"measureable"*, which equals <5% displacement, or, *"significant"*, which equals >5% displacement. The term *"significant"* in this instance relates to an arbitrary threshold established by the MI in cooperation with ornithology experts which was deemed as highly conservative (very low threshold for impact) but necessary given the absence of guidance from the competent authority for Natura 2000 in Ireland. Findings of significance such as this cannot automatically be extrapolated to legal tests under the Habitats and Birds Directives. To do so would negate other relevant considerations of a plan/project's context, scale, intensity and magnitude. The determination as to significance *sensu* the Habitats and Birds Directives as part of the AA process is made at the Departmental level, the purpose of the SPA AA report is to support DAFM's decision making as the competent authority.

For Grey Plover, the worst-case scenario impact was predicted as significant, not due to displacement being >5% but due to the body of evidence which indicates that Grey Plover have a negative response to trestles. Other relevant considerations in addition to this are the positive short and long-term population trends in the Ballyteigue Burrow SPA (38% and 59% respectively) relative to the overall negative trend of the national population of Grey Plover (-54%). These lines of evidence provide a good indication that this SCI will not be significantly affected by the proposed aquaculture activities.

In the case of Light-Bellied Brent Geese the worst-case scenario impact was predicted to be significant, but it is essential to note that:

- This is highly likely to be an over-estimation of impact;
- That the population trend for this species in Ireland in the long-term has been strongly positive (96% increase); and
- The population has increased by 35% at Ballyteigue Burrow SPA in the last decade.

Furthermore, it is noted that the species shows a variable response to oyster trestles. Recent studies on Carlingford Lough in 2020 on behalf of the Marine Institute, further explored the relationship between Light-bellied brent geese and oyster trestles and concluded that:

- Light-bellied brent geese using the areas are well habituated to aquaculture activity and generally undisturbed by it;

- 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 who exploit the fact that green algae grown on the oysters);

This evidence gives further confidence that Light-bellied Brent Geese will not be negatively affected by the proposal.

In the case of Lesser Black backed Gulls, field survey work was undertaken over three survey visits to cover the three main phases of the Lesser Black-backed Gull breeding season: 5th June 2020 (incubation period), 6th July 2020 (chick provisioning period), and 20th July 2020 (fledging period). The only record of a Lesser Black-backed Gull possibly foraging in tidal habitats in Ballyteige Bay was of a single bird in subtidal water in the uppermost section of the bay. Therefore, it can be concluded that intertidal habitat in Ballyteige Bay is unlikely to be a significant foraging resource for Lesser Black backed Gulls from the Saltee Islands SPA (004002) colony. Commuting Lesser Black-backed Gulls were regularly recorded flying inland/out to sea along the Duncormick River Estuary, and these were presumably birds commuting to/from the Saltee Islands. As this is presumably only one of a number of commuting routes, our observations indicate that the terrestrial habitats provide a significant component of the of the foraging resources used by the Saltee Islands colony.

In the case of fish, no conclusions were made in relation to fish as no fish are designated as conservation features in the Ballyteigue SAC. Without any further specific details to consider the MI is not in a position to comment on this perceived issue.

McDonald, Bernie

From: Crowley, Raphael
Sent: Wednesday 4 May 2022 18.02
To: Nyhan, Jennifer
Cc: McDonald, Bernie
Subject: RE: Comments on [redacted] & T03/095A

Jennifer
I refer to the correspondence forwarded to MED subsequent to the Public and Statutory Consultation.
With regards to the navigational marking of the sites, MED does not recommend marking the sites individually as outlined in the submissions from MSO. If these sites are licenced, MED recommends including a condition requiring the operators to mark the sites in accordance with a local SUMS for the bay which should be approved by MSO and CIL.
MED has no comments or observations on the other submissions.
Regards
Raphael

Raphael Crowley
Chartered Engineer - Marine Engineering Division
An Roinn Talmhaíochta, Bia agus Mara
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From: Nyhan, Jennifer
Sent: 20 April 2022 08:54
To: Crowley, Raphael
Cc: McDonald, Bernie
Subject: Comments on [redacted] T03/095A

Good morning Raphael,

I am following up on the comments I sent to you on the 17th and 18th of February following Public and Stat on two applications in Ballyteigue Bay, [redacted] and T03/095A.

Would you like to make any comments on them?

Kind Regards
Jennifer

An Rannán Uisceshaothraithe agus Bainistíochta Urthrá
Aquaculture and Foreshore Management Division

An Roinn Talmhaíochta, Bia agus Mara
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Published 03/01/2023

"Determination of Aquaculture Licensing Application –T03/095A

Johnny Neville & Jeannette Brugman, Danescastle, Wellingtonbridge, Co Wexford have applied for authorisation to cultivate pacific oysters using bags and trestles on the intertidal foreshore on a 1.6459 hectare site in the coastal lagoon of Ballyteigue Burrow in Ballyteigue Bay, Co Wexford.

The Minister for Agriculture, Food and the Marine has determined that it is in the public interest to grant an Aquaculture and Foreshore Licences for this site. 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. Such matters include any submissions and observations received in accordance with statutory provisions.

The following are the reasons and considerations for the Minister's determination to **grant** the licences sought: -

a. *Scientific advice is to the effect that the waters are suitable;*
b. *Public access to recreational and other activities can be accommodated by this project;*
c. *The proposed site should have a positive effect on the economy of the local area;*
d. *All issues raised during the public and statutory consultation phase;*
e. *There are no effects anticipated on the man-made environment heritage of value in the area;*
f. *No significant effects arise regarding wild fisheries;*
g. *The site is located within the Ballyteigue Bay Special Area of Conservation (SAC) and Special Protected Area (SPA). An Article 6 Appropriate Assessment has been carried out in relation to aquaculture activities in the SAC and SPA. The Licensing Authority's Conclusion Statement (available on the Department's website) outlines how aquaculture activities including this site, are being licensed and managed so as not to significantly and adversely affect the integrity of the Ballyteigue Bay SAC and SPA;*
f. *No significant effects arise regarding wild fisheries;*
g. *The site is located within the Ballyteigue Bay Special Area of Conservation (SAC) and Special Protected Area (SPA). An Article 6 Appropriate Assessment has been carried out in relation to aquaculture activities in the SAC and SPA. The Licensing Authority's Conclusion Statement (available on the Department's website) outlines how aquaculture activities including this site, are being licensed and managed so as not to significantly and adversely affect the integrity of the Ballyteigue Bay SAC and SPA;*
h. *Scientific observations related to the Appropriate Assessment received during the licensing consultation process are addressed in the Licensing Authority's Appropriate Assessment Conclusion Statement;*
i. *Taking account of the recommendations of the Appropriate Assessment the aquaculture activity at this site is consistent with the Conservation Objectives for the SAC/SPA;*
j. *No significant impacts on the marine environment and the quality status of the area will not be adversely impacted;*
k. *The updated Aquaculture licence contains terms and conditions which reflect the environmental protection required under EU and National law."*

Marine Institute Bird Studies

Ballyteige Bay: Appropriate Assessment of Aquaculture

February 2020

Notice

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Contents

Section Page

List of Tables

List of Figures

Appendices

Citation: -

Gittings, T. and O'Donoghue, P. (2019). *Ballyteige Bay: Appropriate Assessment of Aquaculture.* Unpublished report prepared by Atkins for the Marine Institute.

Executive Summary

This report presents the results of an Appropriate Assessment of aquaculture in Ballyteige Bay. There are two aquaculture sites, covering a total area of 3.3 ha, within Ballyteige Bay. The only aquaculture activity proposed for these sites is oyster trestle cultivation.

The report assesses the potential impact of the development of these aquaculture sites on the Special Conservation Interests (SCIs) of the Ballyteige Burrow SPA, and on the SCIs of other SPAs where these SCIs may have connectivity with Ballyteige Bay. The potential for cumulative impacts from development of these aquaculture sites in combination with other relevant activities and plans is also assessed. The in-combination activities and plans assessed included shoreline access for recreation and shellfish collecting, and discharges from a wastewater treatment plant.

The SCIs of the Ballyteige Burrow SPA covered by this assessment are: Light-bellied Brent Goose, Shelduck, Golden Plover, Grey Plover, Lapwing, Black-tailed Godwit and Bar-tailed Godwit. These have all been selected for their non-breeding/wintering populations. The SCIs of other SPAs covered by this assessment are: the wintering Dunlin, Curlew and Redshank populations of the Bannow Bay SPA, the wintering Wigeon population of the Tacumshin Lake SPA, the breeding Cormorant population of the Keeragh Islands SPA, and the breeding Lesser Black-backed Gull population of the Saltee Islands SPA.

There is likely to be a measurable displacement impact to Grey Plover, and this may be significant when potential displacement due to disturbance is factored in. The predicted displacement impacts to Light-bellied Brent Goose and Wigeon are significant. However, there is a high level of uncertainty about these predictions due to the variable nature of their responses to oyster trestle cultivation, and the likely significant over-estimation of subsite occupancy levels in the displacement calculations.

The predicted displacement impacts to Shelduck, Lapwing, Curlew, Black-tailed Godwit, Bar-tailed Godwit, Dunlin and Redshank are not significant. The predicted displacement impact to Golden Plover is negligible. The limited data that was available for this assessment means that there is a moderate level of uncertainty about these predictions. For two of the species (Curlew and Redshank) there may be no net displacement impact due to the variable nature of their response to oyster trestle cultivation.

Oyster trestle cultivation is likely to have neutral or positive impacts on prey resources for Cormorants, and they will only utilise the areas around the aquaculture sites at high tide when no husbandry activity will be taking place. Therefore, no negative impacts are predicted for this species.

Due to lack of information on the diet of the Saltee Islands Lesser Black-backed Gull colony, the occurrence of Lesser Black-backed Gull in Ballyteige Bay during the summer, and/or the response of Lesser Black-backed Gull to oyster trestles, it is not possible to make an assessment of the potential impact of aquaculture activities in Ballyteige Bay on the colony.

No potentially significant cumulative impacts were identified from the in-combination assessment.

Acknowledgements

We are grateful to Noel Roche (Ballyteigue Oysters Ltd.) for providing aquaculture production data, and to Killian Mullarney for providing information on waterbird usage of Ballyteige Bay.

This assessment uses: data supplied by the Irish Wetland Bird Survey (I-WeBS), a joint scheme of BirdWatch Ireland and the National Parks and Wildlife Service of the Department of Arts, Heritage & the Gaeltacht; and data from the 2001/12 Waterbird Survey Programme as undertaken by the National Parks & Wildlife Service

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1. Introduction

1.1 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).

1.2 This report presents an Appropriate Assessment of aquaculture in Ballyteige Bay. The subject of the assessment are applications for aquaculture licences (referred to as aquaculture sites). The information on the licensing status of aquaculture sites used in this report was provided by the Department of Agriculture, Food and the Marine.

1.3 The only aquaculture activity proposed for these sites is oyster trestle cultivation.

1.4 The aquaculture sites are within the Ballyteige Burrow SPA, which is the primary focus of this assessment. In addition, following a screening exercise, Special Conservation Interests (SCIs) from four other SPAs are included in this assessment. These SPAs are: the Bannow Bay SPA, the Keeragh Islands SPA, the Saltee Islands SPA and the Tacumshin Lake SPA. The SPAs covered by this assessment are shown in Figure 1.1.

1.5 The Ballyteige Burrow SPA includes a section of seaward coast that is rarely used by the SCI species that were the subject of the assessment. Therefore, in this report we distinguish between the Ballyteige Burrow SPA (the entire SPA) and Ballyteige Bay (the estuarine section of the SPA on the northern side of the sand dunes; Figure 1.2).

1.6 This assessment is based on a desktop review of existing information. Where relevant, it identifies information gaps that may affect the reliability of the conclusions of this assessment.

1.7 The data analysis and report writing was done by Tom Gittings. Paul O'Donoghue assisted with project design, document preparation and undertook document review.

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

Structure of this report

1.9 The structure of the report is as follows:

- Chapter 2 of the report describes the methodology used for the assessment.
- Chapter 3 of the report contains a preliminary screening assessment that reviews the Special Conservation Interests (SCIs) of the Ballyteige Burrow SPA, and the SCIs of other SPAs in the wider vicinity and screens out SCIs that do not show any significant spatial overlap with the activities being assessed.
- Chapter 4 of the report describes the Conservation Objectives, and their attributes and targets, of the SCIs that were screened in for this assessment.
- Chapter 5 of the report contains a summary of waterbird habitats and distribution in the Ballyteige Burrow SPA, and of the status and distribution of the SCI species included in the assessment.
- Chapter 6 provides a description of the current and proposed future extent of the aquaculture activities covered by this assessment and the nature of their operations.

- Chapter 7 assesses the likely impact of the oyster trestle cultivation activity included in this assessment on the SCIs associated with intertidal habitat that were screened in for this assessment.
- Chapter 8 assesses the likely impact of the oyster trestle cultivation activity included in this assessment on the other SCIs that were screened in for this assessment.
- Chapter 9 contains an assessment of cumulative impacts.
- Chapter 10 concludes the report by assessing the impact of aquaculture activities in Ballyteige Bay, and any in-combination impacts (if relevant), on the conservation objectives of the SCIs included in this assessment.

Constraints to this assessment

1.10 There was very limited information available on the current and proposed aquaculture activities in Ballyteige Bay. This has meant that we have had to make assumptions about details of the activities, based on experience of oyster trestle cultivation at other Irish coastal sites. This is a particular issue for the assessment of potential disturbance impacts, where the predicted impacts are sensitive to the assumptions made about the likely patterns of husbandry activities.

1.11 There was also very limited waterbird data available for this assessment. The Irish Wetland Bird Survey counts the Ballyteige Burrow SPA as a single count unit, so I-WeBS data cannot be used to examine waterbird distribution patterns within the SPA. We made efforts to consult with the I-WeBS counter, but these were unsuccessful.

1.12 Our assessment has relied mainly on data from the 2011/12 Waterbird Survey Programme counts. This means that we had a very limited dataset of four low tide counts from one winter to use for out displacement analyses. Therefore, a high degree of uncertainty applies to inferring detailed distribution patterns of waterbirds within Ballyteige Bay from these counts.

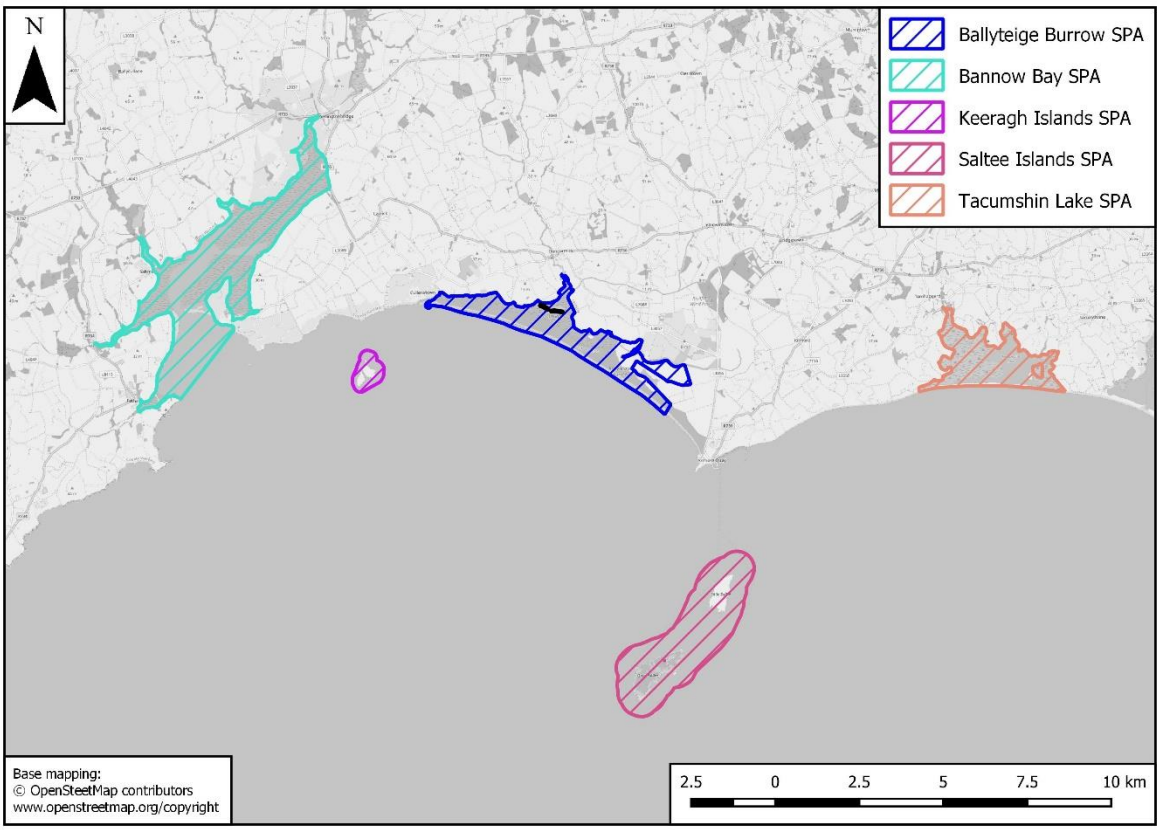

Figure 1.1 – SPAs included in this assessment.

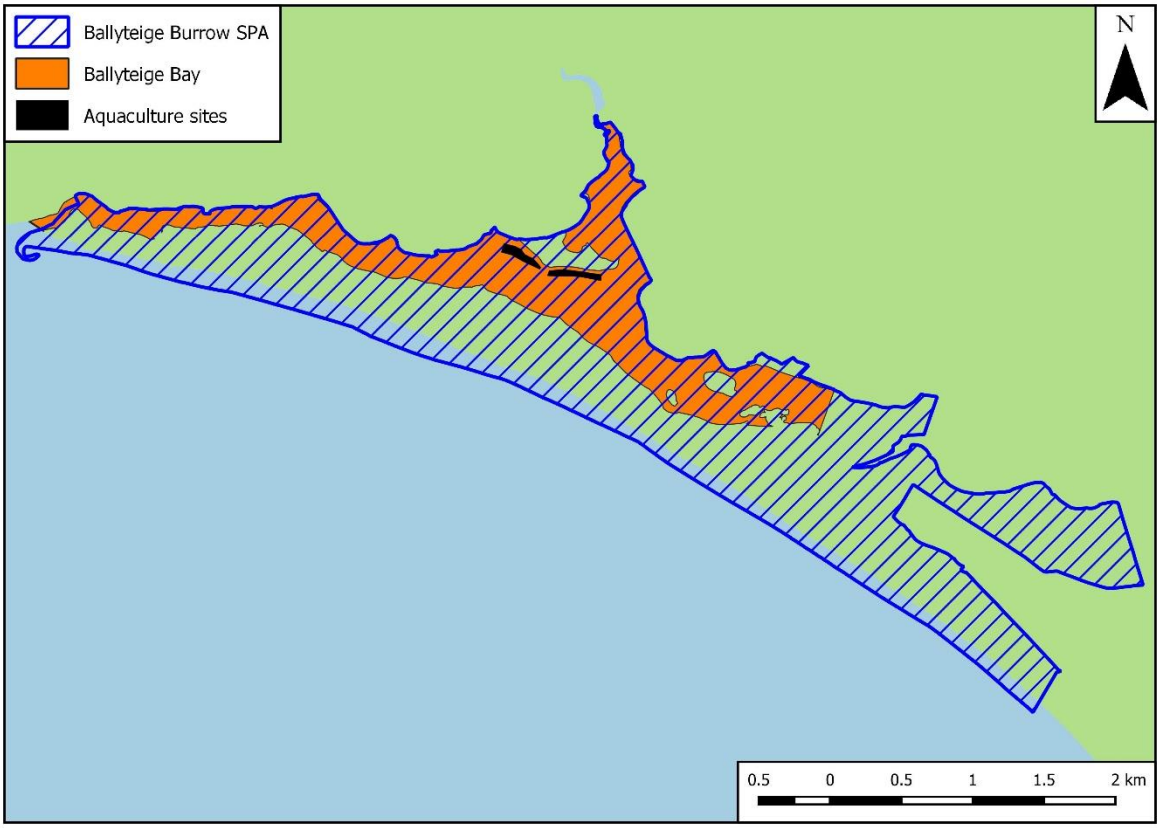

Figure 1.2 – Ballyteige Bay.

2. Methodology

General

2.1 This assessment is based on a desktop review of existing information about waterbird population trends and distribution in Ballyteige Bay, supplemented by site visits to assess the habitat characteristics and tidal regimes in the areas around the aquaculture sites.

Data sources

2.2 The SPA boundaries are derived from NPWS shapefiles[1] (which were last updated in June 2019).

2.3 The spatial extents of the aquaculture sites have been derived from shapefiles supplied by the Marine Institute (shapefile received February 2019).

2.4 The bird data sources used for the assessment are as follows:

- Irish Wetland Bird Survey (I-WeBS) counts, 1994/95-2015/16.
- NPWS Waterbird Survey Programme (WSP) 2011/12 counts.
- The descriptions of waterbird distribution within the Ballyteige Burrow SPA in the SPA Conservation Objectives Supporting Document (NPWS, 2014a).

2.5 Some additional information on waterbird distribution patterns within the Ballyteige Burrow SPA obtained from consultations with Killian Mullarney, a local ornithologist with long experience of the site.

2.6 Information on the distribution of biotopes was taken from the surveys of intertidal habitats by MERC (2012a) and subtidal habitats by MERC (2012b).

2.7 Data on the timing and height of low tides were obtained from the United Kingdom Hydrographic Offices Admiralty EasyTide website (http://easytide.ukho.gov.uk/).

Intertidal mapping

2.8 Ordnance Survey Ireland (OSI) mapping of intertidal habitat is out of date and does not provide a good representation of the current distribution of intertidal habitat in Ballyteige Bay. The OSI mapping forms the basis for the mapping of the *mudflats and sandflats not covered by seawater at low tide (1140)* Annex I habitat in NPWS (2014b). Therefore, the NPWS mapping is similarly unreliable.

2.9 For the purposes of this assessment, we have used Bing aerial imagery to map the extent of intertidal habitat.

[1] www.npws.ie/maps-and-data/designated-site-data/download-boundary-data (accessed 28th June 2019).

Wintering waterbird datasets

I-WeBS

2.10 Waterbird distribution has been monitored as part of the Irish Wetland Bird Survey (I-WeBS) most winters since 1995/96[2]. No counts were carried out in 2000/01. In 2001/02, only a single, apparently incomplete count, was carried out.

2.11 The I-WeBS 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. At Ballyteige Bay, between one and seven counts have been carried out each winter (mean 3.9, excluding poor quality counts), with a generally increased level of coverage in more recent winters. Counts have been carried out in January in 16 of the 20 winters with I-WeBS coverage, with counts in the other months in 8-14 of the winters.

2.12 Ballyteige Bay is treated as a single unit for the I-WeBS counts with no divisions into subsites. Detailed information on the timing of the Ballyteige Bay I-WeBS counts is not available for the majority of the counts. However, of the 16 counts for which information is available (all during 1997/98-2004/05), seven were carried out on ebb tides, four at low tide, three at high tide and two on flood tides.

Waterbird Survey Programme

2.13 Details of the Waterbird Survey Programme (WSP) methodology and results at Ballyteige Bay are described in Cummins and Crowe (2012) and Lewis and Tierney (2014).

2.14 Four low tide counts, and one high tide count, were carried out. The low tide counts were carried out in October, November and December 2011 and February 2012. The high tide count was carried out in January 2011. The counts were carried out by a coordinated team of three-four professional counters. Three of the low tide counts were completed in a single day, while the fourth low tide count and the high tide count were competed over two days. There was complete coverage on each count (Cummins and Crowe, 2012).

2.15 The WSP counts covered all of the Ballyteige Burrow SPA as well as areas of coastline and fields outside the SPA. The total area covered was divided into 14 subsites, of which six covered Ballyteige Bay (Figure 2.1 and Figure 2.2).

2.16 The WSP counted feeding and roosting birds separately. However, we have 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.

2.17 As part of the WSP the approximate position of the main flocks encountered were mapped. These flock map data have been used to supplement the analyses of species distribution from the WSP counts. In particular, the flock map data is useful in indicating relationships between species distributions and broad topographical/habitat zones, such as biotopes, edges of tidal channels, upper shore areas, etc.

[2] Cull & Killag (Ballyteige) I-WeBS site (0O406).

2.18 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 different observers may have varied in the extent to which they mapped flocks.

Assessment methodology

Screening

2.19 The SCIs of the Ballyteige Burrow SPA were reviewed and screened in for detailed assessment if:

- The SCI was considered likely to have significant spatial overlap with the aquaculture activities in Ballyteige Bay, or the potential for such overlap could not be discounted; and
- The SCI was considered likely to be adversely impacted by the aquaculture activities, or the potential for adverse impacts could not be discounted.

2.20 For SCIs of other SPAs, it is difficult to determine the likelihood of spatial overlap as there is generally little information about movements of wintering birds between sites, or about the foraging ranges from breeding colonies.

2.21 Several of the waterbird SCIs of the other SPAs away from Ballyteige Bay are also SCIs of the Ballyteige Burrow SPA. Therefore, these species were screened as part of the screening of the SCIs of the Ballyteige Burrow SPA.

2.22 For additional waterbird SCIs of other SPAs designated for their wintering populations, we considered the general ecology of the species and, in particular, their Ballyteige Bay status and/or the degree of site faithfulness.

2.23 For SCIs designated for their breeding populations, we used information from the literature to define typical foraging ranges for various species.

2.24 The main source for our information on foraging ranges was the BirdLife Seabird Foraging Database (Thaxter *et al.*, 2012), with the additional information provided by Oppel *et al.* (2018) also reviewed. Thaxter *et al.* (2012) provide a range of values for foraging ranges (the mean, the mean maximum and the maximum). The explanatory document for the BirdLife Seabird Foraging Database (Lascelles, 2008) says "*it may be useful to think of areas within the average foraging range as a core zone of activity being exploited by the majority of the birds the majority of the time, and those between the average and the maximum foraging range as a buffer zone, exploited by fewer birds for less of the time*" (although it also acknowledges that this is not always the case). Therefore, we have generally focused on the mean foraging range (rather than the mean maximum or maximum) to give an indication of the core foraging zones.

2.25 It should be noted that the above approach is analogous to the approach recommended by Scottish Natural Heritage for considering connectivity between SPAs and wind farm developments for the purposes of screening (SNH, 2016). The Scottish Natural Heritage guidance states that: -

> "*In most cases the core range should be used when determining whether there is connectivity between the proposal and the qualifying interests. Maximum ranges are also provided to indicate that birds will, at times, travel further. In exceptional cases distances up to the maximum foraging range may be considered; for example, whilst osprey core foraging range is 10 km an osprey foraging at a loch well beyond this distance from its SPA may still be connected if there is a lack of other closer foraging sites*."

2.26 We are not aware of any other explicit guidance relating to this issue. Therefore, we consider that our approach for screening the SCIs designated for their breeding populations is in accordance with

recognised best practise for assessing potential connectivity between breeding bird populations and development proposals.

Identification of potential impacts

2.27 Potential negative impacts to SCI species 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.

2.28 The primary source of information used for the identification of potential impacts is the trestle study (Gittings and O'Donoghue, 2012, 2016b). This study used the results of counts of waterbirds within oyster trestles and in areas of comparable habitat without trestles, and quantification of the available habitat within and outside the trestles, to analyse the relationship between waterbird distribution patterns and the presence of oyster trestles. The main analyses used were: ordination analyses to investigate the influence of oyster trestles on waterbird assemblages (with the position of species in the ordination providing an indication of their association with oyster trestles); and comparison of observed numbers within trestle blocks with numbers predicted assuming that birds are distributed evenly across available habitat. The results of the analyses were used to identify consistent patterns of positive or negative association with oyster trestles across the sites studied and categorised species into the following groups: neutral/positive association, negative association, exclusion response, and variable response (response may vary between sites). In addition, for this assessment, we have carried out further site specific analysis of data from the trestle study (see above).

2.29 The trestle study was carried out during periods with typical levels of husbandry activity. Therefore, the effects of disturbance on waterbirds within the trestle blocks due to husbandry activity associated with intertidal oyster cultivation are included in the categorisation of species responses and such disturbance impacts are not analysed separately in this assessment. However, we have analysed potential disturbance impacts to waterbirds in adjacent areas of tidal habitats outside the trestle blocks.

2.30 The trestle study focused on species associated with the intertidal and/or shallow subtidal habitats. One of the SCIs screened in for this assessment (Cormorant) is a fish-eating species that is primarily associated with deep (>0.5 m) subtidal habitats, and the trestle study does not provide information on its responses to intertidal oyster cultivation. A literature review was carried out to assess the potential impact of intertidal oyster cultivation on fish.

Displacement calculations

General approach

2.31 For most of the species covered by this assessment, we assessed the potential impact of development of the aquaculture sites by calculating the potential displacement as a percentage of the total Ballyteige Bay population. This involves using waterbird count data to calculate the percentage of the total Ballyteige Bay population occurring in the subsites containing the aquaculture sites (waterbird occupancy) and multiplying this by the percentage of tidal habitat in these subsites which is occupied by the aquaculture sites (trestle occupancy).

2.32 We have used similar approaches for previous assessments of oyster trestle cultivation. However, the displacement calculations carried out for the present assessment differ from those previous assessments in two ways: -

- We have used the maximum percentage waterbird occupancy of the subsites containing the aquaculture sites, rather than the mean percentage occupancy.

- We have also included the potential disturbance impacts to waterbirds outside the aquaculture sites from husbandry activity within the aquaculture sites.

2.33 The reasons for these differences are explained below.

Waterbird occupancy

2.34 In general, mean, rather than maximum, waterbird occupancy provides better baseline data for assessing potential displacement impacts. Mean waterbird occupancy measures the overall occupancy levels across the season and indicates the potential cumulative loss of food resources across the season that will result from exclusion of waterbirds from an area.

2.35 At other sites where we have carried out similar assessments, we have had datasets based on a relatively large number of counts over several seasons (e.g., Gittings and O'Donoghue, 2014b), or we have had alternative methods of assessing displacement that can be compared with the occupancy method (e.g., Gittings and O'Donoghue, 2014a), or we have had additional datasets against which the representativeness of the waterbird distribution recorded by the dataset used for the occupancy calculations could be assessed (e.g., Gittings and O'Donoghue, 2016a).

2.36 For the present assessment, the only data that we have on waterbird distribution within Ballyteige Bay is from the WSP low tide counts. There were only four low tide counts carried out, and for several of the SCI species the effective sample size is only two or three counts, as they were absent, or only present in very low numbers on one or two of the low tide counts. We do not have any other data that can be used to evaluate whether the distribution recorded in the WSP low tide counts was representative of typical low tide distribution patterns. A sample size of 2-4 counts is too low for calculations of meaningful occupancy levels using the means of the counts. There would be a high risk of any such calculated means underrepresenting the actual mean occupancy levels due to sampling effects. Therefore, as a precautionary measure, we have used the maximum waterbird occupancies for the calculation of displacement impacts.

2.37 Use of maximum, rather than mean, waterbird occupancies for the present assessment follows the approach taken in the displacement analyses carried out for the Ballymacoda Bay AA (APEM, 2016), which was also based on a dataset that was limited to four low tide counts.

Disturbance

2.38 Displacement of birds from aquaculture sites can be caused by exclusion of birds from the aquaculture sites due to the presence of structures in the aquaculture sites and/or by disturbance due to husbandry activity. In practice, within aquaculture sites it is difficult to distinguish between these two factors and the data that we have on responses to oyster trestle cultivation represents the combined effects of exclusion and disturbance.

2.39 Disturbance can also extend outside the aquaculture sites. However, where there are large aggregations of aquaculture sites, the potential disturbance impact outside the aquaculture sites will be small as most activity will be within the interior of the aquaculture sites. Additionally, in many locations, the configuration of aquaculture sites along the tideline of exposed bays, and the concentration of most waterbird activity along the tideline, means that the potential for disturbance buffers from activity within the aquaculture sites to overlap areas outside the aquaculture sites holding concentrations of waterbirds is very limited.

2.40 The aquaculture sites at Ballyteige Bay differ from the above scenarios due to their size and shape and the position of the aquaculture sites within the bay. The aquaculture sites are small and linear with widths of around 40-70 m, meaning that all activity within the sites will have potential

disturbance effects extending outside the sites. The sites are also located in the middle of the bay with a large area of intertidal habitat adjacent to the sites where waterbirds are likely to be distributed at low tide.

Calculation method

2.41 In the following calculations we used proportions of tidal habitat (intertidal and subtidal) rather than intertidal habitat only. The reason for doing so, is that the detailed configuration of the tidal channels in the subsites containing the aquaculture sites appears to be quite variable between different sources of aerial imagery. Also, at low tide parts or all of the tidal channel may be accessible to intertidally feeding birds. Therefore, we consider that using all tidal habitat, rather than only intertidal habitat, is more appropriate in these circumstances.

2.42 We used the WSP low tide count data to calculate the waterbird subsite occupancy as the maximum percentage (across all the low tide counts, excluding those where very low numbers of the SCI species were recorded) of the total count occurring within the two subsites that contain the aquaculture sites ($P_{W\text{-}SO}$).

2.43 We then corrected $P_{W\text{-}SO}$ to account for displacement due to existing aquaculture activity that was occurring at the time of the WSP counts. The formula for this correction is given at the end of this section, as it is based on the subsequent stages of the displacement calculations. This gave us a corrected value ($P_{W\text{-}SO*}$), which was used in the subsequent calculations.

2.44 We then used the proportion of tidal habitat occupied by the aquaculture sites in these two subsites ($P_{TH\text{-}AQU}$) to estimate the percentage of birds in these subsites that would be expected to occur in the aquaculture sites. The predicted displacement of birds due to exclusion from the aquaculture sites (D_{excl}) is then given by the product of these two percentages:

$$D_{excl} = P_{W\text{-}SO*} * P_{TH\text{-}AQU}$$

2.45 To calculate the displacement due to disturbance, we needed to define the spatial and temporal patterns of husbandry activity within the aquaculture sites, and the response of waterbirds to disturbance.

2.46 A single husbandry worker working on trestles within an aquaculture site represents a point disturbance source. The potential disturbance impact of such a source can by assessed by drawing buffers around the point representing distances at which birds show various levels of response to disturbance. However, in practice, there are usually multiple husbandry workers present in aquaculture sites, which they will move around while they are working. We do not have data on the likely spatial patterns of husbandry activity within the aquaculture sites at Ballyteige Bay. Instead, as a crude approximation, we divided each of the aquaculture sites into four approximately equal segments and assumed that, at any one time, activity within each aquaculture site would be restricted to one of the segments.

2.47 Husbandry activity in small aquaculture sites, such as those in Ballyteige Bay, typically does not take place on every low tide. Based on experience at other oyster trestle cultivation sites in Ireland, we have assumed that husbandry activity will take place on around one-third of days at Ballyteige Bay. We have also assumed that husbandry activity in the two aquaculture sites will take place at the same time.

2.48 We used data from monitoring at Dungarvan Harbour (Gittings and O'Donoghue, 2018a, 2018b, 2019; see Chapter 7) to quantify the potential response of waterbirds to husbandry-related disturbance. This monitoring reported an 80% flush rate within 100 m (n = 5 observations) and a 23% flush rate at distances of 100-300 m (n = 30 observations). Because of the small sample size, we have used a 100% displacement rate for the 0-100 m distance band, and we rounded up to a 25% displacement rate for the 100-300 m distance band.

2.49 We calculated the potential displacement impact due to disturbance (D_{dist}): -

$$D_{dist} = (P_{W\text{-}SO^*} - D_{excl}) * (P_{TH\text{-}100} + (P_{TH\text{-}300} * 0.25)) * 0.33$$

where $P_{TH\text{-}100}$ = the proportion of tidal habitat in the subsites containing the aquaculture sites within 100 m, and 100-300 m, respectively of the aquaculture sites (excluding the habitat within the aquaculture sites). The displacement due to exclusion (D_{excl}) is factored out of this calculation to avoid double counting this impact.

2.50 For each species, we calculated two values of D_{dist}: one using buffers from point sources located at the centroids of each of the aquaculture sites (Figure 2.3), and the other using buffers from segments in each of the aquaculture sites. The latter used the mean of two combinations of segments: one using segments at the opposite ends of the aquaculture sites (Figure 2.4) and the other using segments at adjacent ends of the aquaculture sites (Figure 2.5). Sections of the buffers that overlapped the subsite 0OL06 were excluded from the analyses due to the lack of sightlines from the aquaculture sites to that subsite. These calculations gave a range of minimum to maximum displacement impacts due to disturbance.

2.51 To factor in displacement due to existing aquaculture activity, we corrected $P_{W\text{-}SO}$ using the following formula:

$$P_{W\text{-}SO^*} = P_{W\text{-}SO} + (P_{W\text{-}SO}/(1- P_{TH\text{-}AQU})- P_{W\text{-}SO}) + (P_{W\text{-}SO}/(1- (P_{TH\text{-}100}/4))- P_{W\text{-}SO}) + (P_{W\text{-}SO}/(1- (P_{TH\text{-}300}/16))- P_{W\text{-}SO})$$

2.52 The correction of $P_{TH\text{-}100}$ by a factor of 1/4, and $P_{TH\text{-}300}$ by a factor of 1/16, account for the temporal pattern of husbandry activity (recorded on one out of the four WSP counts) and the 25% flush rate in the 100-300 m distance band.

2.53 In practice the above correction only increased the predicted displacement by a maximum of 0.2%.

Impacts on population trends

2.54 We have information on aquaculture production levels at Ballyteige Bay from 2008-2018. This provides an indication of the intensity of aquaculture activity over those years. Therefore, in theory, analysis of the waterbird population trends over this period could reveal evidence about the nature of any impacts from aquaculture on the waterbird populations.

2.55 The Conservation Objectives Supporting Document (NPWS, 2014a) provides population trend information for the Ballyteige Burrow SPA over the period 1995/96-2010/11. This does not match well with the period for which we have aquaculture production data. Therefore, we have carried out our own analyses.

2.56 We used the I-WeBS dataset to calculate population trends over the period 2007/08-2015/16, as 2015/16 is the most recent winter for which I-WeBS data was available. Also, this broadly corresponds to the period for which Burke *et al.* (2018) calculated national population trends. For comparison with those national population trends, we calculated five year mean peak counts for the beginning and end of the period.

2.57 Aquaculture production at Ballyteige Bay showed an increasing trend across this period. Therefore, if aquaculture in Ballyteige Bay was having a negative impact on waterbird populations we would expect decreasing trends in waterbird populations at Ballyteige Bay relative to the national trend.

2.58 The above represents a very simple analysis. More complex methods of investigating population trends using GLM to impute missing counts and GAM to model smoothed trends are widely used in analyses of waterbird population trends. However, these were not used by NPWS (2014a) at Ballyteige Bay due to the variable level of I-WeBS coverage.

Assumptions

2.59 Our displacement analysis relies on the following assumptions: -

- All the species are completely excluded from areas occupied by oyster trestle cultivation.
- The disturbance responses derived from the Dungarvan Harbour data are representative of the likely disturbance responses in Ballyteige Bay.
- The subsite occupancy values used in the analyses are representative of typical subsite occupancy values across seasons.
- Within the subsites containing the aquaculture sites, and in the absence of any oyster trestle cultivation activity, the waterbirds would occur within the aquaculture sites in proportion to the area occupied by the aquaculture sites.
- Disturbance to waterbirds from oyster trestle cultivation activity will only be potentially significant if it causes displacement of birds.

2.60 The assumption that all the species are completely excluded from areas occupied by oyster trestle cultivation is precautionary. While this assumption is correct for at least one of the species covered by the assessment (Grey Plover), other species show reduced densities within areas of oyster trestle cultivation but are not completely excluded (Bar-tailed Godwit and Dunlin), while other species appear to show variable responses to oyster trestle cultivation which differ between sites (Light-bellied Brent Goose and Curlew).

2.61 We consider the overall pattern of disturbance responses derived from the Dungarvan Harbour data to be broadly representative of typical patterns of disturbance responses to oyster trestle cultivation activity, but the precise quantitative values are likely to vary between species and with flock sizes (see Chapter 7).

2.62 The subsite occupancy values used in the analyses are based on a very small number of counts (2-4 counts) from a single season. For this reason, we have used the maximum, rather than the mean, subsite occupancy values. However, this may still underestimate overall occupancy levels across seasons, as illustrated by the following analysis of data from Bannow Bay.

2.63 At Bannow Bay, counts from three seasons were used for an updated displacement analysis (Gittings and O'Donoghue, 2017) with four counts being carried out in each season. Table 2.1 compares the number of annual peak subsite occupancy values in the two subsites that were used for the displacement analyses that were greater than the overall mean subsite occupancy values across all three seasons. For all species except Light-bellied Brent Goose, there were some annual peak subsite occupancy values that were less than the overall mean. Across all species, 20% of the annual peak subsite occupancy values were less than the overall mean across all seasons. Therefore, even with the use of maximum, rather than mean, subsite occupancy, there is still a significant risk of underestimating overall subsite occupancy levels across seasons.

Table 2.1 - Comparison of annual peak subsite occupancy in subsites used for displacement analyses at Bannow Bay in three seasons with overall mean subsite occupancy across all three seasons.

Species	Number of annual peak values > overall mean		Number of counts included in overall mean
	0O413	0O418	
Light-bellied Brent Goose	3	3	11
Shelduck	2	3	9
Wigeon	2	3	7
Golden Plover	1	2	11
Grey Plover	1	3	12
Lapwing	2	3	12
Curlew	3	2	11
Black-tailed Godwit	3	2	7
Bar-tailed Godwit	3	2	12
Dunlin	2	2	12
Redshank	3	3	10
Totals	25	28	114

Derived from analysis of datasets used for Gittings and O'Donoghue (2017). Counts with overall totals of < 100, or < 10 for Grey Plover, were excluded from the calculations of overall means (see Gittings and O'Donoghue, 2017).

2.64 The assumption that species are effectively uniformly distributed within subsites (at least with respect to aquaculture sites) is unlikely to be strictly correct at most sites but may be a reasonable approximation at Ballyteige Bay. In Ballyteige Bay, the subsites containing the aquaculture sites are relatively small and do not appear to have significant habitat variation. As it is an estuarine site, rather than open sandflat, waterbirds will generally be widely distributed across the intertidal habitat at low tide, rather than concentrated on the tideline. However, there may be some concentration of the species associated with shallow subtidal habitat (Light-bellied Brent Goose, Shelduck and Wigeon) along the tidal channels, while waders may roost along the edges of the tidal channels for short periods at low tide.

2.65 Behavioural responses to disturbance (such as flush responses) will not necessarily indicate the potential impact of disturbance on the species population. Species responses to disturbance should reflect the costs of responding to the disturbance (Gill *et al.*, 2001): if there is alternative habitat available and the costs of moving to this habitat are low, species may show a stronger avoidance of disturbed areas, compared to species with little alternative habitat available and/or higher costs of moving to this habitat. However, if species distributions at the site-scale are not affected by disturbance, and there is sufficient knowledge of the species use of the site to assess that habitat factors/resource availability are not restricting their distribution, it will generally be reasonable to assume that disturbance is not having an impact on the species population. Moreover, for SCIs in SPAs, if species distributions at the site-scale are affected by disturbance this would be in conflict with the site-specific conservation objectives for the site.

Assessment of significance

2.66 We assessed the significance of any potential impacts identified with reference to the attributes and targets specified by NPWS (2014c, 2012b and 2011a). Potential negative impacts were 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.

Ballyteige Burrow SPA and Bannow Bay SPA SCIs

Attribute 2 – Distribution

2.67 For these SCIs, we have focused on attribute 2 (distribution) of the conservation objectives.

2.68 Assessing significance with reference to attribute 2 is difficult because the level of decrease in the range, timing or intensity of use 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 Bannow Bay population would be detectable against background levels of annual variation.

2.69 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.

2.70 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). For example, a 1% decrease in the baseline population of Turnstone would be a decrease of two birds. 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).

Attribute 1 - Population trends

2.71 Impacts on this attribute are only likely to occur if there are high levels of displacement impacts. However, there is a high level of uncertainty about the magnitude of the displacement impacts that are likely to occur. Therefore, we do not consider that it would be appropriate to attempt to assess the impact on this attribute given the current level of available data.

Keeragh Islands SPA and Saltee Islands SPA SCIs

2.72 Two SCIs were screened in from these SPAs: the Cormorant breeding population in the Keeragh Islands and the Lesser Black-backed Gull breeding population in the Saltee Islands.

2.73 NPWS have published site specific conservation objectives for the Saltee Islands SPA, which include detailed attributes and targets for the Lesser Black-backed Gull breeding population. NPWS have only published generic conservation objectives for the Keeragh Islands SPA. However, for the purposes of our assessment, we have assumed that the attributes and targets specified for the Cormorant breeding population in the Saltee Islands SPA[3] also apply to the Cormorant breeding population in the Keeragh Islands SPA.

2.74 We used these attributes and targets to assess the significance of potential impacts to these two SCIs.

[3] Cormorant is also a SCI of the Saltee Islands SPA, but this SCI was screened out due to the distance from Ballyteige Bay relative to the typical foraging range of the species.

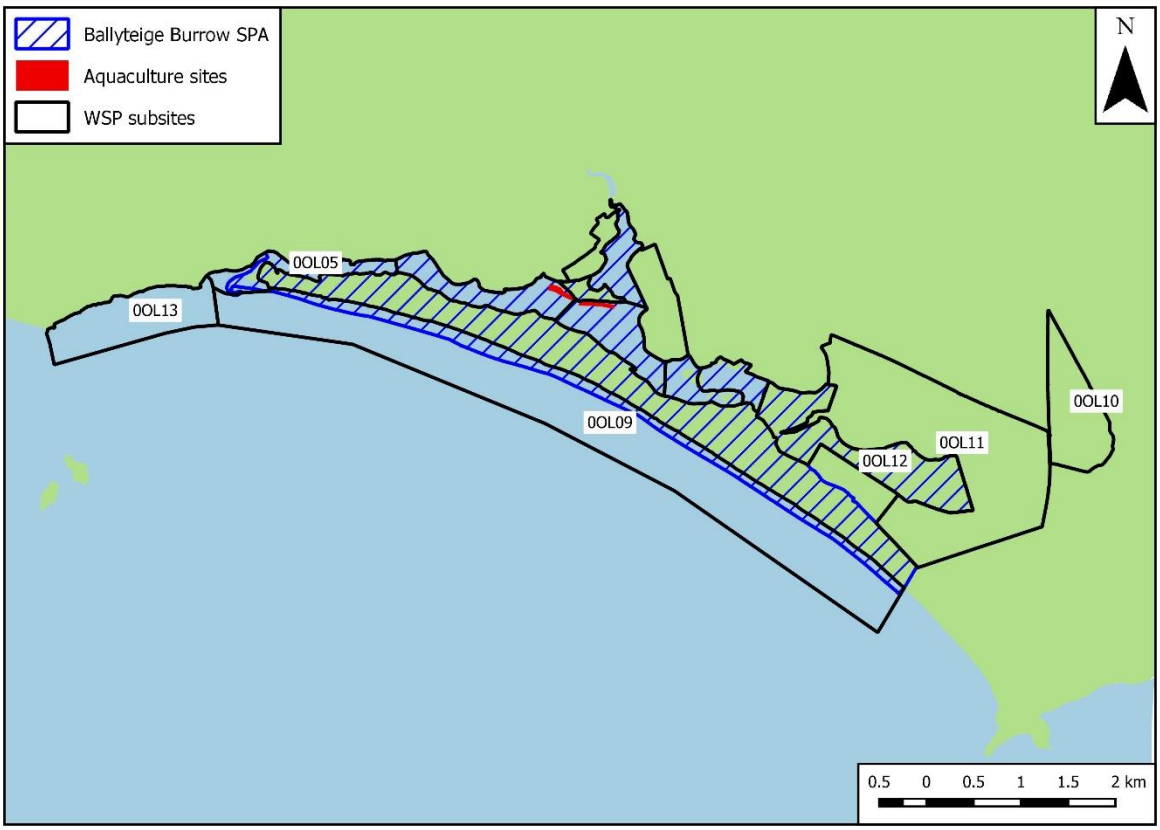

Figure 2.1 – WSP subsites (overall map).

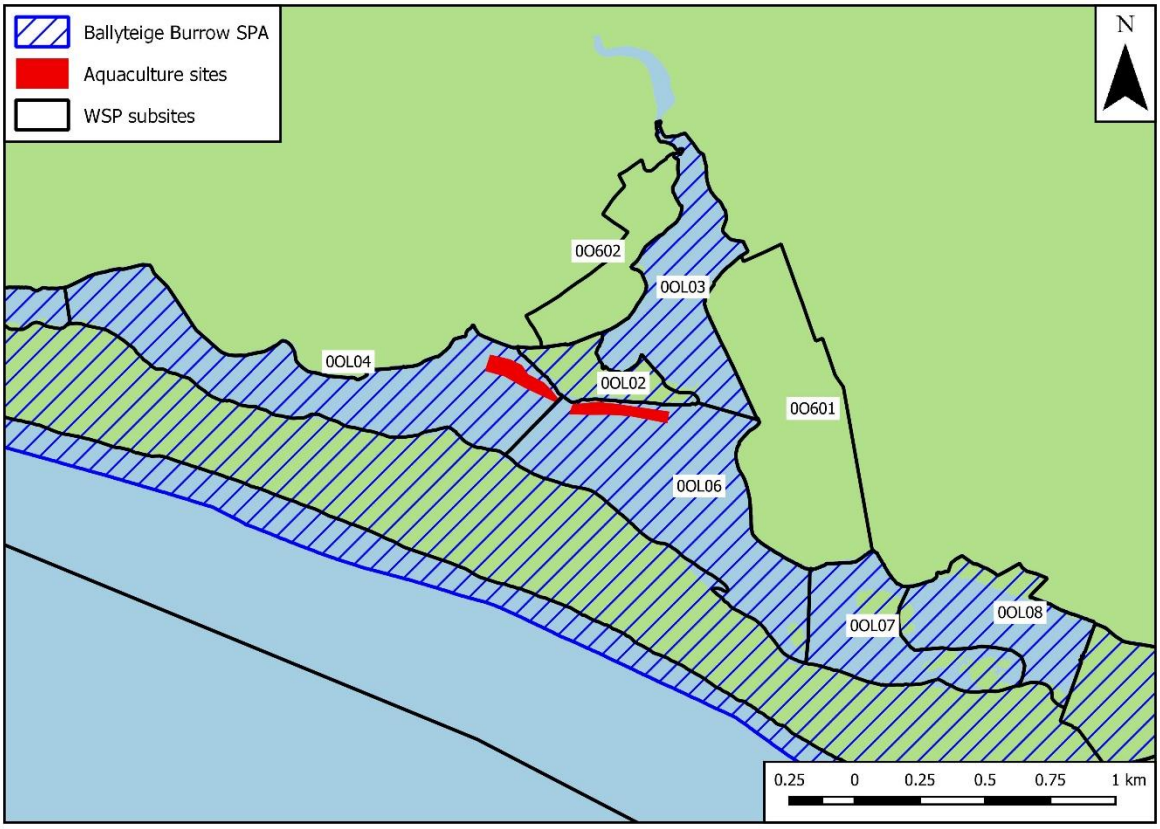

Figure 2.2 – WSP subsites (middle and upper bay).

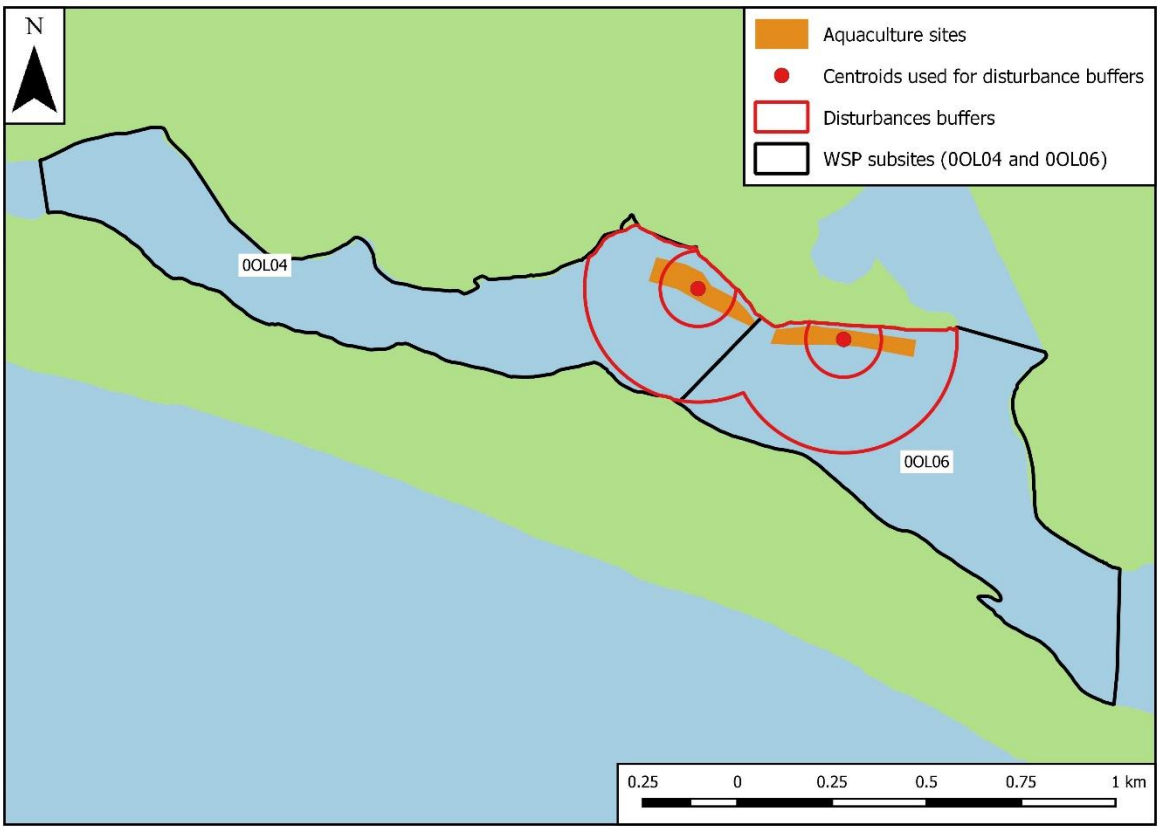

Figure 2.3 – Disturbance buffers generated using the centroids of each aquaculture site.

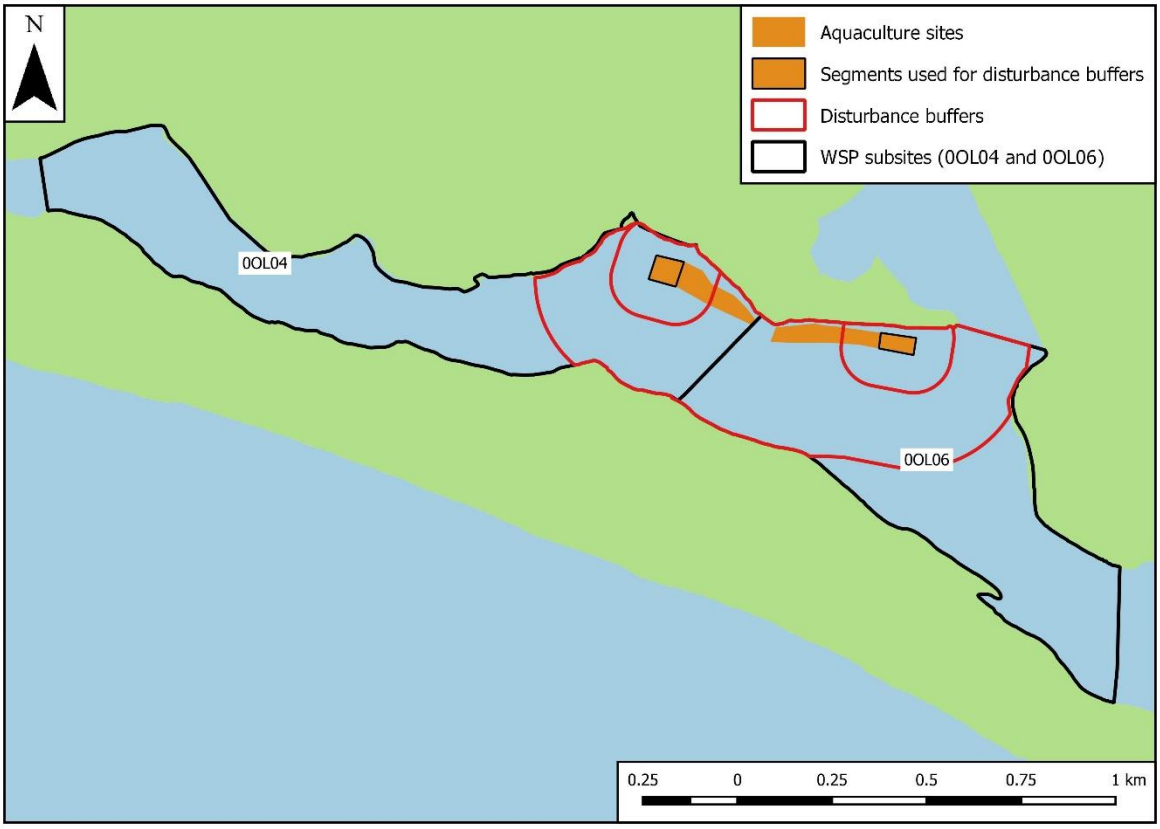

Figure 2.4 – Disturbance buffers generated using segments located at the opposite ends of each aquaculture site.

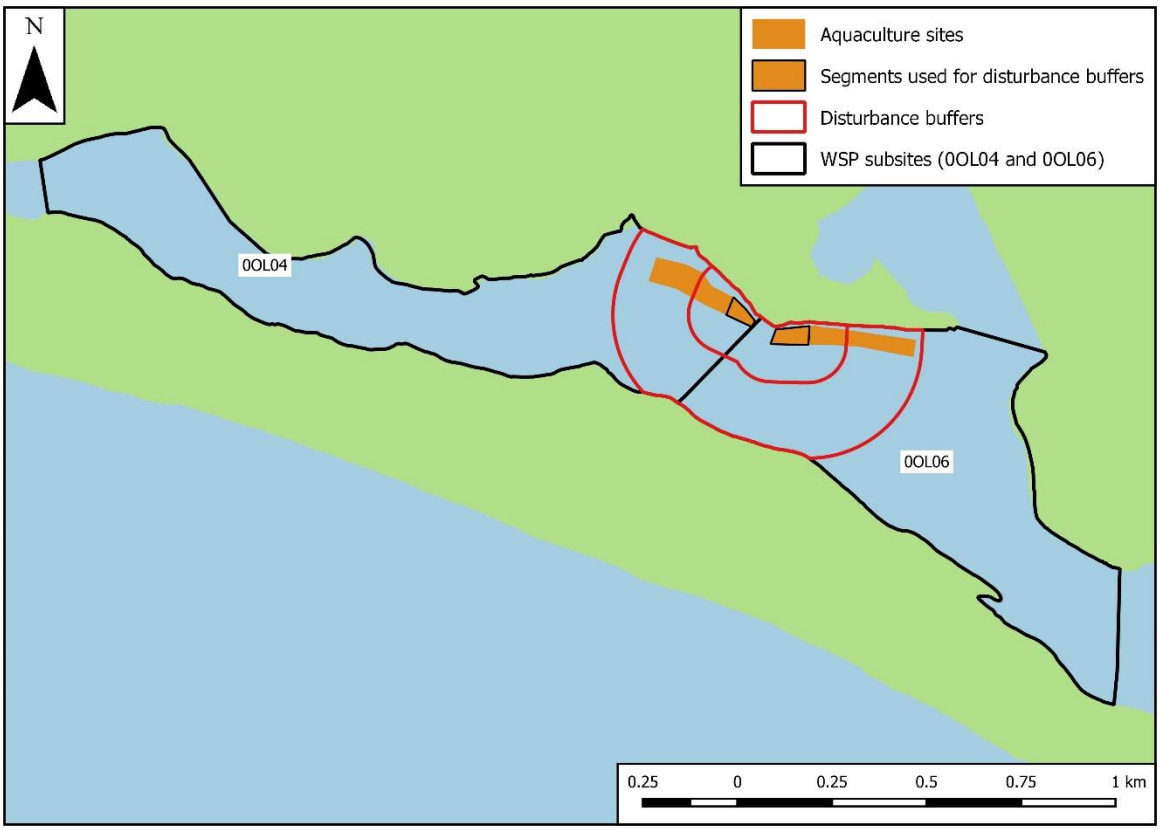

Figure 2.5 - Disturbance buffers generated using segments located at the adjacent ends of each aquaculture site.

3. Screening

Introduction

3.1 In addition to the Ballyteige Burrow SPA, the Bannow Bay, Keeragh Islands, Saltee Islands and Tacumshin Lake SPAs are also within 15 km of the aquaculture sites in Ballyteige Bay (Figure 3.1). There is also potential connectivity with the Lady's Island Lake, The Raven and the Wexford Harbour SPAs (Figure 3.1).

Ballyteige Burrow SPA

Waterbird SCIs

3.2 The following species are listed as SCIs of the Ballyteige Burrow SPA: Light-bellied Brent Goose, Shelduck, Golden Plover, Grey Plover, Lapwing, Black-tailed Godwit and Bar-tailed Godwit. All of these species make significant use of subtidal and/or intertidal habitat in Ballyteige Bay. The aquaculture activities covered in this assessment will affect 3.3 ha of intertidal and subtidal habitat and have the potential to cause significant changes to habitat structure and/or food availability, and/or because disturbance impacts to the SCI species. Therefore, the activities being assessed could potentially have significant impacts on SCIs that use subtidal and/or intertidal habitat.

Wetland SCI

3.3 The wetland habitat is also listed as a SCI of the Ballyteige Burrow SPA. The Conservation Objectives define the favourable conservation condition of this SCI 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 SCI and it has been screened out from any further assessment.

Other SPAs

3.4 SPAs in the wider vicinity of Ballyteige Bay are shown in Figure 3.1. There are a number of SPAs along the coastline on either side of Ballyteige Bay that are designated for various wintering waterbird and/or breeding seabird populations. It is known that some waterbird species regularly move between some of these SPAs: e.g., Whooper Swans move between the Wexford Harbour and Slobs and Tacumshin Lake SPAs. Therefore, it is necessary to consider the potential for impacts to Special Conservation Interests (SCIs) of other SPAs away from Ballyteige Burrow.

3.5 Some of the SCIs of the other SPAs away from Ballyteige Burrow are also SCIs of the Ballyteige Burrow SPA. Therefore, these species will be assessed as part of the assessment of the potential impacts to the Ballyteige Burrow SPA. The additional waterbird and seabird species that are SCIs of other SPAs are listed in Table 3.1 and Table 3.2.

3.6 The additional breeding seabird species include several species that feed in open marine waters and do not usually come into enclosed estuarine areas (Fulmar, Gannet, Puffin, Razorbill, Guillemot and Kittiwake; Table 3.1). Therefore, these species can all be screened out as there is unlikely to be any significant overlap between their foraging ranges and the aquaculture sites. The other breeding seabird SCIs include several for which the aquaculture sites in Ballyteige Bay are well outside their likely core foraging (Cormorant in the Saltee Islands, Shag, Little Tern, Sandwich Tern, Common Tern, Roseate Tern, Arctic Tern and Black-headed Gull; Table 3.1). This leaves only the Cormorant SCI of the Keeragh Islands SPA and the Lesser Black-backed Gull and the Lesser Black-backed Gull and Herring Gull SCIs of the Saltee Islands SPA as likely to have significant spatial overlap with the aquaculture sites in Ballyteige Bay. However, Herring Gull has a neutral/positive

response to oyster trestle cultivation (Gittings and O'Donoghue, 2016b) and can therefore be screened out from further assessment.

3.7 The additional wintering waterbird SCIs include several that are of rare occurrence, or occur in very low numbers, in Ballyteige Bay (Bewick's Swan, Gadwall, Pintail, Shoveler, Tufted Duck, Coot and Knot; Table 3.2). Therefore, these SCIs can all be screened out as they are unlikely to have any significant overlap with the aquaculture sites. Whooper Swan can be screened out because the distance of Ballyteige Bay from Tacumshin Lake (around 10 km) is a lot greater than its likely core foraging range of 5 km (SNH, 2016). The other SCIs include four waders that are SCIs of the Bannow Bay SPA (Curlew, Dunlin and Redshank; Table 3.2). These SCIs have all been screened in due to the likelihood that there is significant waterbird movement between Ballyteige Bay and Bannow Bay due to the unusual tidal regime in Ballyteige Bay. The Wigeon SCI of the Tacumshin Lake SPA has also been screened in due to the low site fidelity of wintering populations of this species.

Table 3.1 - Breeding seabird SCIs of other SPAs in the wider vicinity of Ballyteige Bay that are not SCIs of the Ballyteige Burrow SPA.

Species	SPA	Within core range	Suitable habitat	Preliminary screening
Fulmar	Saltee Islands SPA	yes	no	screened out
Gannet	Saltee Islands SPA	yes	no	screened out
Cormorant	Keeragh Islands SPA	yes	yes	screened in
	Saltee Islands SPA	no	yes	screened out
Shag	Saltee Islands SPA	no	yes	screened out
Puffin	Saltee Islands SPA	no	no	screened out
Razorbill	Saltee Islands SPA	yes	no	screened out
Guillemot	Saltee Islands SPA	yes	no	screened out
Little Tern	Wexford Harbour and Slobs	no	yes	screened out
Sandwich Tern	Lady's Island Lake	no	yes	screened out
Common Tern	Lady's Island Lake	no	yes	screened out
Roseate Tern	Lady's Island Lake	no	yes	screened out
Arctic Tern	Lady's Island Lake	no	yes	screened out
Kittiwake	Saltee Islands SPA	yes	no	screened out
Black-headed Gull	Lady's Island Lake	no	yes	screened out
Lesser Black-backed Gull	Saltee Islands SPA	yes	yes	screened in
Herring Gull	Saltee Islands SPA	yes	yes	screened out

Note: Herring Gull screened out due to neutral/positive response to oyster trestle cultivation (Gittings and O'Donoghue, 2016b).

Table 3.2 – Wintering waterbird SCIs of other SPAs on the south Wexford coast that are not SCIs of the Ballyteige Burrow SPA.

Species	SPA	Ballyteige Bay status	Site fidelity	Preliminary screening
Bewick's Swan	Tacumshin Lake	rare	high	screened out
Whooper Swan	Tacumshin Lake	regular	moderate/high	screened out
Wigeon	Tacumshin Lake	regular	weak	screened in
Gadwall	Lady's Island Lake	rare	not classified	screened out
	Tacumshin Lake	rare	not classified	screened out
Teal	Tacumshin Lake	regular	weak	screened out
Pintail	Bannow Bay	rare	weak	screened out
	Tacumshin Lake	regular	weak	screened out
Shoveler	Tacumshin Lake	rare	moderate	screened out
Tufted Duck	Tacumshin Lake	rare	not classified	screened out
Little Grebe	Tacumshin Lake	regular	unknown	screened out
Coot	Tacumshin Lake	rare	unknown	screened out
Curlew	Bannow Bay	regular	high	screened in
Knot	Bannow Bay	rare	moderate	screened out
Dunlin	Bannow Bay	regular	moderate	screened in
Redshank	Bannow Bay	regular	moderate	screened in

Note: Ballyteige Bay status based on review of I-WeBS data; Bewick's Swan and Pintail were regular in 1990s, and Knot was regular in the 2000s, but these species are all now of very rare occurrence. Site fidelity based on NPWS (2011b, 2014d).

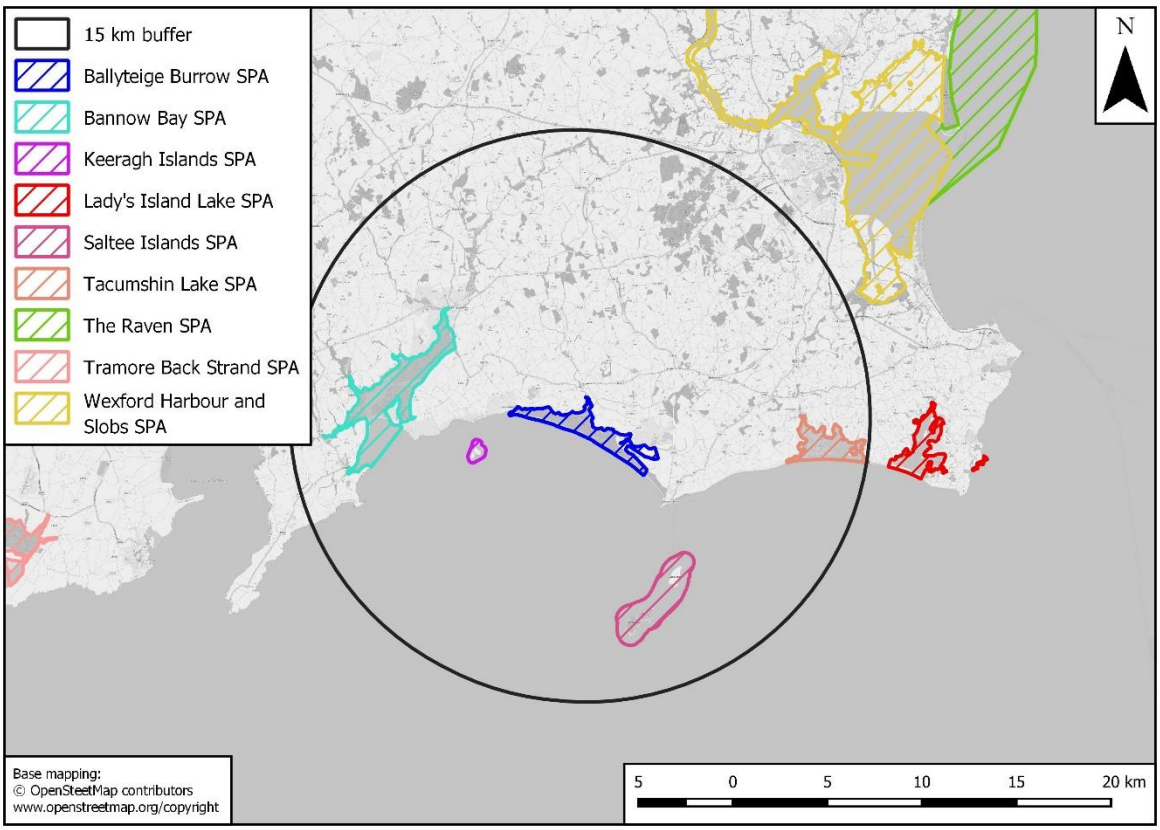

Figure 3.1 – SPAs in the vicinity of Ballyteige Bay.

4. Conservation objectives

Ballyteige Burrow SPA

4.1 The conservation objectives for the Light-bellied Brent Goose, Shelduck, Golden Plover, Grey Plover, Lapwing, Black-tailed Godwit and Bar-tailed Godwit SCIs of the Ballyteige Burrow SPA are to maintain their favourable conservation condition (NPWS, 2014c).

4.2 The favourable conservation conditions of these SCIs in the Ballyteige Burrow SPA are defined by various attributes and targets, which are shown in Table 4.1.

Table 4.1 - Attributes and targets for the conservation objectives for the Light-bellied Brent Goose, Shelduck, Golden Plover, Grey Plover, Lapwing, Black-tailed Godwit and Bar-tailed Godwit SCIs of the Ballyteige Burrow SPA.

Attribute	Measure	Target	Notes
1 Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the Conservation Objectives Supporting Document
2 Distribution	Range, timing and intensity of use of areas	There should be no significant decrease in the range, timing and intensity of use of areas by … [SCI 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

Source: NPWS (2014c).

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

Bannow Bay SPA

4.3 The conservation objectives for the Curlew, Dunlin and Redshank SCIs of the Bannow Bay SPA are to maintain their favourable conservation condition (NPWS, 2012b).

4.4 The favourable conservation conditions of these SCIs in the Ballyteige Burrow SPA are defined by various attributes and targets, which are shown in Table 4.1.

Table 4.2 - Attributes and targets for the conservation objectives for the Curlew, Dunlin and Redshank SCIs of the Bannow Bay SPA.

Attribute	Measure	Target	Notes
1 Population trend	Percentage change	Long term population trend stable or increasing	Waterbird population trends are presented in part four of the Conservation Objectives Supporting Document
2 Distribution	Range, timing and intensity of use of areas	There should be no significant decrease in the range, timing and intensity of use of areas by … [SCI species] other than that occurring from natural patterns of variation	As determined by regular low tide and other waterbird surveys. Waterbird distribution from the 2009/10 waterbird survey programme is discussed in Part Five of the conservation objectives supporting document

Source: NPWS (2012b).

Attributes are not numbered in NPWS (2012b) but are numbered here for convenience.

Tacumshin Lake SPA

4.5 The conservation objectives for the Wigeon SCI of the Tacumshin Lake SPA is to maintain its favourable conservation condition (NPWS, 2018b).

4.6 Site-specific conservation objectives have not been published for the Tacumshin Lake SPA. However, attributes and targets published for the SCIs of the Ballyteige Burrow SPA (Table 4.1) can be assumed to also apply to the Wigeon SCI of the Tacumshin Lake SPA.

Keeragh Islands SPA

4.7 The conservation objective for the Cormorant breeding population in the Keeragh Islands SPA is to maintain or restore its favourable conservation condition (NPWS, 2018a).

4.8 NPWS have only published generic conservation objectives for the Keeragh Islands SPA. Therefore, there are no site-specific attributes and targets to define the favourable conservation condition of this species.

Saltee Islands SPA

4.9 The conservation objective for the Lesser Black-backed Gull breeding population in the Saltee Islands SPA is to maintain its favourable conservation condition (NPWS, 2011a). The favourable conservation condition of this species at the Saltee Islands SPA is defined by the following attributes: breeding population abundance, productivity rate, distribution of breeding colonies, availability of prey biomass, barriers to connectivity, and disturbance at the breeding site.

5. Status and habitats and distribution of the SCI species

Status of the SCI species

Ballyteige Burrow SPA

5.1 The status of the SCI species in the Ballyteige Burrow SPA as reported in the Conservation Objectives Supporting Document (NPWS, 2014a) is summarised in Table 5.1.

Table 5.1 – Status of the SCI species in the Ballyteige Burrow SPA as reported in the Conservation Objectives Supporting Document (NPWS, 2014a).

Special Conservation Interests (SCIs)	Site Conservation Condition	Site population trend[1]	All-Ireland Trend[2]	International trend[4]
Light-bellied Brent Goose	Favourable	+84	Increasing	Increasing
Shelduck	Highly Unfavourable	-77	Stable	Stable
Golden Plover	Favourable	+12	Declining	Decreasing?
Grey Plover	Intermediate (unfavourable)	-12	Declining	Decreasing?
Lapwing	Highly Unfavourable	-60	Declining	Stable
Black-tailed Godwit	Unfavourable	-48	Increasing	Increasing
Bar-tailed Godwit	Highly Unfavourable	-70	Stable	Increasing

Source: Table 4.4 in NPWS (2014a).

[1] change between the 1995/96-1999/00 and 2006/07-2010/11 mean annual peak counts; [2] all-Ireland trends from Crowe and Holt (2013); [4] international trends after Wetland International (2006).

5.2 The population trends reported in the Conservation Objectives Supporting Document (NPWS, 2014a) are now around ten years out of date. The population changes up to the most recent available I-WeBS data are summarised in Table 5.2, and compared to recently published estimates of all-Ireland population changes (Burke *et al.*, 2018).

Table 5.2 –Short-term and long-term percentage changes in the population estimates for the SCI species in the Ballyteige Burrow SPA compared to the national estimates.

Special Conservation Interests (SCIs)	Short-term change		Long-term change	
	Ballyteige Burrow	all-Ireland	Ballyteige Burrow	all-Ireland
Light-bellied Brent Goose	-3%	-15%	+35%	+96%
Shelduck	-2%	-14%	-68%	-30%
Golden Plover	-61%	-24%	-56%	-44%
Grey Plover	+38%	-6%	+59%	-54%
Lapwing	-52%	-16%	-81%	-67%
Black-tailed Godwit	+86%	+4%	-30%	+45%
Bar-tailed Godwit	+14%	+4%	-2%	+6%

Note: The percentage changes are the changes between the mean annual peak counts (Ballyteige Burrow) and the mean annual peak estimates (all-Ireland) between the periods 2006/07-2010/11 and 2011/12-2015/16 (short-term) and 1994/95-1998/99 and 2011/12-2015/16 (long-term). Ballyteige Burrow percentage changes calculated from I-WeBS data. All-Ireland percentage changes from Burke *et al.* (2018).

Bannow Bay SPA

5.3 The conservation condition and trends of the Bannow Bay SCI species included in this assessment are summarised in Table 5.1. Shelduck, Grey Plover, Knot and Dunlin have been classified as having highly unfavourable conservation condition, while Light-bellied Brent Goose, Golden Plover, Lapwing, Curlew and Redshank have been classified as having intermediate (unfavourable)) conservation condition.

Table 5.3 - Conservation condition and population trends of the SCI assessment species at Bannow Bay.

Special Conservation Interests (SCIs)	Site Conservation Condition	12 year site population trend[1]	5 year site population trend[2]	Current all-Ireland Trend[3]	Current international trend[4]
Light-bellied Brent Goose	Intermediate (unfavourable)	-6.99	-9.44	+58	Increase
Shelduck	Highly Unfavourable	-52.6	-48.9	+4.46	Stable (*alpina*)
Golden Plover	Intermediate (unfavourable)	-2.6	-29.0	-2.2	Stable
Grey Plover	Highly Unfavourable	-72.1	-52.8	-33.1	Stable
Lapwing	Intermediate (unfavourable)	-3.0	-35.4	-40.12	Decline
Dunlin	Highly Unfavourable	-75.7	-57.5	-46.5	Decline
Black-tailed Godwit	Favourable	+27.2	+39.6	+70.2	Decline
Bar-tailed Godwit	Favourable	+10.1	-10.6	+1.5	Decline
Curlew	Intermediate (unfavourable)	-17.3	-22.7	-25.7	Decline
Redshank	Intermediate (unfavourable)	-4.6	-21.4	+22.7	Stable/Decline

Source: Tables 4.1 and 4.2 in NPWS (2012a).

n/c = not calculated. [1]site population trend analysis, 12 yr = 1994–2007; [2] site population trend analysis, 5 yr = 2002–2007; [3]all-Ireland trend calculated for period 1994/95 to 2008/09; [4] international trends after Wetland International (2006).

Tacumshin Lake SPA

5.4 The conservation condition of the Wigeon SCI of the Tacumshin Lake SPA has not been assessed.

Keeragh Islands SPA

5.5 The conservation condition of the breeding Cormorant population in the Keeragh Islands SPA has not been assessed.

5.6 The available population data (all apparently occupied nests) are: 160 (1986), 239 (1987), 200 (1988), 206 (1989) and 200 (2000) (JNCC Seabird Colony Data; http://jncc.defra.gov.uk/page-4460).

Saltee Islands SPA

5.7 The conservation condition of the breeding Lesser Black-backed Gull population in the Saltee Islands SPA has not been assessed.

5.8 The available population data (all apparently occupied nests or apparently occupied territories) are: 82 (1986), 80 (1987), 80 (1989), 620 (1994), 500 (1996), 231 (1998) and 184 (2000) (JNCC Seabird

Colony Data; http://jncc.defra.gov.uk/page-4460). All this data is for the Great Saltee Island only, except for the data for 2000 which includes 40 on the Little Saltee Island.

Waterbird habitats in Ballyteige Bay

Tidal patterns

5.9 Ballyteige Bay has an unusual tidal regime.

5.10 The report on the WSP counts states that tides times "were hard to predict as there was on average a 2-hour lag given the unique tidal flow into and out of the intertidal sections of the site" (Cummins and Crowe, 2012). It has also been noted that Ballyteige Bay "*strips much better on a neap tide (the reverse of most bays) due to the narrow mouth to the sea apparently" and, as a result "the existing oyster farmer avails of neap tides rather than spring tides*" (Brian O'Loan, BIM, pers. comm.).

Table 5.4 – Observations of tidal conditions at Ballyteige Bay.

Date	Low tide		Conditions observed	Notes
	time	height		
13/04/2017	14:02	0.7 m	13:30-14:30	Extensive area of intertidal exposed but with wide flooded area in middle of bay. Aquaculture sites at least partly exposed and husbandry work taking place.
08/03/2019	12:45	0.8 m	11:30-14:30	Strong SW winds and heavy rain. Tide barely went out with only narrow strips of intertidal exposed along shorelines. No exposure of aquaculture sites.
28/03/2019*	04:38	1.2 m	07:00-10:00	Tide very low with extensive areas of intertidal exposed

* 28/03/2019 observation: K. Mullarney (pers. comm.).

Habitats

5.11 The majority of intertidal habitat in Ballyteige Bay is unvegetated littoral sediment habitat: i.e., LS habitat, as defined by Fossitt (2007). Areas of saltmarsh occur in several locations (Figure 5.1).

5.12 The littoral sediment habitat was classified into three biotopes by MERC (2012a). The habitat inside the bay was classified as the *Hediste diversicolor dominated gravelly sandy mud shores (LS.LMx.GvMu)*. This biotope is characterised by "sheltered gravelly sandy mud, subject to reduced salinity, mainly on the mid and lower shore" with abundant ragworm *Hediste diversicolor* dominating the benthic fauna. The habitat along the outer beach was classified as the *barren or amphipod dominated mobile sand shores (LS.LSa.MoSa)* biotope. This biotope is "typically situated along open stretches of coastline, with a relatively high degree of wave exposure", but "where the wave exposure is less, and the shore profile more shallow, mobile sand communities may also be present on the upper part of the shore, with more stable fine sand communities present lower down". The third biotope was the *strandlines (LS.LSa.St)* biotope, which was not mapped due to its ephemeral nature.

5.13 Despite the major differences in sediment type and benthic fauna between the inner bay and outer beach, the Conservation Objectives for the Ballyteige Burrow SAC classify all the littoral sediment habitat as a single community type: the *mixed sediment to sand with nematodes and Tubificoides benedii community complex* (NPWS, 2014b; Figure 5.1).

5.14 The subtidal habitat in Ballyteige Bay was classified as a single biotope type by MERC (2012b): the sublittoral sands and muddy sands (SS.SSA) biotope. The Conservation Objectives for the

Ballyteige Burrow SAC also classify the subtidal habitat as a single community type: the *sand with crustaceans and Nephtys hombergii community complex* (NPWS, 2014b; Figure 5.1).

Waterbird distribution in Ballyteige Bay

Habitat Uses

5.15 The broad habitat usage recorded in the WSP low tide counts is summarised in Table 5.5. Most species occurred mainly in the intertidal zone, and, for the waders, the occurrence subtidal zone presumably refers to birds wading in shallow water just below the tideline.

Table 5.5 - Habitat use in the 2011/12 WSP low tide counts.

Species	Mean percentage of total count in habitat zones			
	Subtidal	Intertidal	Supratidal	Terrestrial
Light-bellied Brent Goose	11%	54%	14%	20%
Shelduck	50%	45%	5%	0%
Wigeon	22%	69%	9%	0%
Golden Plover	0%	100%	0%	0%
Grey Plover	0%	100%	0%	0%
Lapwing	0%	92%	7%	1%
Curlew	1%	88%	6%	4%
Black-tailed Godwit	1%	76%	0%	23%
Bar-tailed Godwit	20%	80%	0%	0%
Dunlin	0%	100%	0%	0%
Redshank	7%	92%	0%	1%

Data source: 2011/12 Waterbird Survey Programme as undertaken by the National Parks & Wildlife Service.
Sample sizes: n = 4 for all species, except Shelduck (n = 2), and Light-bellied Brent Goose, Wigeon, Grey Plover, Lapwing and Black-tailed Godwit (n =3).

Waterbird distribution

5.16 The outer part of the Ballyteige Burrow SPA (subsites 0OL09 and 0OL13) appears to be of very low importance for the SCI species with only two records during the WSP low tide counts: 18 Light-bellied Brent Goose and 1 Curlew on 8th February 2012.

5.17 Several SCI species (Shelduck, Golden Plover, Lapwing, Black-tailed Godwit, Bar-tailed Godwit, Dunlin, Redshank) were concentrated in the upper part of Ballyteige Bay in the two subsites adjacent to the Cull (0OL09 and 0OL13) and, for some species, in the Duncormick River Estuary (subsites 0OL03) (Table 5.6). Grey Plover appears to show a relatively even distribution across most of the bay but was absent from the lowermost section (Table 5.6). Light-bellied Brent Goose, Wigeon and Curlew were distributed across most of the bay without clear patterns in their densities (Table 5.6).

Table 5.6 – Mean waterbird densities (birds/ha) in the 2010/11 WSP low tide counts.

Species	Outer	Mid		Estuary	The Cull	
	0OL05	0OL04	0OL06	0OL03	0OL07	0OL08
Light-bellied Brent Goose	1.9	0.2	4.7	0.6	21.1	0.3
Shelduck	0.0	0.0	0.1	0.0	0.0	1.5
Wigeon	0.6	3.8	1.7	1.2	0.0	1.7
Golden Plover	0.0	0.0	0.4	49.4	309.2	119.0
Grey Plover	0.0	0.2	0.5	0.3	0.9	0.2
Lapwing	4.4	5.1	13.2	32.0	35.7	59.1
Curlew	3.7	0.8	0.9	0.7	4.7	3.5
Black-tailed Godwit	0.0	0.1	0.6	5.4	0.2	4.2
Bar-tailed Godwit	0.0	0.1	0.3	1.0	0.7	2.2
Dunlin	0.0	0.0	1.3	1.3	9.9	10.3
Redshank	0.0	0.1	0.6	3.3	2.3	3.8

Data source: 2011/12 Waterbird Survey Programme as undertaken by the National Parks & Wildlife Service.

Sample sizes: n = 4 for all species, except Shelduck (n = 2), and Light-bellied Brent Goose, Wigeon, Grey Plover, Lapwing and Black-tailed Godwit (n =3).

Linkages with other sites

5.18 The unusual tidal patterns in Ballyteige Bay suggest that waterbird movements between Ballyteige Bay and other sites are likely to occur. On days with very limited tidal exposure (such as was observed on 8th March 2017; Table 5.4), waterbirds must move elsewhere to find suitable feeding habitat. While many of the SCI species may feed in fields, movement to Bannow Bay may also occur. Waterbirds may also exploit the asynchrony in the tidal cycle between Ballyteige Bay and Bannow Bay by moving to Ballyteige Bay on neap low tides when intertidal exposure is at a minimum in Bannow Bay but at a maximum in Ballyteige Bay.

5.19 A local ornithologist with long experience of observing birds in Ballyteige Bay and Bannow Bay has noted evidence of movement between Ballyteige Bay and Bannow Bay from observations of rare waders and birds with unusual plumage (K. Mullarney, pers. comm.).

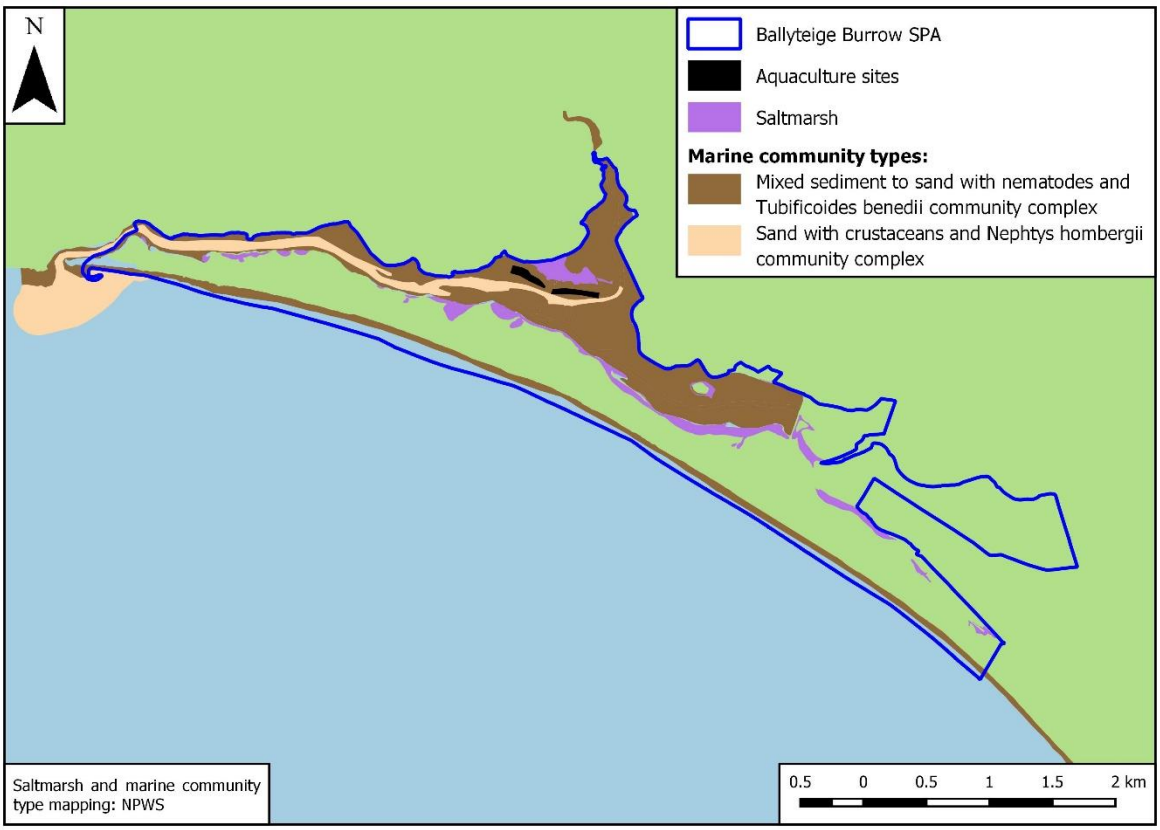

Figure 5.1 – Distribution of marine community types and saltmarsh within the Ballyteige Burrow SPA, as mapped by NPWS.

6. Aquaculture activities at Ballyteige Burrow

Scope of activity

6.1 There are two aquaculture sites, covering a total area of 3.3 ha, at Ballyteige Burrow. These are both classified as applications, although there is current oyster cultivation activity in at least one of the sites (T03/038A). The applicants for the two sites are different indicating that aquaculture activity within the sites will be carried out by different operators.

6.2 The two aquaculture sites are located in the middle of Ballyteige Bay on the northern side of the main tidal channel (Figure 6.1). The only information received about these sites is in the attributes of the shapefile received from the Marine Institute. However, the existing oyster cultivation activity in T03/038A is oyster trestle cultivation. It is our understanding that oyster trestle cultivation is the only activity proposed for both sites.

Table 6.1 – Aquaculture sites at Ballyteige Burrow.

Site	Type	Activity	Area (ha)
T03/038A	Application	Oysters	1.7
T03/095A	Application	Oysters	1.6

History of activity

6.3 Very little information on the history of aquaculture activity in Ballyteige Bay was received for this assessment. Aerial imagery indicates that oyster trestle cultivation activity has been taking place in Ballyteige Bay since at least 1995. We understand that, prior to 2005, four operators were active, but since 2005 only a single operator has been active. Production data received indicates an increase in production from 2008 to 2013, with a slight decrease after 2015.

6.4 The approximate extent of trestles in Ballyteige Bay in June 2010 is shown in Figure 6.2.

Description of activity

6.5 No specific details have been received about the existing or proposed aquaculture activities at Ballyteige Burrow. The following text is a general description of oyster trestle cultivation, adapted from Gittings and O'Donoghue (2012).

6.6 Oyster trestles vary in height but are typically do not exceed 0.5 m height and their height above the sediment is often less as they sink into the sediment.

6.7 The trestles are usually arranged in single or paired rows with a separation of around 4 m between rows and with wider (10-20 m) access lanes. Where the trestles occur on open sandflats the rows are usually orientated more or less perpendicularly to the tideline.

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

6.9 Oyster husbandry activities mainly take place during spring low tides. Workers usually access the trestles by driving tractors across the beach and will often drive through shallow water on the receding tide to make the most use of the time available. Husbandry activities involve turning the

mesh bags every spring tide to rid the bags of any settled silt, stop the growth of oyster shell into the mesh and destroy fouling organisms.

6.10 At Ballyteige Bay, the small size of the aquaculture sites means that husbandry activity is only likely to take place on a proportion of low tides, rather than on every low tide. During the 2011/12 WSP survey, aquaculture activity was only recorded on one of the four low tide counts (NPWS, 2014a).

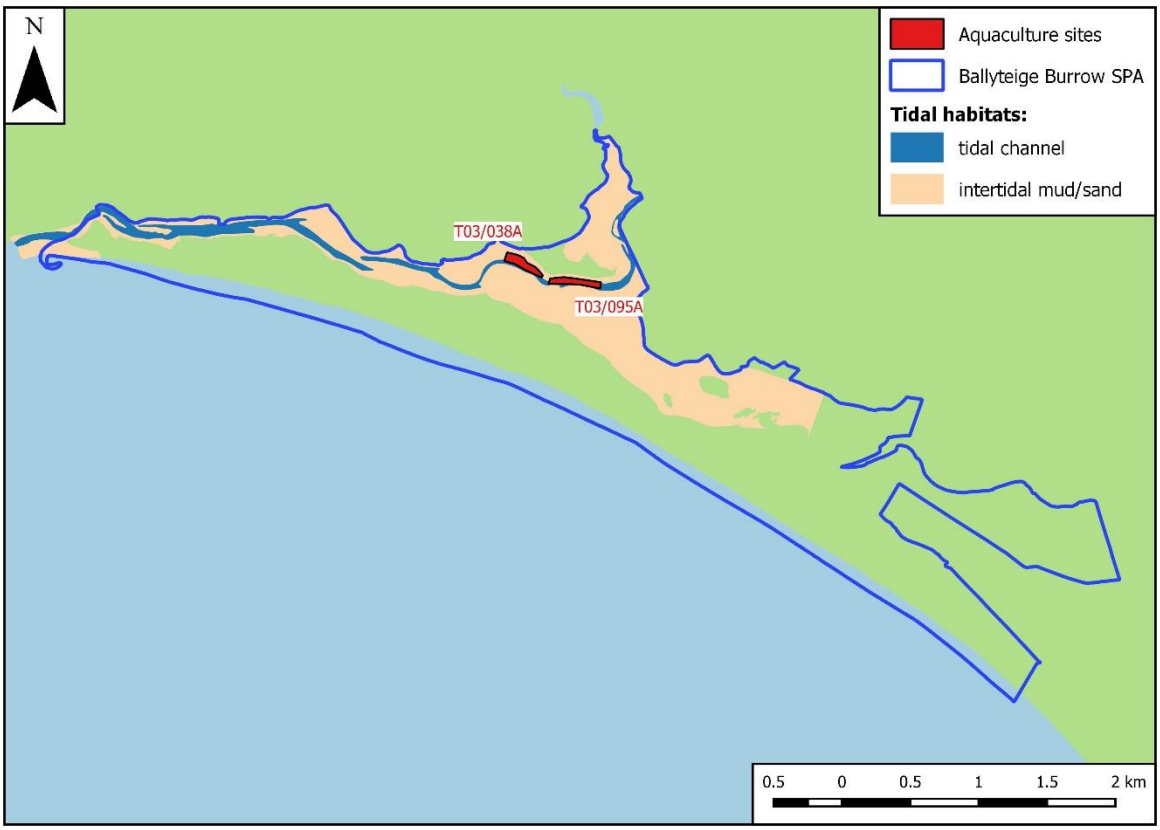

Figure 6.1 – Aquaculture sites in Ballyteige Bay.

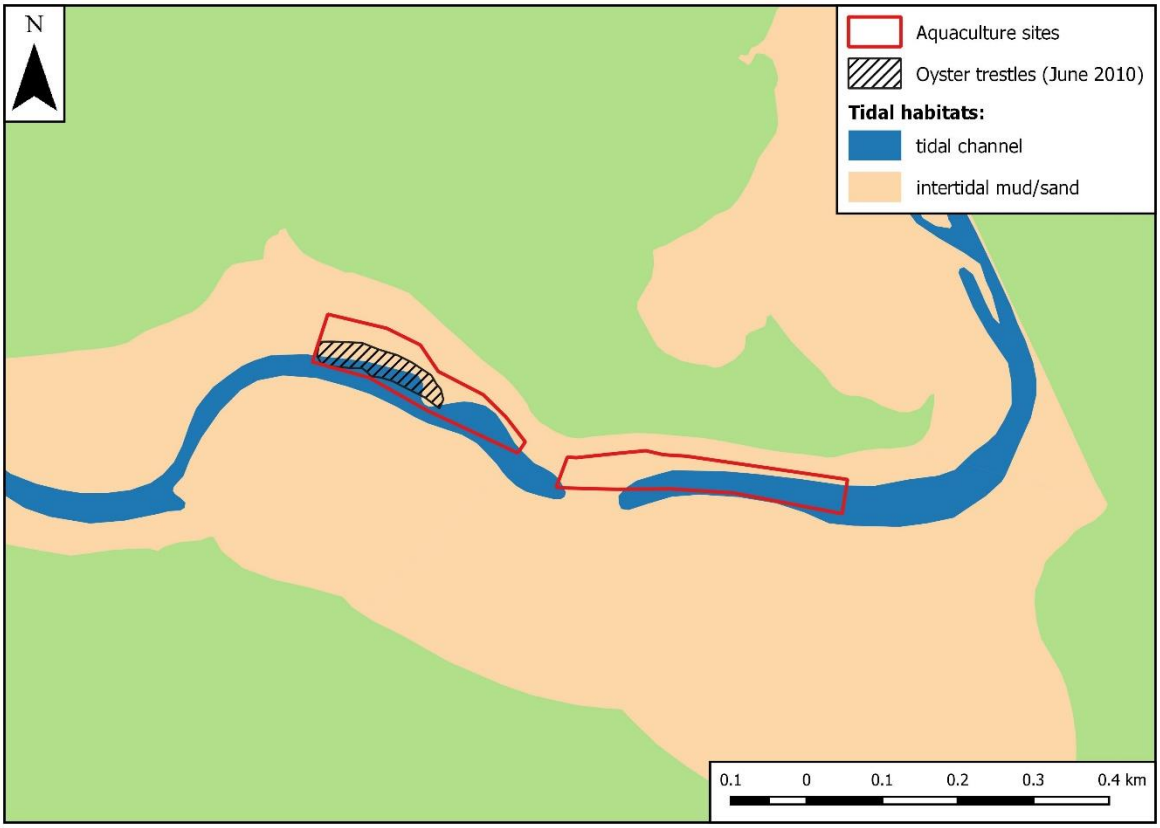

Figure 6.2 – Approximate extent of oyster trestles in Ballyteige Bay in June 2010.

7. Assessment of impacts on intertidal waterbird species

Introduction

7.1 This section presents a detailed assessment of the potential impacts of the existing and proposed aquaculture activities in Ballyteige Bay on the SCI species of Ballyteige Burrow SPA. These also include the Wigeon SCI screened in from the Tacumshin Lake SPA and the four SCI species screened in from the Bannow Bay SPA.

7.2 Husbandry activity is presumed to take place in a 3-4 hour period around low tide[4]. Therefore, husbandry activities will not cause any disturbance impacts outside the low tide period and will not cause impacts to any high tide roosts.

Response to intertidal oyster cultivation

Displacement from areas occupied by oyster trestles

7.3 The overall response of the waterbird species to oyster trestles is summarised in Table 7.1. As there is likely to be signifcant interchange with Bannow Bay, evidence about waterbirds response to oyster trestles at Bannow Bay is also included in Table 7.1 (where available). The latter is presented in the form of Jacobs Index (D) values, which represent the degree of positive or negative association with oyster trestles: D can vary from -1 (indicating complete avoidance) to +1 (strong preference).

7.4 Grey Plover appears to be completely excluded from areas occupied by oyster trestles. This was first demonstrated in the data from the trestle study and has been further supported by subsequent monitoring work at Dungarvan Harbour (Gittings and O'Donoghue, 2015, 2018a, 2018b and 2019). These species did not occur in sufficient numbers in the trestle study counts to calculate D index values for Bannow Bay.

7.5 Dunlin and Bar-tailed Godwit both showed strong avoidance of oyster trestles in the data from the trestle study. For Bar-tailed Godwit, this avoidance has been further supported by subsequent monitoring work at Dungarvan Harbour (Gittings and O'Donoghue, 2015, 2018a, 2018b and 2019). This monitoring work indicated that the relationship with oyster trestles appears to be more complex for Dunlin, although there is still likely to be an overall avoidance effect at the site scale. The D index values from Bannow Bay conform to an avoidance effect for both species.

7.6 Light-bellied Brent Goose showed a variable response pattern in the trestle study with neutral/positive patterns of association at some sites, and negative patterns at other sites. At Bannow Bay, Light-bellied Brent Goose were only recorded on two of the four trestle study counts and they showed strongly negative patterns of association with trestles on both of these counts. This species often feeds on the algae that attaches to the trestle bags and at some sites large numbers can be present on the trestles on the ebb/flood tides to exploit this food source. However, this behaviour appears to be rare at Bannow Bay (Gittings and O'Donoghue, 2016a).

7.7 In the trestle study report, Curlew was classified as having an overall neutral/positive pattern of association with oyster trestles. However, based on further analysis of the dataset we now consider

[4] References in this text to low tide in Ballyteige Bay refers to the period of maximum exposure of intertidal habitat within Ballyteige Bay. As discussed in Chapter 5, the timing of this period in Ballyteige Bay may differ from the timing of low tide in adjacent areas.

that the response should be classified as variable (Gittings and O'Donoghue, 2016b). At Bannow Bay, Curlew showed a consistently negative pattern of association with oyster trestles.

7.8 In the trestle study report, Redshank was classified as having an overall neutral/positive pattern of association with oyster trestles. This is supported by mean D indices close to zero across all sites, and summed D indices close to, or greater than, zero at five of the six sites included in the study. However, Bannow Bay was the one site where Redshank showed a negative pattern of association with oyster trestles.

Table 7.1 - Summary of patterns of association with oyster trestles at Bannow Bay.

Species	Overall response	Jacobs index (D) values for Bannow Bay							
		All sectors				Close sectors			
		D sum	D min	D max	n	D sum	D max	D min	n
Light-bellied Brent Goose	Variable	-0.86	-0.69	-1.00	2	-0.92	-0.81	-1.00	2
Shelduck	(Negative)	-	-	-	-	-	-	-	-
Wigeon	-	-	-	-	-	-	-	-	-
Golden Plover	-	-	-	-	-	-	-	-	-
Grey Plover	Exclusion	-	-	-	-	-	-	-	-
Lapwing	(Negative)	-	-1.00	-1.00	3	-	-1.00	-1.00	2
Knot	Exclusion	-	-	-	-	-	-	-	-
Dunlin	Negative	-1.00	-1.00	-1.00	4	-1.00	-1.00	-1.00	4
Black-tailed Godwit	(Negative)	-1.00	-1.00	-1.00	2	-	-	-	-
Bar-tailed Godwit	Negative	-0.78	-0.67	-0.87	4	-0.60	-0.40	-0.81	3
Curlew	Variable	-0.66	-0.58	-0.95	3	-0.33	-0.39	-0.91	2
Redshank	Neutral/ positive	-0.76	-0.69	-0.95	3	-0.74	-0.59	-0.90	3

Note: Overall response is as classified by Gittings and O'Donoghue (2012), with the exception of Curlew (see text).

7.9 The other species included in this assessment are: Shelduck, Wigeon, Golden Plover, Lapwing and Black-tailed Godwit. These species were not recorded in sufficient numbers in the trestle study to carry out formal analyses of their association with trestles across sites. This reflects the fact that these species tend to occur on muddier sediments, unlike the sandier sediments typically used for intertidal oyster cultivation. However, for Shelduck, Lapwing and Black-tailed Godwit, the trestle study found some weak evidence of negative association with trestles, from ordination analyses and/or qualitative assessment of count data.

7.10 Shelduck are large ducks that stand over 0.5 m tall. Therefore, trestles may impede their movements while foraging as, unlike smaller waders, they will not be able to freely move under the trestles.

7.11 The trestle study only produced limited data for Wigeon, with a neutral/positive pattern of association at one site, and a negative pattern at another site. This species can feed on the algae that attaches to the trestle bags.

7.12 Golden Plover and Lapwing mainly use intertidal areas for roosting. Golden Plover typically roost in large expanses of open mudflat or sandflat, while Lapwing use more varied substrates for roosting, including mixed sediments and rocky shores. It is very unlikely that Golden Plover would roost within trestle blocks, but one could imagine that Lapwing might roost on trestles. However, Lapwing showed strongly negative patterns of association with oyster trestles on three of the four trestle study counts at Bannow Bay.

7.13 Black-tailed Godwit is behaviourally and ecologically similar to Bar-tailed Godwit, as indicated by the fact that small numbers of Bar-tailed Godwits often associate with Black-tailed Godwits in Cork Harbour. Therefore, it seems likely that Black-tailed Godwit will show a similarly strong negative response to trestles, as shown by Bar-tailed Godwit. At Bannow Bay, there was sufficient data to calculate D indices and these indicate a strongly negative patterns of association with oyster trestles.

Disturbance

7.14 During waterbird monitoring work at Dungarvan Harbour (Gittings and O'Donoghue, 2015, 2018a, and 2018b), we collected observations on the disturbance responses of four target species (Grey Plover, Bar-tailed Godwit, Knot and Dunlin) to oyster trestle cultivation husbandry activity. These observations were made in an area from which oyster trestles had been removed (the Bird Corridor) and involved responses to oyster husbandry activity in adjacent areas of oyster trestles, or to movements of tractors travelling to/from areas of oyster trestles past the Bird Corridor. Mapping of tideline positions and the disturbance sources relative to the configuration of the adjacent areas of trestles allowed reliable estimation of bird response distances within distance bands of 100 m width from the disturbance sources.

7.15 There were only four observations of husbandry activity within the 0-100 m distance band, but 80% of those observations resulted in flush response. In distance bands of 100-200 m and 200-300 m, 18% and 26%, respectively, of observations involved a flush response. At distance bands of over 300 m, there was only a single observation of a flush response.

7.16 While the response to disturbance is likely to vary between species, this dataset is too small to examine such differences. Disturbance responses are also likely to vary with flock sizes, with larger flocks being more sensitive to disturbance (Laursen *et al.*, 2005). However, the overall pattern of disturbance responses summarised above is in line with qualitative observations from Dungarvan Harbour and other sites with oyster trestle cultivation (unpublished data). These observations indicate that waterbirds show a degree of habituation to disturbance from oyster trestle cultivation husbandry activity with flush responses generally only occurring when birds are close to the activity.

Table 7.2 – Number of observations of disturbance responses in distance bands from oyster trestle cultivation husbandry activity at Dungarvan Harbour.

Species	Response	Distance bands (m)						Total
		0-100 m	100-200	200-300	300-400	400-500	> 500	
Grey Plover	flush	1	1	1	0	0	0	3
	none	0	3	4	5	5	14	31
Bar-tailed Godwit	flush	1	0	1	0	0	0	2
	none	1	1	6	4	8	21	41
Knot	flush	0	0	1	0	0	0	1
	none	0	2	0	2	1	0	5
Dunlin	flush	2	1	2	1	0	0	6
	none	0	3	4	4	7	12	30
Total	flush	4	2	5	1	0	0	12
	none	1	9	14	15	21	47	107

Data sources: Gittings and O'Donoghue (2018a, 2018b, 2019).

Displacement analysis

7.17 The predicted displacement from oyster trestle cultivation in Ballyteige Bay is shown in Table 7.3. The inclusion of displacement due to disturbance in this assessment doubles the overall predicted

displacement impacts. However, the ranges of values between the two disturbance scenarios assessed are very small.

7.18 The highest overall predicted displacement impacts are for Light-bellied Brent Goose and Wigeon (6-7%) and Grey Plover (5%), with predicted impacts under 3% for all other species.

Table 7.3 - Predicted displacement (% of total Ballyteige Bay population).

Species	Waterbird occupancy		Displacement impact		
	Count	Percentage	Exclusion	Disturbance	Overall
Light-bellied Brent Goose	430	98%	3.4%	3.2-3.5%	6.7-7.0%
Shelduck	5	23%	0.8%	0.7-0.8%	1.5-1.6%
Wigeon	395	100%	3.4%	3.2-3.5%	6.7-7.0%
Golden Plover	18	0%	0.0%	0.0%	0.0%
Grey Plover	71	69%	2.4%	2.2-2.5%	4.6-4.9%
Lapwing	1809	35%	1.2%	1.1-1.2%	2.3-2.5%
Curlew	147	36%	1.2%	1.2-1.3%	2.4-2.6%
Black-tailed Godwit	73	21%	0.7%	0.7%	1.4-1.5%
Bar-tailed Godwit	35	33%	1.1%	1.1-1.2%	2.2-2.3%
Dunlin	80	16%	0.6%	0.5-0.6%	1.1-1.2%
Redshank	66	38%	1.3%	1.2-1.4%	2.6-2.7%

Note: The waterbird occupancy columns show the maximum counts, and maximum percentages of the total Ballyteige Bay counts, recorded in the subsites containing the aquaculture sites during the WSP low tide counts. The displacement impact columns show the predicted displacement impacts caused by displacement of birds from the aquaculture sites (exclusion), and by disturbance to birds in adjacent areas of tidal habitat (disturbance). The range of values for the disturbance impact represent the variation between the displacement predicted using disturbance buffers generated by point sources in the centre of the aquaculture sites and displacement impacts generated by disturbance buffers generated using quarter segments of the aquaculture sites (see Chapter 2).

7.19 As discussed above, Light-bellied Brent Goose has a variable response to oyster trestle cultivation and may benefit from oyster trestle cultivation at some sites where it is able to exploit algae growing on the oyster bags as a food resource. This may also apply to Wigeon, although we have very limited evidence for this species about its interactions with oyster trestle cultivation. At Ballyteige Bay, the small size of the aquaculture sites may limit their potential exploitation by Light-bellied Brent Goose and Wigeon due to disturbance from husbandry activities. However, this will not affect their exploitation on ebb and flood tides before/after any husbandry activity takes place and on low tides when no husbandry activity takes place. It also seems certain that the figure for the waterbird occupancy of the subsites containing the aquaculture sites is a large overestimate of the mean waterbird occupancy levels of these subsites. However, the location of the aquaculture sites along the main tidal channel may increase the potential for disturbance impacts from husbandry activity as Light-bellied Brent Goose and Wigeon may gather along this channel at low tide. Overall, while the predicted displacement impacts for Light-bellied Brent Goose and Wigeon are relatively high, there is uncertainty about whether oyster trestle cultivation will have any net displacement impact on Light-bellied Brent Goose at Ballyteige Bay. If a net displacement impact occurs, the predicted displacement impact is likely to be a significant overestimate of the likely displacement impact.

7.20 Grey Plover is one of the species that shows the strongest negative response to oyster trestle cultivation, and it appears to be completely excluded from areas occupied by oyster trestles. Therefore, it is highly likely that development of the aquaculture sites in Ballyteige Bay will cause some level of displacement impact to Grey Plover. Analysis of Grey Plover densities in the low tide counts indicates that they were fairly evenly spread across the intertidal habitat in Ballyteige Bay,

apart from the lower part of the bay (subsite 0OL05), and the flock mapping data appears to support this pattern. The subsites containing the aquaculture sites hold around 60% of the intertidal habitat within Ballyteige Bay, so the subsite occupancy figure used for the displacement calculations may be a reasonable estimate of the overall mean subsite occupancy across the season. At Dungarvan Harbour, we have recorded several instances of Grey Plover in intertidal habitat being flushed by husbandry activity in adjacent aquaculture sites at distances of up to 300 m, so a measurable level of displacement due to disturbance is also likely to occur. However, the actual displacement impact due to disturbance will depend upon the distribution and timing of the husbandry activities in the aquaculture sites.

7.21 The predicted displacement impacts were under 3% for all the other species. For two of these species (Curlew and Redshank), there may not be any net displacement impacts as they may have a neutral/positive response to oyster trestle cultivation. The other species mainly occur in the uppermost sections of the bay above the subsites containing the aquaculture sites, so the mean occupancy of those subsites is likely to be low, in line with the occupancy figures that we have used for the displacement calculations. However, the analysis of data from Bannow Bay presented in Chapter 2 shows that, while use of maximum, rather than mean, subsite occupancy levels is a precautionary approach, there is still a significant risk of underestimating overall subsite occupancy levels when using maximum subsite occupancy levels derived from a small number of counts in a single season.

Population trends

7.22 The population trends of the SCI species covered by this assessment in the Ballyteige Burrow SPA are compared with the national trends for these species in Table 7.4.

7.23 The short-term change for Period 2 shows the change in the five year mean annual peak counts between 2006/07-2010/11 and 2011/12-2015/16. This is the period over which production data indicates an overall increase in oyster trestle cultivation activity. Therefore, if oyster trestle cultivation activity was causing significant negative impacts on waterbird populations in the Ballyteige Burrow SPA we would expect decreasing trends in waterbird populations in the Ballyteige Burrow SPA relative to the national trend. However, for nine of the eleven species the population trends in the Ballyteige Burrow SPA are less negative than the national trend. It is notable that Grey Plover, which is the species most likely to be negatively affected (see above) showed an increase over this period, compared to a small decrease in the national population estimate. This species also showed a small increase over the earlier period, compared to a large decrease in the national population estimate.

7.24 Overall, the population trend data does not suggest that the increase in oyster trestle cultivation activity at Ballyteige Bay between 2008 and 2016 caused any negative impacts on the population sizes of the SCI species covered by this assessment. However, full development of the aquaculture sites that are the subject of this assessment would cause an approximately fourfold increase in the spatial extent of oyster trestle cultivation in Ballyteige Bay, compared to the mapped extent in 2010.

Table 7.4 – Percentage changes in the five year mean annual peak counts between 1994/95-1998/99 and 2006/07-2010/11 (Period 1), and between 2006/07-2010/11 and 2011/12-2015/16 (Period 2) in the Ballyteige Burrow SPA compared to the national estimates.

Species	Period 1		Period 2	
	Ballyteige Burrow	all-Ireland	Ballyteige Burrow	all-Ireland
Light-bellied Brent Goose	39%	132%	-3%	-15%
Shelduck	-67%	-19%	-2%	-14%
Wigeon	6%	-29%	-3%	-12%
Golden Plover	12%	-26%	-61%	-24%
Grey Plover	15%	-52%	38%	-6%
Lapwing	-60%	-61%	-52%	-16%
Curlew	-47%	-33%	86%	-13%
Black-tailed Godwit	-39%	39%	14%	+4%
Bar-tailed Godwit	-60%	3%	22%	+4%
Dunlin	-61%	-50%	53%	-23%
Redshank	50%	6%	42%	-24%

Note: Ballyteige Burrow SPA percentage changes calculated from I-WeBS data. All-Ireland percentage changes from Burke *et al.* (2018).

Conclusions

7.25 The conclusions of this assessment are summarised in Table 7.5.

7.26 There is likely to be a measurable displacement impact to Grey Plover, and this may be significant when potential displacement due to disturbance is considered. It should, however, be noted that the population trend data for Grey Plover does not show any evidence of impacts from increasing levels of oyster trestles culture over the period 2008-2016. On this basis, it is likely the displacement impact will be substantially lower than the calculated impacts for the two sites assessed (Table 7.5). Notwithstanding, it is recommended that site activities are confined within the licence blocks as well as maintaining strict adherence to access routes.

7.27 The predicted displacement impacts to Light-bellied Brent Goose and Wigeon are significant. However, there is a high level of uncertainty about this prediction due to the variable nature of their responses to oyster trestle cultivation, and the likely significant overestimation of subsite occupancy levels in the displacement calculations.

7.28 The predicted displacement impacts to all the other species are either negligible or not significant. The limited data that was available for this assessment means that there is a moderate level of uncertainty about these predictions (see Chapter 2). However, we have not identified any specific factors that would suggest a significant underestimation of displacement impacts for any of these species. For two of the species (Curlew and Redshank) there may be no net displacement impact due to the variable nature of their response to oyster trestle cultivation.

Table 7.5 – Summary of impact assessment.

Species	Likelihood of negative impact	Predicted displacement impact	Assessment of significance
Light-bellied Brent Goose	1	6.7-7.0%	(significant)
Shelduck	2	1.5-1.6%	not significant
Wigeon	1	6.7-7.0%	(significant)
Golden Plover	2	0.0%	negligible
Grey Plover	3	4.6-4.9%	significant
Lapwing	2	2.3-2.5%	not significant
Curlew	1	2.4-2.6%	not significant
Black-tailed Godwit	2	1.4-1.5%	not significant
Bar-tailed Godwit	3	2.2-2.3%	not significant
Dunlin	3	1.1-1.2%	not significant
Redshank	1	2.6-2.7%	not significant

Likelihood of a negative impact: 1 = species shows a variable response to oyster trestles, so a neutral or positive impact may occur; 2 = species considered to show a negative response to oyster trestles but evidence for this is weak; 3 = strong evidence that species shows a negative response to oyster trestles.

Assessment of significance: parentheses indicate a high level of uncertainty about the assessment. The uncertainty for all other assessments is moderate.

8. Assessment of impacts on other species

Introduction

8.1 This chapter covers the following species: Cormorant and Lesser Black-backed Gull.

Cormorant

Occurrence in Ballyteige Bay

8.2 No information is available about the occurrence of visiting Cormorant from the Keeragh Islands SPA within Ballyteige Bay. In winter, Cormorant regularly occur within Ballyteige Bay, but it is not known to what extent, if any, Cormorants use Ballyteige Bay in summer.

8.3 West *et al.* (1975) studied the diet of birds from this colony. They did not record any eels, or estuarine or freshwater fish species, and the fish identified included mackerel, plaice and wrasse. Therefore, the birds appeared to be feeding exclusively on marine fish. This would suggest that the birds were not making significant use of food resources within the estuarine section of Ballyteige Bay (including the areas around the aquaculture sites), although they may have been feeding in the outer part of the SPA. However, this study was carried out over 40 years ago. At other marine colonies, Cormorant diets can include a significant component of estuarine and freshwater fish species (West *et al.*, 1975; Tierney *et al.*, 2011). Therefore, more recent evidence on the diet composition of the Keeragh Islands colony would probably be required before their usage of estuarine habitat within Ballyteige Bay can be discounted.

8.4 In the 2011/12 WSP counts, Cormorant mainly occurred in subsites 0OL04-06, comprising the middle and lower sections of Ballyteige Bay (mean percentage of total count = 95%; range 92-100%, n = 5). However, these were mainly low tide counts, and presumably reflect the lack of availability of subtidal habitat in the upper sections of the bay at low tide.

Response to oyster trestles

8.5 No evidence is available about the response of Cormorants to oyster trestle cultivation. However, Cormorants will generally not be affected by disturbance from husbandry activity as they will only be likely to make significant use of areas around oyster trestles at high tide, while husbandry activity occurs at low tide.

8.6 Cormorant are fish-eating birds. Therefore, their response will be heavily influenced by the effects of oyster trestle cultivation on fish.

8.7 Dumbauld *et al.* (2009) reviewed studies of the effects of bivalve shellfish aquaculture on nekton (fish and mobile invertebrates such as crabs). There was only one study that specifically examined intertidal oyster cultivation using bags and trestles (Laffargue *et al.*, 2006). This study found that, in an experimental pond mesocosm, sole used the oyster trestles as resting areas during the day, moving out into the open areas (which simulated tidal flats) to forage at night and the authors considered that the "oyster trestles offered cover, camouflage, and safety and were therefore attractive to sole (as artificial reef-structuring effects)". Similarly, De Grave *et al.*, (1998) noted that the trestles in their Dungarvan Harbour study site acted as refuges for scavenging crabs and shrimps. There were also a number of studies reviewed by Dumbauld *et al.* (2009) of related types of oyster cultivation (included suspended culture in subtidal waters, rack and bag systems, longlines and oyster grow-out cages). These all involve placing physical structures in the intertidal or subtidal waters and the potential impacts from organic enrichment and benthic community changes associated with oyster cultivation, so provide some degree of analogous situations to intertidal

oyster cultivation using bags and trestles. These have generally found either little differences between oyster cultivation areas and nearby uncultivated habitats, or higher densities of nekton in the oyster cultivation areas.

8.8 In addition to the alteration of the physical habitat, aquaculture could also, theoretically, have impacts on fish populations through reduced recruitment (due to direct consumption of eggs and larvae by the cultured bivalves), and/or through indirect food web effects (e.g., consumption of organic matter by the cultured bivalves that would have otherwise been available to support fish; Gibbs, 2004). Carrying capacity modelling of the proposed introduction of suspended culture of green mussels into a New Zealand bay indicated that large-scale bivalve culture could cause the replacement of zooplankton by the cultured bivalves as the major grazers in the system with consequent impacts on pelagic fish (Jiang and Gibbs, 2005). However, Leguerrier *et al.*'s (2004) model of the impact of oyster cultivation on a food web in a French bay indicated that oyster cultivation caused secondary production to increase benefitting fish populations, particularly those that used the mudflats as a nursery area. Lin *et al.*'s (2009) model and observations of the removal of oyster cultivation from a eutrophic lagoon in Taiwan indicated that reef fish populations were enhanced by oyster cultivation, but pelagic and soft-bottom fish increased following the removal of the oyster cultivation.

8.9 Overall, the evidence from the literature summarised above indicates that oyster trestle cultivation is likely to either have no effect on or increase local abundances of fish. The small-scale of the proposed oyster trestle cultivation at Ballyteige Bay, suggests that negative impacts on fish population through reduced recruitment or through indirect food web effects are unlikely to occur.

Impact assessment

8.10 Oyster trestle cultivation is likely to have neutral or positive impacts on the availability of prey resources for Cormorant in the areas occupied by the activity, compared to areas of similar habitat elsewhere in Ballyteige Bay. No disturbance impacts from husbandry activity are likely as Cormorants are only likely to make significant use of the areas around the aquaculture sites at high tide, while husbandry activity occurs at low tide. Therefore, intertidal oyster cultivation is not likely to cause any displacement of Cormorant within Ballyteige Bay.

Lesser Black-backed Gull

Occurrence in Ballyteige Bay

8.11 No information is available about the occurrence of visiting Lesser Black-backed Gull from the Saltee Islands SPA within Ballyteige Bay. In winter, Lesser Black-backed Gull regularly occur within Ballyteige Bay, but it is not known to what extent, if any, Lesser Black-backed Gull use Ballyteige Bay in summer.

8.12 Some assessment can, however, be made of the potential occurrence of visiting Lesser Black-backed Gull from the Saltee Islands SPA within Ballyteige Bay by considering evidence about the typical foraging range and diet of the species during the breeding season.

8.13 Thaxter *et al.* (2012) quote a mean foraging range of Lesser Black-backed Gull from its breeding colonies of 71.9 km, a mean maximum of 141 km and a maximum of 181 km. However, these figures are based on a very small number of studies (2 for the mean and 3 for the mean maximum). Camphuysen (2011) reported median foraging distances from a breeding colony at Texel (The Netherlands) ranging from 5-31 km, and maximum foraging distances ranging from 19-359 km, depending upon the area that the birds were feeding in. Therefore, it is clear that Lesser Black-backed Gull can range very widely from their breeding colonies and the aquaculture areas in Ballyteige Bay are likely to be within the core foraging range of the Saltee Islands SPA population.

8.14 The Lesser Black Backed Gull is omnivorous and can utilise a wide array of energy sources, consuming fish, small mammals, invertebrates, plant material, rubbish, fish discards, etc. (Cramp and Simmons, 2004). Though it is capable of obtaining food by dipping to surface, shallow plunging and aerial pursuit of prey, a large portion of its diet seems to come from kleptoparasiting food from other birds (both inter- and intra-specific); it is also generally accepted that open sea fish feeding contributes more to the diet of the Lesser Black Backed Gull than scavenging compared to other large gulls (studies quoted by Cramp and Simmons, 2004).

8.15 The diet of Lesser Black-backed Gull has been studied at Irish breeding colonies at Cape Clear (Creme and Kelly, 1992) and the Magharee Islands (Kelly, 2009). At the Magharee Islands, the diet was dominated by terrestrial beetles, marine fish and anthropogenic garbage (54.3%, 27.4% and 20.2%, respectively).

8.16 At two German North Sea colonies, the diet was dominated by marine fish and open sea crabs indicating that the birds were mainly feeding at sea (Kubetzki and Garthe, 2003). However, at another German North Sea colony, during the incubation period the gulls fed mainly upon crustaceans and molluscs from the intertidal zone, but during chick-rearing, they took mainly crustaceans and fish which were gathered mostly as trawler discards (Garthe *et al.*, 1999). At a breeding colony at Texel, the diet was dominated by marine fish but the polychaete worm *Nereis longissimi* comprised 3-25% of the diet over the five seasons studied, which indicates that the birds made significant use of the intertidal zone in at least some seasons (Camphuysen, 2011). At an Irish Sea colony in Cumbria, marine molluscs comprised 10-14% of the diet (Kim and Monaghan, 2006).

8.17 Therefore, while Lesser Black-backed Gull may be more likely to use food resources in the open sea compared to some other gull species, food resources in the intertidal zone can be a significant component of the diet in at least some breeding colonies. In the absence of specific information about the diet of the Lesser Black-backed Gull colony of the Saltee Islands, the possibility cannot be discounted that intertidal habitat in Ballyteige Bay provides food resources for the colony.

Response to oyster trestles

8.18 The trestle study classified the response of Lesser Black-backed Gull to oyster trestles as unknown, due to lack of sufficient data for detailed analysis. While Lesser Black-backed Gull is very closely related to Herring Gull (which has a neutral/positive association with oyster trestles), there are significant ecological differences between the two species, and it would be dangerous to infer that they have a similar response to oyster trestles. Of the 958 Lesser Black-backed Gulls counted across all sites and days in the extensive study only eight birds were recorded within trestle blocks. Furthermore, it is notable that in the trestle study, 18% of the total number of Herring Gulls recorded across all sites and counts were on trestles, but none of the Lesser Black-Backed Gulls were on trestles (total numbers: 958 Lesser Black-Backed Gulls and 1437 Herring Gulls). However, most of the Lesser Black-backed Gull recorded in the extensive study were roosting birds often in large flocks. It would not be surprising that roosting flocks of Lesser Black-backed Gull, which typically occur on open intertidal flats, avoid trestle blocks. But this does not necessarily mean that feeding Lesser Black-backed Gull similarly avoid trestle blocks. In the context of assessing potential impacts to birds visiting Ballyteige Bay on foraging visits from the Saltee Islands colony, it is the impact to feeding birds that is important.

Impact assessment

8.19 Ballyteige Bay is around 10 km from the Saltee Islands Lesser Black-backed Gull colony and is the closest estuarine/intertidal site to the colony. Therefore, if estuarine/intertidal areas provide significant food resources for the colony, it is likely that the intertidal habitat in Ballyteige Bay contribute to these food resources. If Lesser Black-backed Gull has a negative association with

oyster trestles, then aquaculture activities in Ballyteige Bay could reduce the availability of prey biomass to the colony.

8.20 Without firm information on the diet of the Saltee Islands Lesser Black-backed Gull colony, the occurrence of Lesser Black-backed Gull in Ballyteige Bay during the summer, and/or the response of Lesser Black-backed Gull to oyster trestles, it is not possible to make an assessment of the potential impact of aquaculture activities in Ballyteige Bay on the colony.

8.21 A follow up investigation on Lesser Black-backed Gull use of intertidal habitats within Ballyteige Bay during important breeding season was conducted and presented in Appendix B. Throughout the survey only a single LBBG was observed foraging intertidally in the Bay. On this basis, it can be concluded that intertidal habitat in Ballyteige Bay is unlikely to be a significant foraging resource for Lesser Black-backed Gulls from the Saltee Islands colony.

9. Assessment of cumulative impacts

Introduction

9.1 This section presents an assessment of potential cumulative impacts from oyster trestle cultivation in combination with other activities. Cormorant is not included in this assessment because the main assessment has concluded that this species is likely to have a neutral or positive response to oyster trestle cultivation. Therefore, as the species included in this assessment are only associated with intertidal habitat, activities only affecting deep subtidal habitat such as boat traffic are not included in this assessment.

Activities

Disturbance generating activities

Beach recreation

9.2 Beach recreation areas occurs on the seaward side of the Ballyteige Burrow SPA associated with access points to the shore at Kilmore Quay and Cullenstown with “accessible areas of the coastal strip” being used in summer for beach recreation and in winter for recreational walking (NPWS, 2014a).

9.3 The southern shoreline of Ballyteige Bay is accessible through the dunes from Kilmore Quay but, due to the distance (4 km to the eastern end of the bay), recreational activity along this shoreline is likely to be limited. There is a farm track that previously provided informal vehicle access to the Cull Bank but, in recent years, this has been closed to the public.

9.4 There are public roads providing access at various locations along the northern shore of the bay, but due to the nature of the sediments and shoreline, opportunities for recreational walking associated with these access points are likely to be limited.

9.5 During the WSP survey, a low level of recreational activity (walking along the shoreline) was observed in bay, with a total of seven instances across all five counts.

Other activities

9.6 Water-based recreational activities were not recorded during the WSP counts. Ballyteige Bay is unlikely to be suitable for such activities although, presumably some may occur along the seaward coast of the Ballyteige Burrow SPA in the summer.

9.7 Bait digging was recorded once during the WSP counts in subsite 0OL06, while hand collection of shellfish (winkle picking) was also recorded on a single occasion in subsite 0OL05. Shore angling was not recorded on the WSP counts but is reported to take place on the seaward coast (NPWS, 2014a).

Potential impacts

9.8 The main concentration of recreational activity in the intertidal zone at the Ballyteige Burrow SPA is likely to be on the seaward coast. The intertidal habitat along this coast is of negligible importance for the SCI species covered by this assessment. There appears to be very little potential for significant levels of recreational activity along the shoreline of Ballyteige Bay, where most of the waterbirds occur.

9.9 Shellfish gathering and bait digging will also involve activity in the intertidal zone. However, the levels of these activities appear to be low and they are unlikely to cause significant disturbance impacts.

9.10 Overall, the available information indicates that non-aquaculture related disturbance generating activities are unlikely to be causing significant impacts to the species covered in this assessment. Therefore, it is not necessary to consider potential in-combination effects with oyster trestle cultivation.

Activities affecting waterbird food resources

Bait digging and shellfish collecting

9.11 Bait digging and shellfish collecting will remove food resources that would otherwise be available for consumption by waterbirds and may also cause mortality to non-target species (Masero *et al.*, 2008). Therefore, if these activities are extensive and/or affect concentrated food resources they could affect waterbird distribution (by causing displacement from depleted areas) and/or survivorship (by reducing the overall carrying capacity of the system).

9.12 In the Ballyteige Burrow SPA, bait digging and shellfish gathering appear to be low intensity activities, with only single observations of each activity during the WSP counts. Therefore, it seems unlikely that bait digging, or winkle picking is having measurable impacts in terms of resource depletion or physical habitat disturbance in the Ballyteige Burrow SPA, and it is not necessary to consider potential in-combination effects with oyster trestle cultivation.

Effluent discharge

9.13 Organic and nutrient inputs to estuaries increase productivity and may increase food resources for waterbirds. Therefore, adverse impacts to waterbirds might be expected to be caused by declines in organic and nutrient inputs associated with improvements in wastewater treatment.

9.14 The Duncormick Wastewater Treatment Plant (WWTP) discharges to the Duncormick River around 700 m upstream of the Ballyteige Burrow SPA boundary (WCC, 2009). This is a secondary treatment plant that services four housing estates and part of the main street in Duncormick. It was constructed as a primary treatment plant in the early 1970s and upgraded to secondary treatment in 2006/07. The Appropriate Assessment for this WWTP concluded that the “contribution of nutrients [from the WWTP] is minimal in comparison to the water volumes of the designated site” (WCC, 2009). Therefore, there is no evidence to indicate that the discharge from this WWTP is likely to be influencing food supply for any of the SCI species, and it is not necessary to consider potential in-combination effects with oyster trestle cultivation.

10. Assessment of impacts on conservation objectives

Introduction

10.1 Potential impacts on the screened-in SCIs are summarised below.

Ballyteige Burrow SPA

Grey Plover

10.2 There is potential for full occupation of the aquaculture sites to cause measurable displacement impacts to this species. On the basis of observed population trends these impacts are unlikely to be significant.

Light-bellied Brent Goose

10.3 There is potential for full occupation of the aquaculture sites to cause significant displacement impacts to this species. However, there is a high level of uncertainty about the likelihood of this impact as this species may not be adversely affected by oyster trestle cultivation. t.

Shelduck, Lapwing, Black-tailed Godwit and Bar-tailed Godwit

10.4 The calculated displacement impacts from full occupation of the aquaculture sites would be non-significant but measurable.

Golden Plover

10.5 The calculated displacement impacts from full occupation of the aquaculture sites would be negligible.

Bannow Bay SPA

Light-bellied Brent Goose, Golden Plover, Grey Plover, Lapwing, Black-tailed Godwit and Bar-tailed Godwit

10.6 This assessment for the Ballyteige Burrow SPA concluded that there is potential for full occupation of the aquaculture sites to cause significant (Light-bellied Brent Goose and Grey Plover), or the potential for such impacts cannot be discounted beyond reasonable scientific doubt (Golden Plover, Lapwing, Black-tailed Godwit and Bar-tailed Godwit).

10.7 The effects of any such impacts on the conservation objectives for the Bannow Bay SPA would depend upon the connectivity between the two sites. If their connectivity is high, the two sites would effectively support a single population and it is possible that major displacement impacts within the Ballyteige Burrow SPA would affect attribute 1 (population trend) of the conservation objectives for the Bannow Bay SPA.

10.8 Any such impacts would not affect attribute 2 (distribution) of the conservation objectives for Bannow Bay SPA, as this attribute refers to distribution within Bannow Bay.

Dunlin, Curlew and Redshank

10.9 The calculated displacement impacts within the Ballyteige Burrow SPA from full occupation of the aquaculture sites would be non-significant but measurable. Given the uncertainty about the assessment, due to the limited data, the potential for significant displacement impacts within the Ballyteige Burrow SPA cannot be discounted beyond reasonable scientific doubt. However, for Curlew and Redshank, is a high level of uncertainty about the likelihood of any negative impacts as these species may not be adversely affected by oyster trestle cultivation.

10.10 The effects of any such impacts on the conservation objectives for the Bannow Bay SPA would depend upon the connectivity between the two sites. If their connectivity is high, the two sites would effectively support a single population and it is possible that major displacement impacts within the Ballyteige Burrow SPA would affect attribute 1 (population trend) of the conservation objectives for the Bannow Bay SPA.

10.11 Any such impacts would not affect attribute 2 (distribution) of the conservation objectives for Bannow Bay SPA, as this attribute refers to distribution within Bannow Bay.

Keeragh Islands SPA

Cormorant

10.12 This assessment has not identified any significant potential impacts from aquaculture activities on this species. Therefore, no impacts to the conservation objectives for this SCI is predicted.

Saltee Islands SPA

Lesser Black-backed Gull

10.13 On foot of follow-up investigations it can be concluded that intertidal habitat in Ballyteige Bay is unlikely to be a significant foraging resource for Lesser Black-backed Gulls from the Saltee Islands colony.

Tacumshin Lake SPA

Wigeon

10.14 There is potential for full occupation of the aquaculture sites to cause significant displacement impacts to this species within the Ballyteige Burrow SPA. However, there is a high level of uncertainty about the likelihood of this impact as this species may not be adversely affected by oyster trestle cultivation.

10.15 The effects of any such impacts on the conservation objectives for the Tacumshin Lake SPA would depend upon the connectivity between the two sites. If their connectivity is high, the two sites would effectively support a single population and it is possible that major displacement impacts within the Ballyteige Burrow SPA would affect attribute 1 (population trend) of the conservation objectives for the Tacumshin Lake SPA.

10.16 Any such impacts would not affect attribute 2 (distribution) of the conservation objectives for Tacumshin Lake SPA, as this attribute refers to distribution within Tacumshin Lake.

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Appendix A
Scientific names

Common name	Scientific names	BTO code
Arctic Tern	*Sterna paradisaea*	AE
Bar-tailed Godwit	*Limosa lapponica*	BA
Bewick's Swan	*Cygnus columbianus*	BS
Black-headed Gull	*Chroicocephalus ridibundus*	BH
Black-tailed Godwit	*Limosa limosa*	BW
Common Tern	*Sterna hirundo*	CN
Coot	*Fulica atra*	CO
Cormorant	*Phalacrocorax carbo*	CA
Curlew	*Numenius arquata*	CU
Dunlin	*Calidris alpina*	DN
Fulmar	*Fulmarus glacialis*	F.
Gadwall	*Anas strepera*	GA
Gannet	*Morus bassanus*	GX
Golden Plover	*Pluvialis apricaria*	GP
Grey Plover	*Pluvialis squatarola*	GV
Guillemot	*Uria aalge*	GU
Herring Gull	*Larus argentatus*	HG
Kittiwake	*Rissa tridactyla*	KI
Knot	*Calidris canutus*	KN
Lapwing	*Vanellus vanellus*	L
Lesser Black-backed Gull	*Larus fuscus*	LB
Light-bellied Brent Goose	*Branta bernicla hrota*	PB
Little Grebe	*Tachybaptus ruficollis*	LG
Little Tern	*Sternula albifrons*	AF
Pintail	*Anas acuta*	PT
Puffin	*Fratercula arctica*	PU
Razorbill	*Alca torda*	RA
Redshank	*Tringa totanus*	RK
Roseate Tern	*Sterna dougallii*	RS
Sandwich Tern	*Sterna sandvicensis*	TE
Shag	*Phalacrocorax aristotelis*	SA
Shelduck	*Tadorna tadorna*	SU
Shoveler	*Anas clypeata*	SV
Teal	*Anas crecca*	T.
Tufted Duck	*Athya fuligula*	TU
Whooper Swan	*Cygnus cygnus*	WS
Wigeon	*Anas penelope*	WN

Appendix B
Ballyteige Burrow Lesser Black-backed Gull survey

Marine Institute Bird Studies

Ballyteige Burrow Lesser Black-backed Gull survey

August 2020

Notice

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Contents

Section Page

List of Tables

List of Figures

1. Introduction

1.1 The Appropriate Assessment report on aquaculture in the Ballyteige Burrow SPA concluded that "*without firm information on the diet of the Saltee Islands Lesser Black-backed Gull colony, the occurrence of Lesser Black-backed Gull in Ballyteige Bay during the summer, and/or the response of Lesser Black-backed Gull to oyster trestles, it is not possible to make an assessment of the potential impact of aquaculture activities in Ballyteige Bay on the colony*" (Gittings and O'Donoghue, 2019; referred to hereafter as the AA report).

1.2 This report presents the results of a Lesser Black-backed Gull survey carried out in the Ballyteige Burrow SPA in June-July 2020. The objective of the survey was to address the information gap identified in the Appropriate Assessment report by establishing whether Lesser Black-backed Gulls forage in intertidal habitats within Ballyteige Burrow during the breeding season.

1.3 The survey also collected data on Lesser Black-backed Gull usage of Bannow Bay and on the summer waterbird populations of the Ballyteige Burrow SPA.

1.4 The Ballyteige Burrow SPA includes a section of seaward coast that is rarely used by the Special Conservation Interest species that were the subject of the Appropriate Assessment, and which does not include any aquaculture sites. Therefore, in this report, as in the AA report, we distinguish between the Ballyteige Burrow SPA (the entire SPA) and Ballyteige Bay (the estuarine section of the SPA on the northern side of the sand dunes).

2. Methods

2.1 We carried out three survey visits to cover the three main phases of the Lesser Black-backed Gull breeding season: 5th June 2020 (incubation period), 6th July 2020 (chick provisioning period), and 20th July 2020 (fledging period).

2.2 The survey visit timings, and the weather conditions during the visits, are shown in Table 2.1. As there is an unusual tidal regime in Ballyteige Bay, the survey timings reflected the exposure period of the intertidal habitat, rather than the predicted low tide for Fethard-on-Sea.

Table 2.1 – Survey visits.

Date	Coverage period	Low tide		Cloud	Wind	Rain
		time	height			
05/06/2020	10:45-17:45	12:11	0.5	0-33%	NW4	showers
06/07/2020	12:30-19:33	13:29	0.6	34-66%	W3	no rain
20/07/2020	11:20-18:42	12:21	0.9	0-33%	S3	no rain

Low tide times and heights for Fethard-on-Sea (www.ukho.gov.uk/easytide).

2.3 On each survey visit the intertidal habitat adjacent to the aquaculture sites was monitored for the duration of the period of exposure (the aquaculture sites monitoring area; Figure 2.1). The monitoring was carried out from the northern shoreline of Ballyteige Bay east of the Duncormick River Estuary. We chose this location because it allowed coverage of the areas holding the main concentrations of waterbirds in the Ballyteige Burrow SPA (see Gittings and O'Donoghue, 2019) without needing to leave the estuary to travel between vantage points. The main vantage point used allowed full coverage of the aquaculture sites monitoring area. This comprised all the intertidal habitat within the potential disturbance zone from the aquaculture sites (cf. Figures 2.3-2.5 in Gittings and O'Donoghue, 2019) and included the eastern third of subsite 0OL04 and most of subsite 0OL06. By walking along the shoreline in either direction it was also possible to cover the remainder of subsite 0OL06, subsite 0OL02 (the Duncormick River Estuary) and subsites 0OL07 and 0OL08 (the uppermost part of Ballyteige Bay).

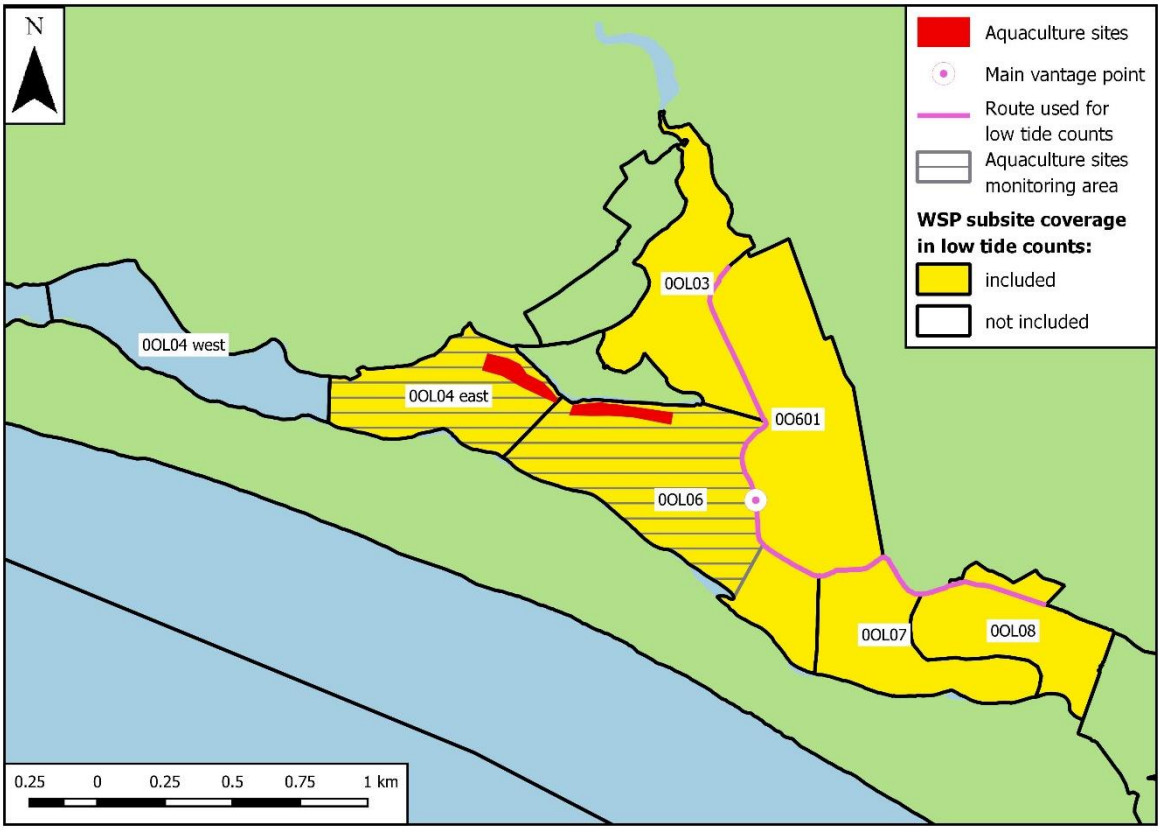

Figure 2.1 – The aquaculture site monitoring area and the coverage of WSP subsites during the low tide counts.

2.4 All observations of Lesser Black-backed Gulls during the survey period were recorded. Observations of birds on intertidal or subtidal habitat within Ballyteige Bay were mapped, their behaviour recorded (feeding, or roosting/other) and the time and duration of their occurrence recorded. Flightlines of birds overflying Ballyteige Bay were mapped and the time of the observation was recorded. The age of all birds was recorded using the following age-classes: juvenile, first-summer, second-summer, third-summer and adult. However, for overflying birds seen from below, it was not always possible to distinguish between the third-summer and adult age-classes.

2.5 In addition to monitoring Lesser Black-backed Gull occurrence, during each visit a full waterbird count was taken during the middle of the coverage period covering subsites 0OL02, 0OL04 (eastern third), 0OL06, 0OL07 and 0OL08. Further additional waterbird counts of the aquaculture sites monitoring area were taken at intervals across the coverage period.

2.6 On the 5th June 2020 and 6th July 2020 survey visits, quick checks of Bannow Bay for Lesser Black-backed Gull were carried out before arriving at Ballyteige Bay. These were carried out from vantage points along the eastern shore and covered most of Bannow Bay upstream of Saltmills. On 5th June 2020, the visit was carried out from 09:50-10:30, while on 6th July 2020, the visit was carried out from 11:20-12:05.

3. Survey results

Tidal exposure patterns in Ballyteige Bay

3.1 On the three survey days, the intertidal habitat around the aquaculture sites was exposed for a period of around 7-8.5 hours, from around 1.5-2 hours before the Fethard-on-Sea low tide to 5.5-6.5 hours after the Fethard-on-Sea low tide. The maximum exposure occurred around 3.5 hours after the Fethard-on-Sea low tide. This meant that the exposure pattern was not symmetric around low water, with a period of around 5-6 hours before low water, compared to 2-3 hours after low water. The maximum extent of tidal exposure was greater on 6th and 20th July 2020, compared to 5th June 2020, even though the lowest predicted tide occurred on the latter date.

Lesser Black-backed Gull in Ballyteige Bay

3.2 On 5th June 2020, we flushed an adult Lesser Black-backed Gull from a tidal channel in subsite 0OL08. The bird was hidden by the angle of the seawall as we approached and flushed as soon as it became visible. As the Herring Gulls and Great Black-backed Gulls seen on subtidal water during the surveys were usually feeding, it seems likely that this bird was feeding before it was flushed. Apart from this record, we did not record any Lesser Black-backed Gull feeding in tidal habitats in Ballyteige Bay on any of the three survey days.

3.3 On 6th July 2020, we recorded a single adult Lesser Black-backed Gull roosting on intertidal habitat in subsite 0OL06.

3.4 On 20th July 2020, we recorded Lesser Black-backed Gulls roosting on intertidal habitat, with Herring Gulls and Great Black-backed Gulls, throughout the duration of the watch. These roosting groups occurred in three general areas: in the middle of the tidal flats in subsite 0OL06 (R1; Figure 3.1), on the tip of the sandbar separating subsite 0OL06 from the Duncormick River Estuary (R2; Figure 3.1), and in the upper section of the Duncormick River Estuary in subsite 0OL02 (R3; Figure 3.1). The roosting numbers increased across the first five hours of the watch, then decreased as the tide began to flood roosts R1 and R3 (Table 3.1). The peak count across all three roosts was 63. Excluding the count of adult/third-summers, across all the counts, 92% of birds recorded were adults, with small numbers of third-summers and juveniles, and a single second-summer.

Table 3.1 – Hourly counts of roosting Lesser Black-backed Gull in Ballyteige Bay on 20th July 2020.

Time period	Age	Roosts		
		R1	R2	R3
11:20-12:20	Adult	0	no count	0
12:20-13:20	Adult	4	no count	0
13:20-14:20	Adult	4	no count	0
14:20-15:20	Adult	5	3	0
	Juvenile	1	0	0
15:20-16:20	Adult	5	no count	16
	third-summer	0		1
	second-summer	1		0
	Juvenile	0		1

Time period	Age	Roosts		
		R1	R2	R3
16:20-17:20	Adult	17	41	0
	third-summer	0	4	0
	Juvenile	0	1	0
17:20-18:20	Adult	2	0	0
	adult/third-summer	0	18	0
	Juvenile	0	1	0
18:20-18:40	Adult	2	0	10

See Figure 3.1 for roost locations.

3.5 On all three survey days, commuting Lesser Black-backed Gull were recorded flying over Ballyteige Bay. Most records (92% of all commuting birds recorded) were of birds broadly following the Duncormick River Estuary (Figure 3.2). A few birds were recorded flying along the dunes or commuting inland/out to sea at Lacken (Figure 3.2). However, the vantage points used for the survey will have biased the survey effort towards recording of birds using the Duncormick River Estuary as a commuting route. The alignment of the Duncormick River Estuary and Lacken commuting routes (Figure 3.2) indicated that the birds were commuting to/from the Saltee Islands. Peak numbers of birds commuting inland were recorded during the mid-afternoon, while peak numbers of birds commuting out to sea were recorded towards the end of each survey period (Table 3.2). The largest number of commuting birds were recorded on 6th July 2020. On 20th July 2020, many of the birds recorded commuting out to sea were probably birds that had been roosting in the upper part of the Duncormick River Estuary (R3; Figure 3.1). Most commuting birds were recorded as adults, although these may have included some third-summers (see paragraph 2.4). The only non-adult/third-summers recorded were single records of second-summers on 5th June 2020 and 20th July 2020. Note that some commuting birds may have been missed while carrying out waterbird counts.

Table 3.2 - Hourly counts of commuting Lesser Black-backed Gull flying inland and out to sea along the Duncormick River Estuary at Ballyteige Bay on the three survey days.

Time period	05/06/2020		06/07/2020		20/07/2020	
	inland	out to sea	inland	out to sea	inland	out to sea
10:00-11:00	0	0				
11:00-12:00	1	0			0	0
12:00-13:00	1	0	0	1	0	0
13:00-14:00	0	0	3	1	0	0
14:00-15:00	2	0	7	1	3	0
15:00-16:00	12	1	6	1	1	5
16:00-17:00	0	3	5	8	2	6
17:00-18:00	0	0	5	11	0	20
18:00-19:00			0	13	0	14
19:00-20:00			0	16		
Totals	**16**	**4**	**26**	**52**	**6**	**45**

Shaded cells indicate the time period was not covered on that survey date. The first and last time periods on each survey day were only partly covered; see coverage periods in Table 2.1.

Lesser Black-backed Gull at Bannow Bay

3.6 When we checked Bannow Bay on 5th June 2020, there was partial exposure of intertidal habitat around the trestles, with extensive exposure in the upper estuary and in the sandflats around Bannow Bay Island. No Lesser Black-backed Gulls were recorded.

3.7 When we checked Bannow Bay on 6th July 2020, the intertidal habitat around the trestles was more or less fully exposed. Two adult Lesser Black-backed Gulls were recorded feeding on intertidal habitat along the edge of the main tidal channel close to the trestles, and a single adult Lesser Black-backed Gull was recorded roosting on intertidal habitat in the upper estuary.

3.8 We did not visit Bannow Bay during the 20th July 2020 survey visit.

Waterbird counts at Ballyteige Bay

3.9 The overall waterbird numbers recorded on the low tide counts increased across the three survey days (Table 2.1). The main species recorded were Curlew, Black-tailed Godwit, Redshank and Black-headed Gull. The peak numbers of Little Egret, Curlew and Black-headed Gull were higher than the five year mean annual peak I-WeBS count (Table 2.1). The highest concentrations of most species occurred in the Duncormick River Estuary (subsite 0OL03) and in the uppermost section of Ballyteige Bay adjacent to the Cull (subsite 0OL08), while the overall numbers in the aquaculture sites monitoring area were generally low (Table 3.4). On 20th July 2020, the large Curlew count included a flock of 338 roosting in the saltmarsh in subsite 0OL08. Most of the Black-headed Gulls recorded were feeding in the intertidal zone. On 5th June 2020 and 6th July 2020, the Herring Gulls and Great Black-backed Gulls were mainly feeding in subtidal water in the tidal channels, while on 20th July 2020 they were mainly roosting with the Lesser Black-backed Gulls.

Table 3.3 – Low tide waterbird counts at Ballyteige Bay in June-July 2020 compared to the five-year mean annual peak I-WeBS counts.

Species	05/06/2020	06/07/2020	20/07/2020	I-WeBS
Shelduck	8	8	0	37
Mallard	1	2	0	48
Cormorant	2	1	1	16
Little Egret	2	25	26	18
Grey Heron	2	2	0	6
Oystercatcher	29	21	54	85
Whimbrel	0	0	1	1
Curlew	6	77	519	342
Black-tailed Godwit	90	207	181	281
Bar-tailed Godwit	0	2	1	320
Dunlin	0	0	7	532
Greenshank	0	4	10	20
Redshank	0	51	192	423
Black-headed Gull	298	344	686	348
Mediterranean Gull	0	4	0	1
Lesser Black-backed Gull	1	0	7	82
Herring Gull	6	11	56	172
Great Black-backed Gull	11	15	31	46

I-WeBS data are the five-year mean annual peak counts for the period 2011/12-2015/16; data supplied by the Irish Wetland Bird Survey (I-WeBS), a joint scheme of BirdWatch Ireland and the National Parks and Wildlife Service of the Department of Arts, Heritage & the Gaeltacht.

Table 3.4 – Maximum counts in the aquaculture sites monitoring area.

Species	05/06/2020	06/07/2020	20/07/2020
Cormorant	0	1	2
Little Egret	3	3	7
Grey Heron	0	1	1
Oystercatcher	7	11	28
Ringed Plover	4	0	3
Whimbrel	0	0	3
Curlew	8	17	40
Black-tailed Godwit	0	2	0
Bar-tailed Godwit	0	1	0
Dunlin	17	0	5
Greenshank	0	1	0
Redshank	3	3	5
Black-headed Gull	23	37	54
Lesser Black-backed Gull	0	0	17
Herring Gull	4	2	12
Great Black-backed Gull	3	6	21

See Figure 2.1 for the extent of the area covered.

Disturbance at Ballyteige Bay

3.10 Husbandry activities took place around the western aquaculture site (T03/038A) on 6th and 20th July 2020. The vantage points used for this survey were too distant from that site to monitor whether the activities caused any disturbance impacts.

3.11 A walking route runs along the northern shore of Ballyteige Bay from the Duncormick River Estuary to the Cull, with small numbers of people using this route on all three survey days. However, most people using this route kept to the shoreline and did not appear to cause significant disturbance responses from waterbirds in the estuary.

3.12 Observations of activities in the tidal zones in Ballyteige Bay are summarised in Table 3.5. There is a route marked out by old wooden posts that crosses the middle of subsite 0OL06, which appears to be used by horse riders to access the dunes to/from the slip at Blackstone. On 20th July 2020, three bait diggers were working in the middle of subsite 0OL06 on the flood tide. The gull flock roosting at R1 (including Lesser Black-backed Gulls) appeared to tolerate their activity but flushed when one of the bait diggers walked back directly towards them.

Table 3.5 – Observations of potential disturbance generating activities in the tidal zones of Ballyteige Bay.

Date	Time	Details
06/07/2020	16:55-17:20	Horse rider and dog rode out to the southern tidal channel across the sandflats in the middle of subsite 0OL06.
	17:20-17:40	Dog ran out across mud in subsite 0OL06 near mouth of Duncormick River Estuary, swam across northern tidal channel and then continued up the Duncormick River Estuary, chasing birds.

Date	Time	Details
	18:20-18:45	Horse rider rode out across the sandflats in the middle of subsite 0OL06, crossed southern tidal channel and continued into dunes, returning back along the same route.
20/07/2020	16:10-17:35	3 bait diggers walked out to middle of subsite 0OL06. They worked around 200-300 m away from the roosting gull flock without causing any disturbance response. One returned at 17:00, flushing the roosting gull flock which was directly on his route. The other two moved up the estuary to the eastern end of subsite 0OL06, returning to the shore at 17:35.
	17:10	Horse rider crossed the estuary from the dunes across the middle of subsite 0OL06.
	18:30	3 horse riders wading below the tideline along the now largely flooded northern shore of subsite 0OL06 west of the mouth of the Duncormick River Estuary.

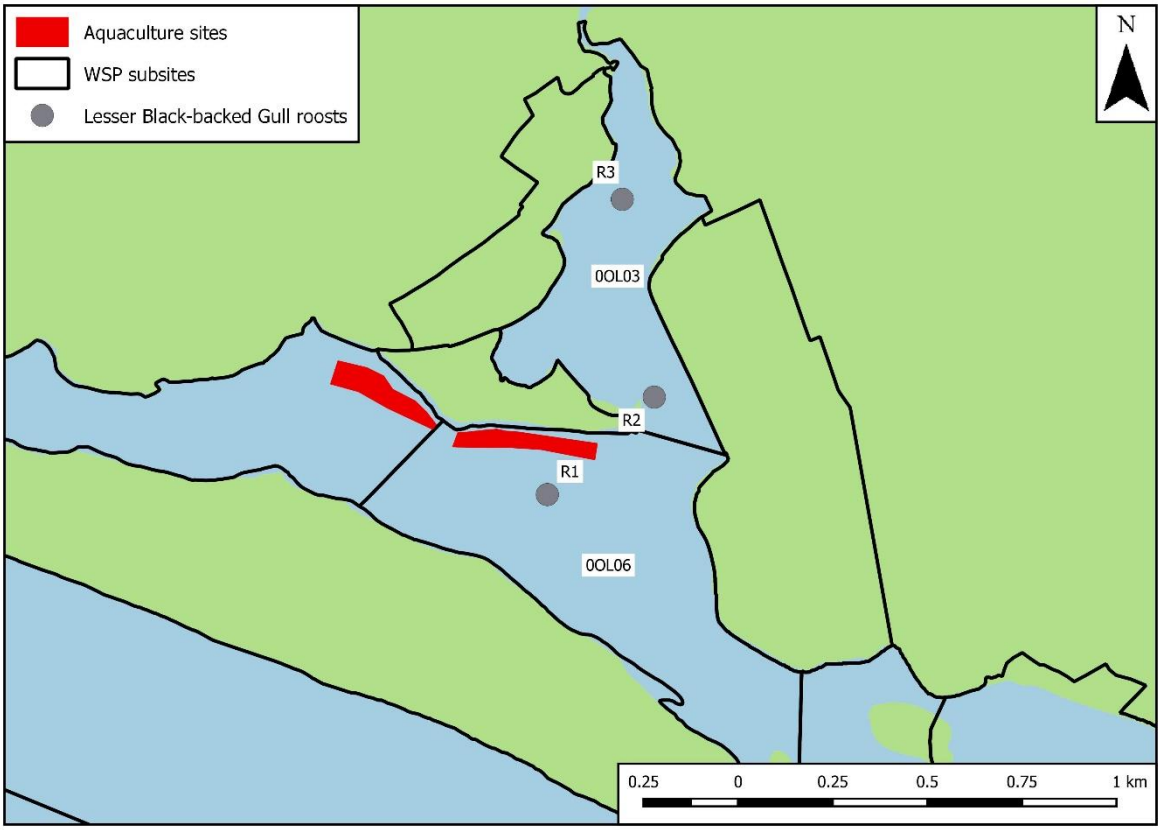

Figure 3.1 – Lesser Black-backed Gull roost locations on 20th July 2020.

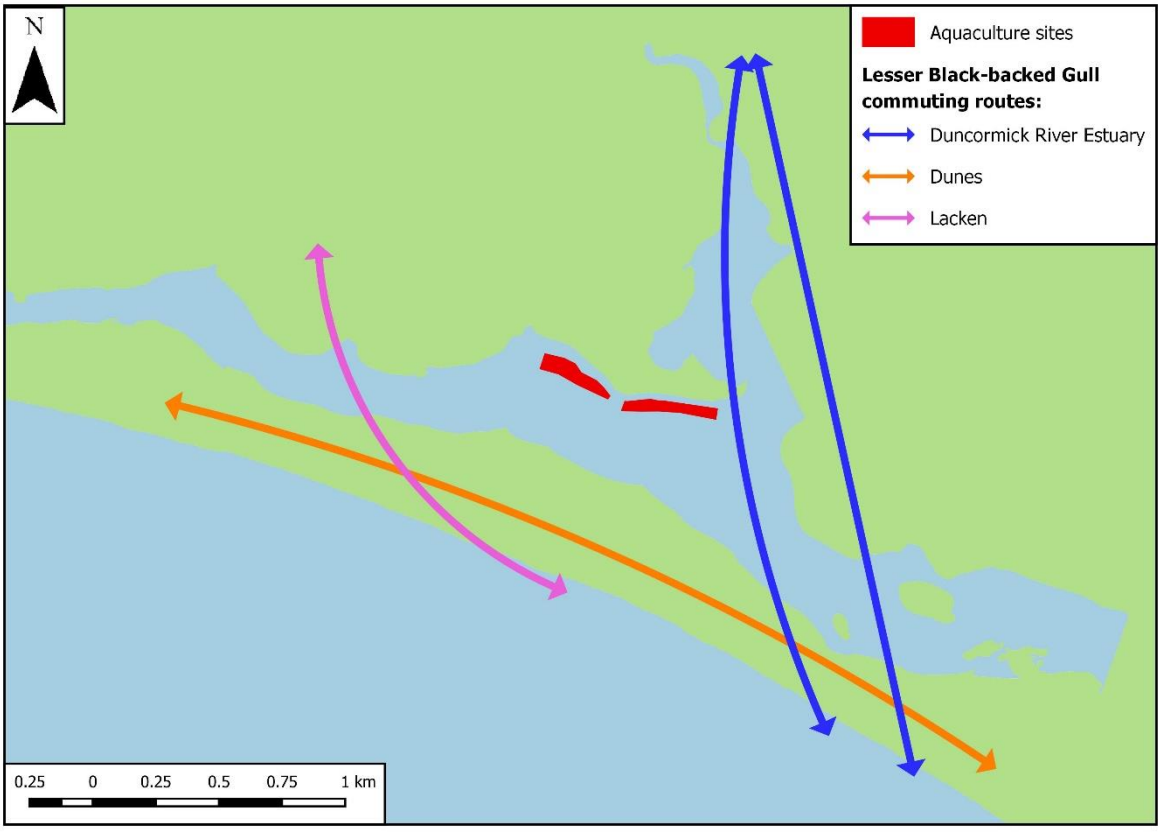

Figure 3.2 – Lesser Black-backed Gull commuting routes.

4. Conclusions

4.1 This survey sampled the incubation, chick provisioning and post-fledging phases of the Lesser Black-backed Gull breeding cycle. The only record of a Lesser Black-backed Gull possibly foraging in tidal habitats in Ballyteige Bay was of a single bird in subtidal water in the uppermost section of the bay. Therefore, it can be concluded that intertidal habitat in Ballyteige Bay is unlikely to be a significant foraging resource for Lesser Black-backed Gulls from the Saltee Islands colony. While our data for Bannow Bay is more limited, we also did not find any evidence to indicate that intertidal habitat there is likely to be a significant foraging resource for Lesser Black-backed Gulls from the Saltee Islands colony.

4.2 We regularly recorded commuting Lesser Black-backed Gulls flying inland/out to sea along the Duncormick River Estuary, and these were presumably birds commuting to/from the Saltee Islands. The numbers recorded on 5th and 20th July 2020 represent around 10% of the adult breeding population of the Saltee Islands colony (251 apparently occupied nests in 2015-2018; Cummins *et al.*, 2019). As this is presumably only one a number of commuting routes, our observations indicate that the terrestrial habitats provide a significant component of the of the foraging resources used by the Saltee Islands colony.

4.3 On 20th July 2020, small roosting flocks of Lesser Black-backed Gulls occurred in Ballyteige Bay. These appeared to be birds returning along the Duncormick River Estuary commuting route, pausing to roost, before continuing onto the Saltee Islands. One of the roost sites occurred within around 100-200 m of aquaculture site T03/095A. Observations of the responses of the gulls to bait diggers indicated that they tolerated activity within a few hundred metres but flushed when they were directly approached. Therefore, while husbandry activity within this aquaculture site may cause disturbance to this roost site the gulls are likely to be able to continue to roost elsewhere in the same general area.

4.4 We recorded high counts of some other waterbird species during the surveys, with the peak Little Egret, Curlew and Black-headed Gull counts exceeding the most recent five-year mean annual peak I-WeBS counts. The occurrence of relatively high waterbird numbers outside the I-WeBS season is not unusual (Cooney, 2017, 2018; T. Gittings, unpublished data for Cork Harbour). In particular, late summer is probably the peak period of utilisation of intertidal habitats by Black-headed Gulls in southern Ireland. This illustrates the limitations of relying solely on I-WeBS data, and other data from winter bird surveys, for assessments of impacts to waterbird populations. However, only three of the species recorded in significant numbers in these surveys are Special Conservation Interests that were screened in for assessment in the AA report (Curlew, Black-tailed Godwit and Redshank). These species were not identified as at being at risk of significant impacts in the AA report. Given the relatively low numbers that occurred in the area around the aquaculture sites, the results of these surveys do not suggest any changes to that assessment.

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Report supporting Appropriate Assessment of Aquaculture in Ballyteigue Burrow SAC (Site code: 000696)

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AQUAFACT

Table of Contents

List of Figures

List of Tables

1. Preface

Articles 3 to 9 of the European Community (EC) Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna (commonly known the Habitats Directive) 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. Following the requirements of Article 6(3) of the Habitats Directive, implemented into national law under Regulation 31 of the Habitats Regulations SI 94/1997 and subsequently amended and consolidated in the European Communities (Birds and Natural Habitats) Regulations 2011, if a plan or project is not connected with, or necessary for the management of a protected site and is likely to have a significant effect on the features for which the site is designated either individually or in combination with other plans or projects, an Appropriate Assessment (AA) is required to assess whether a plan or project will have any adverse effect on the integrity of Natura 2000 site(s) in view of the Conservation Objectives set for the features (habitats and/ or species) for which the site(s) is designated.

Natura 2000 sites in Ireland that form part of the Natura 2000 network of protected sites include Special Areas of Conservation (SACs) designated due to their significant ecological importance for species and habitats protected under Annex I and Annex II respectively of the Habitats Directive, and Special Protection Areas (SPAs), designated for the protection of populations and habitats of bird species protected under the EU Birds Directive (Council Directive 2009/147/EC on the conservation of wild birds). The features for which SACs and SPAs are designated are respectively called Qualifying Interests and Special Conservation Interests (also collectively referred to herein as conservation features). The NPWS are the competent authority for the management of Natura 2000 sites in Ireland.

Aquaculture operations existed in coastal areas prior to the designation of areas as SACs and/ or SPAs under the Directives. Ireland is undertaking AA of existing and proposed aquaculture activities in SACs and SPAs. This is an incremental process, as agreed with the EU Commission in 2009, and will eventually cover all aquaculture activities in all Natura 2000 sites. AA of aquaculture operations are carried out against the Conservation Objectives for the conservation features of the Natura 2000 site. The Conservation Objectives are defined by the NPWS.

Aquaculture activities are licenced by the Department of Agriculture, Food and Marine (DAFM). For aquaculture operations, DAFM receives applications to undertake such activity and submits a set of applications and existing licences, at a defined point in time, for AA. If the AA process finds that the possibility of significant adverse effect cannot be discounted or that there is a likelihood of negative consequence for the conservation features for which a site is designated then such activities will need

to be mitigated further if they are allowed to continue. The assessment reports are not always explicit on how this mitigation might be achieved but rather indicate whether mitigation is required or not and what results should be achieved.

2. Executive Summary

2.1 The SAC

The Ballyteige Burrow Special Area of Conservation (SAC) is located on the south coast of Co. Wexford. The SAC site extends eastwards and northwards from the village of Kilmore Quay in Co. Wexford. The site consists of a long, narrow spit of coarse sand and gravel with a sand dune system, the Ballyteige Burrow, which forms most of the seaward boundary.

Annex I marine habitats for which the site is designated include Estuaries (1130) and Mudflats and sand flats not covered by seawater at low tide (1140) each of which support soft sedimentary communities and community complexes. The site also contains, and is designated for, a range of Annex I coastal habitats including lagoons, salt meadow and marsh, sand dunes and scrub. Conservation Objectives for the conservation features of the site were identified by NPWS (2014a).

The Conservation Objectives for the Annex I marine habitats is to maintain the Favourable Conservation Condition of the habitats which is defined by attributes and targets relating to:

1) the extent of permanent Annex I habitat; and

2) the natural condition of constituent community types identified within the Annex I habitat.

2.2 Activities in the SAC

Aquaculture activity within Ballyteigue Burrow SAC focuses on the cultivation of the Pacific oyster *Crassostrea gigas* on trestles in intertidal areas of the bay. Aerial imagery indicates that oyster trestle cultivation activity has been taking place in Ballyteige Bay since at least 1995. Prior to 2005, four operators were active, but since 2005 only a single operator has been active. Production data received indicates an increase in production from 2008 to 2013, with a slight decrease after 2015. Currently there are two aquaculture sites (namely [redacted] and T03/095A), covering a total combined area of 3.3ha at Ballyteige Burrow SAC. These are both classified as applications, although there is current oyster cultivation activity at one of the sites [redacted]

2.3 The Appropriate Assessment Process

The function of this Appropriate Assessment (AA) is to determine if existing and proposed aquaculture activities at Ballyteigue Burrow SAC are consistent with the Conservation Objectives for the site or if such activities will lead to deterioration in the attributes of the conservation features for which the site is designated over time due to the scale, frequency and intensity of the aquaculture activities.

NPWS (2014a) is a guidance document that details the Conservation Objectives defined for Ballyteigue Burrow SAC. Specifically, the document provides guidance on interpretation of the Conservation Objectives which are, in effect, management targets for the habitats, community types and species in the SAC. This guidance is scaled relative to the anticipated sensitivity of habitats and species to disturbance by activities. Some activities are deemed to be wholly inconsistent with long term maintenance of certain sensitive habitats while other habitats can tolerate a range of activities.

For the practical purpose of management of sedimentary habitats, a 15% threshold of overlap between a disturbing activity and a habitat is given in the NPWS guidance. Below this threshold disturbance is deemed to be non-significant. Disturbance is defined as that which leads to a change in the characterising 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 characterising species may recover to pre-disturbed state or may persist and accumulate over time.

The AA process is divided into two stages.

The first stage of the process is an initial Screening wherein activities that cannot have, because they do not spatially overlap with a given habitat or have a clear pathway for interaction, any impact on the features for which the site is designated and are therefore excluded from further consideration.

The next phase is the Natura Impact Statement (NIS) where interactions (or risk of) are identified and an assessment of the significance of the likely interactions between activities and conservation features is conducted. Mitigation measures (if necessary) are introduced in situations where the risk of significant disturbance is identified. In situations where there is no obvious mitigation to reduce the risk of significant impact, it is advised that caution should be applied in licensing decisions.

Overall, AA is both the process and the assessment undertaken by the competent authority to effectively validate this Screening Report and/or NIS. It is important to note that the screening process is considered conservative in that other activities which may overlap with habitats, but which may have very benign effects are retained for full assessment. In the case of risk assessments, consequence and likelihood of the consequence occurring are scored categorically as separate components of risk. Risk scores are used to indicate the requirement for mitigation.

2.4 Data Supports

Data on the distribution of habitats and species populations are provided by NPWS. Scientific reports on the potential effects of various activities on habitats and species have been compiled by the Marine Institute and provide the evidence base for assessment findings. The data supporting the assessment of activities vary and provides for varying degrees of confidence in the findings.

2.5 Findings

Aquaculture and Habitats:

Within the Annex I habitats, 2 community types have been identified namely Mixed sediment to sand with nematodes and *Tubificoides benedii* community, and Sand with crustaceans and *Nephtys hombergii* community complex.

Based upon the scale of spatial overlap of activities with the above habitats, and the relatively high tolerance levels of the habitats and species therein, the general conclusions relating to the interaction between aquaculture activities with habitats is that consideration can be given to licencing (existing and applications) in the Annex I habitats 1130 and 1140.

The site is at risk from the introduction of non-native (alien) invasive species on and among culture stock. To manage the risk of introduction of alien species into the SAC all movement of stock in and out of the bay should adhere to relevant legislation and follow best practice guidelines (*e.g.* http://invasivespeciesireland.com/cops/aquaculture/).

3. Introduction

This document assesses the potential ecological interactions of aquaculture and fisheries activities within the Ballyteigue Burrow SAC (Site code: 000696) on the Conservation Objectives of the site. The information upon which this assessment is based is a list of license applications for aquaculture activities administered by the Department of Agriculture Food and Marine (DAFM) and forwarded to the Marine Institute. The spatial extent of aquaculture licenses is derived from a database managed by the DAFM[1].

[1] Aquaculture Licence GIS https://www.agriculture.gov.ie/seafood/engineering/publications/gisdata/ (23.12.19)

4. Conservation Objectives for the Ballyteigue Burrow SAC

The AA of aquaculture in relation to the Conservation Objectives for Ballyteigue Burrow SAC is based on:

1) NPWS (2014a[2]) Conservation Objectives: Ballyteige Burrow SAC 000696. Version 1.
2) NPWS (2014b[3]) Conservation Objectives supporting document - Marine Habitats Ballyteige Burrow SAC 000696 Version 1.
3) NPWS (2014c[4]) Conservation Objectives supporting document - Coastal Habitats. Ballyteige Burrow SAC 000696 Version 1.
4) Spatial data[5] for conservation features.

4.1 The SAC Extent

Ballyteigue Burrow SAC is a coastal site extending eastwards and northwards from the village of Kilmore Quay in Co. Wexford. A long, narrow spit of coarse sand and gravel with an impressive sand dune system (Ballyteige Burrow) forms most of the seaward boundary of this site. Behind the spit lies a shallow, tidal sea inlet and estuary of the Duncormick River (The Cull). The eastern portion of this intertidal system was reclaimed in the 19th century by construction of the Cull Bank and is now polderland, most of which is intensively farmed grassland and arable land. The western portion of The Cull retains semi-natural habitat, including mudflats which are exposed at low tide and saltmarsh. Most of the site is designated a Nature Reserve. The extent of the SAC is shown in **Figure 4.1** below.

4.2 Qualifying Interests

The SAC is designated for the following habitats Annex I of the Habitats Directive:

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]
- Coastal lagoons [1150] (*priority habitat under the Habitats Directive)
- Annual vegetation of drift lines [1210]

[2] https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO000696.pdf

[3] https://www.npws.ie/sites/default/files/publications/pdf/Ballyteige%20Burrow%20SAC%20(000696)%20Conservation%20objectives%20supporting%20document%20-%20marine%20habitats%20[Version%201].pdf

[4] https://www.npws.ie/sites/default/files/publications/pdf/Ballyteige%20Burrow%20SAC%20(000696)%20Conservation%20objectives%20supporting%20document%20-%20coastal%20habitats%20[Version%201].pdf

[5] https://www.npws.ie/maps-and-data/habitat-and-species-data

- Perennial vegetation of stony banks [1220]
- *Salicornia* and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) [1420]
- Embryonic shifting dunes [2110]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] (*priority habitat under the Habitats Directive)
- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150] (*priority habitat under the Habitats Directive)

The spatial extent of the Qualifying Interest Annex I marine habitats Estuaries (1130) and Mudflats and sandflats not covered by seawater at low tide (1140) is illustrated in **Figure 4.2** and **Figure 4.3** respectively.

Constituent communities and community complexes recorded within the Annex I habitats 1130 and1140 are listed in NPWS (2014b) and illustrated in **Figure 4.4** and presented in **Table 4.1** below.

Table 4.1: The constituent community types recorded in Ballyteige Burrow SAC and their occurrence in the Annex I habitats

	SAC Annex I Habitats	
Community Type	**Estuaries (1130)**	**Mudflats and sandflats not covered at low tide (1140)**
Mixed sediment to sand with nematodes and *Tubificoides benedii* community	✓	✓
Sand with crustaceans and *Nephtys hombergii* community complex	✓	

Figure 4.1: The extent of the Ballyteigue Burrow SAC.

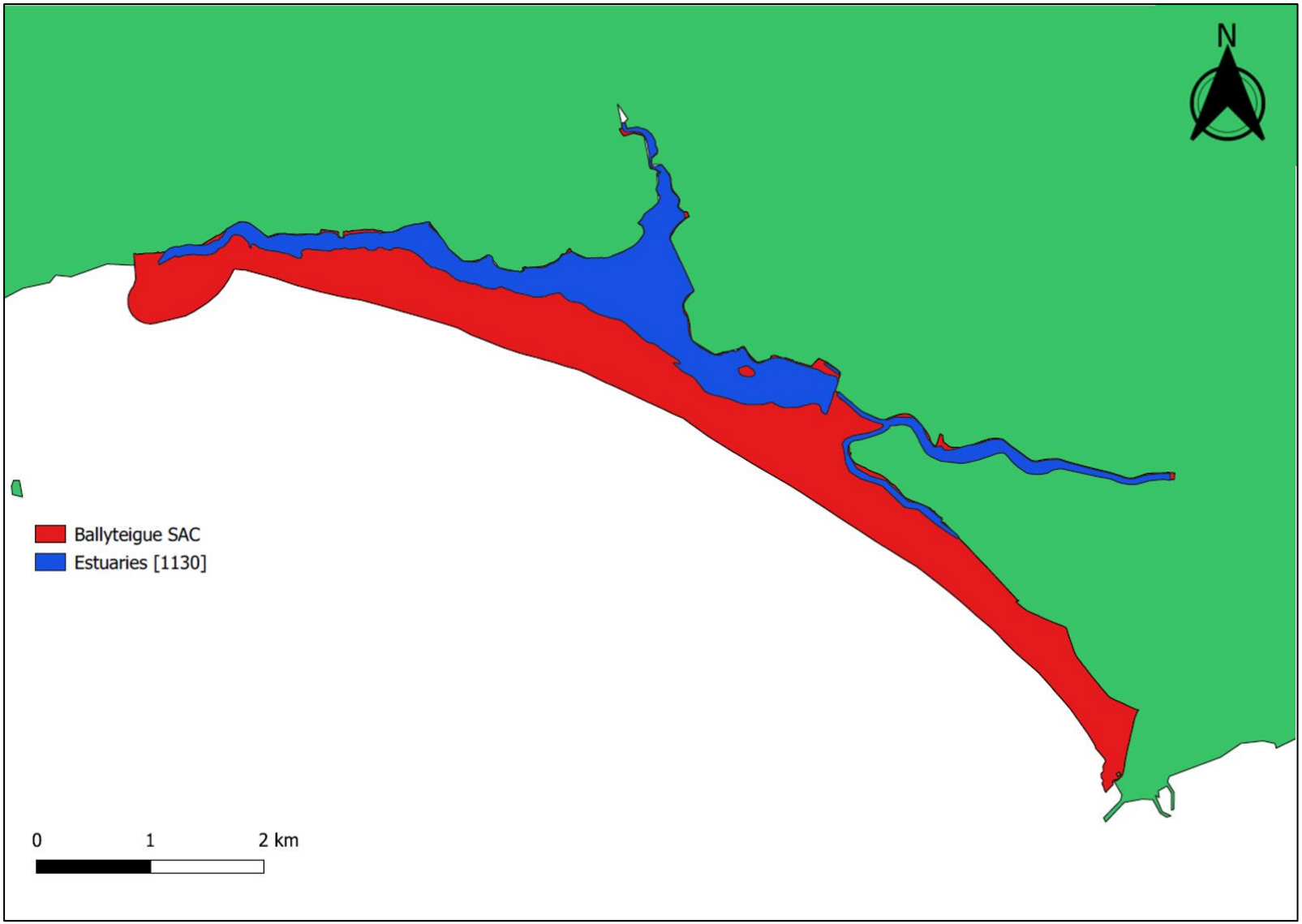

Figure 4.2: The extent of the marine Annex I Qualifying Interest of 1130 within Ballyteigue Burrow SAC.

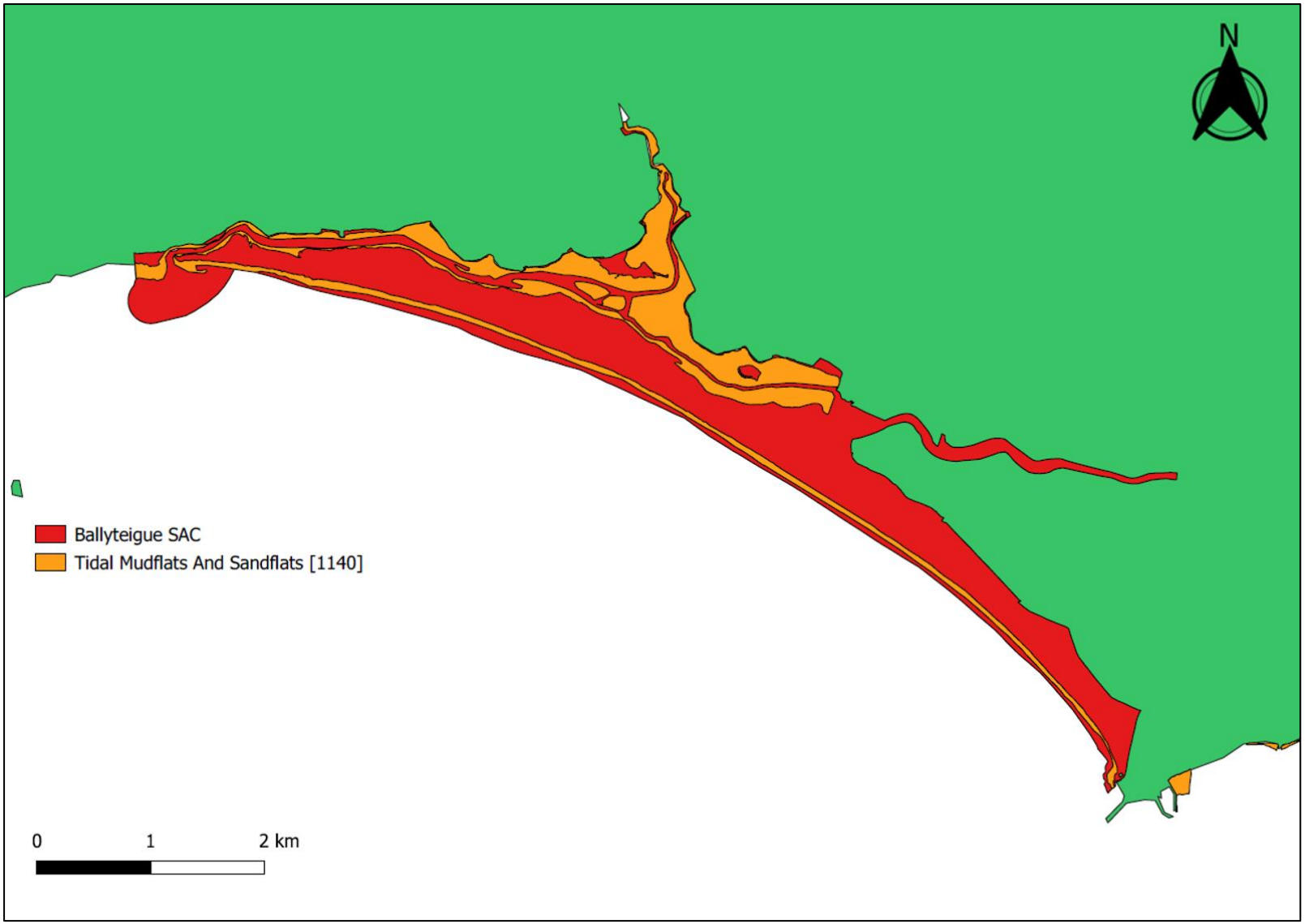

Figure 4.3: The extent of the marine Annex I Qualifying Interest 1140 within Ballyteigue Burrow SAC.

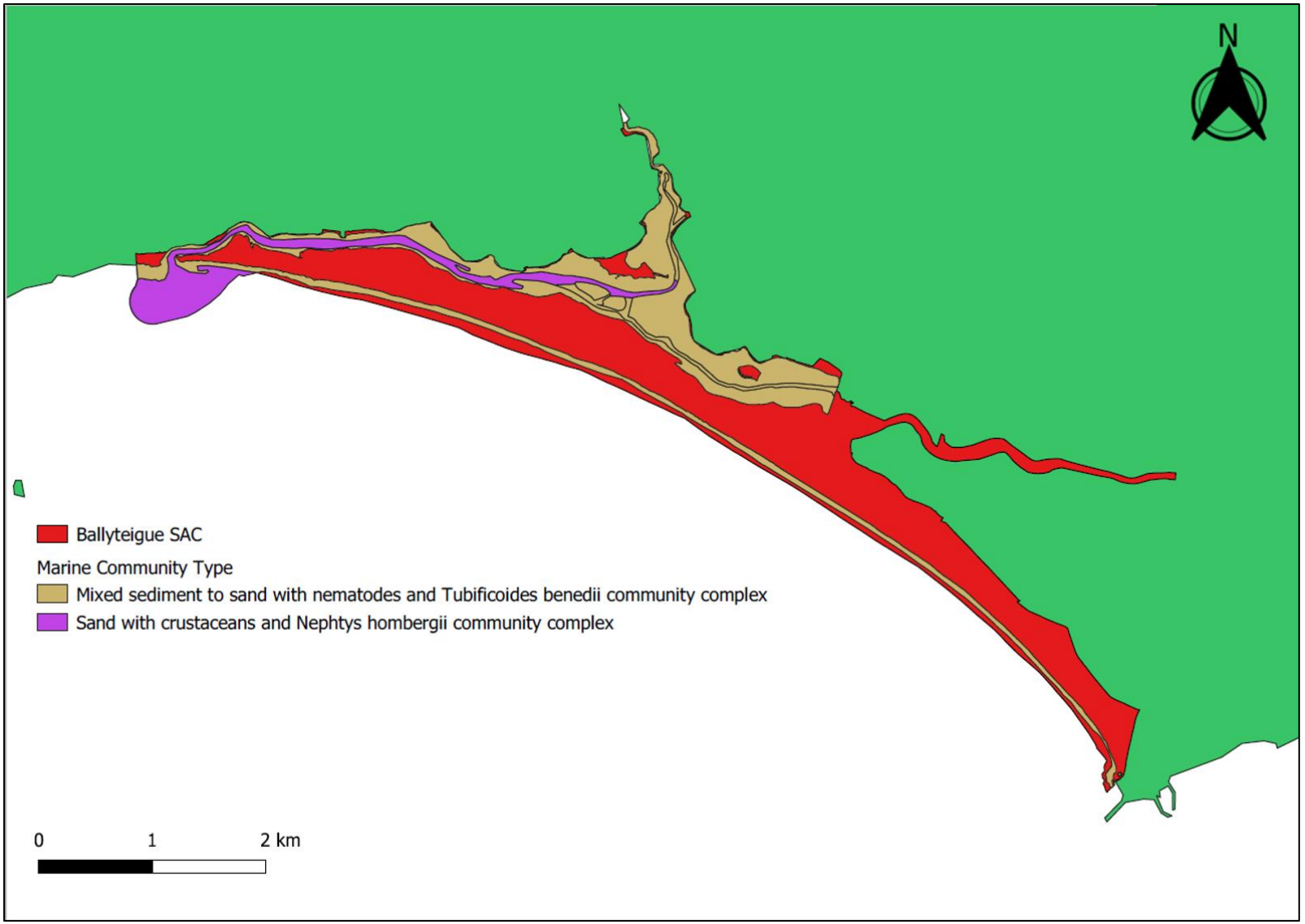

Figure 4.4: Benthic communities types recorded within the marine Annex I Qualifying Interest of 1130 and 1140 within the Ballyteigue Burrow Bay SAC.

4.3 Conservation Objectives for Ballyteigue Burrow SAC

The Conservation Objectives for the Qualifying Interests identified for the site state that the natural condition of the designated features should be preserved with respect to their area, distribution, extent and community distribution (see 2014a). The Conservation Objectives, attribute and targets of the Qualifying Interests of the SAC are listed in **Table 4.2** below.

Table 4.2: The constituent community types recorded in Ballyteigue Burrow SAC and their occurrence in the Annex I habitats (NPWS 2014b).

Feature Community Type	**Objective**	**Targets**
Estuaries (1130)	Maintain Favorable Conservation Condition	237ha: The permanent habitat area is stable or increasing, subject to natural processes. 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
Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex; Sand with crustaceans and *Nephtys hombergii* community complex)	Maintain Favorable Conservation Condition	164ha: Conserve community type in a natural condition
Sand with crustaceans and *Nephtys hombergii* community complex)	Maintain Favorable Conservation Condition	30ha: Conserve community type in a natural condition
Mudflats and sandflats not covered by seawater at low tide (1140)	Maintain Favorable Conservation Condition	201ha: The permanent habitat area is stable or increasing, subject to natural processes. 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
Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex.	Maintain Favorable Conservation Condition	201ha: Conserve community type in a natural condition
Coastal lagoons (1150)	Maintain Favorable Conservation Condition	12.5ha: 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

Feature Community Type	Objective	Targets
Annual vegetation of drift lines (1210)	Maintain Favorable Conservation Condition	0.66ha: 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
Perennial vegetation of stony banks (1220)	Maintain Favorable Conservation Condition	0.506ha; 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
Salicornia and other annuals colonising mud and sand (1310)	Maintain Favorable Conservation Condition	3.13ha: 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
Spartina swards (*Spartinion* maritimae) (1320)	Maintain Favorable Conservation Condition	1320 was originally listed as a qualifying Annex I habitat. However, all stands of cordgrass in Ireland are now regarded as common cordgrass (*Spartina anglica*), an alien invasive species. Thus, no Conservation Objective has been prepared for this habitat. It is therefore not necessary to assess the likely effects of plans or projects against this habitat.

4.4 Screening of Adjacent SAC or for Ex-Situ Effects

There are six SAC sites proximate the Ballyteigue Burrow SAC (**Figure 4.5**). The characteristic features of these sites are identified in **Table 4.3** where a preliminary screening is carried out on the likely interaction with aquaculture activities within Ballyteigue Burrow SAC. As it was deemed that there are no ex-situ effects and no effects on features in adjacent SACs all Qualifying Interests of the adjacent SACs sites were screened out.

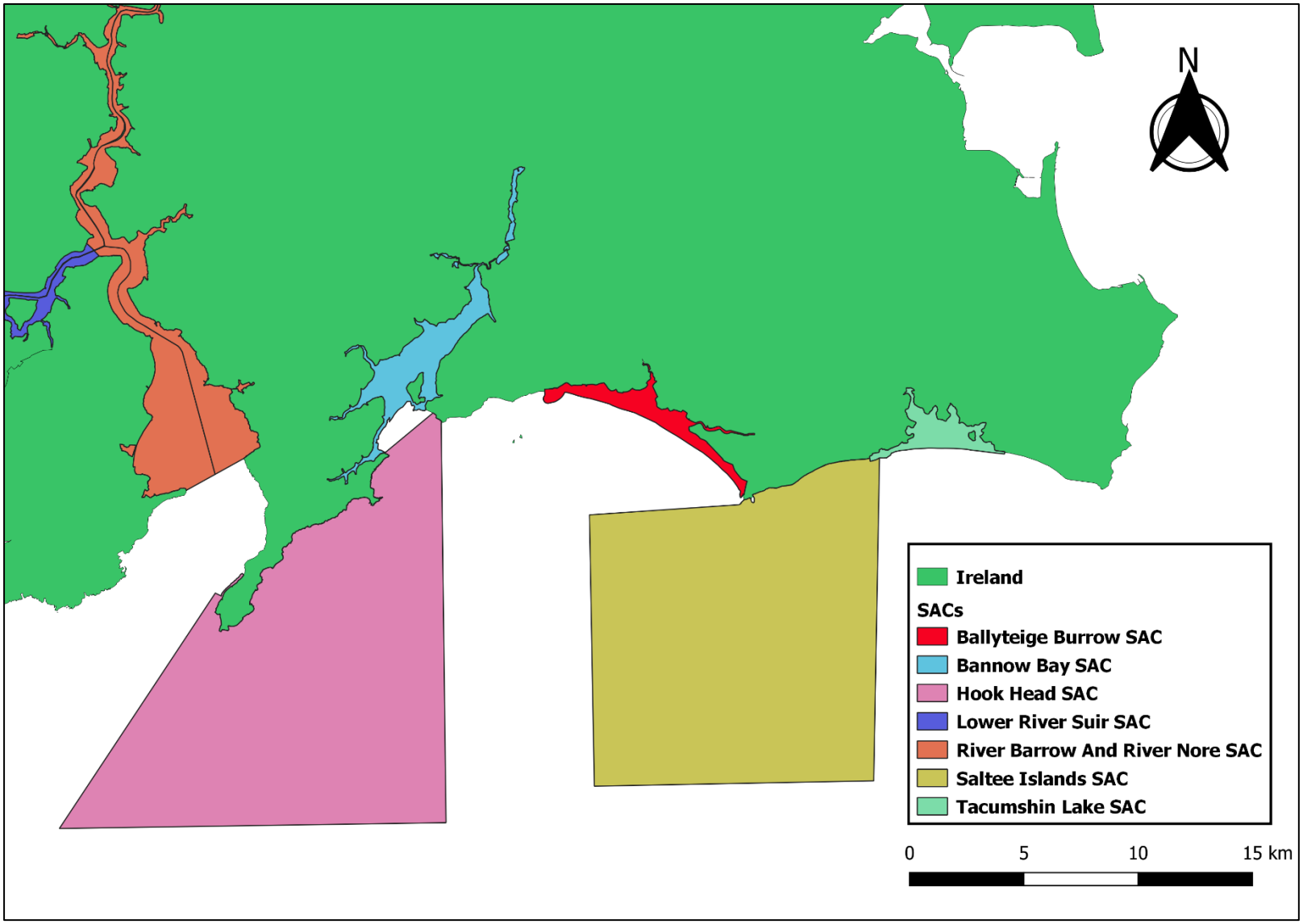

Figure 4.5: SAC adjacent to Ballyteigue Burrow Bay SAC.

Table 4.3: SAC sites adjacent to the Ballyteigue Burrow SAC and qualifying features with initial screening assessment on likely interactions with aquaculture activities.

Site (Site Code)	Qualifying Features	Aquaculture Initial Screening
Hook Head SAC (000764)	Large shallow inlets and bays (1160)	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	Reefs [1170]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
Saltee Island SAC (000707)	Mudflats and sandflats not covered by seawater at low tide [1140]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	Large shallow inlets and bays [1160]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	Reefs [1170]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	Submerged or partially submerged sea caves [8330]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	Halichoerus grypus (Grey Seal) [1364]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
River Barrow and River Nore SAC (002162)	Estuaries [1130]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	Mudflats and sandflats not covered by seawater at low tide [1140]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	Reefs [1170]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.

Site (Site Code)	Qualifying Features	Aquaculture Initial Screening
	Salicornia and other annuals colonising mud and sand [1310]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	European dry heaths [4030]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	*Petrifying springs with tufa formation (*Cratoneurion*) [7220]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis.
	*Alluvial forests with *Alnus glutinosa* and Fraxinus *excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Vertigo moulinsiana (Desmoulin's Whorl Snail) [1016]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Austropotamobius pallipes (White-clawed Crayfish) [1092]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis

Site (Site Code)	Qualifying Features	Aquaculture Initial Screening
	Lampetra planeri (Brook Lamprey) [1096]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Lampetra fluviatilis (River Lamprey) [1099]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Alosa fallax fallax (Twaite Shad) [1103]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Salmo salar (Salmon) [1106]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Lutra lutra (Otter) [1355]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Trichomanes speciosum (Killarney Fern) [1421]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Margaritifera durrovensis (Nore Pearl Mussel) [1990]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
Lower River Suir SAC (002137)	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Mediterranean salt meadows *(Juncetalia maritimi) [1410]*	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis

Site (Site Code)	Qualifying Features	Aquaculture Initial Screening
	*Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*) [91E0]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	**Taxus baccata* woods of the British Isles [91J0]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Austropotamobius pallipes (White-clawed Crayfish) [1092]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Petromyzon marinus (Sea Lamprey) [1095]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Lampetra fluviatilis (River Lamprey) [1099]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Alosa fallax fallax (Twaite Shad) [1103]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Salmo salar (Salmon) [1106]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Lutra lutra (Otter) [1355]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
Bannow Bay SAC (000697)	Estuaries [1130]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Mudflats and sandflats not covered by seawater at low tide [1140]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Annual vegetation of drift lines [1210]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Perennial vegetation of stony banks [1220]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis

Site (Site Code)	Qualifying Features	Aquaculture Initial Screening
	Salicornia and other annuals colonising mud and sand [1310]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Mediterranean salt meadows (*Juncetalia maritimi*) [1410]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) [1420]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Embryonic shifting dunes [2110]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	*Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
Tacumshin Lake SAC (000709)	*Coastal lagoons [1150]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Annual vegetation of drift lines [1210]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Perennial vegetation of stony banks [1220]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Embryonic shifting dunes [2110]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]	No spatial overlap or likely interactions with aquaculture activities in Ballyteigue Burrow Bay SAC – excluded from further analysis
* Indicate priority habitat under the Habitat Directive		

5. Details of the Proposed Plans and Projects

Overview

This assessment focuses on aquaculture activities which occur within the Qualifying Interest of Estuaries (1130) and Mudflats and sandflats not covered by seawater at low tide (1140) for which the Ballyteigue Burrow SAC is designated.

Aquaculture activities within the SAC focus on the cultivation of the Pacific oyster *C. gigas*. Descriptions of the spatial extent of aquaculture activities overlapping the Qualifying Interests were calculated in a GIS. The spatial extent of the cultivation sites overlapping the Qualifying Interest of 1140 and 1130 are presented in **Table 5.1** and presented graphically in **Figure 5.1** while the spatial extent of routes used by for vehicle access to the sites is presented in **Table 5.2** and **Figure 5.1**.

5.1 Description of Aquaculture Activities

There are two aquaculture sites [redacted] T03/095A [1.6ha]), covering a total area of 3.3 ha, at Ballyteige Burrow SAC. These are both classified as applications, although there is current oyster cultivation activity at one of the sites [redacted]. The applicants for the two sites are different indicating that aquaculture activity within the sites will be carried out by different operators.

The two aquaculture sites are located in the middle of Ballyteige Bay on the northern side of the main tidal channel (**Figure 5.1**). The existing oyster cultivation activity in [redacted] is oyster trestle cultivation. It is our understanding that oyster trestle cultivation is the only activity proposed for both sites. No specific details have been received about the existing or proposed aquaculture activities at Ballyteige Burrow. The following text is a general description of oyster trestle cultivation, adapted from Gittings and O'Donoghue (2012).

Oyster trestles vary in height but are typically do not exceed 0.5 m height and their height above the sediment is often less as they sink into the sediment. The trestles are usually arranged in single or paired rows with a separation of around 4 m between rows and with wider (10-20 m) access lanes. Where the trestles occur on open sandflats the rows are usually orientated more or less perpendicularly to the tideline.

Oyster spat is supplied by hatcheries and is placed in mesh bags. Generally, only a proportion of the trestles hold oyster bags at any one time. The bags are placed on top of the trestles, where they are on-grown until they are ready for harvesting. The function of the trestles is to keep the animals off the

seabed, preventing grit getting inside the oysters, providing increased water flow and allowing suitable shell growth. The mesh bags facilitate stock handling and prevent predation.

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

At Ballyteigue Bay, the small size of the aquaculture sites means that husbandry activity is only likely to take place on a proportion of low tides, rather than on every low tide.

Cultivation sites overlap with approximately 1.41% of the Qualifying Interest 1130 Estuaries and 1.66% of 1140 Mudflats and sandflats not covered by seawater at low tide (**Table 5.2**).

5.1.1 Current Oyster Cultivation

There is very little information on the history of aquaculture activity in Ballyteigue Bay. Aerial imagery indicates that oyster trestle cultivation activity has been taking place in Ballyteigue Bay since at least 1995. We understand that, prior to 2005, four operators were active, but since 2005 only a single operator has been active (BIM). Production data received indicates an increase in production from 2008 to 2013, with a slight decrease after 2015.

5.1.2 Access Routes

There is one access route in Ballyteigue Bay (**Figure 5.1**) used by tractors and trailers to access main production areas of the Bay. Access route spatial coverage is calculated by multiplying the linear measurement of the route by 10m, which give a conservative estimate of the area covered. Access routes overlap 0.17% of the Qualifying Interest 1130 and 0.20% of 1140 (see **Table 5.2**).

Table 5.1: Spatial extent of aquaculture activities overlapping with the Qualifying Interest 1130 and 1140 in Ballyteigue Burrow SAC (Site Code 000696). Spatial data based on licence database provided by DAFM. Habitat data provided in NPWS 2014b.

Estuaries (1130)		Mudflats and sandflats not covered by seawater at low tide (1140)	
Area Overlap (ha)	**% Overlap**	**Area Overlap (ha)**	**% Overlap**
3.3ha	1.41%	3.3ha	1.66%

Table 5.2: Spatial extent of aquaculture access routes overlapping with the Qualifying Interest 1130 and 1140 in Ballyteigue Burrow SAC (Site Code 000696). Spatial data based on licence database provided by DAFM. Habitat data provided in NPWS 2014b.

Estuaries (1130)		Mudflats and sandflats not covered by seawater at low tide (1140)	
Area Overlap (ha)	**% Overlap**	**Area Overlap (ha)**	**% Overlap**
0.41ha	0.17%	0.41ha	0.20%

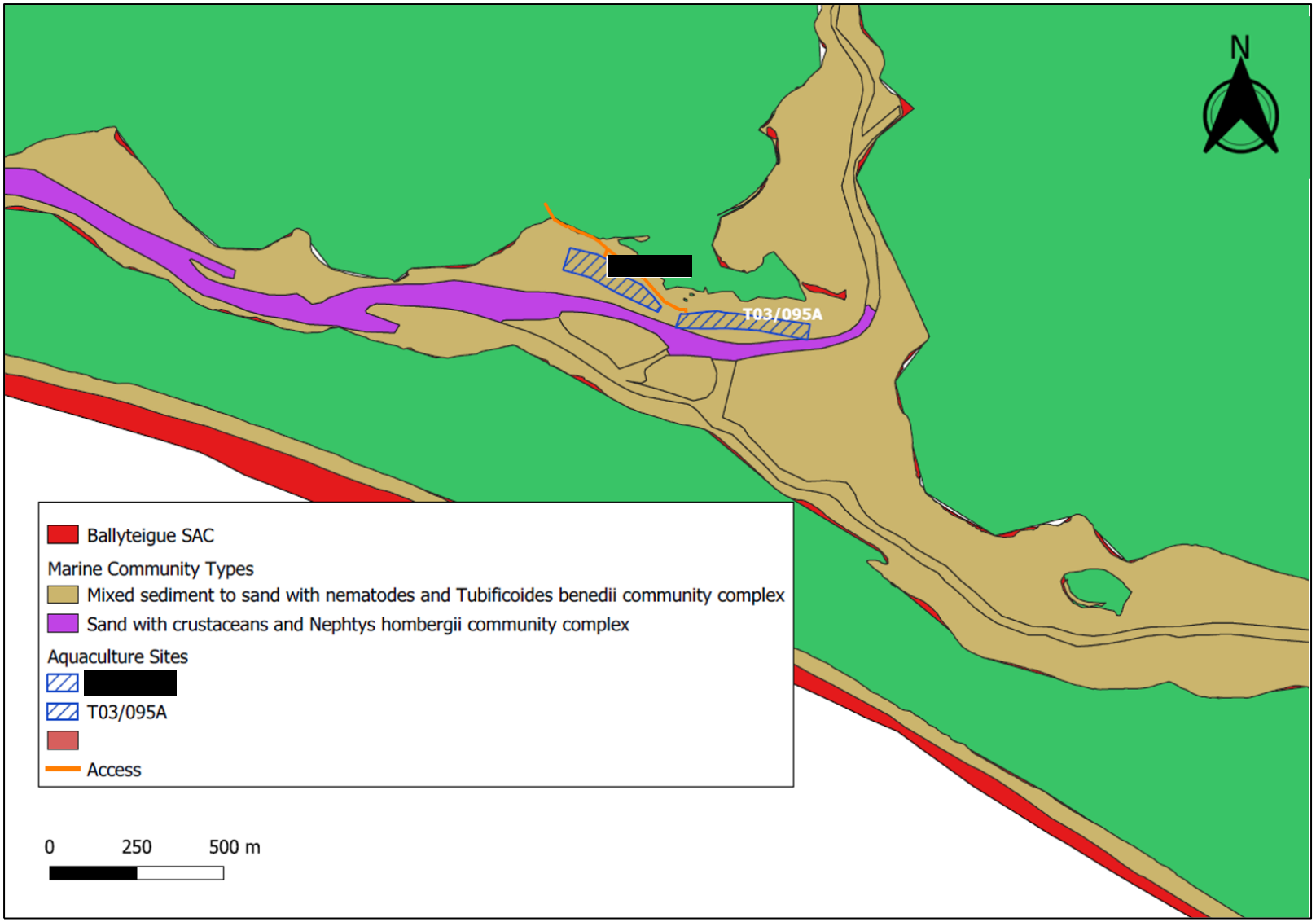

Figure 5.1: Aquaculture sites and access routes within Ballyteigue Burrow SAC

6. Natura Impact Statement for the Activities

Overview

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

Within the Qualifying Interests 1130 and 1140 of the Ballyteigue Burrow SAC the species cultured is the Pacific oyster *C. gigas* in bags and trestles in the intertidal area. Cultivation of oysters on intertidal trestle can alter the surrounding environment, both physically and biologically, not only due to the presence of the culture organisms (*e.g.* increased deposition, disease, shading, fouling, alien species) but also due to the activities associated with the culture mechanisms (*e.g.* structures resulting in current alteration, sediment compaction).

Details of the potential biological and physical effects of aquaculture activities, their sources and the mechanism by which the impact may occur are summarised in **Table 6.1** below. The predominant environmental effects of intertidal trestle cultivation are briefly discussed in **Section 6.1** to **Section 6.3.** The impact identified in the table and discussed below, are derived from published primary literature and review documents that have specifically focused upon the environmental interactions of mariculture (*e.g.* Black 2001; McKindsey *et al*., 2007; O'Beirn *et al.,* 2012; Cranford *et al.,* 2012; ABPMer, 2013a - h).

A detailed screening assessment of potential effects identified in **Section 6.1** to **Section 6.3** is presented in **Section 7**. Where significant effects of an impact mechanism on a receptor cannot be discounted (screened out) at the screening stage, the impact mechanism and receptor combination is brought forward in the assessment (see **Section 8**).

6.1 Physico-chemical Effects

Filter feeding organisms, for the most part, feed at the lowest trophic level, usually relying primarily on the ingestion of phytoplankton. The process is extractive in that it does not rely on the input of feedstuffs in order to produce growth. Suspension feeding bivalves such as oysters and mussels can modify their filtration to account for increasing loads of suspended matter in the water and can

increase the production of faeces and pseudofaeces (non-ingested material) which result in the transfer of both organic and inorganic particles to the seafloor. This process is a component of benthic-pelagic coupling. Faeces and pseudofaeces can accumulate on the seafloor beneath aquaculture installations and can alter the local sedimentary habitat type in terms of organic content and particle size which has, in certain circumstances, been shown to alter the resident faunal communities.

Moderate enrichment due to deposition can lead to increased diversity due to increased food availability; however further enrichment can lead to a change in sediment biogeochemistry (*e.g.* oxygen levels decrease and sulphide levels increase) which can result in a reduction in species richness and abundance resulting in a community dominated by specialist species. In extreme cases of protracted organic enrichment anoxic conditions may occur where no fauna survives, and the sediment may become blanketed by bacterial mats. Changes to the sedimentary habitat due to deposition are indicated by a decrease in oxygen levels, increased sulphide reduction, decrease in REDOX depth (*i.e.* the depth of the boundary between oxic and anoxic sediments) and particle size changes.

Oysters are typically cultured in the intertidal zone in plastic mesh bags on 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 effect to habitats 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. The accumulation of material beneath oyster trestles is dictated by a number of factors, including:

- Hydrography – low current speeds (or small tidal range) may result in material being deposited directly beneath the trestles. If tidal height is high and large volumes of water moved through the culture area an acceleration of water flow can occur beneath the trestles and bags, resulting in a scouring effect or erosion and no accumulation of material.
- Turbidity of water – oysters have very plastic response to increasing suspended matter in the water column with a consequent increase in faecal or pseudo-faecal production. Oysters can be cultured in estuarine areas (given their polyhaline tolerance) and as a consequence can be exposed to elevated levels of suspended matter. If currents in the vicinity are generally low,

elevated suspended matter can result in increased build-up of material beneath culture structures.

- Density of culture – the density of oysters in a bag and 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 effect can be realised with resultant accumulations. Close proximity may also result in impact on shellfish performance due to competitive interactions.
- 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 re-suspend and disperse material away from the trestles.

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.

6.2 Shading Effects

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.

6.3 Non-native Species

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.

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). 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.

Aquaculture presents a risk for the introduction of alien species as 'hitchhikers' on and among culture stock. There is potential that alien species may spread or proliferate to a degree that can result in environmental damage.

6.4 Disease Risk

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

Table 6.1: Potential indicative environmental pressures of aquaculture activities within the Qualifying Interest 1130 and 1140 of the Ballyteigue Burrow SAC.

Activity	Pressure Category	Pressure	Potential Effects	Equipment/ Gear	Duration (days)	Time of Year	Factors constraining the Activity
Intertidal Oyster Culture	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	At low tide only
		Surface disturbance	Ancillary activities at sites, *e.g.* servicing, transport increase the risk of sediment compaction resulting in sediment changes and associated community changes.				
		Shading	Prevention of light penetration to seabed potentially impacting light sensitive species				
	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				
	Physical	Current alteration	Structures may alter the current regime and resulting increased deposition of fines or scouring				
		Shading	Prevention of light penetration to seabed potentially impacting light sensitive species				
		Fouling	Increased secondary production on structures and culture species. Increased nekton production.				
		Seston filtration	Alteration of phytoplankton and zooplankton communities and potential impact on carrying capacity				

7. Screening of Aquaculture Activities

Overview

A screening assessment is an initial evaluation of the possible impacts that activities may have on the Qualifying Interests. The screening is a filter, which may lead to exclusion of combinations of activities (or impact mechanisms) and Qualifying Interests from AA proper, thereby simplifying the assessments, if this can be justified unambiguously using limited and clear-cut criteria. Screening is a conservative filter that minimises the risk of false negatives.

7.1 Physico-chemical Effects

The screening of potential physico-chemical impacts of the proposed activities is based primarily on spatial overlap. Where Qualifying Interests overlap spatially with the proposed activities then significant effects due to these activities on the Conservation Objectives for the Qualifying Interests is not discounted (not screened out) except where there is absolute and clear rationale for doing so.

Where there is relevant spatial overlap full assessment is warranted. Likewise, if there is no spatial overlap and no obvious interaction is likely to occur, then the possibility of significant effect is discounted, and further assessment of possible effects is deemed not to be necessary. Where the overlap between an aquaculture activity (*i.e.* the cultivation site and the access route) and a Qualifying Interest is zero and there is no likely interaction identified; the Qualifying Interest and aquaculture activity combination is screened out and not considered further. Therefore, on this basis, the following habitats are excluded from further consideration in this assessment:

- Coastal lagoons [1150]
- Annual vegetation of drift lines [1210]
- Perennial vegetation of stony banks [1220]
- *Salicornia* and other annuals colonising mud and sand [1310]
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330]
- Mediterranean salt meadows (*Juncetalia maritimi*) [1410]
- Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) [1420]
- Embryonic shifting dunes [2110]
- Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120]
- Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]
- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150]

In contrast, spatial overlap of activities with the following Annex I habitats exist:

- Estuaries [1130]
- Mudflats and sandflats not covered by seawater at low tide [1140]

Table 5.1 and **Table 5.2** respectively highlight the spatial overlap between aquaculture activity (*i.e.* the cultivation site and the access route) with the Qualifying Interest of 1130 and 1140.

Respectively **Table 7.1** and **Table 7.2** provide spatial overlap of aquaculture cultivation site and the access route, with the community types identified within 1130 and 1140. An assessment (see **Section 8**) was carried out on the likely interactions of aquaculture activities with the community types.

Conclusion: potential significant effects exist (see **Section 8.1** for assessment of significance of effects)**.**

7.2 Shading Effects

Shading is considered not to be an issue as the species characterising the benthic habitats under the cultivation structures are not shade sensitive species.

Conclusion: potential significant effects are unlikely to occur - effect screened out.

7.3 Non-native Species

7.1.1 Naturalisation of *Crassostrea gigas*

As outlined above oyster culture presents a risk in terms of the establishment of breeding populations of Pacific oyster. Factors contributing to the successful establishment of oysters in Irish bays include the high-density cultivation of the species, long residence times of embayment waters and large intertidal areas.

Oyster production levels at the Ballyteigue site and the hydrography of the bay does not fulfil these criteria, therefore the risk of successful establishment of 'wild' populations of Pacific oyster in Ballyteigue Burrow SAC is considered low.

It should be noted that no one has witnessed or are aware of any successful settlement and recruitment of pacific oysters in the Bay.

Conclusion: potential significant effects are unlikely to occur - effect screened out.

7.1.2 Introduction of non-native species

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 of time the stock has spent outside of the Ballyteigue Burrow SAC.

Invasive species can have serious negative consequences on their environment and cause damage to ecosystem functions and services by outcompeting native species. This would be of particular concern for any aquaculture activity within SAC sites, but also any aquaculture with connectivity to a SAC sites *e.g.* hydrological connectivity.

Conclusion: potential significant effects (see **Section 8.2** for assessment of significance of effects)**.**

Section 8.2 also describes the potential significance of effects and outlines the existing measures that are implemented to manage the risk of introduction of non-native species

7.4 *Disease Risk*

As outlined above, Kochmann *et al.* (2012; 2013) reported naturalised populations on the west and north coast of Ireland. Given that the Ballyteigue site is located on the south coast away from established populations of 'wild' *C. gigas* population, disease transmission risk is considered negligible.

Conclusion: potential significant effects are unlikely to occur - effects screened out.

Table 7.1: Spatial overlap of aquaculture sites with constituent community types within the Qualifying Interest 1130 and 1140 in Ballyteige Burrow SAC. Spatial data based on licence database provided by DAFM. Habitat data provided in NPWS (2014a,b).

Estuaries (1130)				Mudflats and sandflats not covered by seawater at low tide (1140)	
Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex		Sand with crustaceans and *Nephtys hombergii* community complex		Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex	
Area Overlap (ha)	% Overlap	Area Overlap (ha)	% Overlap	Area Overlap (ha)	% Overlap
3.3	2.04%	0.002	<0.01%	3.3	1.66%

Table 7.2: Spatial overlap of intertidal oyster cultivation site access routes with constituent community types within the Qualifying Interest 1130 and 1140 in Ballyteigue Burrow SAC. Habitat data provided in NPWS (NPWS 2014a,b).

Estuaries (1130)				Mudflats and sandflats not covered by seawater at low tide (1140)	
Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex		Sand with crustaceans and *Nephtys hombergii* community complex		Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex	
Area Overlap (ha)	% Overlap	Area Overlap (ha)	% Overlap	Area Overlap (ha)	% Overlap
0.4	0.25%	No Overlap	No Overlap	0.41	0.20%

8. Assessment of Aquaculture Activities

The objective of this AA is to determine whether ongoing and proposed aquaculture activities in Ballyteigue Burrow SAC are consistent with the Conservation Objectives for the site or if such activities will lead to deterioration in the attributes of the habitats and species over time and in relation to the scale, frequency and intensity of the activities.

8.1 Physico-chemical Effects

8.1.3 Overview

NPWS (2014a) provides guidance on interpretation of the Conservation Objectives which are, in effect, management targets for the Qualifying Features in the SAC. This guidance is scaled relative to the anticipated sensitivity of habitats and species to disturbance by the proposed activities. Some activities are deemed to be wholly inconsistent with long term maintenance of certain sensitive habitats while other habitats can tolerate a range of activities.

For the practical purpose of management of sedimentary habitats, a 15% threshold of overlap between a disturbing activity and a habitat is given in the NPWS guidance. Below this threshold disturbance is deemed to be non-significant. Disturbance is defined as that which leads to a change in the characterizing species of the habitat (which may also indicate change in structure and function). Such disturbance may be temporary or persistent in the sense that change in characterizing species may recover to pre-disturbed state or may persist and accumulate over time.

8.1.4 Determining Significance

The significance of the possible effects of the proposed activities on habitats, as outlined in **Section 6** and the subsequent screening exercise in **Section 7**, is determined here in the assessment. The significance of effects is determined on the basis of guidance for constituent habitats (NPWS 2014a) 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 8.1**.

Within the Ballyteigue Burrow SAC the Qualifying Interest habitats considered subject to potential disturbance and therefore, considered here are:

- 1140 Mudflats and sandflats not covered by seawater at low tide
- 1130 Estuaries

Constituent community types within the above listed Qualifying Interests are:

- Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex
- Sand with crustaceans *and Nephtys hombergii* community complex

For the Qualifying Interests and their constituent community types, potential effects are identified in relation to, first and foremost, the spatial overlap (see **Section 5** and **Section 7** respectively).

Subsequent disturbance and the persistence of disturbance are considered as follows:

1. **The degree to which the activity will disturb the Qualifying Interest**. Disturbance is meant as a change in the characterising species, as listed in the Conservation Objective guidance (NPWS 2014a) of the constituent community types.

   The likelihood of change depends on the sensitivity of the characterising species to the activities in question. Sensitivity results from a combination of intolerance to the activity and/ or recoverability from the effects of the activity (see **Section 8.2** below).
2. **The persistence of the disturbance in relation to the intolerance of the community**. If the activities are persistent (high frequency, high intensity) and the receiving community has a high intolerance to the activity (*i.e.* the characterising species of the communities are sensitive and consequently impacted) then such communities could be said to be persistently disturbed.
3. **The area of communities or proportion of populations disturbed**. In the case of community disturbance (continuous or ongoing) of more than 15% of the community area it is deemed to be significant.

For the assessment the threshold detailed in **3** above applies to the constituent community types that are overlapped by the aquaculture activity.

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

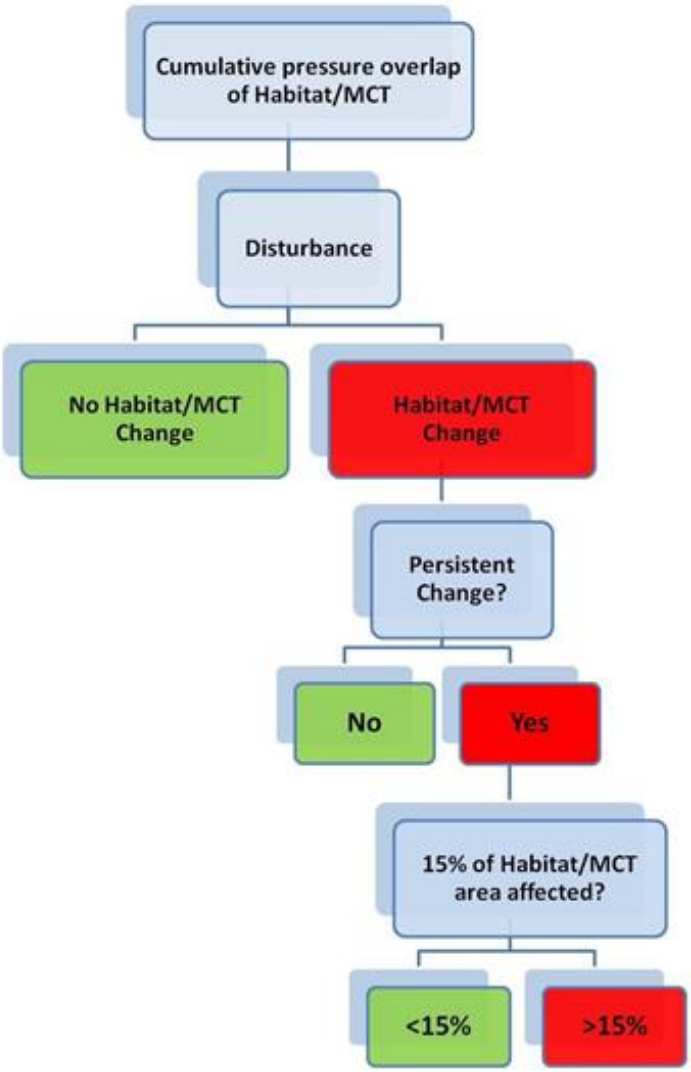

Figure 8.1: **Schematic outlining the determination of significant effects on habitats and marine community types (MCT) (following NPWS 2014b).**

8.1.5 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 Qualifying Interest 1130 and 1140 habitats of the Ballyteigue Burrow SAC.

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 that are 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 the NPWS have acknowledged that given the wide range of community types that can be found in marine environments, the application of conservation targets to these would be difficult. 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*. Directed research investigating the effect of aquaculture on intertidal environment does provide a greater degree of confidence in conclusions; for example, the output of Forde *et al.* (2015) has provided greater confidence in terms of assessing likely interactions between intertidal oyster culture and marine habitats.

The 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 conservation features (species, habitats and communities) the separate components of sensitivity (intolerance, recoverability) are relevant to the persistence of the pressure:

- For persistent pressures (*i.e.* activities that occur frequently and throughout the year) recovery capacity may be of little relevance except for species/ habitats that may have extremely rapid (days/weeks) recovery capacity or whose populations can reproduce and recruit in balance with population damage caused by aquaculture. In all but these cases, and if sensitivity is moderate or high, then the species/ habitats may be negatively affected and will exist in a modified state. Such interactions between aquaculture and species/ habitat/ community represent persistent disturbance. They become significantly disturbing if more than 15% of the community is thus exposed (NPWS 2014a).
- 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 found within the Ballyteigue Burrow SAC to pressures caused by aquaculture (*e.g.* smothering, organic enrichment and physical disturbance) are similar to those of of the surrogate communities identified in **Table 8.1**.

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). Sensitivity is also expected to be high for species 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.
- 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 8.1: Matrix showing the sensitivity scores x pressure categories for habitats (or surrogates) in the Ballyteigue Burrow SAC (ABPMer 2013a-h) (Table 8.2 provides the codes for the various categorisation of sensitivity and confidence.)

Pressure	Physical Damage								Change in Habitats Quality								Biological Pressures					Chemical Pollution			Light
	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 to the surface)	Changes to sediment composition-increased coarseness	Changes to sediment composition-increased fine sediment proportion	Changes to water flow	Decrease in turbidity/ increased suspended sediment	Changes in turbidity/ decreased suspended sediment	Organic enrichment of sediments-sedimentation	Increased removal of primary production-phytoplankton	Decrease in oxygen levels- sediment	Decrease in oxygen levels-water column	Genetic impacts	Introduction of non-native species	Introduction of parasites/pathogen	Removal of Target Species	Removal of Non-target species	Introduction of antifoulants	Introduction of medicines	Introduction of hydrocarbons	Prevention of light reaching seabed/ features
Habitat A2.23 Polychaete/ amphipod dominated fine sand	H (*)	M (*)	M (*)	H (*)	M - H (*)	N - L (*)	L - M (*)	N - L (*)	N - L (***)	N - L (***)	L - M (*)	H (*)	H (*)	H (*)	H (*)	H - M (*)	H - M (*)	NE	H (***)	NE	H (*)	H (*)	NA	H (*)	M (*)	H (*)
Habitat A5.23 Polychaete/ bivalve dominated muddy sand shores	H (*)	M (*)	M (***)	NE	NE	N - L (*)	L - M (*)	N - L (*)	N - L (*)	N - L (*)	L - M (*)	H (*)	H (*)	H (*)	H (*)	H - M (***)	H - M (***)	NE	H (***)	NE	H (*)	H (*)	NA	H (*)	M (***)	H (*)
Habitat A5.42 Estuarine Atlantic sublittoral mixed sediment	H (*)	M (*)	M (*)	NE	NE	N - L (*)	L - M (*)	L - M (*)	H (*)	H (*)	H (*)	H (*)	H (*)	H (*)	H (*)	M (*)	M (*)	NE	H (*)	NE	H (*)	H (*)	NA	H (*)	M (*)	H (*)

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

Pressure interaction codes for Table 8.1	
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

8.1.6 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 assessing risk of disturbance to habitats and species:

- type of activity.
- location and orientation of structures associated with the culture organism.
- density of culture organisms.
- duration of the culture activity.

NPWS (2014b) provide lists of 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 site (NPWS 2014a), Favourable Conservation Condition for 1130 and 1140 are defined by targets set for attributes of the Qualifying Interest. The attributes are 1) Habitat Area and 2) Community distribution. Assessment of the potential effects to the Qualifying Interest with respect to the attributes 1) and attribute 2) are presented in **Section 8.1.7** and **Section 8.1.8**.

8.1.7 Habitat Area

For Estuaries 1130 and Mudflats and sandflats not covered by seawater at low tide 1140 the target for Habitat Area is to ensure that the permanent habitat area is stable or increasing, subject to natural processes.

It is unlikely that the activities proposed will reduce the overall extent of permanent habitat within the feature Mudflats and sandflats not covered by seawater at low tide.

Conclusion: no likely significant adverse effects to Habitat Area.

8.1.8 Community Distribution

Attribute 2 relates to the Distribution of communities identified within the Qualifying Interest 1130 Estuaries and 1140 Mudflats and sandflats not covered by seawater at low tide. The constituent communities in the Qualifying Interest 1130 and 1140 are:

- Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex
- Sand with crustaceans and *Nephtys hombergii* community complex

The target for the attribute is; to Conserve the community types in a natural condition:

The likely interactions between aquaculture activities are outlined in **Table 8.3** and **Table 8.4**. Specifically, **Table 8.3** and **Table 8.4** focus on the spatial overlap of **a)** the cultivation sites and **b)** access routes with the constituent community types of 1130 and 1140.

Short summaries of the assessments together with broad conclusions and justifications on whether the activities are considered disturbing are provided below.

a) Cultivation sites

Significant adverse effects are unlikely to occur as the spatial overlap of the oyster cultivation sites with constituent community types of 1130 and 1140 is below the 15% disturbance threshold identified in the site Conservation Objectives (see NPWS *2014a) (see* ***Table 8.3***.

In addition, published literature (Forde *et al., 2015;* O'Carroll *et al*., 2016) indicates that, with the exception of heavy vehicle movement along access routes, intertidal oyster cultivation is non-disturbing to intertidal habitats.

b) Access Routes

Published literature has reported significant impacts to intertidal communities at routes used to access oyster cultivations (De Grave *et al*., 1998; Forde *et al*., 2015; O'Carroll *et al*., 2016). The

impact is attributed to the persistent compaction of the sedimentary habitats by heavy vehicles accessing the sites.

Significant adverse effects are unlikely to occur as the spatial overlap of the access routes is below the 15% disturbance threshold identified for constituent community types in the site Conservation Objectives (see NPWS 2014a) **Table 8.4**).

Conclusion: Significant adverse effects are unlikely to occur as the spatial overlap of the cultivation sites and access routes is below the 15% disturbance threshold.

8.1.9 Conclusion Summary

Based upon the spatial overlap and sensitivity analysis, it is concluded that aquaculture activities at trestle sites and along access routes do not pose a risk of significant disturbance to the conservation of the habitat features of Estuaries (1130) and Mudflats and sandflats not covered by seawater at low tide (1140) or their associated constituent community types.

Table 8.3: Interactions between the relevant aquaculture activities and constituent communities of 1130 and 1140.

Estuaries (1130): 237ha		**Mudflats and sandflats not covered by seawater at low tide (1140); 201ha**
Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex	Sand with crustaceans and *Nephtys hombergii* community complex	Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex
Disturbing: No **Justification**: The activity overlaps 3.3ha or 2.04% of this community type.	**Disturbing: No** **Justification:** The activity overlaps <0.01ha or <0.01%% of this community type.	**Disturbing: No** **Justification:** The activity overlaps 3.3ha or 1.66% of this community type.
Justification: 1) Overlap below Given that this value is less than 15% threshold, significant adverse impacts of activities on the community type can be discounted 2) Published literature (Forde *et al.,* 2015, O'Carroll *et al*., 2016) indicate that activities occurring at trestle culture sites are not disturbing.		

Table 8.4: Interactions between access routes used for oyster aquaculture activities and constituent communities of 1130 and 1140.

Estuaries (1130): 237ha		**Mudflats and sandflats not covered by seawater at low tide (1140); 201ha**
Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex	Sand with crustaceans and *Nephtys hombergii* community complex	Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex
Disturbing: No **Justification**: The activity overlaps 0.41ha or 0.25% of this community type.	**No overlap**	**Disturbing: No** **Justification:** The activity overlaps 0.41ha or 0.20%% of this community type.
Justification: 1) Overlap below Given that this value is less than 15% threshold, significant adverse impacts of activities on the community type can be discounted 2) Published literature (Forde *et al.,* 2015, O'Carroll *et al*., 2016) indicate that activities occurring at trestle culture sites are not disturbing.		

8.2 Non-native Species

8.2.1 Overview

Aquaculture activity has the potential to act as a significant vector for the introduction of non-native species to the SAC. It should be noted, however, that the cultivation of oysters grown in other bays in Ireland and 'finished' at the Ballyteigue 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.

8.2.2 Determination of Significance

As outlined in **Table 8.1** intertidal and subtidal sand and mixed habitats[6] 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 include the slipper-limpet *Crepidula fornicata*[7] and the leathery (or club) sea squirt *Styela clava*[8] and the carpet squirt *Didemnum vexillum*[9]. While these non-native species have not been recorded at the Ballyteige Burrow SAC, their potential introduction presents a risk of the Qualifying Interest 1130 and 1140 for which the SAC is designated. Specifically, there is potential that the invasive species may alter community structure thus impacting the attributes defined for habitats in the Conservation Objective.

C. fornicata can effect change in community structure by out-competing resident benthic species for food and space (JNCC 2002). Slipper limpet can also act to alter sediment characteristics through the removal of huge volumes of suspended organic material from the water column, and depositing filtered material on the bottom as pseudofaeces (Thieltges *et al*., 2003).

[6] Habitat A5.42 proxy for *Mixed sediment to sand with nematodes and Tubificoides benedii community complex*. Habitat A2.23 and Habitat A5.23; proxy habitats for *Sand with crustaceans and Nephtys hombergii community complex*.

[7] Global Invasive Species Database http://www.iucngisd.org/gisd/species.php?sc=600

[8] Global Invasive Species Database http://www.iucngisd.org/gisd/species.php?sc=951

[9] Global Invasive Species Database http://www.iucngisd.org/gisd/species.php?sc=951

Similar to slipper limpet effects on the microbenthic communities, the tunicate species *S. clava* and *D. vexillum* can impact resident benthic communities by out-competing resident flora and fauna. At high densities these species can significantly impact on native and aquaculture species through competition for space and food, as well as predation of larvae from the water column. The species form large colonies significant over rocks and gravels, aquaculture equipment (trestle, bags, ropes, netting *etc.*) and vessel hulls. The tunicate species can smother benthic organisms and change community structure.

8.2.3 Management Measure

To manage potential risk of introduction of alien species into the SAC as a result of aquaculture activities all movement of stock in and out of the bay should adhere to relevant legislation and follow best practice guidelines (*e.g.* http://invasivespeciesireland.com/cops/aquaculture/).

Conclusion: with strict adherence to relevant legislation and best practice guidelines, there will be no likely significant adverse effects.

8.2.4 Conclusion Summary

The site is at risk from the introduction of non-native species on and among culture stock. To manage the risk of introduction of alien species to the habitat features of Estuaries (1130) and Mudflats and sandflats not covered by seawater at low tide (1140) and their associated constituent community types, all stock movement in the bay follow should strictly adhere to relevant legislation and follow best practice guidelines.

9. In-Combination Effects of Aquaculture, Fisheries and other Activities

9.1 Fisheries

There are no known applications for a fishery or proposed fishery plans for the Ballyteigue Burrow SAC. On this basis, there are not likely to be any in-combination impacts between fishery and aquaculture activities.

9.2 Pollution Pressures

There are a number of activities which are terrestrial in origin that might result in impacts on the conservation features of the Ballyteigue Burrow SAC. Primary among these are point source discharges from domestic sewage outfalls located adjacent to the SAC. The pressure derived from these point

sources may have very localised impacts upon dissolved nutrients, suspended solids and some elemental components.

9.3 Conclusion Summary

Pressures resulting from aquaculture activities are the localised compaction of sediment along access routes and the potential introduction of non-native species. Pressures resulting from point discharge location would not significantly impact chemical parameters in the water column, any in-combination effects with aquaculture activities are considered to be minimal or negligible.

10. SAC Aquaculture Appropriate Assessment Concluding Statement and Recommendations

In the Ballyteigue Burrow SAC, oyster culture (using bags and trestles) is the only type of aquaculture activity currently occurring. Based upon this and the information provided in the aquaculture profiling carried out (**Section 5**), the likely interaction between this culture methodology and conservation features of the site were considered.

An initial screening exercise resulted in the following features being excluded from further consideration by virtue of the fact that no spatial overlap of the culture activities was expected to occur: Coastal lagoons [1150], Annual vegetation of drift lines [1210], Perennial vegetation of stony banks [1220], *Salicornia* and other annuals colonising mud and sand [1310], Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) [1330], Mediterranean salt meadows (*Juncetalia maritimi*) [1410], Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*) [1420], Embryonic shifting dunes [2110], Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes) [2120, Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] and Atlantic decalcified fixed dunes (*Calluno-Ulicetea*) [2150].

A full assessment was carried out on the likely interactions between existing and proposed aquaculture operations and the features of the Annex I habitats 1140 (Mudflats and sandflats not covered by seawater at low tide) and 1130 Estuaries. The likely effects of the aquaculture activities (species, structures, access routes) were considered in light of the sensitivity of two constituent community types and species of the Annex I habitats 1140 and 1130. The constituent communities are: Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex, and Sand with crustaceans and *Nephtys hombergii* community complex. Based upon the scale of spatial overlap of current and proposed aquaculture activities and the relatively high tolerance levels of the habitats and

associated species, the general conclusion is that current and proposed activities are considered non-disturbing to the habitat Qualifying Interests and their constituent communities. It is recommended that there be strict adherence to the access routes identified and that density of culture structures within the sites be maintained at current levels.

The site is at risk from the introduction of non-native species on and among culture stock (*e.g.* slipper limpet, leathery sea squirt and carpet sea squirt). To manage the risk of introduction of alien species into the SAC all movement of stock in and out of the bay should adhere to relevant legislation and follow best practice guidelines[10].

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Site Status

- Appealed to ALAB
- Lapsed
- Licensed
- Under Application

Drawn : 08-03-2023

Scale = 1:15,000

BALLYTEIGUE BAY
CO. WEXFORD
AQUACULTURE SITES UNDER APPLICATION, LAPSED, LICENSED & APPEALED TO ALAB

CYAL50317599

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
Minister for Agriculture, Food and the Marine
Agriculture House
Kildare Street
Dublin 2

06 March 2023

Our Ref: AP5/2023
Site Ref: T03/095A

Re: Appeal against the decision of the Minister for Agriculture, Food and the Marine to grant an Aquaculture Licence to Johnny Neville & Jeanette Brugman to cultivate pacific oysters using bags and trestles on the intertidal foreshore on site T09/095A at Ballyteigue Burrow in Ballyteigue Bay, Co Wexford

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/wexford/

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
Secretary to the Board

cc: Mr Ultan Waldron, Aquaculture and Foreshore Management Division